Exploring interactions between General Practitioners and Community Pharmacists: a novel application of social network analysis

A thesis submitted to the University of Manchester for the degree of Doctor of Philosophy in the Faculty of Medical and Human Sciences

2011

Fay Laura Bradley

School of Pharmacy and Pharmaceutical Sciences
CONTENTS

List of Tables ........................................................................................................................... 5
List of Figures .......................................................................................................................... 5
Abstract ................................................................................................................................... 6
Acknowledgements ................................................................................................................ 8
The author .............................................................................................................................. 9
Abbreviations ........................................................................................................................ 10
Glossary of terms .................................................................................................................. 11
1 Introduction ................................................................................................................... 12
  1.1 About this study .................................................................................................... 12
  1.2 Organisation of the thesis ................................................................................. 12
2 Background .................................................................................................................... 14
  2.1 The Policy context ............................................................................................... 14
    2.1.1 Pre 2010 ..................................................................................................... 14
    2.1.2 2010 onwards ........................................................................................... 16
  2.2 GP-pharmacist interaction and collaboration literature ....................................... 19
    2.2.1 History of the doctor-pharmacist relationship ........................................... 19
    2.2.2 The nature or type of interaction ............................................................... 21
    2.2.3 The extent or measure of collaboration .................................................... 23
    2.2.4 Perceptions of or attitudes towards collaboration ...................................... 26
    2.2.5 The Process of collaboration .................................................................... 30
    2.2.6 Strategies to improve or promote collaboration ........................................ 34
    2.2.7 Outcomes of collaboration ....................................................................... 35
    2.2.8 Conclusion ................................................................................................. 38
  2.3 Discussion of key concepts .................................................................................... 39
    2.3.1 Integration ................................................................................................... 39
    2.3.2 Collaboration ............................................................................................... 42
    2.3.3 Sociology of interprofessional health care .................................................. 44
  2.4 Conclusion ............................................................................................................. 49
  2.5 Aims and objectives ............................................................................................... 50
3 Method .......................................................................................................................... 51
  3.1 Overall study design .............................................................................................. 51
    3.1.1 Stage one - Census survey .......................................................................... 51
    3.1.2 Stage two - Qualitative interviews ............................................................... 52
  3.2 Justification of the study design ............................................................................. 53
    3.2.1 What can social network analysis add to the area? .................................... 53
    3.2.2 Epistemology ............................................................................................... 53
    3.2.3 Different network approaches that were considered .................................. 55
    3.2.4 Different methods for collecting relational data that were considered ........ 57
  3.3 Sampling ................................................................................................................ 58
3.3.1 Sampling in social network analysis ................................................................. 58
3.3.2 Individuals or organisations? ............................................................................ 59
3.3.3 Selection of PCT areas ................................................................................... 59
3.3.4 Selection of smaller case study areas ............................................................. 62
3.3.5 Sample for qualitative interviews ................................................................... 64
3.4 Questionnaire design .......................................................................................... 64
3.4.1 Purpose of the questionnaire ........................................................................... 64
3.4.2 Designing a questionnaire for collecting relational data ................................. 65
3.4.3 Designing the roster of names ......................................................................... 65
3.4.4 Designing the questions ................................................................................ 67
3.4.5 Piloting the questionnaire ............................................................................... 72
3.4.6 Revised strategy for data collection ............................................................... 73
3.4.7 Second pilot .................................................................................................. 74
3.5 Interview schedule design ................................................................................... 74
3.6 Data Collection ................................................................................................... 75
3.6.1 Data collection at site 1 .................................................................................. 75
3.6.2 Data collection at site 2 .................................................................................. 76
3.6.3 Data collection at site 3 .................................................................................. 77
3.6.4 Data collection at site 4 .................................................................................. 77
3.6.5 Factors affecting recruitment ........................................................................ 78
3.7 Handling and analysing network data .................................................................. 79
3.7.1 Organising data ............................................................................................. 79
3.7.2 Types of ties ................................................................................................... 81
3.7.3 Network measures ....................................................................................... 82
3.7.4 Comparing means ......................................................................................... 86
3.7.5 QAP analysis ............................................................................................... 88
3.7.6 Adjustments made ......................................................................................... 88
3.7.7 Visual network analysis ............................................................................... 90
3.8 Qualitative analysis ............................................................................................ 91
3.9 Limitations of the study design ......................................................................... 92
3.9.1 Dealing with non-response ......................................................................... 93
3.10 Ethical considerations ...................................................................................... 94
4 Overview of case study sites ................................................................................ 95
4.1 Description of the sites ................................................................................. 95
4.1.1 Site 1 ............................................................................................................ 95
4.1.2 Site 2 ............................................................................................................ 97
4.1.3 Site 3 ............................................................................................................ 98
4.1.4 Site 4 ............................................................................................................ 99
4.2 Who is in the networks? .................................................................................. 100
4.2.1 Responders ............................................................................................... 100
4.2.2 Non-responders ......................................................................................... 101
5 Network Characteristics .............................................................. 104
  5.1 Level of contact ................................................................. 104
    5.1.1 How connected are the networks? ......................... 104
    5.1.2 Frequency of contact ............................................... 107
    5.1.3 Reciprocation of contact ............................................. 112
    5.1.4 Summary................................................................. 115
  5.2 Nature of contact ............................................................... 116
    5.2.1 Direct contact .......................................................... 116
    5.2.2 Indirect contact ......................................................... 117
    5.2.3 Face-to-face contact .................................................. 122
    5.2.4 Summary................................................................. 124
  5.3 Subject of contact ............................................................... 125
    5.3.1 Summary................................................................. 133
  5.4 Centrality and strength of relations ...................................... 133
    5.4.1 Perceived quality of relationship ................................. 133
    5.4.2 Central GPs and pharmacists – the stars .................. 136
    5.4.3 Strong ties ............................................................... 139
    5.4.4 Summary................................................................. 142
  5.5 Discussion ............................................................................ 142
  6 Establishing, maintaining and strengthening ties......................... 147
    6.1 The GP-pharmacist encounter ........................................ 147
      6.1.1 ‘The approach’ ...................................................... 147
      6.1.2 Summary............................................................... 158
    6.2 Building ties – getting to know each other .................... 159
      6.2.1 The anonymous pharmacist .................................... 159
      6.2.2 Nice to know or need to know? ................................. 161
      6.2.3 Face-to-face .......................................................... 162
      6.2.4 Propinquity ............................................................ 163
      6.2.5 Summary............................................................... 165
    6.3 Strong ties – becoming central ........................................ 166
      6.3.1 Social ties ............................................................... 166
      6.3.2 Stability ................................................................. 170
      6.3.3 Trust and dependency .............................................. 175
      6.3.4 Summary............................................................... 181
    6.4 Discussion ........................................................................ 182
  7 Opportunities and constraints .................................................. 186
    7.1 Benefits of strong ties .................................................... 186
      7.1.1 The ‘safety net’ ...................................................... 186
      7.1.2 Efficiency and convenience .................................... 187
      7.1.3 Financial benefit .................................................... 190
      7.1.4 Summary............................................................... 191
7.2 How important are strong ties? ................................................................. 192
7.2.1 Necessity or added bonus? .................................................................. 192
7.2.2 Does being isolated from each other matter? .................................. 193
7.2.3 Summary ........................................................................................... 195
7.3 Barriers to more integrated networks ................................................. 195
7.3.1 Perceived limited benefits ................................................................. 196
7.3.2 Current system of contact ................................................................. 199
7.3.3 Location ............................................................................................ 207
7.3.4 Conflicts of interest .......................................................................... 210
7.3.5 Power and control ............................................................................ 217
7.3.6 Summary ........................................................................................... 228
7.4 Discussion ............................................................................................ 233
8 Conclusion ............................................................................................... 236
8.1 Summary of main findings ................................................................... 236
8.2 Implications for practice ..................................................................... 237
8.2.1 Recommendations for practice ..................................................... 238
8.3 Implications for research .................................................................... 245
8.3.1 Adopting a relational approach ...................................................... 245
8.3.2 Future research ............................................................................... 247
References .................................................................................................. 250
Appendix A – Methods for literature review .......................................... 264
Appendix B – PCT characteristics data .................................................. 269
Appendix C – Network questionnaire (GP version) .................................. 270
Appendix D – Cover letters, information sheets and consent forms ........... 276
Appendix E – Sample interview topic guide ............................................ 283
Appendix F – Ethical approval .................................................................. 285

Word count - 83,741
LIST OF TABLES

Table 3-1: Types of ties used in the study ................................................................. 81
Table 4-1: Demographic and geographic characteristics of case study sites .......... 96
Table 4-2: Questionnaire response rate by site ...................................................... 101
Table 4-3: Number of GPs and community pharmacists interviewed by site .......... 101
Table 4-4: Characteristics of questionnaire respondents ....................................... 101
Table 4-5: Characteristics of non-responders ....................................................... 102
Table 5-1: Densities of the networks ..................................................................... 105
Table 5-2: Differences in degree and reciprocation between GPs and CPs across all sites 108
Table 5-3: Differences in degree and reciprocation between GPs and CPs at site 1 .... 109
Table 5-4: Differences in degree and reciprocation between GPs and CPs at site 2 .... 109
Table 5-5: Differences in degree and reciprocation between GPs and CPs at site 3 .... 109
Table 5-6: Differences in degree and reciprocation between GPs and CPs at site 4 .... 110
Table 5-7: Differences in degree and reciprocation between sites ......................... 111
Table 5-8: Service provision by pharmacy .............................................................. 132
Table 5-9: Dyads possessing strong reciprocal ties .............................................. 140
Table 5-10: QAP correlations ............................................................................... 142

LIST OF FIGURES

Figure 2-1: McDonough and Doucette’s collaborative working relationship model (2001) 23
Figure 2-2: Conceptual model of GP-pharmacist collaboration (Bradley et al., 2012) .... 25
Figure 2-3: Axelsson and Axelsson’s conceptual scheme of integration (2006) ............. 41
Figure 2-4: Ahgren and Axelsson’s five-point scale of integration (2005) ..................... 41
Figure 2-5: Armitage’s five-point collaboration scale (1983) .................................... 43
Figure 3-1: Overview of research design ................................................................. 52
Figure 3-2: Example of data in UCINET and sociogram produced in NETDRAW ........ 80
Figure 5-1: Presence of tie reciprocal reporting ..................................................... 114
Figure 5-2: ‘Mostly direct’ contact, respondents only .......................................... 118
Figure 5-3: The receptionist as ‘broker’ ............................................................... 119
Figure 5-4: The patient as ‘broker’ ....................................................................... 121
Figure 5-5: Face-to-face contact in the last 12 months, respondents only ............... 123
Figure 5-6: Variation in subject of contact at site 1 ............................................. 128
Figure 5-7: Variation in subject of contact at site 2 ............................................. 129
Figure 5-8: Variation in subject of contact at site 3 ............................................. 130
Figure 5-9: Variation in subject of contact at site 4 ............................................. 131
Figure 5-10: Relationships reported to be good / very good quality ................. 135
Figure 5-11: Centrality measures at site 1 (large town) ....................................... 137
Figure 5-12: Nodes sized by a composite score of centrality ......................... 138
ABSTRACT

The University of Manchester
Fay Laura Bradley
Doctor of Philosophy
Exploring interactions between General Practitioners and Community Pharmacists: a novel application of social network analysis
7th December 2011

Increasing collaborative working between GPs and community pharmacists has recently become a high priority for the NHS. Previous research suggests that interaction is limited and problematic between the two professions, forming a barrier to service provision. This PhD aimed to explore the level, nature and process of interaction between GPs and community pharmacists, using a social network analysis approach.

The study focused on four geographically different case study areas and 90 GPs and community pharmacists participated in total. A two-stage design was adopted. Firstly data were collected through a network questionnaire and analysed using social network analysis. Secondly, qualitative interviews were conducted to provide narrative to the network findings and analysed using the framework approach.

The nature of contact was characterised as mostly indirect through brokers, de-personalised and non-reciprocal and seemingly at odds with collaborative behaviour. A misalignment in responses pointed to asymmetry in the relationship, representing little commonality, knowing and understanding of each other. Through social network analysis, individuals and dyads in possession of strong ties were identified. Strong ties were not the norm and were characterised by more personalised forms of reciprocal contact. Qualitative interviews provided insight into the processes of interaction between the two professional groups. An approach to the interaction, which involved pharmacists tactically managing the potential conflict in the interaction through use of deferential and sometimes subservient behaviour, was conceptualised as the ‘pharmacist-GP game’. Those pharmacists with strong ties to GPs also, at times, adopted aspects of this approach but also attempted to set themselves apart from other pharmacists in order to develop and maintain their strong ties with GPs. However, possession of strong ties did not always lead to capitalisation, and the benefits of possessing these were often viewed as efficiency and convenience gains rather than anything more wide-reaching. Often, more isolated GPs and pharmacists did not view strong ties as a necessity, with the benefits of these not considered rewarding enough for the time and effort required to achieve them.

This effort-reward conflict was identified as an important constraint faced by GPs and pharmacists in relation to transforming these loose connections into more integrated networks. Other micro and macro level constraints were also identified and a series of accompanying recommendations made for future practice and research.
DECLARATION

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

COPYRIGHT STATEMENT

i. The author of this thesis (including any appendices and/or schedules to this thesis) owns certain copyright or related rights in it (the “Copyright”) and s/he has given The University of Manchester certain rights to use such Copyright, including for administrative purposes.

ii. Copies of this thesis, either in full or in extracts and whether in hard or electronic copy, may be made only in accordance with the Copyright, Designs and Patents Act 1988 (as amended) and regulations issued under it or, where appropriate, in accordance with licensing agreements which the University has from time to time. This page must form part of any such copies made.

iii. The ownership of certain Copyright, patents, designs, trade marks and other intellectual property (the “Intellectual Property”) and any reproductions of copyright works in the thesis, for example graphs and tables (“Reproductions”), which may be described in this thesis, may not be owned by the author and may be owned by third parties. Such Intellectual Property and Reproductions cannot and must not be made available for use without the prior written permission of the owner(s) of the relevant Intellectual Property and/or Reproductions.

iv. Further information on the conditions under which disclosure, publication and commercialisation of this thesis, the Copyright and any Intellectual Property and/or Reproductions described in it may take place is available in the University IP Policy (see http://www.campus.manchester.ac.uk/medialibrary/policies/intellectual-property.pdf), in any relevant Thesis restriction declarations deposited in the University Library, The University Library’s regulations (see http://www.manchester.ac.uk/library/aboutus/regulations) and in The University’s policy on presentation of Theses.
ACKNOWLEDGEMENTS

I would firstly like to thank my supervisors Professor Darren Ashcroft and Professor Nick Crossley for offering me great encouragement and guidance when I needed it, but also affording me the space to develop as an independent researcher. I would also like to extend my thanks to them for their support prior to the start of this PhD, during my education and early career.

I am hugely grateful to all the community pharmacist and GP respondents who took part in this study. I am particularly indebted to those individual respondents who ‘opened the doors’ for me, taking the time to meet with me to discuss the research, introduce me to other potential respondents and pass on questionnaires to colleagues. I would also like to thank those pharmacists and GPs at the university, and elsewhere, who acted as advisors during the development of the questionnaire and helped to pilot this for me. Special thanks also to members of the NHS North West Corporate Pharmacy Network, staff at the North West Primary Care Research Network and the PCT managers at the case study sites for their advice and invaluable contacts. Thank you also to the National Institute for Health Research for providing the funding for this study.

I feel very privileged to have worked in such a supportive and friendly environment as the DUPP group at Manchester for the last 8 years and grateful that I could continue my PhD studies there. I would particularly like to thank Professor Peter Noyce for his continued support and invaluable words of wisdom. Thanks also to my friends Dr Rebecca Elvey, Dr Penny Lewis, Dr Devina Halsall, Jasmin Cairns, Dr Liz Seston and Dr Chuenjid Kongkaew, for making me laugh, keeping me positive and inspiring me with their own successes.

Finally, special thanks to my Mum and Dad for listening and always being there, and to my husband Pete, who had the hardest job providing daily support and making sure I didn’t lose my sense of humour.
THE AUTHOR

The author has a social science background, having obtained a BA(Hons) in Sociology from the University of Sheffield and an MA(Econ) in Applied Social Research from the University of Manchester.

The author has worked as a research associate in the Drug Usage and Pharmacy Practice Group at the University of Manchester since 2003. During this time she has been involved in a series of research projects focused on community pharmacy, particularly concerning service provision and commissioning. This experience led to an interest in the GP-pharmacist relationship and several resultant publications on the topic. In 2009, the author was awarded a National Institute for Health Research (NIHR) Doctoral Research Fellowship which provided three years’ funding to undertake a PhD.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADR</td>
<td>Adverse Drug Reaction</td>
</tr>
<tr>
<td>CP</td>
<td>Community Pharmacist</td>
</tr>
<tr>
<td>EHC</td>
<td>Emergency Hormonal Contraception</td>
</tr>
<tr>
<td>GMC</td>
<td>General Medical Council</td>
</tr>
<tr>
<td>GP</td>
<td>General Practitioner</td>
</tr>
<tr>
<td>IMD</td>
<td>Index of Multiple Deprivation</td>
</tr>
<tr>
<td>LMC</td>
<td>Local Medical Committee</td>
</tr>
<tr>
<td>LPC</td>
<td>Local Pharmaceutical Committee</td>
</tr>
<tr>
<td>LPS</td>
<td>Local Pharmaceutical Services</td>
</tr>
<tr>
<td>MUR</td>
<td>Medicine Use Review</td>
</tr>
<tr>
<td>NHS</td>
<td>National Health Service</td>
</tr>
<tr>
<td>NMS</td>
<td>New Medicines Service</td>
</tr>
<tr>
<td>OA</td>
<td>Output Area</td>
</tr>
<tr>
<td>PBC</td>
<td>Practice Based Commissioning</td>
</tr>
<tr>
<td>PCT</td>
<td>Primary Care Trust</td>
</tr>
<tr>
<td>RCGP</td>
<td>Royal College of General Practitioners</td>
</tr>
<tr>
<td>RCT</td>
<td>Randomised Controlled Trial</td>
</tr>
<tr>
<td>RPS</td>
<td>Royal Pharmaceutical Society</td>
</tr>
<tr>
<td>SNA</td>
<td>Social Network Analysis</td>
</tr>
<tr>
<td>SOA</td>
<td>Super Output Area</td>
</tr>
</tbody>
</table>
# GLOSSARY OF TERMS

| **Node / actor** | The individual/organisation/group of interest in the network |
| **Social Network Analysis** | The study of connections between actors |
| **Tie** | The connection/relationship between actors |
| **Ego-net** | The personal network of one actor (ego) |
| **Alter** | An actor with whom ego is connected to |
| **Full network** | A census of ties between all actors in the network |
| **Dyad** | A connected pair of actors |
| **Two-mode network** | A network involving two groups of nodes. Ties are across groups not within the groups |
| **Sociogram** | A visual map of the network, showing actors and the ties between them |
| **UCINET** | Software package for Social Network Analysis |
| **NETDRAW** | UCINET associated software for producing visual sociograms |
| **Degree (in/out)** | The number of ties sent by an actor (out-degree) The number of ties received by an actor (in-degree) |
| **Degree Centrality** | A measure of how central actors are in the network in relation to their in/out degree |
| **Density** | A measure of how connected the network is |
| **Normalised degree** | An actor’s actual number of ties expressed as a proportion of potential ties. Degree is normalised in order to compare between different size networks |
| **Broker** | An actor whom other actors need to go through in order to reach other actors in the network |
1 INTRODUCTION

1.1 About this study

This study examined the level, nature and process of interaction between general practitioners (GPs) and community pharmacists at four geographically different areas in England. The study adopted a relational approach framed around the concept of networks, using social network analysis techniques and a combination of quantitative and qualitative data. The research was funded by the National Institute for Health Research (NIHR) through their doctoral fellowship scheme.

1.2 Organisation of the thesis

Background literature informing the development and conduct of this study is presented in chapter 2. It outlines recent policy and practice changes that have resulted in a need for greater collaboration between GPs and pharmacists; examines existing literature about the GP-pharmacist relationship identifying gaps in knowledge; and discusses some of the key concepts and theories relevant to the study of GP-pharmacist interaction. This chapter concludes by presenting the aims and specific objectives of the study.

Chapter 3 outlines the study design and methods used. It provides detail on different approaches that were considered for the design of the study; methods of sampling and selection; design and piloting of the research instruments; data collection strategies and recruitment; the handling and analysis of data; and also considers some of the limitations and ethical issues of the design. Chapter 4 presents an overview of the four different case study areas included in the study, in relation to their demographical and geographical characteristics. It also presents detail on response rate and the characteristics of the responders and non-responders.

The findings of the study are presented in chapters 5 - 7. Chapter 5 presents a network analysis of the interactions and relationships between GPs and pharmacists at the four sites. Chapter 6 examines the formation of networks and relationships and how those with strong ties perceived that these have been achieved. Chapter 7 presents an
examination of the opportunities and constraints faced by those situated in different network positions, and considers barriers to, and solutions for, more integrated networks.

Chapter 8 provides a conclusion to the study, discussing implications for practice, including a series of recommendations, and implication for future research.
2 BACKGROUND

This chapter examines the literature in relation to the GP-pharmacist relationship. It outlines recent policy and practice changes that have resulted in a need for greater collaboration between the two professional groups; the historical context of the relationship; existing literature concerning the nature of, attitudes to, and outcomes of the relationship; and discusses some of the key concepts and theories relevant to the study of GP-pharmacist interaction.

2.1 The Policy context

2.1.1 Pre 2010

In 2003, under Labour government administration, the Department of Health outlined their vision for pharmacy to be recognised as “an integral part of the NHS family” and for pharmacy services to be “more clearly integrated with the work of other primary care professionals – particularly GPs” (Department of Health, 2003:10). The changing role of community pharmacists in the UK has been well documented, with a shift from dispensing activity to patient focus, involvement in pharmaceutical care and development of clinical skills (Noyce, 2007; Working party on the future role of the community pharmaceutical services, 1992). Similarly, contractual changes for community pharmacists have recognised and attempted to promote this change in role. In England, the Local Pharmaceutical Services (LPS) contract was introduced in 2002 and provided an alternative method of delivering care through locally commissioned services (Kendall et al., 2005b). In 2005, reform to the national pharmaceutical contract introduced a new structured tier system to service provision at essential, advanced and enhanced level, and formalised clinical governance arrangements for community pharmacy (Pharmaceutical Services Negotiating Committee, 2004).

In effect, the revised General Medical Services contract introduced in 2004 ended the role of GPs as ‘independent contractors’ to the NHS (RCGP, 2007a). The new contract arrangements involved practices entering into contract with Primary Care Trusts (PCTs) rather than individual practitioners, with all partners of the practice signing the contract. Practice partnership was also opened up to other health care professionals such as nurses, allied health professionals and pharmacists. At the same time, practice-based
commissioning (PBC) was also introduced in an attempt to reinforce the status of the GP practice as the nucleus of clinical leadership and service design in primary care (RCGP, 2007a). The Royal College of General Practitioners (RCGP) commented that, “such developments have reduced the emphasis on the individual GP providing isolated care, necessitating a team approach and the employment of greater skill mix.” (RCGP, 2007b:1).

Thus, during this period of contractual reform, through policy and guidance, GPs and pharmacists were encouraged to adopt a more multi-disciplinary, collaborative approach. However, evaluations of the changes to contractual arrangements for community pharmacy in England highlighted a fundamental problem related to the operation and design of many community pharmacy services - an assumption that GPs and pharmacists were both willing and able to work together collaboratively (Kendall et al., 2005a; Bradley et al., 2005; Bradley et al., 2007; Bradley et al., 2006). Findings have indicated that the pre-existence of good working relationships with a strong emphasis on trust (mostly from the GP’s perspective) have been critical to the operation of these pharmacy services. The operation of essential and advanced services, such as repeat dispensing (Ashcroft et al., 2006) and Medicines Use Reviews (MURs) have both been shown to be hindered by interprofessional relations or lack of (Blenkinsopp et al., 2007; Bradley et al., 2008b).

Findings from these evaluations suggested that GP-pharmacist collaborations operated on an informal, high-trust basis. Evaluation of the LPS contract demonstrated that many of the collaborations operating were not contractually bound (the pharmacist was bound by the LPS contract, but the GP not). Similarly, with the national contract for pharmacy, GPs were not contractually obliged to collaborate with pharmacists. This led certain groups such as the All-Party Pharmacy Group to recommend that GP and pharmacy contracts become more integrated (All-Party Pharmacy Group, 2007).

Two years after the changes to the national pharmacy contract were made, a period of reflection on progress ensued. Anne Galbraith’s review of NHS pharmaceutical arrangements (Galbraith, 2007) reported that relationships between GPs and community pharmacists had not developed as expected and that there was a need for closer cooperation for integrated care. Similar sentiments were echoed by the All-Party Pharmacy Group Inquiry which reported that professional relationships were strained as a
consequence of suspicions and misconceptions about professional roles (All-Party Pharmacy Group, 2007). Using evidence from these two sources, the White Paper ‘Pharmacy in England’ (Department of Health, 2008) called for a clear strategic focus to improve working relationships between GPs and Pharmacists. At this time, the White Paper presented a clear statement of the Labour government’s stance in relation to GP and pharmacist collaborative relationships and a belief that these relationships were beneficial:

“The Government believes that good working relationships between all healthcare professionals are essential to the delivery of personalised and effective patient services. This requires far greater collaboration and stronger communications between healthcare professionals than has perhaps been evidenced so far...there are benefits where pharmacists are active partners in collaboration with GPs.” (Department of Health, 2008:74)

The White Paper went on to state that the Government had asked NHS Employers to create a working group of pharmacy and medical professionals and public representatives to “formulate a series of actions to promote more effective professional relationships” (Department of Health, 2008:74). In November 2009, it was announced that the Royal Pharmaceutical Society (RPS) and the RCGP had launched a joint inquiry into improving integrated working between general practice and pharmacy, with a final report expected the following year.

2.1.2 2010 onwards

In May 2010, the Conservative-Liberal Democrat coalition Government came into power. At this time, after the strong commitment announced in the Pharmacy White Paper in 2008, and launch of the joint enquiry in 2009, the GP-pharmacy integration agenda appeared more subdued. Plans to radically overhaul the NHS were announced in July 2010, through the White Paper ‘Equity and Excellence - liberating the NHS’, with a focus on financial deficit reduction and increased efficiency in health care (Department of Health, 2010:26). Plans announced at this time involved the dissolution of PCTs and Strategic Health Authorities, with GPs taking responsibility for commissioning of services and NHS budgets through GP Commissioning Consortia. In relation to pharmacists, the national elements of their contract were reported to fall under the responsibility of a new National Commissioning Board, rather than GP Commissioning Consortia. At the beginning
of 2011, the new Health and Social Care Bill, detailing these reforms was introduced to Parliament. However, the Bill has since been subject to a series of amendments in the face of strong opposition from a number of health care professional groups. Primary concerns involve an increase in competition in the health service, at the expense of quality. In April 2011, the health secretary, Andrew Lansley announced a ‘natural pause’ of three months in the progression of the bill, for a listening exercise to be conducted by the NHS Future Forum, in the face of growing opposition, particularly from members of the British Medical Association and the Royal College of Nursing. The NHS Future Forum’s (2011) report following this listening exercise concluded that “Multi-professional clinical advice, leadership and involvement in commissioning high quality integrated care are crucial if the proposed NHS reforms are to be successful”. They made a series of recommendations including the need to ensure that both the commissioning consortia and the NHS commissioning board were “more directly required to take relevant multi-professional advice when making commissioning decisions”. They also recommended that “given the importance of multi-professional input to commissioning, the terms ‘GP led commissioning’ or ‘GP Commissioning Consortia’ should be abandoned” (NHS Future Forum, 2011:5).

At the time of writing, the revised Health and Social Care Bill is currently being reviewed by the House of Lords, but opposition is still evident. In October 2011, protesters in London urged the House of Lords to ‘block the bill’ and around 400 health professionals and academics wrote to peers asking them to vote against the bill, stating it would cause "irreparable harm to the NHS, to individual patients, and to society as a whole" (Triggle, 2011).

As a result of the series of amendments made to the Bill and evolving changes in responsibility and levels of inclusion, it is difficult to predict how community pharmacy may fit within the proposed reforms. Although integration is a key strategic concern of the reforms, there is a primary focus on the integration between health and social care. However, the White Paper does briefly mention pharmacy, expressing a commitment to reforming payment structures and incentives, and recognition of an expanding role working with other health care professionals:
“The community pharmacy contract, through payment for performance, will incentivise and support high quality and efficient services, including better value in the use of medicines through better informed and more involved patients. Pharmacists, working with doctors and other health professionals, have an important and expanding role in optimising the use of medicines and in supporting better health. Pharmacy services will benefit from greater transparency in NHS pricing and payment for service.” (Department of Health, 2010:26)

Under the planned reforms, ‘The NHS Commissioning Board’ will hold responsibility for managing the community pharmacy contract, whereas clinical commissioning groups will be responsible for commissioning of local health services. Local Authorities, via Health and Wellbeing Boards and ‘Public Health England’, will have responsibility for public health services. Thus, if community pharmacy is to be involved, or has a desire to be involved in service provision beyond national contract requirements, it appears likely that pharmacists will need to engage both with clinical commissioning groups and Local Authorities (Pharmacy Voice, 2011).

In March 2011, it was announced that additional services would be added to the advanced service tier of the national pharmacy contract in England, to be implemented from October 2011 – the New Medicines Service (NMS) and targeted MURs (Department of Health, 2011). The NMS involves pharmacists engaging with and supporting patients starting new medications. Recruitment of the patient is by GP referral or pharmacy recruitment. Seven to fourteen days after starting the new medication the pharmacist consults with the patient (either face-to-face or by telephone) using an interview schedule to assess the patients’ level of adherence to the new medication, identify potential problems and the patients’ need for information or support, which is to be met by the pharmacist. The patient is then contacted again 14-21 days later for a follow-up consultation. If a problem is identified, pharmacists are to contact the patients’ GP using an NMS feedback form. The remuneration in the first year of the service involves a one-off implementation payment and target payments linked to the pharmacy’s prescription volume and number of NMS consultations completed. The MUR service, first introduced in 2005, has been revised at the same time. Previously criticised by GPs and pharmacists for promoting quantity rather than quality (Bradley et al., 2008b) the revisions aim to make MURs more targeted to those taking high risk medications. Fifty percent of MURs undertaken in community pharmacy are to be targeted within high risk groups, whereas
the other 50% can cover any type of medication (as per previous practice) (Pharmaceutical Services Negotiating Committee, 2011). It appears likely that the introduction of these new services from October 2011 will increase the need for communication between the community pharmacist and GP.

In July 2011, over a year later than planned, the RPS and RCGP released a joint statement in response to their ‘breaking down the barriers’ inquiry. The statement recommended the need for a culture change “between GPs, pharmacists and the public to allow the collaborative partnership between general practice and community pharmacy to deliver its potential” (RPS and RCGP, 2011:1). Although, the recommendations presented tend to focus less on specific actions to be taken, highlighting instead areas for improvement, the statement represents an important step in legitimising the need for improved relationships. This statement represents a joint agreement from both professional representation bodies that change needs to occur. Sceptically however this statement could be viewed as one of political significance for both professional bodies – to be seen to be committed to a cause which is now becoming more expected of their respective professions. Translation of this rhetoric to practice on the ground, against a backdrop of changing health care systems, may be where the greatest challenges lie.

2.2 GP-pharmacist interaction and collaboration literature

This section presents an overview of existing literature concerning interaction and collaboration between GPs and pharmacists. Parts of this section were informed by a literature review of GP-pharmacist interaction and collaboration which was conducted at the start of the PhD programme, examining literature from 1970-2009. For a description of the methods used to conduct this review, see Appendix A. This section presents a summary of the literature review findings, along with current relevant literature identified from 2009 onwards.

2.2.1 History of the doctor-pharmacist relationship

The historical relationship between pharmacists and doctors is often described as ‘uneasy’ (Cowen, 1992), due to an apparent overlap in both service and skill leading to conflict and
competition (Turner, 1999). Some commentators have however highlighted the duality of the relationship historically. GPs and pharmacists are said to share a common ancestor in ‘the apothecary’ (Liaw and Peterson, 2009) and mythology and art often portrays the two functions of diagnosis and treatment working in harmony (Helmstäedter and Staiger, 2002). The patron saints of medicine and pharmacy – Cosmas and Damian respectively, described as twin brothers of Arabian descent working in the 3rd century - were said to have ‘worked wonders’ together in their time. Cosmas is often depicted as the physician holding symbols of diagnosis, and Damian as the apothecary with pestle and mortar (Helmstäedter and Staiger, 2002). It is thought that the separation of pharmacy and medicine into more distinct roles occurred in the late 12th, early 13th century (Cowen, 1992). But whilst separate, the two roles were still very much intertwined. Artistic depictions often showed physicians and apothecaries interacting and working together, although the hierarchy in the relationship was evident, with the physician seemingly instructing the apothecary on how to ‘make up’ the medicine that he required, by pointing to specific drug jars. Apothecaries were also required to take oaths to follow medical instruction (Cowen, 1992). Distinction in social status (or assumed difference by the artist) is also said to be depicted in these early representations by the clothing worn (Helmstäedter and Staiger, 2002). Inequality in social status and the subordination of the pharmacist are said to have arisen due to educational differences, with medicine being deemed an academic discipline whilst pharmacy was considered a craft (Helmstäedter and Staiger, 2002). Despite this inequality, personal contact was the norm until the introduction of the written prescription, which led to the demise of face-to-face interaction. An additional effect was the patient becoming the main link and broker between the physician and pharmacist (Helmstäedter and Staiger, 2002).

In England in the 19th century, there was separation in the apothecary occupation. Apothecaries, who often visited the sick in their homes and conducted patient consultations in their retail establishments, abandoned their compounding and dispensing role. The latter role was adopted by ‘chemists and druggists’ who would later become known as ‘pharmacists’. The Medical Act of 1858, led to the recognition of apothecaries, re-titled ‘general practitioners’, as part of the ‘medical profession’ along with physicians and surgeons (Eaton and Webb, 1979). Thus both GPs and pharmacists share the common ancestor of the apothecary (Liaw and Peterson, 2009) and are historically intertwined as
professions. The chemist and druggists/pharmacists anticipated this split however and sought professionalisation through the establishment of their own pharmaceutical society in 1841 - to represent them as a profession, provide education and training and to pursue a monopoly over the role of compounding and dispensing drugs (Turner, 1999). However Denzin and Metlin (1968), adopting a profession trait theory approach, argued that pharmacy had failed to become a complete profession, due to a lack of control over the social object of practice - the drug - and the commercial shopkeeper image of pharmacy which was contrary to altruism. With the development of an international pharmaceutical industry in the 20th century, pharmacists found their traditional role as the compounder of drugs to be undermined. Furthermore, they had also failed to monopolise the dispensing of drugs, as in certain circumstances doctors were (and still are) allowed to dispense medication (Eaton and Webb, 1979). This led some to suggest that pharmacists were over-trained and under-utilised for their current position (Eaton and Webb, 1979). From the 1960s onwards, pharmacists underwent what could be described as a period of ‘re-professionalisation’ where they began to move beyond dispensing into more patient centered roles and services (Birenbaum, 1982). But this expansion of skill and service can be viewed as encroachment into the GPs domain, leading to greater conflict and tension between the two professions (Eaton and Webb, 1979). Some argue however that this ‘boundary encroachment’ offers little challenge to the medical dominance of GPs, as pharmacists are often still dependent on GPs for referral to extended services and thus, in this sense, the GP is delegating to the pharmacist whilst still retaining medical control (Edmunds and Calnan, 2001). Others suggest that any such encroachment has been enabled by doctors themselves, by their neglect of certain areas such as the provision of drug related information and counselling. Pharmacists taking up these tasks can be seen to be doing the ‘dirty work’ of doctors for relatively few gains (Eaton and Webb, 1979).

2.2.2 The nature or type of interaction

The literature focused on this area suggests that interaction is limited between the two professions (Jepson and Strickland-Hodge, 1995; Kennedy et al., 1997; Chen et al., 2001; Paes, 1983), mostly confined to routine administrative queries (Kennedy et al., 1997; Tanskanen et al., 1997; Pojskic et al., 2011), principally pharmacist initiated (Kennedy et al., 1997; Tanskanen et al., 1997) and mostly by telephone (Van et al., 2007).
Jepson and Strickland-Hodge’s (1995) survey of community pharmacists (n=293) and GPs (n=271) in the UK, revealed that 59% of pharmacists and 71% of GPs reported having ‘spoken contact’ with a member of the other profession between one to five times in the preceding week. Pharmacists reported much higher levels of communication, with 33% reporting contact of more than six times, compared to 4% of GPs. Kennedy et al. (1997) studied the nature, purpose and extent of contact between GPs (n=36) and community pharmacists (n=27), through a diary record study. During one week, each professional initiated or received a mean of 6 contacts, although pharmacists on average initiated three times more contacts than GPs (9 and 3 contacts initiated respectively). Over half of contacts were related to administrative queries and clarifying prescriptions, mostly initiated by the pharmacist.

Other literature in this area suggests that pharmacists may be reluctant to make drug therapy recommendations due to a lack of confidence or fear of displeasing the GP (Lambert, 1996). Some studies indicate that GPs would welcome more interaction with pharmacists (Tanskanen et al., 1997), others imply the opposite (Paes, 1983). There is some interesting evidence that GPs and pharmacists may seek different outcomes from their interaction with each other, that they may perceive collaboration differently and that GPs may give less priority to co-operation with pharmacists than vice versa (Paes, 1983). Finally, one study which examined how the introduction of a collaborative service may affect the level of communication suggests that this alone may not be sufficient to stimulate more interaction and communication (Chen et al., 2001).

The majority of the studies examining the nature or type of collaboration or interaction between GPs and pharmacists were conducted in the 1990’s. More recent work is required to examine whether the nature or type of interaction has changed or evolved concurrently with developments in policy and practice for both professions. Furthermore, none of the literature presented here examines reciprocity of interaction at the level of actual GP-pharmacist pairs or dyads. For example, some of the most recent work from Canada only examined physician reports of their contact with pharmacists (Pojskic et al., 2011). There is a need to examine why contact with community pharmacists might not be a high priority for GPs and why and how collaboration is viewed differently. The theme of
different perceptions is also recurrent in some of the literature outlined later in section 2.2.4.

2.2.3 The extent or measure of collaboration

The small number of studies outlined above provides some insight into the extent of collaboration in terms of frequency of contact, however little attention has been given in previous literature to measuring levels or stages of collaboration between pharmacists and doctors.

McDonough and Doucette (2001) developed a collaborative working relationship (CWR) model for pharmacists and physicians in the USA. This model attempts to demonstrate influencing factors upon the level of collaboration, including participant characteristics (level of education, training experience and age); context characteristics (practice environment, type and size) and exchange characteristics (trustworthiness, relationship initiation and role specification), see Figure 2-1.

This model has formed the basis of a number of other studies conducted by Doucette and colleagues (Brock, 2004; Doucette et al., 2005; Zillich et al., 2004; Zillich et al., 2005; Liu et al., 2010; Liu and Doucette, 2011).

**Figure 2-1: McDonough and Doucette’s collaborative working relationship model (2001)**

<table>
<thead>
<tr>
<th>Stage 0 – Professional awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1 – Professional recognition</td>
</tr>
<tr>
<td>Stage 2 – Exploration and trial</td>
</tr>
<tr>
<td>Stage 3 – Professional relationship expansion</td>
</tr>
<tr>
<td>Stage 4 – Commitment to the Collaborative Working Relationship</td>
</tr>
</tbody>
</table>

In further work, the authors developed the Physician/Pharmacist Collaboration Index (PPCI) questionnaire to measure drivers for physician-pharmacist collaborative
relationships (Doucette et al., 2005; Zillich et al., 2004). Using the PPCI, the model was tested with a survey of physicians (n=340) and a survey of pharmacists (n=166). ‘Exchange characteristics’ were found to be most significant – the three domains chosen were relationship initiation, trustworthiness and role specification.

In a further paper, the authors go on to test the PPCI for sensitivity and criterion-related validity (Zillich et al., 2006). The PPCI was administered during an un-blinded randomised trial of pharmacist interventions with patients with uncontrolled hypertension, which was designed to improve collaborative relationships. Pharmacists’ scores of their relations with physicians improved in the intervention group suggesting collaborative relations improved during the three-month study. The authors claim that the results support the PPCI as a tool to measure pharmacist-physician collaboration and could be used to benchmark relationships. Whilst the work by this team empirically tested drivers of collaboration, the original collaboration stages presented in the model were theoretical and not developed from GP and pharmacists’ own accounts of collaborative experience. Furthermore, the model may not be applicable to other contexts outside of the USA, as participant, context and exchange characteristics could vary in relation to different organisational arrangements and settings.

Prior to the commencement of this PhD, the author developed a conceptual model of GP-pharmacist collaboration derived from qualitative interviews with GPs and community pharmacists involved in the provision of collaborative services in England (Bradley et al., 2012) (shown in Figure 2-2). The development of the model was also informed by existing scales and models of collaboration and integration in the health and social care literature (some of which are outlined in section 2.3). The model involves three stages – ‘isolation’, ‘communication’ and ‘collaboration’ and demonstrates the characteristics present in these different stages. It was argued that previous models (including the CWR outlined above) had failed to recognise the asymmetry in the GP-pharmacist relationship in terms of different perceptions and importance assigned to factors such as trust and communication. The latter stage of collaboration of the model is therefore characterised by a convergence in these perceptions, reciprocity and greater symmetry between GPs and pharmacists. The authors acknowledged that further empirical work was required to test the applicability of the model.
Figure 2-2: Conceptual model of GP-pharmacist collaboration (Bradley et al., 2012)

Level 1 - Isolation

Locality
- Geographically separate
  - Pharmacy provides limited or no additional services beyond dispensing
  - GP has little trust in the pharmacist(s), with suspicion about the business element of pharmacy. The need to trust the GP is not considered by the pharmacist

Service Provision
- Pharmacies and pharmacists do not feel that they ‘know’ each other

Trust
- Limited communication which is mostly unidirectional from the pharmacist to the GP

Communication
- Defined, separate and traditional roles. GP maintains a territorial approach. Pharmacist may be reluctant to expand their role

Professional Roles
- Limited evidence of professional respect for or confidence in pharmacy from the GP

Professional Respect
- GP believes that the pharmacist can be useful in a substitute role, if appropriately trained, and their role should be limited to the management of minor ailments and helping ease workload etc. GP is still somewhat territorial. The pharmacist has a reactive rather than proactive approach and believes it is the GP’s domain to select appropriate patients for a service

Level 2 - Communication

Locality
- Mostly geographically separate but with some exceptions
  - Pharmacy provides some additional services – the increased contact necessitated by these services has the potential to improve or worsen relationships
  - Some trust has been built and is dependent on the pharmacist demonstrating they are trustworthy. GP distrust is associated with certain types of pharmacists. The need to trust the GP is still given little consideration by the pharmacist

Service Provision
- GPs may feel that they ‘know’ some pharmacists in their locality, but are concerned that they do not know locums/sessional pharmacists and that their patients will not either

Trust
- Moderate communication. Still mostly unidirectional, with the pharmacist initiating most of the contact. Communication at the start of the service may have been good but it has not been sustained. Limited communication may be viewed as desirable as it indicates that there are few problems arising

Communication
- GP believes that pharmacists can offer an enhanced level of service as a result of their expertise. The GP views the pharmacist as a useful resource for them to consult for advice. Motivation for both is patient benefit, which is considered more important than professional territories

Professional Roles
- Ongoing reciprocal communication is the norm. Both parties are comfortable communicating with each other, informally and formally.

Professional Respect
- Examples of mutual respect for both individuals and the professions generally

Level 3 - Collaboration

Locality
- Co-located or close geographically
  - Pharmacy provides enhanced level services – working together on a service can formalise and cement relationships

Service Provision
- A historical relationship - mutual trust has been built up over time. Having had good relationships with pharmacists before, the GP is more inclined to trust the profession more widely

Trust
- Both parties feel they ‘know’ each other. Some concerns on the GPs part that they would need to get to ‘know’ a new pharmacist – demonstrating a level of dependency

Communication
- Regular reciprocal communication is the norm. Both parties are comfortable communicating with each other, informally and formally.

Professional Roles
- GP believes that pharmacists can offer an enhanced level of service as a result of their expertise. The GP views the pharmacist as a useful resource for them to consult for advice. Motivation for both is patient benefit, which is considered more important than professional territories

Professional Respect
- Examples of mutual respect for both individuals and the professions generally.
The development of, and ideas behind this PhD study have been greatly influenced by the findings from this paper and also previous work by the author in the same area (Bradley et al., 2008a; Bradley et al., 2008b). The relevance and applicability of the conceptual model to the findings of this PhD study are discussed later in this thesis (chapter 5, section 5.5).

This section demonstrates that there is currently little work in the area of measuring the extent or various levels of collaboration between GPs and pharmacists, especially in the UK.

2.2.4 Perceptions of or attitudes towards collaboration

2.2.4.1 GP views

A large proportion of the pharmacist-doctor collaboration literature is focused on doctors’ perceptions of or attitudes towards collaboration, with a smaller proportion of studies examining the views of pharmacists or comparing the views of both professionals. The majority of this literature is focused on surveying GPs to establish their views on the appropriateness of certain roles for community pharmacy.

In the 1990’s, two similar surveys conducted in England and Scotland found that GPs were generally supportive of extending the role of community pharmacists to limited routine activities such as reporting adverse drug reactions (ADRs) (Spencer and Edwards, 1992; Bond et al., 1995), the disposal of unwanted medicines and the provision of compliance aids (Bond et al., 1995). However, a third of GPs in one study stated that pharmacists ‘should stick to dispensing’ (Spencer and Edwards, 1992) and in the other study GPs were unsupportive of the provision of diagnostic and screening services by pharmacists (Bond et al., 1995). Similar views have also been reported in studies from the USA (Bailie and Romeo, 1996) and New Zealand (Ellis et al., 1992).

Bleiker and Lewis (1998) conducted a further study of the attitude of GPs in England and Wales (n=299) to the extension of the community pharmacist’s role, using some of the same questions as Spencer and Edwards and Bond et al., to examine any changes in attitude over time. Overall the findings suggest a more positive attitude by GPs to the health promotion and medicines management role of pharmacists. Views were found to
be similar in relation to screening services, communication and commercial pressure. New questions included in the questionnaire revealed that GPs were positive about pharmacists becoming members of the primary health care team but negative towards pharmacies being routinely located in GP premises and including pharmacists as practice partners. On balance, non-dispensing GPs were found to have more positive attitudes towards the role of community pharmacy than dispensing GPs.

Overall these surveys suggest that in the 1990’s, GPs/physicians were willing to see pharmacists extend their role, but only into roles that supported the GP rather than those which enabled the pharmacist to act more autonomously, such as the provision of screening services. The disadvantage of these studies, however, is that they lack depth and do not explore reasons why GPs may feel it inappropriate for community pharmacists to offer such services. More recent studies suggest that there has been little change in these views (Ranelli and Biss, 2000; Van et al., 2007). Van et al.’s (2007) interviews with GPs in Australia (n=23) revealed mixed views regarding pharmacists offering screening services and the monitoring of chronic diseases. This research design enabled exploration of the reasons for GP opposition to these services and found that GPs held concerns about continuity of care and the pharmacists’ lack of clinical patient information. A qualitative study involving focus groups with 23 physicians in the USA, also found some opposition to community pharmacists undertaking medication therapy management (McGrath et al., 2010). Key reasons for this included physicians perceiving that they were better suited to undertake the service as pharmacists were perceived not to know the patient or have the appropriate clinical skills. Physicians were also unsure what the service actually entailed and felt that pharmacists needed to fully communicate to them the benefits of the service to patients. Physicians also wanted reimbursement for any time they spent discussing the resultant recommendations with the pharmacist.

Few of the studies presented so far in this section actually capture information from GPs who have experience of collaborating with pharmacists and are therefore mostly hypothetical about collaboration. They also tend to concern whether the GP deems it appropriate for the pharmacist to perform a certain role without prior experience of the pharmacist performing that role. It could be argued however that these studies do reveal
more about intention to collaborate if opposition to the extended role of pharmacists is equated with opposition to the possibility of collaboration.

More recently, qualitative work by Pottie et al. (2008) (which examined physicians views of pharmacists joining their family practices to provide medication assessments, drug information and education in Canada - the IMPACT programme), and Blenkinsopp et al. (2008) (which examined the views of GPs about pharmacist supplementary prescribers working at their practices in the UK), offers an important insight into GP views of the pharmacists’ role once they have had experience of working with pharmacists. Both studies suggest that GPs found working alongside a pharmacist beneficial; however whilst Pottie et al.’s study indicates that GPs’ initial fear and apprehension was alleviated after working with the pharmacist for a period of time, Blenkinsopp et al.’s work indicates that fears surrounding boundary encroachment still remained. Some GPs perceived pharmacist prescribing as a threat to professional boundaries; others reported needing reassurance that the pharmacist prescriber was committed to the core principles of the practice and professionally competent. Pottie et al.’s findings were supported by another study of the same IMPACT program, which found a change in the expectations about pharmacist contributions, over 19 months. A survey was administered to physicians at 3, 12 and 19 months of the programme. At 3 months, physicians perceived their own contributions to be significantly higher than those of pharmacists in relation to diagnosis and prescribing, monitoring and administration/documentation. As the programme progressed, physicians perceived a significant increase in contribution from pharmacists in relation to diagnosis and prescribing, monitoring and medication review and a simultaneous decrease in their own contribution to diagnosis and prescribing (Farrell et al., 2010).

A point should be made that the pharmacists involved in these collaborations tended to be non-dispensing (i.e. non-community pharmacy based) pharmacists who worked in physician offices. Bryant et al. (2010) examined GP views of collaborating with community pharmacists undertaking clinical medication reviews in New Zealand. GPs were found to be unsure about community pharmacists continuing to undertake the service in the future and tended to weigh up the perceived benefits to health outcome against the resources needed for the service to construct a concept of ‘value’ for the service. The value assigned to the service varied amongst the GPs and was related to the usefulness of the
recommendations they received. Issues of territoriality were also reported to be an underlying tone in the GPs’ assessments. The authors conclude that it may be more efficient to have clinical pharmacists (i.e. non-community pharmacists) based in the practice conducting this role (as in the IMPACT study).

There is evidence of strong opposition to some of the more advanced roles for pharmacists from GPs and it appears that as time progresses and the pharmacist role is extended through policy development, GP opposition may be directed towards the most advanced role at the time. For example, the opposition to screening exhibited in the 1990s and, more recently, opposition to pharmacist prescribing. Opposition also appears to be potentially alleviated through experience of collaborating with pharmacists over time, but may also be dependent on both the pharmacist’s clinical skill and the GPs’ perception of the pharmacist’s clinical skill.

2.2.4.2 Comparison of GP and pharmacist views

In comparison to the volume of studies focused on GPs views, there are few that focus on pharmacist views of collaboration with GPs or a comparison of both views. The studies identified demonstrate there is a tendency for agreement between GPs and community pharmacists on the more ‘routine’ tasks (Sutters and Nathan, 1993) but disagreement on the more advanced roles, such as screening and diagnostics (Sheppard et al., 1995; Sutters and Nathan, 1993; Bryant et al., 2009). Literature in this area again draws out the theme that GPs and community pharmacists may perceive collaboration and relationships differently. There is evidence that GPs may feel that their relationships with community pharmacists are fine, whereas community pharmacist may feel unsatisfied with the relationship and feel that their input is unwanted (Sutters and Nathan, 1993). They may also find communicating with GPs difficult and intimidating (Reebye et al., 1999).

Some studies also report a lack of confidence by pharmacists towards the expansion of their role and collaboration or little desire to move beyond their traditional discipline (Dobson et al., 2009; Bryant et al., 2009).
2.2.5 The Process of collaboration

2.2.5.1 Relationship development and formation

There are few studies that examine collaborative relationship development in terms of the actual process of, or experience of, building collaborative relationships. One study that does offer some insight into this area is work by Farrell et al. (2008) in Canada, which presents the narrative reports of pharmacists’ experiences working with physicians for the IMPACT study. One theme is the emotional challenges faced by the pharmacists, such as feeling ‘in the way’, being an imposition on the physicians’ time, feeling like an outsider or feeling inadequate. Emotional victories were also reported, including feeling competent or appreciated by physicians. Pharmacists reported that they understood that developing relationships with the physicians would be a lengthy process. There were also reports of how relationships were being developed in both formal environments such as education sessions and informally during lunch breaks or chance meetings. As time progressed, more pharmacists reported that communication with physicians was becoming bidirectional. The pharmacists also reported the relationship building strategies they employed with physicians, such as increasing their visibility (reminder cards, sending letters to physicians, signage) and establishing the best times to approach physicians. The pharmacists reported a need to clearly demonstrate their value to physicians in order to encourage them to take up their services. The authors relate their findings to the CWR model developed by McDonough and Doucette (2001) (outlined above in Figure 2-1) and state that parallels can be drawn between their findings and the various stages of progression. The authors also stress however, that progression through the stages was not a linear or clear-cut process for the pharmacists; the process took several months and occurred sporadically. The authors also state that this has important implications for policy, in terms of setting realistic expectations and time-frames for relations to develop.

Several other studies have also examined relationship formation with reference to the CWR. Previous work by Zillich and colleagues (outlined in section 2.2.3) found that characteristics such as trustworthiness and role specification were predictors of collaborative behaviour for both physicians and pharmacists. However, more recent work by Liu et al. (2010) suggests that different predictors are applicable at different stages of collaboration. They surveyed a random sample of pharmacists at baseline (n=239) and
then again at three months (n=188). Trustworthiness and role specification were predictors of collaborative care at baseline (in agreement with previous work) but, at three months, trustworthiness and professional interaction were predictors of collaborative care. The authors state that different factors are associated with different stages of collaborative care. However, the measures used by the authors do not seem easily comparable with the CWR levels. The authors state that at three months the collaborative level appeared to be different from baseline but the direction (more or less collaborative) was not known, although their descriptions indicate a lower level of collaborative behaviour at three months than at baseline. They state that this does not necessarily indicate that collaboration deteriorated, as baseline measures were based on willingness rather than behaviour. Despite this lack of clarity, the authors speculate that role specification may be important in the lower levels of collaboration and professional interaction may be more important in the higher levels. These factors, along with the exclusion of physicians, and the short time scale of only three months for the measurement, (when existing work indicates that collaborative relationships are a lengthy process) are obvious shortcomings of this work.

Further work examining the CWR and the Pharmacist-physician collaborative index (PPCI) (outlined in section 2.2.3), was conducted by Snyder et al. (2010) in the USA and aimed to gain information about professional exchanges between physicians and pharmacists involved in collaborative relationships. Previous work using this instrument had found that exchange characteristics were significant drivers of collaborative relationships but little was known about what these exchanges involved and what made them successful. Five physician-pharmacist ‘highly collaborative’ pairs participated in individual interviews. Again, trustworthiness was found to be an important characteristic, and was reported to be established by the pharmacist making constant contributions to improved patient outcomes. Pharmacists were found to be the principal initiators of the relationships and face-to-face contact was said to be important to develop a ‘personal’ relationship. The importance of developing the relationship slowly over time and maintaining communication regularly was also highlighted. Physicians valued the role of the pharmacists, although they did highlight the difference in their roles, stating that they (the physicians) were ultimately responsible for the patient’s outcome, and thus the overall decision makers in the relationship. The authors acknowledge that there were difficulties
recruiting to the study and that it focuses solely on highly collaborative individuals. They state that the inclusion of non-collaborators or those with difficulties collaborating may have provided more insight into how relationships develop.

Another study which examines the integration of community pharmacists into the primary care team, this time in England, outlines the importance of pre-existing working relationships for successful operation of new services (Bradley et al., 2008a). A survey of pharmacists (n=28) and interviews with pharmacists (n=20) and GPs (n=13) involved in the provision of Local Pharmaceutical Services (LPS) revealed that the successful operation of new services was aided by pre-existing trust-based relationships. Service provision was hindered by a lack of established relations as many pharmacists were dependent on GP referral into the service. GPs were neither contracted nor incentivised to collaborate with the pharmacists and thus good-will relations were found to be imperative. There was also evidence that GP engagement in the services had not always been sought beforehand, indicating that those involved in the development of the services had underestimated both the importance of GP engagement and, as Farrell et al. highlight above, the time involved to build such relationships. Overall, both pharmacists and GPs reported the formation of new, and the strengthening of existing, relationships through the provision of LPS. However, feelings of being integrated into the primary health care team did not substantially increase for the pharmacists over a 12-month period. Pre-existing working relationships between GPs and community pharmacists were also identified as an important pre-requisite to the successful operation of repeat dispensing by community pharmacists in England (Elvey et al., 2008). Knowing the pharmacist was also an important consideration for the GPs, in terms of patient safety. GPs expressed concern over locum pharmacists, who they did not know, providing the service to their patients. These two studies informed the development of the conceptual model of GP-pharmacist collaboration, presented in section 2.2.3 and Figure 2-2 (Bradley et al., 2012).

Howard et al. (2003) also report on the importance of trust in the physician-pharmacist relationship. Physicians and pharmacists involved in a medication assessment randomised controlled trial (RCT) which expanded the role of the pharmacist and required collaborative working to optimise drug therapy, reported that the frequent contact
encouraged strong relationships to form. Prior acquaintance before the trial was also reported to be helpful for collaboration.

These small numbers of studies indicate that building collaborative relationships is a lengthy process and that trust and prior acquaintance is important in the process. There are several areas that have not been addressed however, which justify further exploration. Little is known about how this trust might be built and what it entails; whether trust is necessary from the outset, or whether prior acquaintance is sufficient for collaboration to begin; and why community pharmacists and GPs may perceive the importance of trust in the relationship differently.

2.2.5.2 Barriers to collaboration

Several studies have identified barriers to collaboration between the two professions. One of the most comprehensive is work by Hughes and McCann (2003) which identified four main barriers through focus groups with GPs and pharmacists. Firstly, the ‘shopkeeper’ image of pharmacists held by GPs as a result of the commercial aspect of community pharmacy, which was found to be the most predominant theme, pervading the other three sub-themes identified. Secondly, access in terms of both pharmacists having difficulties accessing GPs and GPs having reservations over granting pharmacists access to patient records. Thirdly, the hierarchical relationship between GPs and pharmacists, in relation to professional status, and concerns over boundary encroachment. Finally, GPs’ lack of knowledge of the training and continuing professional development of pharmacists.

Other barriers identified in the literature include lack of time to carry out team based activities (Dobson et al., 2006; Norton et al., 2003; Lalonde et al., 2011); inadequate financial recompense for team-based activities; lack of opportunity to get to know other health care professionals; other health care professionals being too protective of their ‘professional turf’ (Dobson et al., 2006); and limited face to face interaction (Norton et al., 2003; Reebye et al., 1999).

Chen and De Almeida Neto (2007) provide a useful overview and commentary on current barriers to collaboration between pharmacists and physicians, which captures several of these points. They identify the importance of pre-existing collaboration and trust and
identify geographical isolation as a barrier. They also raise the notion that there is not a strong culture of collaboration between the two professions. Routine collaboration is not the norm for the two professions and thus not expected or assumed and the nature of previous interaction is mostly episodic rather than continuous and face-to-face.

As mentioned in section 2.2.4.2, some studies reported a lack of confidence or desire amongst pharmacists to extend their role, which can also be viewed as a barrier to collaboration. A survey of both GPs and community pharmacists in New Zealand found that both groups perceived that pharmacists’ involvement in clinical services lacked mandate, legitimacy, adequacy and effectiveness (Bryant et al., 2009). A survey of pharmacists in Canada indicated a willingness to expand pharmacy’s role within the realms of drug therapy, but not to roles beyond this. Pharmacists were willing to take on more responsibility for minor illnesses but were reluctant to be involved in the management of chronic disease (Dobson et al., 2009).

2.2.6 Strategies to improve or promote collaboration

A number of papers outline strategies to promote or improve collaboration, some of which have been implemented and evaluated; others are simply presented as recommendations.

Chen et al. (1999a) present a model to be used at a local level for the promotion of collaboration between GPs and community pharmacists. The model is based on diffusion of innovation and linkage theories. In further work they describe the implementation and evaluation of this model over a two and a half year period, in relation to a medication review service in a metropolitan division of general practice in Australia (Chen et al., 1999b). The authors conclude that the model had a positive impact on interprofessional communication, citing examples including face-to-face meetings between practitioners and a continuation of the medico/pharmacy committee after the project had ended. The authors discuss attitudinal barriers to be overcome, such as boundary encroachment and state that the model attempted to address these by raising awareness of the role of community pharmacists in medication review; encouraging face-to-face interaction; organising meetings at external venues to reduce interprofessional conflict and overcome geographical isolation; and allowing GPs to retain overall control by granting them sole responsibility for identifying patients.
Other interventions described in the literature include computer networking (Sellors et al., 2004), which physicians reported to be beneficial as it offered them direct access to a pharmacist and enabled them to gain information from the pharmacists about their patients which they had not previously known. Blenkinsopp et al. (1994) evaluated the use of a notification card system between community pharmacists which aimed to improve communication. This qualitative evaluation suggested that GPs thought the notification cards were useful, particularly for alerting them to potential ADRs. Several GPs on reflection expressed regret at not having more frequent contact with the pharmacists prior to the pilot.

Interprofessional education and training has also been suggested as a strategy to improve relationships and promote collaboration. Austin et al. (2005) describe the development of the Family Practice Stimulator model. Pharmacist participants reported that the training had improved their confidence when speaking to physicians and they had a better understanding of the physician perspective and the type of information that they require.

Overall there is no large-scale work examining and evaluating successful strategies for promoting collaboration between GPs and community pharmacists and the evidence presented in the studies outlined above is still somewhat inconclusive.

2.2.7 Outcomes of collaboration

There is a growing body of evidence from a number of RCTs in the USA and one from Japan indicting that pharmacist-physician collaboration can be more beneficial for chronic conditions than ‘usual care’, particularly for the control of hypertension (Weber et al., 2010; Tobari et al., 2011; Carter et al., 2009; Hunt et al., 2008; Carter et al., 2008; Bogden et al., 1998).

Outside of the USA and the area of hypertension, such RCTs are scarce. In Canada, a non-randomised controlled trial suggested that a pharmacist working with physicians in a health centre dealing with faxed prescription requests from patients, led to more medication problems being identified, more medication changes and more patient appointments. The authors claim this demonstrates an improvement in medicines management, however no patient opinions or health outcomes were measured in this
study (McKinnon and Jorgenson, 2009). In Australia, a retrospective cohort study of pharmacist-conducted home medication reviews, in collaboration with physicians, demonstrated a 37% reduction rate in hospital admission for heart failure, indicating that this intervention was effective in delaying hospitalisation (Roughead et al., 2009).

The trials and studies presented above have involved, what could be termed, ‘clinical pharmacists’ working in collaboration with physicians/GPs. Many were based in the same health centre as the doctor, and some were already working in that post prior to the start of the trial/study and had existing relationships. It could be envisioned that, given some of the barriers outlined in the previous section, the inclusion of community pharmacists in these trials may be more challenging. Of the small number of RCTs involving community pharmacist collaboration with GPs identified from the literature, few demonstrated positive results (Tsuyuki et al., 2002; Bryant et al., 2011; Sellors et al., 2003; Holland et al., 2005). The majority of these trials involve the provision of medication reviews by pharmacists, in a range of settings. A trial of community pharmacist medication reviews from New Zealand found that for the intervention group, medication appropriateness had significantly improved, but quality of life had significantly reduced in two domains (Bryant et al., 2011). Both the GPs and pharmacists involved were said to have had an existing relationship prior to the start of the study. However, a large number of pharmacists withdrew from the study; the authors conclude that this may indicate that community pharmacy is not an appropriate location for the provision of this service (Bryant et al., 2011).

A UK RCT examined pharmacist-conducted home medication reviews for elderly people (Holland et al., 2005). Similarly, this trial did not significantly improve quality of life or reduce deaths and was in fact associated with a significantly higher rate of hospital admission than usual care. Another study in the UK (not a RCT but a multiple interrupted time-series trial of five PCTs) also demonstrated no significant effects related to the provision of pharmaceutical care plans (in collaboration with GPs) and medication reviews by community pharmacists. No significant changes to the appropriateness of prescribing or quality of life were observed (Richmond et al., 2010).

A RCT from Canada, also involving medication reviews by community pharmacists for elderly patients, but based in family practices (with written recommendations provided to
physicians), found no significant effect on patient outcomes. Physicians were generally accepting of the pharmacists’ recommendations but the intervention was not successful in meeting its objective of reducing medication costs and the number of daily medication units taken by elderly people (Sellors et al., 2003). Away from medication reviews, more positive results have been shown in relation to community pharmacist interventions for cholesterol risk management. In a Canadian RCT, community pharmacists provided patient education, measurement, referral and follow-up to ‘at risk’ patients. The trial was terminated early due to benefit, and a significantly higher percentage of intervention patients reached end point than those receiving usual care (Tsuyuki et al., 2002).

In the UK, pre-test/post-test studies have examined community pharmacist and GP partnership in the management of other chronic conditions. Ryan Woolley et al. (2001) conducted a small scale feasibility study of ischaemic heart disease co-management over five months which found that pharmacists’ interventions, both therapeutic and lifestyle, had improved patient disease specific quality of life from baseline. The authors concluded that community pharmacists could work in partnership with GPs in general practice to deliver a specific model of care. A similar study, designed to test the feasibility of community pharmacist involvement in diabetes care in general practice showed a reduction in glycated haemoglobin, blood pressure and total cholesterol (Wermeille et al., 2004). In Northern Ireland, the feasibility of community pharmacy collaboration with general practice for the management of asthma was assessed by a factorial design intervention of one control group and three treatment groups (Grainger-Rousseau and McElnay, 1996). Health-related quality of life and subjective symptom scores remained largely unchanged, but inhaler technique was found to have significantly improved after education. The large majority (90%) of drug therapy changes recommended by the pharmacists were also implemented by the GPs.

The studies presented in this section, indicate a growing body of evidence that pharmacist-GP collaboration can be beneficial for chronic conditions. A limitation however is that those studies which show the most positive outcomes tend to involve clinical non-dispensing pharmacists rather than community pharmacists. Existing studies involving community pharmacists also tend to involve less rigorous study designs from which to draw conclusions, and those RCTs which do involve community pharmacist-GP collaboration (particularly related to medication reviews), do not indicate great
advantages or overwhelmingly positive results from this collaboration. There is also an apparent lack of work from the UK using RCTs to measure outcomes of pharmacist-GP collaboration. Therefore, whilst pharmacist-GP collaboration may be successful, there is little evidence to support the inclusion of community pharmacists in this collaboration. Additionally, with the exception of Bryant et al’s (2011) work, these studies tend to only report outcomes and offer no insight into the process of collaboration and relationship formation, how often the GPs and pharmacists interacted or the impact of working relations on these outcomes.

2.2.8 Conclusion
This section demonstrates that existing empirical work offers some insight into the frequency, purpose, method and initiator of contact between GPs and pharmacists; the views of GPs and pharmacists towards the extended role of community pharmacists and associated collaboration; some of the factors that appear to be important in the formation of collaboration, including prior acquaintance, trust, face-to-face interaction; the barriers to collaboration including structural and cultural barriers; the process of collaboration, which may be a lengthy process with several stages but not necessarily a linear process; potential strategies for promoting collaboration, which are yet to be fully evaluated; and the potential outcomes of collaboration, which although evidence is somewhat limited, indicate some patient benefit for those with chronic conditions.

However this review also indicates that more work is required to demonstrate whether the frequency and nature of interaction has changed, in light of policy development and the expansion of the role of community pharmacy. Two conceptual models have been developed in the USA and UK which demonstrate various stages of collaboration between physicians/GPs and pharmacists, however these models do not examine the consequences associated with the different levels of collaboration for those involved. Several of the studies outlined in this review highlight the importance of reciprocity of communication; however, few have attempted to measure this through examination of actual pharmacist-GP pairs. Additionally, differences in perceptions concerning what collaboration entails and the importance of factors such as trust and prior acquaintance have not been fully explored in the existing literature although their importance is highlighted. Existing work
has also been limited by a lack of theoretical underpinnings. Theories related to the building of relationships and trust, such as social capital, often described as the way people form networks and relationships, or the ‘glue’ holding these networks and relationships together, may have relevance.

2.3 Discussion of key concepts
This section presents an overview and discussion of some of the key concepts and theories relevant to the study of interprofessional interaction.

2.3.1 Integration

2.3.1.1 Terminology use
‘Integrate’ and its related suffix forms have become ‘buzz words’ in the NHS. In the 2003 document ‘A Vision for Pharmacy in the new NHS’ reference is made to ‘integrated approaches’, ‘integrated services’ and ‘integration into health care teams’, more so than other related terms such as collaboration; co-operation; team, joint or partnership working; and professional working relationships (Department of Health, 2003). This perhaps indicates that the use of such terminology is deliberate. Again, in the 2008 white paper ‘Pharmacy in England’, use of the terms integration or integrated are frequent, more so than the other related terms, apart from the word ‘team’ (Department of Health, 2008). Interestingly, this document appears to also favour expressions such as ‘working/professional relationships’ and ‘networks’, but these terms were scarcely mentioned in the earlier 2003 document.

Despite the frequent use of these terms, these documents do not provide a definition of what the Department of Health views as integration, integrated care or integrated services, but there is also an inherent assumption that integration and collaboration is a ‘good thing’.

2.3.1.2 What is ‘integration’?
The concept of integration has roots in organisational theory. Lawrence and Lorsch (1967) placed great emphasis on the concepts of ‘integration’ and ‘differentiation’ in relation to
the understanding of organisational systems. Their contingency theory of organisations suggests that in order for organisations to deal with their external environment there is a need for them to become segmented into units, with each unit addressing a certain portion of the external environment. This leads to differentiation. In order for the organisation to accomplish their overall goal, these units need to be linked together, leading to integration. They define integration as:

“The quality of the state of collaboration that exists among departments that are required to achieve unity of effort by the demands of the environment.” (Lawrence and Lorsch, 1967:11)

In the realm of health and social care or ‘human services’, the following definitions have been put forward:

“Integrated care is a concept bringing together inputs, delivery, management and organisation of services...Integration is a means to improve the services in relation to access, quality and user satisfaction and efficiency.” (Grone and Garcia-Barbero, 2001:7)

“...the term used to describe types of collaboration, partnerships or networks whereby different services that are usually autonomous organisations, work together for specific community residents to improve health and social care.” (Browne et al., 2004:1)

2.3.1.3 Different types of integration

Terms such as integration, collaboration and co-operation are often used interchangeably. It may be simpler to view integration as an end point and these other concepts as types of integration or even methods through which to achieve integration. Axelsson and Axelsson (2006) developed a conceptual framework of integration in public health, categorising integration into four forms – co-ordination, co-operation, contracting and collaboration, see Figure 2-3. The difference between vertical and horizontal integration is also distinguished within their conceptual framework and plays an important role. Horizontal integration is defined as “integration which takes place between organisations or units that are on the same hierarchical level or have the same status”. Vertical integration “takes place between organisations and units on different levels of a hierarchical structure” (Axelsson and Axelsson, 2006:79).
Reflective of the idea of the process of integration, integration is often expressed as a continuum in the health and social care literature. Several authors have developed continuums or scales of integration. For example, Leutz (1999) developed a typology of integration within the context of medical and social services in the USA and UK, involving three levels - ‘linkage’, ‘co-ordination’ and ‘full integration’. Ahgren and Axelsson (2005) presented a five-point scale of integration ranging from full segregation to full integration, based on Leutz’s earlier work with the addition of ‘full segregation’ and ‘co-operation’ (see Figure 2-4).

Figure 2-4: Ahgren and Axelsson’s five-point scale of integration (2005)
2.3.1.4 Is integration a useful concept for GP-pharmacist relations?

As noted in section 2.3.1.1, ‘integration’ appears to be the chosen policy terminology. On Ahgren and Axelsson’s (2005) scale, integration is the end point achieved when resources are pooled and new organisations are created. This may be a useful way of conceptualising the formation of new organisations in relation to health and social care, such as the creation of Care Trusts in England in 2002 which aimed to provide integrated health and social care. But is a state of integration between GPs and community pharmacists achievable or even desirable?

The empirical literature presented in section 2.2 indicates that interactions were limited between the two professional groups and that any joint efforts were based on informal, high-trust arrangements. GPs and community pharmacists are not contractually bound to work together and thus any such arrangements are usually voluntary. This style of working therefore appears to fit with Axelsson and Axelsson’s (2006) concept of ‘collaboration’ - characterised by high horizontal integration. ‘Collaboration’ would therefore appear to be a more meaningful concept when talking about GPs and pharmacists working together. Certainly, this is the term most frequently referred to in the academic literature related to GPs and pharmacists. However, Axelsson and Axelsson's (2006) collaboration ‘works’ when there is high horizontal integration - integration of those on the same hierarchal level or with the same status. Arguably, historical and current literature (see sections 2.2.1 and 2.2.4.2) demonstrates unequal status between the two professions, offering insight into why the task of collaboration may fail.

2.3.2 Collaboration

Much of the work in the general area of interprofessional working in health and social care has focused on ‘collaboration’. Axelsson and Axelsson (2006) argue that most integration within the public health arena involves either ‘co-operation’ or ‘collaboration’. Loxley (1997) argues that the term ‘collaboration’ rather than ‘co-operation’ is more appropriate in the context of health and welfare working together as this term acknowledges the interwoven conflict between professionals, whereas co-operation implies more of a consensus. Sullivan (1998) states that although the concept of ‘co-operation’ is related to
‘collaboration’, it does not mean the same thing. ‘Co-operation’, she concludes, is only the first step to ‘collaboration’.

Early work by Bond et al. (1987) on interprofessional collaboration in primary health care in England focused on collaboration between GPs and district nurses and GPs and health visitors. A five point collaboration scale, first developed by Armitage (1983), was utilised to assess the level of collaboration (shown in Figure 2-5). The most common level of collaboration found was level three - ‘communication’.

Figure 2-5: Armitage’s five-point collaboration scale (1983).

<table>
<thead>
<tr>
<th>Isolation</th>
<th>Encounter</th>
<th>Communication</th>
<th>Collaboration between agents</th>
<th>Collaboration throughout organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members who never meet, talk or write to one another</td>
<td>Members who encounter or correspond with others but do not interact meaningfully</td>
<td>Members whose encounters or correspondence include the transference of information</td>
<td>Members who act on the information sympathetically: participate in patterns of joint working: subscribe to the same general objective as others on a one-to-one basis in the same organisation</td>
<td>Organisations in which the work of all members is fully integrated</td>
</tr>
</tbody>
</table>

Hudson et al. (1997) provide a similar continuum of collaboration developed in relation to the primary and social care interface, with four points on the scale. The labels used are similar to those of Armitage, although this work is not cited. Isolation and encounter are condensed into one category – ‘Isolation/encounter’, followed by ‘communication’, ‘collaboration’ then finally ‘integration’. The ‘integration’ category replaces Armitage’s ‘collaboration throughout organisation’. The choice of terminology could again be reflective of the popularity of the term ‘integration’ - Armitage’s work was conducted in the early 1980’s, Hudson’s in the late 1990s - and the fact that Hudson’s work relates to the primary and social care interface, which is essentially the integration of two organisations, as discussed above. However, Armitage does refer to the organisation being fully integrated.

It appears that integration is a more useful concept for organisational or group level analysis and collaboration is a more versatile concept for both individual and group level
analysis. Furthermore, the scales presented by Armitage and Hudson reinforce the idea that integration is a process, ‘a state to be achieved’, and that collaboration, although a more realistic concept for explaining GP and pharmacists working together, is only one stage in a continuum toward integration.

Hudson’s work also has an added dimension as it incorporates the dimension of ‘trust’ into the scale, with ‘collaboration’ and ‘integration’ being characterised by higher levels of trust. This resonates with some of the findings from the GP-pharmacist literature presented in section 2.2.5, which demonstrates the importance of trust in the GP-pharmacist relationship.

2.3.3 Sociology of interprofessional health care
Reeves (2011) argues that the contribution sociology could make to informing and understanding inter-professional interactions and relations in health care has been largely overlooked by the interprofessional literature. Rational choice theories such as ‘game theory’ have been applied to the study of GP-patient interaction (Tarrant et al., 2010) and interactionist theories of ‘negotiated order’ have been adopted to offer insight into the interaction between doctors and nurses (Allen, 1997; Svensson, 1996). However, the study of GP-pharmacist interaction has been relatively devoid of theoretical foundation. This section examines relevant sociological theories and concepts to this study.

2.3.3.1 Trust
Previous work has suggested that trust is an important factor in the GP-pharmacist relationship. But little is known about how this trust is conceptualised, how it evolves and how it is maintained. As Tonkiss states “…talk about trust has a kind of commonsense resonance, but does not necessarily get at the way respondents understand or act on trust.” (Tonkiss, 2004:17). Previous findings suggest that successful GP-pharmacist collaborations operate on a high-trust basis and are not contractually bound (Bradley et al., 2008a). Consequently, this has led to calls from some groups, for example the All-Party Pharmacy Group (2007), to recommend that GP and pharmacy contracts become more integrated to enable contractual linkage. If this was to occur, this poses the question of whether GP-pharmacist collaboration would operate on a level of confidence rather than
trust. Smith (2005) argues that confidence and trust are separate concepts; the former implies confidence in the abilities of an individual, taking for granted the nature of ‘expert knowledge’, and the latter involves having trust in an individual’s behaviour or actions. Trust is informal and a way of responding to uncertainty in our interactions with others. The way of reducing this uncertainty is through contract and regulation, which secures relations of confidence, as opposed to trust (Tonkiss, 2004).

Social exchanges and interactions are cited to be important in the generation of trust, particularly in social exchange theory (Blau, 1964). One concept relevant for interprofessional collaboration is the gradual build-up of trust between actors who experience successful exchanges. This can start with small events involving minor risk, leading to social bonds and mutual commitment (Loxley, 1997). Due to the isolated geographical nature of community pharmacies, exchanges and interactions with GPs may be limited, as demonstrated by the literature presented in section 2.2.2. This lack of interaction is likely to impact on the formation of trust relationships.

2.3.3.2 Social capital and networks

In the sociological literature, trust is often linked to the concepts of social capital and networks (Koniordos, 2005). For Putnam (1993), social capital is the networks, norms of reciprocity and trustworthiness that arise from the connections between individuals. In this sense, trust and networks are almost lumped together and indistinguishable from the concept of social capital. Fukuyama (1995) is more specific, viewing trust as both the condition for, and effect of, the forms of social capital, which he claims are networks and collective and cultural values.

Social capital has been criticised as an overused, but under-theorised, concept and the numerous definitions presented can lead to conceptual confusion (Portes, 1998). However, the concept may have some resonance with the topic of study. In general terms, social capital is often described as the way people form networks and relationships or the ‘glue’ holding these networks and relationships together.

Bourdieu (1986) was one of the first to systematically analyse social capital, defining the concept as:
“the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalised relationships of mutual acquaintance or recognition.” (Bourdieu, 1986:248)

Although, as Portes (1998) states, his ideas on social capital did not receive wide attention at the time. Coleman’s conceptualisation received more attention and he was one of the first to examine the concept empirically, focusing on educational attainment and social inequality (Coleman, 1988). Coleman’s view of social capital differs from Bourdieu’s more ego-centric view as it draws more on the idea that social capital can be a public good, beneficial both individually and collectively, not just to those involved in its production (Field, 2003). Coleman states:

“Like other forms of capital, social capital is productive, making possible the achievement of certain ends that in its absence would not be possible...unlike other forms of capital, social capital inheres in the structure of relations between actors and among actors.” (Coleman, 1988:598)

Coleman’s premise was that of rational choice theory – the idea that all behaviour results from individuals pursuing their own interests. In this sense’ competition could be seen as more immediately beneficial for individuals than co-operation. Social capital, as a concept, was a way in which Coleman could explain why individuals as rational actors would choose to co-operate, rather than compete (Field, 2003).

More recently, Robert Putnam’s account of the decline of social capital in American society has been responsible for popularising the concept further. Putnam states that ‘the core idea of social capital theory is that social networks have value.” (Putnam, 2000:18-19). Consequently, the popularisation of social capital has led to a greater interest in the analysis of networks.

Social capital has received attention in policy fields as it is often seen as an alternative to formal contracting. In this way it mirrors the concept presented in section 2.3.3.1 about trust versus confidence through regulation and the ideas of collaboration opposed to contracting presented in section 2.3.1.3. Fukuyama’s (1995) work on trust and social capital presents the concept of low and high trust societies, characterised by the willingness of individuals to form associations outside of family obligations or those
imposed by state regulation. Overall, Fukuyama’s ideas are linked to how these types of societies affect economic growth, but parallels could be drawn between these ideas and current policy debates about whether GPs and pharmacists should be incentivised or contracted to work together.

The concepts of social capital presented above have received criticism in relation to several areas (Field, 2003). One particular criticism which has resonance to the topic of study is that these accounts often give little attention to the negative or ‘dark-side’ of social capital (Portes, 1998). Parallels can be drawn between Coleman’s and Putnam’s ideas that social capital works for the public good with the idea that collaboration and integration between pharmacists and GPs would benefit patients. The connections and ties between GPs and community pharmacists may be more beneficial to the professionals involved than the patients they care for - and to the greater extreme - more beneficial to the organisations for which they work, such as large multiple pharmacy chains.

### 2.3.3.3 Social network analysis

The interest in social capital and the importance of networks has led to an increase in the application of social network analysis. Social network analysis is an established approach which has been adopted by anthropology, psychology and sociology. Initially used to study community and kinship relations, social network analysis has since been applied to other areas such as political, organisational and diffusion studies. In relation to health, social network analysis has been applied to the study of the diffusion of medical innovation (Coleman et al., 1966), epidemiological studies such as the transmission of human immunodeficiency virus (HIV) (Rothenberg et al., 1998), and the effects of social support of physical health (Berkman, 1984). Attention has recently started to shift to the application of social network analysis to the study of multi-disciplinary working in health care teams and a small number of studies have arisen.

These studies have mostly focused on primary care. Keating et al. (2007) examined the intra-professional interaction of primary care physicians in one hospital based academic practice in the USA, specifically looking at influential conversations regarding women’s health. They found those with recognised expertise were often consulted and therefore centrally located in the network, but that convenience and opportunity, such as proximity,
also played a part. Lewis et al. (2008) studied the network dynamics of primary care partnerships in Australia, capturing data at three points over a three year period. This study attempted to measure how network dynamics changed over time and also to identify which actors had continuity and as such were central to the networks. Scott et al. (2005) present a description of the applicability of social network analysis to the examination of interaction patterns leading to decision making in primary care practices. They present an example of two practices and argue that the comparison of networks enables insight into how decision-making differs between organisations. Another study, which focused on multi-disciplinary team-work and decision making in long-term care teams in Canada, identified a clearly defined hierarchy in the team - the autonomous, multi-professional team involved in decision making and problem solving, and the lower status nursing team, whose focus was on working together to get tasks completed. The authors argue that true collaborative teamwork is confined to the higher status team only (Cott, 1997).

The four studies presented above have used primary data collected by survey or interview and illustrated the networks using network maps (sociograms). A recent study by Fattore et al. (2009) in Italy demonstrates the use of archival data, namely data on GPs working in formal collaborative arrangements (with other GPs), and data on GP prescribing behaviour. A number of network measures were conducted, but no visual maps of the networks presented. The study aimed to examine how GPs’ network organisation influenced their prescribing performance (prescribing performance was measured against the ability of the GP to meet health authority targets) and specifically whether social capital plays a role. This was measured by the actor’s centrality to the network, hypothesising that those more central to the network, with more ties, have information advantages that could positively influence performance. The study concluded that social influence, in terms of actors influencing the behaviour of others through social control and norms, was more significant than social capital. This was measured by the positive association of the GPs performance with the performance of the GPs to which they were connected. However, direct ties for the GPs were based on what is termed ‘affiliation’ data, using the assumption that two GPs who are members of the same collaborative arrangement interact with each other. The homophily seen between the GPs could be explained by their interactions and the social influence this reproduces in the network.
Alternatively, it could be that the collaborative arrangement simply attracted like-minded, similar, people. Another limitation of the study, which is acknowledged by the authors, is the lack of attention to informal ties between the GPs, an artefact of the formal administrative data utilised.

The limited number of studies presented here demonstrates that social network analysis can have application to the study of health care professional relationships and networks. However, these studies do lack depth, with little exploration of different types of relations between actors, the strength of these ties, direction or reciprocation of contact, and the consequences of individuals’ positions in the network such as opportunities or constraints. Furthermore, these studies have not explicitly demonstrated how their findings have addressed a particular policy issue or problem. Although the approach has been applied to studies of the interactions of GPs, there are no studies that have focused on pharmacists. This study will be the first to apply the technique to a study of GPs and community pharmacists.

2.4 Conclusion
Existing studies of GP-pharmacist interaction, outlined in section 2.2 often focus on attitudinal responses to new professional roles or the expansion of service provision by pharmacists, with findings being mainly at a descriptive level. Use of a relational, network approach has the potential to examine the level of interaction and the nature of ties between GPs and pharmacists (strength, frequency, reciprocity). This approach can also offer insight into the extent to which pharmacists are integrated into their local GP network and identify individuals in possession of strong or weak ties, situated in central or isolated positions in the network. Combined with in-depth interviews, this approach can also offer understanding of how those individuals who are well integrated have achieved these positions and, in contrast, the circumstances of those who may be more isolated. The opportunities and constraints these individuals experience as a result of their position in the network can also be explored. This approach holds opportunities for further exploration of the neglected areas of the process of GP-pharmacist relationship formation and the development of strategies for greater collaboration.
This background section has presented existing work examining GP-pharmacist relationships, recent policy priorities and initiatives, and examined some of the key concepts and theories that may have relevance to this area of study. This section has attempted to draw a path and outline a train of thought, starting with the initial problem of relationships between GPs and community pharmacists being limited or poor, identifying gaps in existing knowledge, and arriving at the potential to explore this area further using a novel network approach. The following section outlines the aims and objectives that were developed through this line of reasoning.

2.5 Aims and objectives

Purpose
This study aims to provide ‘real world’ examples of how GPs and community pharmacists interact with each other during their everyday practice. Policy and guidance is urging GPs and community pharmacists to work together more collaboratively and new pharmacy services are being introduced which require further interaction to occur. By providing these ‘real world’ examples, this study aims to give policy makers an insight into how GPs and community pharmacists perceive their own interaction, thus enabling policy makers to consider whether the current state of interaction is aligned with present and future aims for collaborative working between the two professions.

Overall aim
To explore the level, nature and process of interaction between GPs and community pharmacists at four case study areas

Specific objectives
1. To explore the type of interaction and strength of relations between GP and community pharmacists
2. To map and profile their relational networks using social network analysis measures
3. To examine individuals’ positions in these networks and how these have been achieved and maintained
4. To explore internal and external opportunities and constraints for these networks
3 METHOD

3.1 Overall study design
The study design involved two stages, each intending to address different objectives of the study. The overall study adopted a case study approach involving four geographically different areas. For the first stage of the study, all GPs and community pharmacists working in these defined areas were invited to respond to a questionnaire survey regarding their interactions and relationships with one another. The relational data collected from this questionnaire were analysed using a social network analysis approach. This stage aimed to address the first two objectives of the study (see chapter 2, section 2.5). The second stage involved in-depth interviews with a smaller sample of GPs and pharmacists from these sites, which aimed to elucidate views about their relationships and experiences of interaction. This second stage aimed to address the third and fourth objectives of the study and also to offer explanations for the stage one findings. An overview of the research design is shown in Figure 3-1.

3.1.1 Stage one - Census survey
The questionnaire aimed to elicit information from respondents about their current level of contact and perceived quality of relationships with one another using a roster of names of local GPs/pharmacists. Pharmacist respondents were asked to look down the list of local GP names, and GPs the list of pharmacist names, and answer a set of questions related to their contact and relationship with those individuals. Questions related to frequency, subject of contact, directness of the contact, face-to-face contact and perceptions about the quality of the relationship. Demographic questions about the individual GP/pharmacist (age group, gender, ethnic group) were also included to build up a profile of respondents and ensure a variety of pharmacies/practices and pharmacists/GPs were represented. The questionnaire was distributed by post, online and at local health events/meetings. Completion took between 10 and 15 minutes, depending on the respondents’ level of contact and size of the area. All respondents were assured of the confidentiality of their responses and made aware that during the data inputting stage all names and other identifying particulars would be removed and codes assigned and used for the remainder of the project.
Data from the questionnaire were analysed using network analytic techniques and ‘UCINET’ software (Borgatti et al., 2002). The structural properties of the networks were analysed to show key network measures and the individuals’ positions in the networks were also examined.

3.1.2 Stage two - Qualitative interviews

Social network analysis often focuses solely on quantitative techniques. This study aimed to enhance the understanding of the relational networks through additional qualitative work. Interviews were conducted with a purposive sample of 43 questionnaire respondents. Participants were offered ‘High Street vouchers’ (worth £40) as an incentive to aid recruitment and acknowledge their time. The interviews aimed to explore further details about the respondents’ relationships with local GPs or pharmacists, such as their experiences of interaction, how they felt relationships had been achieved (or not), and the opportunities and constraints they faced. The interview schedule design was informed by the literature review and the questionnaire findings. Interviews took place at the respondents’ place of work and were audio recorded and transcribed verbatim. Interviews lasted between 30 minutes and an hour. The analysis of the interviews progressed iteratively and followed principles of framework analysis (Ritchie and Spencer, 1993). Cases were compared and reviewed against each other both across sites, and within and between professions. Nvivo 7 software (QSR International) was used to assist with the coding and organisation of qualitative data and Excel was used to organise the data into a framework structure to aid analysis.

Figure 3-1: Overview of research design

<table>
<thead>
<tr>
<th>Stage</th>
<th>Design</th>
<th>Sample</th>
<th>Data collection</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Quantitative</td>
<td>Census of GPs and community pharmacists in 4 selected areas</td>
<td>Postal / online survey collecting relational data</td>
<td>Social Network Analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Need to explore the narrative of the network</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Qualitative</td>
<td>Purposive sample of 43 respondents</td>
<td>In-depth interviews using sociograms</td>
<td>Framework analysis</td>
</tr>
</tbody>
</table>

Stage 2 findings offer explanations for stage 1 findings
3.2 Justification of the study design

3.2.1 What can social network analysis add to the area?
Social network analysis focuses on the “relationships among social entities and on the patterns and implications of these relationships” (Wasserman and Faust, 1994:3).

The foundation and starting point of this study was the examination of relationships between GPs and community pharmacists. Previous studies in this area have concentrated on the collection of attitudinal responses to new professional roles or the expansion of service provision by pharmacists, with findings being mainly at a descriptive level. Amongst the limited number of studies which have collected data on interactions between GPs and pharmacists, very few have focused on reciprocated interaction. For example, those GPs that were contacted by pharmacists were not included in the same study, or if they were, their responses were not linked in the analysis undertaken.

Social network analysis focuses on the analysis of relational data, the reported ties and connections between nodes or actors (individuals, groups, or organisations), which can be demonstrated visually using network maps (sociograms). Tie attributes such as frequency, direction and reciprocation of contact can be examined. The structural properties of the networks can also be measured using a series of measures including the density of the network, which is the number of observed ties expressed as a ratio of possible ties. Clustering and cliques within the network can also be identified as stars (those with many ties) and isolates (those with none of few) (Scott, 2000; Wasserman and Faust, 1994; Knoke and Yang, 2008). Further qualitative work can then pursue how these individuals have reached and maintained this position in the network, or in the case of isolates, what may have been the constraints or barriers (Crossley, 2010). This approach can therefore examine networks of contact between GPs and pharmacists in a selected area and identify individuals of varying levels of inclusion in the network.

3.2.2 Epistemology
Social network analysis (SNA) is often associated with a structuralist epistemology; that is the way in which we come to know the social world is through the study of structures in
society. It is understandable how this assumption could be made, with the importance SNA places on measuring structure and visualising this through mapping techniques. However, it has been argued that the original interactionist roots of the technique have been overlooked in recent years, with the expansion of quantitative mathematical techniques of analysis. For example, early anthropologists such as Clyde Mitchell used forms of SNA as a way of recording and storing the interactions he observed (Crossley, 2010).

SNA has been criticised for this focus on structure at the expense of individual agency (Emirbayer and Goodwin, 1994) and some social network analysts strongly adhere to the concept that agency is not a primary focus:

*Network analysts start with the simple but powerful notion that the primary business of sociologists is to study social structure...the focus is not on voluntaristic actors, but on structural constraint.* (Wellman, 1983:156‐157).

It is being increasingly recognised, however, that SNA does not need to conform to a solely structuralist epistemology and can also take account of individual agency, and interactionism, through the choice of methods adopted. By combining the tradition of quantitative social network analysis techniques with qualitative methods, certain shortcomings in both these methods for the study of networks can be addressed (Crossley, 2010). Crossley (2010) argues that it is important to recognise networks as “social worlds” (an interactionist concept), formed through meaningful interactions, rather than abstract structures. Interactions can form identities in these networks and shape future interactions. Adopting this perspective, it was important therefore, to study both the structure and form of the network quantitatively and the content and narrative of the network qualitatively. The qualitative interviews were therefore included to complement the quantitative network analysis to examine how actors perceived the processes of interaction - how their interactions had formed, developed and maintained their relations.
3.2.3 Different network approaches that were considered

3.2.3.1 Ego-net vs. whole network

When designing this study, a number of alternative approaches were considered. The main approaches in social network analysis are whole networks or ego-centric networks. A whole network examines every relation between actors in a given population, usually a census, and an ego-centric network approach focuses on one actor (ego) and their ties to other actors (alters). The latter approach may also examine the direct ties between ego’s alters, either as reported by ego or collected from the alters themselves (Knoke and Yang, 2008). Initially, an ego-centric approach was considered for this project. A small number of community pharmacists and/or GPs could be selected randomly and then their networks of contact examined. However the disadvantage of this design would be the exclusion of isolates from the project. The ego-centric approach would only capture information on the individuals with whom ego has contact and would fail to examine where contact did not occur. Therefore, a whole network approach was adopted, which aimed to collect maximum information, identify isolates and also gather data on reciprocation of contact. Whilst an ego-centric approach could gather information on reciprocity by asking those identified as alters by ego what kind of contact they have with ego, knowing that they had been identified by ego could affect and influence how they report their reciprocal contact with ego.

3.2.3.2 One mode vs. two mode networks

Unlike a conventional whole network approach, the decision was made not to examine contact between all those in the network - only inter-professional contact rather than intra-professional contact. It was felt that to examine intra-professional contact would extend beyond the aims of the project, addressing a different research topic. It was also felt that this approach would be too burdensome for respondents, as they would be required to report contacts for a much larger number of individuals. In terms of social network research, this design is what is termed a ‘two-mode network’ as there are two parts to the network – GP and pharmacist actors. Two-mode network data cannot always be dealt with in the same way as conventional one-mode network data, and many of the established network analysis techniques either cannot be performed or need some
modification (Borgatti and Everett, 1997). This is discussed further in the analysis section 3.7.3.

3.2.3.3 How to define the network boundaries

Once the whole network approach was decided upon, the next decision focused on what constituted, in this case, a ‘whole network’. Specifying the boundary of the network is an important consideration for whole network research. According to the literature (Knoke and Yang, 2008; Scott, 2000), three approaches first put forward by Laumann et al. (1983) appear to be the most widely accepted – positional, reputational and event based. The positional approach samples actors from those who occupy formally defined positions or group memberships (Scott, 2000), such as all members of a school class. It is therefore the attributes of the actors that inform their inclusion in the sample (Knoke and Yang, 2008). The reputational approach focuses on relations more than attributes and can be used when a full list of actors is not available or when actors’ own or other key individuals’ knowledge is important for setting the boundary of the population. Key informants can therefore be used to produce lists of the target population, but the researcher is reliant on the informants having accurate knowledge of the target population. Linked to this approach is the use of snowballing or the chain referral method, whereby actors are surveyed and asked to identify other actors which they consider to be part of the network and these are in turn asked to nominate other actors. This is a useful technique for tracking down hard to reach populations, not easily identified through formal routes (Hanneman and Riddle, 2005). However, through this method only those actors with connection to other actors would be identified rather than unconnected isolates. Finally, the event-based approach sets network boundaries on the basis of participation in events or specific activities and may be independent of the position or reputation these actors hold (Knoke and Yang, 2008; Scott, 2000).

This study adopted a positional approach whereby the network actors were identified by their formally defined position or group memberships, in this case their professional group memberships as registered general practitioners and community pharmacists. Reputational and event based approaches were discounted because both approaches, by design, are more centred on those who are already connected.
With professional membership set as the inclusion criteria, but being so wide, there was an obvious need to select a smaller sample of actors. In this sense the project is adopting a nominalist approach rather than realist. Prior to defining the three approaches above, Laumann et al. (1983) presented the boundary specification decision in terms of the dichotomy of nominalist or realist strategies (Knock and Yang, 2008). Realist strategies adopt the presumed subjective perceptions of the boundary from the network members themselves. Nominalist strategies involve the researcher imposing a boundary on the network for theoretical and analytical purposes. The process of imposing the boundary is discussed in greater detail in the sampling section 3.3.

### 3.2.4 Different methods for collecting relational data that were considered

Scott (2000) argues that methods of data collection for social network analysis are essentially the same as those for collecting conventional data. Survey research methods such as questionnaires and interviews can be used, as well as ethnographic methods such as diary and observation methods. Archival methods examining documentary information can also be utilised (Scott, 2000). The latter was discounted for this research design, as there was no existing data or documents available that would adequately address the research question, therefore primary data collection was required. Adopting an ethnographic approach was also considered. Observational methods were discounted on the basis that they could be considered quite intrusive due to patient confidentiality issues. Furthermore, previous research has shown that interactions between GPs and community pharmacists are limited and thus the timescale required for the observation to capture interaction would be lengthy and researcher time intensive. Diary methods were considered as an alternative which could allow GPs and pharmacists to record their interactions with each other. This approach has been used before (Kennedy et al., 1997) but not to capture reciprocal information. Self-recorded diary methods have been reported to be more reliable for collecting data on organisational communication than questionnaires which rely on the perceptions and recall of the respondents (Conrath et al., 1983). However, this approach was considered too burdensome for respondents as busy health care professionals. Furthermore this approach is more suited to ego-centric approaches and by only recording interactions that occur, could fail to capture information on isolates. A questionnaire survey was considered the least burdensome approach for
GPs and pharmacists. It also enabled the collection of larger scale data suited to a whole network approach. Interviews were also considered, but consistent with the larger whole network approach, the questionnaire survey was favoured for the initial first stage of data collection, with interviews chosen for the second stage to provide more in-depth information on a smaller sample.

### 3.3 Sampling

Sampling for the project involved several stages and different levels of sampling. However, this was not a linear decision making process and was iterative and somewhat circular. Three areas are discussed here: decisions for the sampling of the PCT areas, decisions for setting smaller boundary areas within these PCT areas, and decisions about the unit of analysis – individuals and organisations. These decisions were also strongly linked and influenced by the process of designing the roster of names for the questionnaire, which is discussed in section 3.4.3.

#### 3.3.1 Sampling in social network analysis

Sampling in social network analysis varies from conventional sampling. Conventional sampling is based on theories of probability and established techniques for measuring the reliability of the sample data, but no comparable techniques exist for social network data. Selecting a random sample of actors does not produce meaningful and useful relational data. Scott (2000) notes that if a random sample of actors is selected, many of the contacts they name will not be part of the random sample themselves and therefore there will be very few relations between the members of the sample. Additionally, one cannot assume that the relations identified by the actors in the random sample will actually be a random sample of all the relations these actors have. For a large scale sample, such as national study, the chance of two actors selected randomly being linked by a relation is very unlikely. Many of the key measures of social network analysis could not be utilised if conventional sampling was adopted (Scott, 2000).

Consequently, it is rare in social network analysis to draw samples and the approach is often a census of a given population. Populations however, can be sampled. Hanneman and Riddle (2005) state that social network analysis studies can be extended by replicating
populations - that is including more than one population in the study. These populations can be sampled which enables replications and testing of hypotheses by comparing the populations. Marsden (1990) states, however, that the small numbers of studies that have attempted to compare entire networks (such as Knoke and Rogers’ (1979), Inter-organisational networks study) have selected these networks purposively or on a convenience basis rather than randomly.

3.3.2 Individuals or organisations?
One of the first decisions to be made was whether to focus on individual GPs and pharmacists or pharmacies and GP practices. It was decided that it would not be appropriate, or particularly useful, to have one individual responding as a proxy for a whole practice or pharmacy. With large GP practices, housing around six or seven GPs, it was considered unlikely that all of the GPs would have the same relationship with a particular pharmacy. Similarly, pharmacists working different time shifts in a large pharmacy may not have the same relationships with a practice. It was therefore decided to collect data at the individual level with the advantage of being able to build this data up to practice or pharmacy level if required.

It was also considered important to capture whether or not respondents knew each other individually. Anecdotal comments from pharmacists and GPs working at the University of Manchester indicated that GPs may not know individual pharmacists by name, whereas pharmacists may have more familiarity with the GPs name after seeing this on prescriptions. Consequently, both Pharmacy and Practice names were included on the roster of names, along with individual pharmacist and GP names. An explanation was presented to respondents stating that if they felt they did not know the names of the individuals listed they could answer the questions for the practice or pharmacy as a whole.

3.3.3 Selection of PCT areas
As the second stage of the project involved qualitative face-to-face interviews, costs and travel time were taken into consideration when selecting the case study areas, as were local knowledge and established contacts. For this reason, it was decided that the sites
would be based in the North West of England, as defined by the North-West Strategic Health Authority.

Initial ideas for the sample of the project included a complete enumeration of all GPs and community pharmacists in several PCT areas. At this stage, the use of PCT boundaries was considered helpful as these were existing administrative boundaries, which whilst still unnatural, could offer some legitimacy to the boundary selection. However, it was soon realised, early on in the project, that this design was impractical. Across the 24 PCTs in the North West, the average number of GPs per PCT was 188 and the average number of community pharmacies was 66 in 2009. The actual number of community pharmacists is unknown, but even counting just one individual at each pharmacy, this gives a total sample size of 254 individuals at each PCT. It became obvious that the PCT boundary was too wide and that each PCT area would need to be broken down into smaller sub-areas. Surveying the whole PCT but dividing the PCT into smaller areas and using different versions of the questionnaire (with a different roster of names depending on the geographical position) and then attempting to build up the whole network by matching up these smaller areas and examining the overlap between the areas was also considered. Based on the average number of GPs and pharmacists in each PCT, this would, at the very least, involve 10 different versions of the questionnaire in one PCT area, and dealing with the overlap between areas was also considered to be highly problematic. The advantage of having a large number of respondents was weighed up against the disadvantages of possibly misrepresenting the network and of the large amount of administrative work involved in such a task.

As a consequence, rather than attempting to map whole PCTs, a decision to focus on smaller distinct areas within PCTs was made, with the primary selection criteria being geographical variation - rural, town and city. This top level selection criteria was considered important due to previous findings, which demonstrated that GPs and pharmacists alike felt that working in a small area with fewer practices or pharmacies contributed towards the ease of forming relationships, whereas larger city locations considered this more complex (Bradley et al., 2012; Kendall et al., 2005a; Ashcroft et al., 2006). Areas could have been selected randomly but it was considered more useful to purposively select these PCTs in order to take account of this geographical variation.
Purposively selecting PCTs with different geographical characteristics can allow some comparisons across sites, although not generalisable. Social network analysts tend to have little concern with inferring to the rest of the population with the emphasis directed towards selecting theoretically interesting populations. It is likely that a design which attempted to collect the amount of data that would be required to make inferences about differences between areas would be unmanageable within the time constraints of a PhD project.

A decision to focus on four geographically different areas was made - a city; large town; small town and village/rural area. By adopting these criteria, the characteristics of the PCT as a whole became less of a concern. It was decided that each area could be selected from a different PCT or more than one area could be chosen from a PCT if the PCT covered different types of locations (e.g. both village and town). It was also decided that case study areas should be contained within the boundary of the PCT, despite the possibility that connections could cross PCT boundaries, because it was felt that practice and priorities may vary between PCTs, and that some PCTs may have contributed towards building collaborative relationships. Additionally, in terms of NHS R&D management approval being required for each PCT that the research was conducted in, it was more practical to limit the research to these boundaries.

The process of drawing a shortlist of potential PCT areas involved several iterative stages. This included: (1) examination of existing data on PCT characteristics, such as the rural/urban definition, deprivation statistics, numbers of pharmacies and general practices and pharmacy service provision to draw out demographic and geographic differences between PCTs (see Appendix B for details). (2) A speculative email to all PCT pharmaceutical advisors in the North West to explain the project and to ask whether they could help with the provision of a list of the names of pharmacists in their area. Names of GPs working at each practice are in the public domain and can be located on the NHS choices website (www.nhs.uk), or the GP practice’s own website. Comparative lists of pharmacists working at each pharmacy are not as freely available and PCTs are not required to keep a list of pharmacists working in each pharmacy in their area, although some do. Additionally, use of locums and the high mobility of the workforce also pose a problem for PCTs keeping up-to-date with this information. The majority of PCTs
responded to this email stating that they did not collect or hold this information. Three PCTs stated that they did have lists; another three offered to provide names as they knew many of the pharmacists in their area, despite not holding a formal list; a further five stated that they could possibly help with gathering names. It was acknowledged that any such list would still need to be checked with the actual pharmacies involved for accuracy prior to commencing the research and that those PCTs keeping these records or keen to engage with research could be described as more pro-active in organisation than some of the other PCTs. However, it was also acknowledged that in terms of practicalities and facilitating the research, these PCTs would be a helpful starting point. Five of the 11 PCTs that had offered to help in some way were selected as potential sites, which across them contained several potential large and small towns and rural/village areas. One other PCT which had not been able to offer help with the pharmacist list was also selected on the basis of needing a city centre area for the sample. R&D management approval was sought for these six PCTs, although only four were to be included in the research.

3.3.4 Selection of smaller case study areas

Examining statistics at PCT level was helpful for focusing sample selection and making the task more manageable, however these statistics may not be representative of the smaller areas selected. A PCT with low levels of deprivation will probably have areas with high and low levels of deprivation, just as a primarily urban PCT may also have rural pockets. Therefore these factors (rural classification and deprivation) were also examined at (lower Super) output area level to ensure that the smaller areas selected were contrastable to some degree (although, this was not possible for general practice and pharmacy statistics as these are only available at PCT level); see chapter 4, Table 4-1.

Each of the six PCT areas were examined further for geographical spread of community pharmacies and general practices. The NHS choices website map facility and Google maps (http://maps.google.co.uk) were useful tools to visualise the spread of provision in the various areas and to examine potential boundaries for the networks. The first site, a large town, was selected as a pilot site. It was decided that if data collection at this site was successful then the findings would be included in the final results. The boundary drawn was a one-mile radius of the town centre, in which there were two distinct clusters of
general practices and pharmacies. This area contained six GP practices and seven pharmacies. However, as described further in section 3.4.5 this pilot was not considered successful in terms of recruitment methods (the need for a high response rate for network analysis is discussed in section 3.9.1). A revised strategy for recruitment, based on more personalised contact and engagement with potential ‘gatekeepers’, was devised. This revised approach and the need to ensure a high response rate therefore influenced selection of the final four case study areas.

With the aim of improving recruitment, the researcher utilised a number of existing contacts to explore options for engaging respondents, particularly GPs, in the research. These contacts included, the pharmaceutical advisors previously contacted at the PCTs; GP, pharmacist and PCT staff contacts of colleagues at the University of Manchester’s School of Pharmacy; and the contacts of the National Institute for Health Research’s (NIHR) North West Primary Care Research Network (PCRN). Through the process of consulting with these potential ‘gatekeepers’ and the additional contacts that they in turn provided, it became apparent that there were potential recruitment opportunities at four of the PCTs, in terms of either the opportunity to attend GP health events to publicise and recruit for the project, or commitment to the project by certain GP practices. Selection of the defined network boundary areas (small town, large town, city area and rural/village area) were then tailored around these recruitment opportunities in conjunction with the examination of the geographic, demographic and GP/pharmacy provision detail of the areas. The recruitment process for each site differed and was adaptive to the location and the opportunities. These processes are described in further detail in section 3.6. The next chapter provides descriptive overviews of the characteristics of the specific case study areas and details how the boundaries for each of these areas were set.

In relation to the sample size at each area, this varied depending on the geographical characteristics (GP and pharmacy provision in the area) and was dictated by the questionnaire roster design; see section 3.4.3 for further details.
3.3.5 Sample for qualitative interviews

Initially, during the research design stage of the study, the aim was to collect network data first by questionnaire and then purposively select individuals for interview by nature of their network position (e.g. those well connected and those more isolated). In practice, due to the opportunities available to the researcher, in terms of attending local health events to recruit participants, it became more practical to recruit for interviews at the same time. In order to maximise participation, it was also considered more advantageous to ask all questionnaire respondents whether they would be willing to partake in an interview, rather than targeting only a select few. A detachable slip was inserted at the end of the questionnaire which asked respondents whether they would be willing to take part in a follow-up interview. In terms of numbers of participants for interview, ultimately this was dictated by the number of questionnaire respondents agreeing to take part in an interview. However, a figure of approximately 40 qualitative interviews across all sites was considered to be a manageable number to conduct in the time available.

3.4 Questionnaire design

This section outlines the stages and process of designing the questionnaire for the first phase of the project. Two versions of the questionnaire were designed – one for GPs and one for community pharmacists with essentially the same set of questions. A number of advisors - four practising community pharmacists who also worked at the University of Manchester; one community pharmacist outside the university and five practising GPs who also worked at the university – were consulting during the questionnaire design phase for advice. These advisors also pre-piloted the questionnaire. Please refer to Appendix C for the final version of the questionnaire.

3.4.1 Purpose of the questionnaire

The questionnaire stage was designed to address the first two objectives of the study (see chapter 2, section 2.5). The purpose of the questionnaire was to collect data which could be used to:

- measure the frequency, nature, purpose and direction of interaction
- determine tie strength and perceived quality of ties
- identify well-connected and more isolated actors
• examine the overall structure (form) of the networks.

3.4.2 Designing a questionnaire for collecting relational data
A search for literature discussing questionnaire design for collecting relational data highlighted a general paucity in this area. The methodological literature in the social network analysis field is heavily weighted (as the name would suggest) towards the analysis of data rather than methods of data collection. The general text-books state that data collection methods are the same for collecting relational data as they are for collecting conventional data (Knoke and Yang, 2008; Scott, 2000) and in the broadest sense this is true. General principles of good questionnaire design (Fowler, 1995; Dillman et al., 2009) are applicable, but, as was discovered through the design stages, presenting a roster of names to respondents with linked questions, poses a number of design issues.

3.4.3 Designing the roster of names
In the initial stages of questionnaire design, two techniques were considered – 1) having a fixed list roster of names on the questionnaire; or 2) presenting a question to respondents which would encourage them to generate names of those with whom they had contact. The decision was relatively straightforward and mainly dictated again by the need to identify those with limited connections (isolates) rather than to identify only those that were connected. It was therefore necessary to present respondents with a roster of names which included others in their defined area rather than allowing them to generate the names themselves.

The lack of discussion in the area of network survey design, perhaps relates to the limited number of studies which have focused on whole networks using a roster technique, or perhaps an assumption that the design of a roster is quite simple, as in the case of Cott’s (1997) study of contact between multidisciplinary long term care teams. This study examined intra-team contact (around 30 individuals), asking respondents to look down a list of fellow team members and tick which type of contact (eight different types, ranging from chatting to problem-solving) they had had in the past two weeks.
In the case of this PhD study, the questionnaire aimed to measure more than just type of contact and therefore by adding more questions, lack of space becomes an issue. Furthermore, presenting both the individuals and the pharmacy or practice name in the roster also demands more space, as does the addition of extra rows for respondents to add any other individuals not listed. The questionnaire design was not therefore a simple fixed list method, but a combination of a recognition (roster list) and recall (self-completion list) method.

It was decided that it would be preferable to restrict the relational questions to one A3 sheet, folded into an A4 booklet, with the roster of names as rows and the questions as columns, with all names and questions visible across this one sheet. This decision impacted on the types of response categories available for answering each question and these are discussed in the following section. This decision also dictated the number of individual names that could be listed on the single page. The maximum number of individual names that can be fitted onto the page is around 17. Any more than this and the space available for respondents to complete their answers is too small. Advisors suggested that a one page roster (17 names) was preferable, with two pages of rosters (35 names) being the maximum. This practical issue therefore dictated a very crucial decision for the project - the maximum size and boundaries for each of the case study areas.

Daugherty et al.’s (1988) social support questionnaire contained space for 24 names. They state that this number appears arbitrary, but their previous research experience indicated that “people who list more than this number are ‘reaching’, that is, citing persons with whom they actually have little contact”. They also state that this observation is confirmed by Burt’s analysis of the US General Social Survey. However, social support contact was not the topic of study for this PhD and little is known about the number of contacts health care professionals may have. Furthermore ‘reaching’ may be important to this study as frequency of interaction and having ‘little contact’ was of interest to this research. Cott’s (1997) questionnaire for health care professionals listed around 30 names for the roster, however again, this is not directly comparable as these were distinct teams working together. The deciding factor was knowledge from previous research indicating that interaction was limited between GPs and community pharmacists (chapter 2, section 2.2.2). An a priori assumption was therefore made that more than 35 contacts would be
rare. The inclusion of space for respondents to add additional names also helped to reduce these problems.

The number of contacts listed was different for each case study area, simply because they were distinct geographical areas with different configurations. Therefore, for more sparse rural areas, the likelihood of being able to list 35 individuals on the roster may be low. In city or urban areas, the possibility of listing more than 35 individuals on the roster could be higher. In these cases, practical and common sense judgements had to be made about where to mark these cut off points and draw the boundaries. Chapter 4 provides further detail on the setting of boundaries for each site.

Once the boundaries were drawn, the names of GPs and pharmacists were collated. GP names were collected from the NHS choices website and Practice websites and then double-checked for any changes with the practice reception. At three of the sites, lists of pharmacist names were provided by the PCT pharmaceutical advisor or community pharmacy facilitator and then again checked by phoning the pharmacy and speaking to pharmacy staff. No pharmacist list was available for the fourth site; names of pharmacists were collected by the researcher by phoning the pharmacy and also through visiting the pharmacy in person to discuss the research.

### 3.4.4 Designing the questions

#### 3.4.4.1 Language

A conscious decision was made to avoid the use of certain language throughout the questionnaire. As discussed in the background section, terms such as collaboration and integration do suffer from conceptual confusion and tend to have connotations of benefit. The researcher did not want respondents to be deterred from completing the questionnaire because they were either confused about these terms or felt them to be not relevant to their situation. The aim of the questionnaire was to collect data on the presence of interaction between individuals; therefore a decision was made to use the term ‘contact’ as this was felt to be a more neutral term. A broad definition of contact was presented for respondents, developed with advice from the GP and pharmacist advisors, which read – “By contact we mean any type (written, phone or face-to-face)
either directly between yourself and the GP/pharmacist or indirectly through another person e.g. practice receptionist”.

### 3.4.4.2 Demographic and practice section

For both versions of the questionnaire, these questions were similar, with the addition of service related questions for community pharmacists. Questions related to job title, length of time working at the practice/pharmacy, full or part-time working and length of time qualified. These questions were included to build a picture of the respondents and the nature of their role.

In addition, pharmacists were asked to report whether their pharmacy provided Medicines Use Reviews (MURs) and any enhanced services. Previous work has indicated that the introduction of MURs caused some disquiet amongst GPs, possibly affecting relationships (Wilcock and Harding, 2007) and that some pharmacists were reluctant to provide MURs for fear of affecting good existing relationships with GPs (Bradley et al., 2008b). The provision of enhanced services could require collaboration with GPs. High levels of contact with GPs could possibly be an artefact of the provision of enhanced services or vice versa. The two could also be completely unrelated with the provision of enhanced services not involving any form of GP contact. Feedback from pharmacy advisors helped to develop the list of services to be included in this question.

The remaining three questions ask the respondent for their age, gender and ethnic group. These questions were included in order to build up a picture of the respondents’ characteristics and to see which types of groups were represented. Ethnic group classifications were reproduced from the 2001 Census.

#### 3.4.4.3 Network questions

This section contained six questions about the nature of contact and relationships with the individuals listed in the roster. These include:
1) How often do you make contact with the following?
2) How often do you receive contact from the following?

These two questions attempted to measure whether a tie was perceived to be present or not, the frequency of contact and the direction of contact (which can demonstrate reciprocity). Frequency of contact and reciprocation could indicate the strength of the tie between two individuals.

The respondents were presented with a scale of 0 – 4 (0=never, 1=rarely, 2=sometimes, 3=fairly often, 4=very often). These categories could be criticised for being too broad and open to interpretation. All the pharmacy advisors who reviewed the questionnaire commented that they had no problems with the categories of the scale and did not prefer a set time period or the scale to give more exact frequencies. However, feedback from one GP suggested that the categories could be defined, for example, ‘Often = more than once a week, sometimes = less than once a month’. Again, this presents its own issue as the researcher is then imposing what they believe to be ‘often’ and ‘sometimes’ and this may not be the same for GPs as it is for pharmacists.

Collecting exact frequency of contact from both sets of respondents over a given time period would alleviate this issue and this approach was considered, such as ‘how many times have you made contact with the following in the last two weeks/month’ as in Cott’s study (1997). The problem with this design was that if someone answered ‘never’ to this question, this relates to a finite time period and cannot capture information on contact that has never been made ever, which was an important concern for this study. An alternative would be to use two questions, ‘Have you ever had contact with the following?’ and ‘If yes, how many times have you made contact with this GP in the last two weeks/month?’ But this would have the disadvantage of making the questionnaire longer, exacerbate the shortage of space and probably necessitate the removal of another question.

The necessity of having the more exact level of detail had to be considered in relation to the aims of the project. It was decided that the most important function of the questionnaire was to capture whether a tie was present or not and the direction of that tie.
The advantage of setting a time period would be that these categories would be less open to interpretation (e.g. one person’s ‘rarely’ might be another person’s ‘sometimes’) and if the questionnaire was distributed to respondents at the same time their responses would be more comparable, across group and between group. Conversely, the subjective categories offer the potential for interesting comparisons to be made between groups. If, for example, the pharmacist reports that they make contact with the GP sometimes and the GP states that the same pharmacist contacts them very often, this could demonstrate different perceptions of frequency.

3) Thinking about the contact you do have with those listed, how often is that contact about the following activities?

This question attempts to address the types of information or resources exchanged through the contact. The lists of activities presented in this question were developed in consultation with the pharmacy and GP advisors. Kennedy et al.’s (1997) diary study was also useful for informing this list. Common activities were included as well as those that might be considered less common but could indicate a willingness to interact with other professionals, such as attending local health events. A non-work related social category was included to examine the potential cross-over between social and professional life and to examine multiple ties, which could be a measure of tie strength. A box providing descriptions of these activities was included as a recommendation from pharmacy and GP advisors who also helped to formulate these descriptions.

The same frequency scale was employed again for this question for continuity and flow. Again, it was important to gather some level of frequency. Previous research suggests that contact is mostly confined to routine administrative queries (see chapter 2, section 2.2.2), so it was important to examine the distribution of their contact time to different types of activities. A ranking question was considered initially, but respondents are reported to dislike ranking items (Dillman et al., 2009) as they force the respondents to place items in an order when items may be equal in importance/frequency.
4) Is the contact you have mostly direct between yourself and the GP/pharmacist or indirect through others?

This question attempts to measure how direct the contact is, or whether the contact is mainly through a proxy. This question was included in response to anecdotal reports from pharmacist advisors that they rarely get to speak to GPs directly and that the majority of their contact is via the practice receptionist. Two GP advisors also mentioned that the majority of their contact was with pharmacy assistants or technicians, rather than with a pharmacist. No previous research has however gathered empirical evidence to this effect. Additionally, the level of direct contact could be considered a measure of tie strength. For simplicity, respondents were presented with three options and asked to tick one selection – ‘mostly direct’, ‘mostly indirect’ and ‘equally indirect and direct’.

5) In the last 12 months have you met this GP/pharmacist face-to-face?

Previous research suggests that the majority of contact between GPs and pharmacists is by phone (chapter 2, section 2.2.2). Meeting face-to-face could indicate a stronger tie is present. Assessing the presence of face-to-face contact against another measure of tie strength could help to establish how important face-to-face contact might be, i.e. can strong relationships still be formed without face-to-face contact? The time period during which face-to-face contact had occurred was also deemed to be important. Meeting 10 years ago but not meeting since, may have less impact than having met six months ago. Twelve months was chosen as the time period, on the basis that certain events or seasonal incidences of disease (e.g. flu) may occur annually. A simple yes/no tick box option was provided for this question.

6) Which best describes your working relationship with this GP/pharmacist?

This question attempted to measure the respondents’ own perception of tie strength and the level of agreement about tie strength between GPs and pharmacists. A previous study showed differences in perception about relationships between GPs and pharmacists (Paes, 1983). For example, GPs might perceive the relationship to be good, whereas the pharmacist might think that it is poor, due to different expectations about the relationship.

It was also important to enable comparison between levels of contact and the perception of the quality of the relationships. Contact could be very frequent but the individuals
involved may feel that their relationship is poor. Conversely, contact could be infrequent but individuals feel the relationship is very good.

The category ‘no relationship formed’ was added following a comment by a GP advisor, who suggested that an individual may have contact with another individual but not consider this to be a working relationship.

Finally, free-text boxes were provided for respondents to comment on working relationships generally and on the design and content of the questionnaire. Respondents were also asked whether or not they wished to receive a summary of the study findings.

3.4.5 Piloting the questionnaire

The pre-piloting with GP and pharmacy advisors was useful for testing face validity of the questionnaire and for gaining feedback on the interpretation of questions, whether these were clear and whether any response categories were missing. It was also useful for highlighting any design issues. However, those involved in the pre-piloting could not actually answer the questions as the versions they examined did not contain a roster of names tailored to their area. The formal pilot aimed to: test whether the boundary drawn was appropriate (examined through the number of additional contacts included by the respondents); provide an indication of the response rate that might be expected for the rest of the sites; inform the planning of strategies to deal with any issues of response rate; examine whether completion instructions were clear and that respondents were completing all questions with the insertion of either numbers from the scale or ticking the appropriate boxes; and gather a small amount of data with which to test and plan the analysis further. The questionnaire also contained a comments box for respondents to provide feedback on any aspect of the questionnaire design. If the data were found to be useable, the aim was for the pilot site data to be included in the formal analyses. The questionnaire, with an information sheet, covering letter (see appendices C and D) and return envelope were distributed to the first area (28 GPs and 19 community pharmacists) at the beginning of November 2009. The respondents were given a timescale of three weeks to complete and return the questionnaire. After three weeks, two questionnaires had been received (one from a pharmacist and one from a GP), giving a response rate of
All pharmacists were reminded by telephone to return the questionnaire and all practice managers and/or receptionists were asked to remind the GPs in the practices, as it was not possible to speak directly to the GPs. Several of the practice managers reported that their GPs tended not to complete surveys as they received so many. A follow-up survey and reminder letter was sent in December 2009, but no further responses were received.

The time of year around the busy Christmas holidays may have been one factor that contributed to the unsuccessful response rate. However, other factors such as the lack of incentive, the unusual survey design and lack of personal contact prior to sending out the questionnaire were also considered to be influential. A decision was made to abandon data collection at the pilot site and revise the recruitment strategy for the other case study sites.

3.4.6 Revised strategy for data collection

The revised strategy for increasing participation involved adopting a more personalised approach with the help of a number of ‘gatekeepers’, rather than simply sending out a postal questionnaire with no prior contact. As no financial incentive was offered for completion of the questionnaire but an incentive of £40 was offered for the interview, one strategy also considered was to invite participants for interview first before sending out the questionnaire, the aim being that if the participant agreed to the interview, the questionnaire could be sent to them for completion beforehand. It was anticipated that not all would agree to be interviewed and in these cases, these individuals would then be asked whether they would be willing to complete the questionnaire instead, which would perhaps appear less burdensome to the respondents. This strategy was tested on the pharmacist sample at site 1, because of their accessibility – the ability to speak to them directly on the phone or visit them in person at the pharmacy – which lends itself to a more personal approach to recruitment. This approach was found to be successful. Similarly, a more personal approach was considered for GPs, but with limited opportunity to speak directly by telephone or in person, this proved more problematic than with the pharmacists. Data collection strategies, particularly for GPs, were adapted to the opportunities available at each site and are outlined in detail in section 3.6.
3.4.7 Second pilot

Through contacts made at site 1, the researcher had the opportunity to meet with two GPs from the PCT area for one hour to talk about the project, the questionnaire design and recruitment strategies. These GPs indicated that an online version of the questionnaire may be appropriate for some GPs and that it was worthwhile having this as another option. Established social network researchers at the University of Manchester recommended ONASurveys.com, an online survey tool mostly utilised for organisational network analysis. This tool possessed many of the qualities required for the survey but some adaptations were required to fit the existing format. This process was nevertheless helpful for re-assessing the wording of the questionnaire and ensuring that the questionnaire length was as concise as possible. Data collection at site 1 was treated as another pilot for the questionnaire, and data collection at the remaining three sites did not commence until data collection had finished at site 1. This was to ensure that if any problems did arise in relation to the questionnaire design or analysis of data, these could be rectified, prior to data collection at the remaining sites. Opportunity also arose to conduct a study of a village/rural location within the same PCT as site 1, an area which encompassed only one practice (two GPs) and one pharmacy (two pharmacists), co-located in the same premises. This small study (referred to as site 0 from this point onwards) served to test the applicability of the questionnaire and interview schedule for more remote areas outside of town and city centre areas. The qualitative interviews at site 0 and site 1 also served as a useful method to gain feedback on respondents’ experience of completing the questionnaire and to check for any misinterpretation or unclear wording.

3.5 Interview schedule design

The interviews were semi-structured, exploratory in nature and tailored to the respondents’ own circumstances in terms of their relationships with GPs/pharmacists. The aim was for the interviewees to complete the network questionnaire prior to interview, to enable the researcher to analyse their responses and tailor questions to their specific circumstances. Visual representations in the form of network maps (sociograms) were produced using the questionnaire information and then shown to respondents in the interview to stimulate further discussion. The sociograms produced illustrated the
respondents’ own personal network (their ego-network) using only data they had provided rather than any data from other respondents, thus preserving anonymity and confidentiality. In some cases however, respondents did not always return questionnaires prior to interview, which prevented sociograms from being produced. In these cases the completed questionnaire was left open and visible to participants and the researcher during the interview to elicit further discussion.

An interview topic guide was produced which had two main parts. The first part of the interview focused on an in-depth discussion of the questionnaire responses and the second part focused on their views of contact and collaboration more generally. The topic guide was designed to be flexible and was developed further as interviews progressed and new themes emerged. For a final version of the topic guide, see Appendix E.

3.6 Data Collection

This section details the data collection process undertaken at each of the sites.

3.6.1 Data collection at site 1

Data collection at site 1 was conducted between April and August 2010. Names of community pharmacists working in the chosen location were provided by the PCT lead for community pharmacy and double checked with the pharmacy by the researcher. Each pharmacist was sent a letter inviting them to interview. The letter was followed up by either a telephone call or visit by the researcher a week later. Those not wishing to participate in the interview were asked whether they would be willing to complete the questionnaire. Those completing the questionnaire were reminded up to three times to return this.

Names of GPs working at each of the practices were located from the NHS Choices website and the accuracy of these checked with practice receptionists. Contact with the PCT Medical Director at site 1 was made via an introduction from a colleague, which led to an opportunity to meet with two GPs from the area. The researcher provided lunch for the GPs and explained the purpose of the project and issues with recruitment. The GPs felt that the best way to recruit GPs for the project would be to present to them at a local
event, during which it would be possible to distribute questionnaires and recruit for interviews. One of the GPs arranged for the researcher to attend a Practice Based Commissioning Consortia (PBC) meeting. Both GPs were also helpful in distributing the questionnaires to their practice colleagues, with a 100% response rate received from both practices.

Eight of the 12 practices included in the sample were part of the PBC consortium. A presentation was made to the GPs, explaining the project and the questionnaire, and asking for volunteers to take part in the interviews. Representatives from all eight practices were present at the meeting, so questionnaires were distributed as fully as possible, with some GPs taking questionnaires for colleagues who were not in attendance. Five GPs also volunteered to take part in an interview. Four practices in the sample were not part of the PBC consortium, so GPs in these practices were sent copies of the questionnaire by post. After three weeks, for those who had not responded, a second questionnaire was delivered by hand to the practice reception, which was followed up by several reminder phone calls.

### 3.6.2 Data collection at site 2

Data collection at site 2 was conducted between August 2010 and January 2011. The same recruitment strategy for pharmacists was employed at this site based on the successes of site 1. Names of community pharmacists working in the chosen location were provided by the community pharmacy lead at the PCT and verified with the pharmacy by the researcher. For GP recruitment, the researcher was put in contact with a member of staff at the PCT responsible for the organisation of PCT-led GP training events, through a community pharmacy contact. Unfortunately, there was not space on the next meeting’s agenda to present to GPs, but the researcher was provided with a stall at the entrance to the event and spoke to GPs about the project as they entered. Only three GPs agreed to take part in the research, but fortunately they were all located in small village areas close together geographically and securing this GP engagement led to the formalisation of the network boundary for this area. These GPs were also helpful in distributing questionnaires to other GP colleagues in their practices. For the remaining GP practices in this area, contact was made with practice managers to see if they would be willing to distribute
questionnaires during practice meetings. Questionnaires were also sent by post and hand delivered to practice receptions, with subsequent reminder phone calls made.

3.6.3 Data collection at site 3

Data were collected at site 3 between September 2010 and January 2011. The same strategy was again utilised for pharmacist recruitment, however pharmacist names were not available from the PCT but gathered by the researcher through telephone calls to pharmacies. For GP recruitment, the researcher was unable to secure invitation to any GP events in the area. Contact with one GP practice was made through a colleague who had a personal contact working there and the practice agreed to participate in the research. Another GP in the area also worked at the University of Manchester and agreed to take part in the research and help recruit other GP colleagues in the same practice. For the remaining GP practices in this area, as at the other two sites, contact was made with practice managers to see if they would be willing to distribute questionnaire during practice meetings. Questionnaires were also sent by post and hand delivered to practice receptions, with reminder phone calls made.

3.6.4 Data collection at site 4

Data collection at the final site occurred between November 2010 and March 2011. The same strategy was again utilised for pharmacist recruitment. Pharmacist names were provided by the PCT and verified by the researcher. As this PhD was funded by the NIHR, the researcher had access to support from the North West Primary Care Research Network (PCRN), which holds a database of clinicians who are interested in taking part in research. The researcher had been in contact with the organisers of this network and those responsible for overseeing the selected PCT areas throughout the project. Unfortunately, they had no interested parties listed on their database for the first three case study sites. For site 4 however, the researcher was put in contact with a GP on the PCRN’s database who agreed to meet to discuss the project further. This GP was situated in a health centre with two other GP practices and located in a small affluent town. After the meeting, the GP agreed to distribute questionnaires to his GP colleagues and also introduced the researcher to several other GPs in two other practices at the health centre, who also agreed to take part. Through the success of this meeting, this small town was finalised as
case study site 4. The majority of questionnaire distribution and reminders at these practices were conducted in person as the researcher was frequently visiting the health centre to conduct interviews.

3.6.5 Factors affecting recruitment

Overall recruitment of pharmacists to the project was successful. The combination of being able to directly approach and speak to individual pharmacists to explain the project, along with the saliency of the topic to them were undoubtedly important factors in their recruitment. Recognising their time through a financial incentive for interview may have also helped to recruit those perhaps not normally attracted to taking part in research.

In contrast, GP recruitment proved very difficult. The next chapter outlines details of response rates for each site. Factors which may have aided pharmacist recruitment were unfortunately lacking in many cases for GP recruitment. For example, it was not always possible to speak directly to a GP in order to explain the project. In the cases when this did occur (at the PBC consortium event, PCT event or through a personal introduction) participation from GPs was noticeably higher. Saliency was also another important issue. The topic may have had more resonance with pharmacists than GPs. The idea of GPs and pharmacists working together more closely is one that is often cited more vociferously by pharmacy spokespeople and organisations rather than their GP counterparts. It could be argued that pharmacists, through their exposure to this rhetoric have more awareness of this agenda than GPs. GPs may also be exposed to survey fatigue as a consequence of the number of surveys and other requests they receive each day. Pharmacists may also encounter survey fatigue, but speaking directly to the researcher and the saliency of the topic may have helped to alleviate this. Furthermore, with there being more GPs in the sample than pharmacists, due to the nature of their organisational structures (i.e. large number of GPs at each practice compared with only one or two pharmacists at each pharmacy), this meant that more surveys were required from GPs than pharmacists. Consequently, the majority of pharmacist questionnaire respondents were also taking part in an interview and therefore being financially incentivised for their time. A smaller proportion of the GP respondents were invited to interview, resulting in the majority of GP questionnaire respondents not being offered an incentive and a greater reliance on goodwill.
3.7 Handling and analysing network data

This section outlines the analysis of network data, detailing the organisation of data, the types of ties used for analysis, and the series of network measures and tests employed.

3.7.1 Organising data

Social network analysis is heavily influenced by graph theory and follows the same principles (Scott, 2000). A number of software packages are available for handling relational data, which involve the analysis and manipulation of case by case adjacency matrices. UCINET and accompanying network visualisation software NETDRAW were utilised for this study, due to the accessibility of the software to the researcher and high level of support and expertise already available through the Sociology Department at the University of Manchester. Questionnaire data were firstly inputted into Excel spreadsheets and then imported into UCINET. Each matrix represented a different relationship or tie. Ties can be considered directed or undirected. An undirected tie, is a tie where reciprocation is a given, for example the co-authoring of an academic paper (Bellanca, 2009). A directed tie means that the tie has a direction, for example an individual can contact another individual but this contact may not be reciprocated. This study focused on directed ties, by collecting information from both GPs and pharmacists about the direction of the contact and reciprocation. Tie measures can be binary in the sense that a tie is either present or not or can be valued on a scale. For this study, tie measures were collected at a binary level (e.g. face-to-face contact = 1, no face-to-face contact = 0) and also on a scale (frequency of contact from 0-4). For some analyses, valued data were also collapsed to binary level.

The data were organised using square adjacency matrices, with all of the members of the network listed in both the rows and columns of the matrix as shown in Figure 3-2 (which demonstrates face-to-face contact at site 4). Data for each case study site were organised and analysed separately. Section ‘C’ of the matrix contains pharmacist reports of face-to-face contact with GPs and section ‘B’ contains GP reports of face-to-face contact with the same pharmacists. Comparison of section C with section B demonstrates the level of reciprocity and the direction of the tie. Sections ‘A’ and ‘D’ all contain zeros because the study was a ‘two-mode’ network study, focusing only on inter-group ties. Two-mode network data cannot always be dealt with in the same way as conventional one-mode
network data, and many of the established network analysis techniques either cannot be performed or need some modification; these are discussed throughout this section. Figure 3-2 also demonstrates the visual sociograms produced in NETDRAW from these data and section 3.7.7 presents a further explanation of these sociograms.

Figure 3-2: Example of data in UCINET and sociogram produced in NETDRAW
3.7.2 Types of ties

One of the objectives of this project was to measure the type and strength of ties between pharmacists and GPs. Many social network analysis studies only examine one type of tie, e.g. friendship ties or advice giving. The examination of multiple ties can offer more dimensions to a project as the structure of the network can change depending on the type of tie being measured (Hanneman and Riddle, 2005). A tie could also be considered stronger if it involves more than one sort of relationship, such as a working and a social relationship. The frequency of interaction could also indicate the strength of the relationship, as could reciprocation of the interaction (Hanneman and Riddle, 2005). Table 3-1 outlines the types of ties analysed in this study and the associated questions from which these measures were derived.

<table>
<thead>
<tr>
<th>Question</th>
<th>Tie name</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 How often do you make contact with...?</td>
<td>Self-reported out-degree Other group reported in-degree</td>
<td>Valued 0-4 (frequency of contact) Also collapsed to: Binary 0 (no contact) 1 (contact)</td>
</tr>
<tr>
<td>2 How often do you receive contact from...?</td>
<td>Self-reported in-degree Other group reported out-degree</td>
<td>Valued 0-4 (frequency of contact) Also collapsed to: Binary 0 (no contact) 1 (contact)</td>
</tr>
<tr>
<td>3 Q1 and Q2 combined – contact either made or received</td>
<td>Presence of tie degree</td>
<td>Binary 0 (no tie) 1 (tie present)</td>
</tr>
<tr>
<td>4 How often is contact about the following activities...?</td>
<td>Drug therapy degree Prescription processing degree Equipment/stock/delivery degree MUR degree Pharmacy services degree Meetings/events degree Non-work related social degree</td>
<td>Valued 0-4 (frequency of contact) Also collapsed to: Binary 0 (no contact) 1 (contact)</td>
</tr>
<tr>
<td>5 Met face-to-face in last 12 months?</td>
<td>Face-to-face degree</td>
<td>Binary 0 (no face-to-face in last 12 months) 1 (face-to-face in last 12 months)</td>
</tr>
<tr>
<td>6 Is the contact you have mostly direct or indirect through others?</td>
<td>Direct degree Mostly direct degree</td>
<td>1 = mostly direct 2 = mostly indirect 3 = equally direct and indirect Binary 0 (mostly not direct) 1 (mostly direct)</td>
</tr>
<tr>
<td>7 Which best describes your working relationship with...?</td>
<td>Quality degree High quality degree</td>
<td>Valued 0-4 Binary 0 (satisfactory or less) 1 (good, very good)</td>
</tr>
</tbody>
</table>
3.7.3 Network measures

The following section outlines the measures performed using the tie data outlined above in Table 3-1.

3.7.3.1 Density

The density measure in network analysis describes the level of linkage in a network. Measuring the density attempts to demonstrate how far from a state of completion the network is (Scott, 2000). It involves the calculation of the actual number of ties observed in a network as a proportion of the potential number of ties in a network. If a network has a density of 1, all actors in the network are directly linked. The equation for calculating density for an undirected one-mode network, where \( t \) is the number of ties present and \( n \) is the number of nodes in the network, is:

\[
\frac{t}{n(n-1)/2}
\]

And for a directed network:

\[
\frac{t}{n(n-1)}
\]

In the latter calculation, for a directed network, the number of ties is not halved because the connection between the two nodes may or may not be reciprocated.

However, the standard measure of density for one-mode data was not appropriate for the data derived from the questionnaire, which was two-mode in nature (Borgatti and Everett, 1997). For two-mode data the potential ties denominator is calculated by multiplying the number in the first group with that of the second group, as shown below:

\[
\frac{t}{n_a(n_b)}
\]

\( n_a \) refers to the number in the first group, \( n_b \) to the number in the second group. For a directed network this would be multiplied by two. For example, if there are 15 GPs and 11
pharmacists in a network sample, and the ties are considered to be undirected, respondents possess the potential to report on 165 ties (15CPsx11GPs). If the ties are considered to have a direction, the respondents have a potential to report on 330 ties (165x2).

Additionally, non-response needs to be considered as this can affect the measure of density, because the actual numbers of ties are under-reported. The denominator of potential ties therefore needs to be calculated using only those that responded. Using the same example of 15 GPs and 11 pharmacists in a network sample and 100% of the pharmacists respond to the questionnaire, meaning that 11 pharmacists report on 15 GPs (11x15=165 potential ties). For the GPs however, only 11 out of 15 GPs respond, meaning that 11 GPs report on ties with 11 pharmacists, (11x11=121) giving a potential ties denominator for the GPs of 121.

3.7.3.2 Degree centrality

In social network analysis, centrality is the concept of network position and is said to determine the importance of a node in the network (Bavelas, 1950). One of the most common measures is degree centrality, whereby the number of ties a node possesses determines how central they are to the network. If an individual makes a lot of contact and also receives a lot of contact, they could be described as a central node in the network, and hence a potentially powerful or influential member of the network. This relates to the concept of ‘the star’ - a node with many degrees that might be considered the most popular in the network. With directed data (as in this case of this study) both in-degree centrality and out-degree centrality can be examined, measuring the number of ties the node receives from others (in-degree) and the number of ties the node sends to others (out-degree). Respondents were asked to report the contact they made and the contact they received, which enables measurement of both in-degree and out-degree using self-reports and also the reports of the other group. For example, pharmacist 1 reports making contact ties with 10 GPs and receiving contact ties from 8 GPs. Pharmacist 1 therefore has a self-reported out-degree of 10 and a self-reported in-degree of 8. Six GPs in the sample report making contact with pharmacist 1 and 7 GPs report receiving contact from pharmacist 1. Pharmacist 1 therefore has a GP-reported out-degree of 7 and a GP-reported in-degree of 6. These are useful measures to compare whether or not
those who perceive themselves as central to the network are also considered central by others. The centrality of individuals can be compared within groups (e.g. to examine which pharmacists are most central and which are most isolated) and also compared between groups (e.g. the level of in/out degree of pharmacists compared with that of GPs).

When comparing degree centrality scores across a one-mode network, it would be sufficient to use a count of the number of out and in degrees. However, being a two-mode network, in which the number of potential ties for each group may be different, it is necessary to normalise the degree scores in order to make comparison between GP and pharmacist groups. In this study, pharmacists had the potential for more ties than GPs due to there being a larger number of GPs in the sample. Normalizing the scores involves dividing the number of out or in degrees by the number of possible ties available to that group – the theoretical maximum (Borgatti and Everett, 1997). This provides a relative (normalised) measure which can be used to compare between groups and also across networks/sites (Freeman, 1979). For example, if there are 15 GPs in the network, pharmacist 1 has a theoretical maximum of 15 ties. If pharmacist 1 sends out 14 ties (14 out degrees), this is then divided by the theoretical maximum of 15, to give a normalised out-degree of 0.933, or in other words 93% of the possible out-degrees were made by pharmacist 1.

Social network analysts have also presented a number of other centrality measures, including closeness centrality and betweenness centrality, but these will not be assessed in this study as they are most applicable to one-mode networks when all nodes have the opportunity to be connected to all other nodes. Data about different types of contact and relationships were also collected through the questionnaire. Therefore, a node’s degree centrality can also be measured in relation to their degree of face-to-face contact, mostly direct contact, and high quality ties or any of the degree measures outlined in Table 3-1.

3.7.3.3 Reciprocation

Reciprocation focuses on the reciprocation of the tie between a pair of actors (dyad). Directed data, which were collected for this study, are needed to measure reciprocation between dyads. For undirected data, reciprocation is either not known or is assumed.
Reciprocation measures the proportion of a node’s ties that are reciprocated by the other member of the dyad. Reciprocation is an important concept in social network analysis; a reciprocated tie indicates that the tie has been validated by both nodes in the dyad, which suggests that the tie is stronger than those ties that are not reciprocated. Studying reciprocation also offers insight into potential power imbalances in the relationship. If the direction of the tie is always one way, this indicates that information is only shared in one direction and not the other. Thus, reciprocation is a highly relevant concept for the study of GP-pharmacist relationships. An out-going tie that is not reciprocated may indicate a lack of two-way information sharing and any form of collaboration.

For this study, reciprocation was considered in two ways. Firstly, by measuring reciprocation of out-degree ties, for example if a pharmacist reports making contact with a GP, does that GP also report making contact with that pharmacist? The second measure of reciprocation examined whether there was agreement that a tie existed regardless of who made the contact or the frequency of that contact. This measure accounts for situations where it may not be necessary to reciprocate contact. Respondents were asked on the questionnaire to state how often they made and received contact from the individuals listed. Therefore, even if there was a not a need to reciprocate the contact, the respondent could still report having received the contact from the individual. For this measure, pharmacists’ reports of a tie (any frequency, either made or received) were compared with GPs’ reports of a tie (any frequency, either made or received). Whilst the first measure provides an insight into whether contact is reciprocated, the second measure provides insight into whether there is agreement that contact has occurred and whether GP and pharmacist perceptions of the existence of a contact tie are aligned.

As well as agreement on the existence of a contact tie, this measure was also utilised to examine whether the dyads agreed:

1) That the contact they have is mostly made directly between themselves
2) That they have met face-to-face in the last 12 months
3) That the quality of the relationship that they have is good or very good

Due to the nature of this measure which required reports from both members of the dyad, only responders could be included in these analyses. All reciprocation measures were
performed in UCINET, which produced the overall level of reciprocation for the networks being measured and also normalised reciprocation scores for each node (i.e. the proportion of a node’s ties that were reciprocated). A function in NETDRAW was also utilised to highlight reciprocal and non-reciprocal ties on the sociograms produced. The ‘cliques’ function in UCINET was also used to identify node pairs or dyads with agreement concerning quality of relationship (good or very good), frequency of contact (often or very often), directness of contact (mostly direct between two members), face-to-face contact (have met face-to-face in the last 12 months) and social contact. This analysis was used to identify those in the network possessing strong ties.

3.7.4 Comparing means
Most social network analysis involves descriptive analysis, but statistical methods are evolving. Standard statistical tests are not applicable because network data are not generated from independent random samples. Often there is little preoccupation with inferring to the rest of the population in social network analysis, although the most common approach tends to be the generation of simulations for estimating probability (Hanneman and Riddle, 2005). UCINET provides a t-test function for comparing the means between two groups and an ANOVA test for comparing means between more than two groups. Both tests run standard t-tests and ANOVA tests and then run permutation tests, generating 10,000 random permutations, whereby the frequency scores for the individuals are randomly assigned. These permutations generate the significance level of the test (Hanneman and Riddle, 2005).

For this study, t-tests in UCINET were used to compare differences in mean normalised degree scores (for several types of ties as listed in Table 3-1) and mean frequency of contact made between GPs and pharmacists. The ANOVA test in UCINET was also used to examine differences in means across the four sites. Significance was determined at <0.05 level. In conjunction with the ANOVA test, a post-hoc test (Tukey HSD) was performed in SPSS for Windows (16.0.2. 2008. SPSS Inc. Chicago) to establish the direction of the significance, i.e. between which sites the difference was significant. This option is not available in UCINET and, as stated above, standard statistical procedures should not be applied to network data. These post-hoc tests were used with caution and only employed
if the ANOVA test in SPSS produced identical results to those produced by UCINET after the random permutations. It was decided that if there was consistency between these results then the post-hoc test in SPSS may be acceptable for determining the direction of the significance.

3.7.4.1 Caution when comparing means

Each individual node in the networks was assigned various normalised scores depending on the different ties measured. Taking the example of normalised out-degree, each respondent had a score of between 0 and 1 depending on the proportion of potential ties that they reported to make. The t-test and ANOVA tests outlined above therefore take a mean of all of these normalised scores for one group and compare them with the means of the normalised scores of another group or groups. If there is a large difference in these mean normalised scores then the random permutations conducted may indicate the probability of this difference occurring by chance. As all respondents in one group at a case study site, say for example pharmacists, had the same potential number of ties with GPs, the mean of their combined normalised scores should equal the density calculation for pharmacist out-degree, i.e. the total number of out-degrees for all the pharmacists at this one site divided by the total number of ties these pharmacists could possess with GPs at this site.

However, a problem arises when calculating normalised degree scores for other tie measures which are dependent on using the node’s actual number of ties reported as the denominator rather than the potential number of ties. As the number of ties reported varies for each individual, a different denominator is used for each calculation. For example, the proportion of reciprocated ties for each node is calculated by dividing the number of reciprocal ties they have by the number of ties they report in total. For example, pharmacist 1 may have reported 17 ties with GPs and 2 of these are reciprocated by these GPs, pharmacist 1 therefore has a normalised reciprocated degree of 0.118 (2/17=0.118). Pharmacist 2 may have reported 15 ties with GPs and had 12 of these reciprocated, so has a normalised reciprocated degree of 0.800 (12/15=0.800). Pharmacist 3 may have reported 6 ties with only 1 of these reciprocated, giving a normalised reciprocated degree of 0.667 (1/6=0.667). The mean of these three normalised reciprocated degrees is therefore 0.528 (0.118+0.800+0.667/3=0.528), whereas the
proportion of reciprocated ties (the density) across these three nodes is 0.395 (15 reciprocated ties divided by 38 actual ties = 0.395). These two values are therefore different and pose a problem when comparing across groups. A difference may be apparent between GPs and pharmacists when comparing densities but in order to statistically test this difference, their normalised scores need to be used. This difference may then be either smaller or larger than the difference observed in density and calls into question the validity of these statistical tests (t-test and ANOVA). In chapter 5, t-tests and ANOVA have been used in an attempt to test significance but any discrepancies between the values utilised have been clearly outlined in the tables presented.

3.7.5 QAP analysis
Another significance test was also performed in UCINET - Quadratic Assignment Procedure (QAP) correlation. This test examines whether the pattern of ties for one relation among a set of actors aligns with the pattern of ties for another relation, to see if there is correlation. For example, do those who report having mostly direct contact also report having met face-to-face in the last 12 months? This test calculates measures of nominal, interval or ordinal associations between the relations in two matrices, using the QAP procedure to develop standard errors and test for significance of association.

The calculation involves two stages. Firstly, correlation coefficients are produced between the corresponding cells of the two matrices. Secondly, hundreds of random permutations are run to calculate the proportion of times a random measure is larger or equal to the measure produced in the first stage. A level of <0.05 indicates that an association between the two matrices is unlikely to have occurred by chance. Several coefficients are produced by this test, but as recommended for binary data by Hanneman and Riddle (2005) the Jaccard coefficient has been reported. Respondent only data were used for this test with all data on non-respondents removed.

3.7.6 Adjustments made
Due to the nature of some of these data, several adjustments were required to enable certain network measures to be conducted.
Because respondents were presented with the option of answering for either the individuals listed on the roster or the pharmacy/general practice as a whole, these different individual or organisational level responses posed a problem when measuring reciprocity. Some adjustments were required to enable comparisons to be made. This involved assigning these organisational level responses to individuals. The following rules were applied. If the pharmacist or GP practice had only one pharmacist or GP working there, the organisational level responses was assigned to these individuals. If there was more than one individual working at the pharmacy or practice and the respondent had answered ‘no contact’ for the organisational level, this ‘no contact’ was also assigned to all individuals working there. If the respondents reported that there was contact at the organisation level, the individual responses of those working for that organisation served as a proxy, thus making the responses symmetrical and reciprocal. This was less of a problem for GPs answering for pharmacies at organisational level as most pharmacies tended to only have one pharmacist and therefore these responses could easily be assigned to individuals. Symmetrisation of responses only tended to be necessary when pharmacists answered for practices as a whole. Despite the option of answering at an organisational level being included to measure whether or not individuals knew each other, several pharmacists when interviewed stated that they had adopted to use this option, not because they did not know the individual GP names, but because they felt there was little variation in contact between the GPs at the practice. They had therefore chosen this option to save time when completing the questionnaire.

For the measurement of density, some adjustments were made to the potential ties denominator used for the calculation at sites 1, 2 and 3. For these sites the potential ties denominator does not equal the number of GPs multiplied by the number of pharmacists (as it would in the calculation of normal two-mode density). At site 1 this is as a result of some GPs and pharmacists being presented with fewer names listed on their questionnaire rosters early on in data collection, resulting in these individuals being questioned about a smaller number of potential ties. Being a pilot site, the sampling and boundary of the network was tested and evolved during the data collection period with additional GPs and pharmacists added to the sample and roster list where necessary. For sites 2 and 3 this is a result of the nature of the areas. At site 2, four villages were included and therefore respondents were presented with different rosters depending on their area.
At site 3, two different rosters were used, as there was a clear geographical divide within the site. The potential ties denominator at these sites was therefore adjusted to take account of this variation. Without these adjustments the density would appear lower and result in respondents’ reported level of ties being unfairly assessed against a number of ties which respondents had either the inability to make (due to location) or report on (as a result of not being included on the roster).

3.7.7  Visual network analysis

Throughout Chapter 5, visual representations (sociograms) of the networks are presented where appropriate. These have been produced using the software package NETDRAW. The purpose of these sociograms is to convey network and actor properties when textual description alone may not be sufficient. They have been utilised to demonstrate the more descriptive properties of the networks, such as the frequency of contact and reciprocation, but also display individual actor properties such as centrality. For all of the sociograms presented in this thesis, red squares indicate GPs and blue circles represent community pharmacists (labelled as ‘CP’). Each node is coded with a number which refers to their practice or pharmacy and a letter (a, b, c etc.) to distinguish between colleagues. No letter is present if the practice or pharmacy is single-handed. In some sociograms, practices and pharmacies are also represented, as some respondents answered for the pharmacy or practice as a whole rather than for individuals. Practices are represented by grey squares and pharmacies by grey circles. In other sociograms, the frequency of contact is demonstrated by the shading of lines (ties) between the nodes, with darker lines indicative of higher frequency of contact along with larger arrow heads. The arrow heads also indicate the direction of contact and show reciprocation. NETDRAW automatically positions nodes when generating sociograms, but these were further manipulated by the researcher, to try to make these as clear as possible. The positioning of the nodes and hence the length of the lines between them are therefore based on the researcher’s own judgement and do not represent any physical proximity or the geographical relationship between the respondents.
3.8 Qualitative analysis

The approach taken to the interview analysis can be viewed as a combination of analytic induction and deduction. Inductive in the sense that the study was exploratory in nature and aimed to generate new knowledge on the GP-community pharmacist relationship, and deductive in the sense that the qualitative analysis was often led by ideas and findings from the quantitative network analysis. Generally the analysis can be described as ‘thematic’ in approach, but also ‘explanatory’ as ‘qualitative data were often re-examined and interrogated further for explanations which could ‘make sense’ of or provide interpretations for some of the quantitative network findings.

In relation to the actual process of organising and preparing the data, the stages outlined in the ‘Framework approach’ by Ritchie and Spencer (1993), were found to be a helpful guide. These stages were followed in principle, but the interpretation of the analysis occurred iteratively throughout these stages and often involved going back and forth between the qualitative and quantitative datasets. The stages included:

1) *Familiarisation with the data* - this involved the reading and re-reading of transcripts and notes/thoughts recorded by the researcher after the interview was conducted and making summaries of ideas and themes.

2) *Identifying a thematic framework* - this involved the identification of key and recurring concepts and themes in the data. These were identified with reference to the aims and objectives of the study, the findings from the network analysis and the topics raised by the respondents themselves.

3) *Indexing* - this involved applying codes to the data systematically, using the thematic framework as a guide. Nvivo 7 was used to assist with this process.

4) *Charting* - this involved organising data into charts. Verbatim text was summarised, using the same language as the respondents. The charts were organised with key themes in the columns and each respondent was assigned a row in the chart with their views or perceptions inserted under the appropriate theme heading. Charts were arranged by case study - one for each site - and organised in Microsoft Excel.
Mapping and interpretation – the charts were used to examine data by case study sites (e.g. looking for differences and similarities between GP and pharmacist views at the site) and also across the four case study sites (e.g. similarities and differences between sites). They were also utilised to aid examination of similarities and differences within and across the two professional groups. In conjunction with the network analysis, which identified individuals with different levels of centrality and tie strength, these charts enabled an examination of the views and perceptions of those in these different positions, looking for possible explanations for their network position.

3.9 Limitations of the study design

A number of limitations need to be acknowledged. Some relate to social network analysis generally and therefore any study following this approach would face these limitations; others are more specific to the topic of study.

Critics could argue that collecting self-reported relational data is a limitation as this does not measure actual contact only contact as perceived by the actors. Alternative methods of data collection which have been discussed in section 3.2.4, such as observation or the use of archival data, could potentially offer a more objective measure of contact. However, the analysis of such would then be influenced by the researcher’s own interpretation of what constitutes contact. This matter is not unique to social network analysis or the collection of relational data but is omnipresent in all research. Rather than viewing this as a limitation, it could be argued that comparing how two different professional groups perceive their contact and networks offers an interesting insight into possible differences in perception.

Another criticism of social network analysis is that it presents a snap-shot of a network at a given time, when relational ties and networks do not stay constant over time. It is acknowledged that the results presented in this study are temporal. However, like any other type of research using similar methods, the temporal element will always be present. Measuring a network longitudinally would offer an interesting insight into how a network changes over time, or changes as a result of an intervention. Unfortunately the
time constraints of a PhD did not allow for this type of design, but future work could examine this.

The boundary specification issue in social network analysis has been discussed in section 3.2.3.3. Again, it must be recognised as a limitation, applicable to most social network analysis research. Additional space on the questionnaire was offered to respondents to include those outside the defined boundary, and the potential to discuss contacts outside the boundary occurred during the interviews. This enabled some assessment to be made concerning the accuracy of the boundaries drawn at each site. It must be acknowledged however, that, although necessary, the setting of boundaries is somewhat arbitrary and can potentially affect the network formation.

Specific to the topic of study are limitations relating to the transitivity of the pharmacy workforce. In order to minimise this problem, the accuracy of the lists were checked wherever possible and additional space provided on the questionnaire for respondents to add any further names. Several locum pharmacists were interviewed for the study (and several permanent pharmacists also spoke of their prior experiences of locuming), however it is probable, given their transitivity, that some locums potentially working in these areas were not captured in the sample. This could be considered a imitation as previous work indicates that GPs may be reluctant to trust locum pharmacists (Bradley et al., 2012).

3.9.1 Dealing with non-response
It was anticipated that one of the largest limitations that this study would face would be non-response. A survey directed at busy health care professionals is unlikely to receive a high response rate. In conventional research, non-response can be accepted and appropriately accounted for. However, in social network analysis, especially whole network research, non-response can be problematic. Kossinets (2006) outlines some strategies for dealing with non-response in social network research, the simplest of which is to forfeit reciprocal information and rely on the accounts of those who do respond, to reconstruct the network. For example, GP A does not complete the questionnaire, but pharmacists B and C report that GP A contacts them. This strategy is reliant on the non-response levels being small relative to the size of the network. Whilst this approach may
not be ideal, it is a pragmatic approach to these circumstances, although it does raise some ethical issues which are discussed in section 3.10 below. Non-response and its effects are considered further in chapter 4, section 4.2.2.1.

3.10 Ethical considerations

Ethical issues related to social network analysis concern the inclusion of data related to individuals who may not have consented to take part in the study. As noted previously, if response rates are low it is sometimes necessary to include data about a relationship as reported by one individual only which has not been corroborated by the other party involved, i.e. the other party has not returned the questionnaire and therefore has not provided reciprocal information about the relationship. Technically, by not returning the questionnaire, the non-responder has not provided consent to be included in the study, although data about his or her relationships, as perceived by others, will be included in the study. Social network analysts argue that each respondent has a perception of their relationship with another individual and has a right to share this perception with the research team if they wish to do so (Borgatti, 2003). They further argue that by excluding non-responders from the analysis, researchers are distorting the network (i.e. by suggesting these individuals do not exist, the network appears smaller and respondents’ ties in the network are misrepresented). There is therefore a line of argument that by excluding data about non-responders, as reported by those that do respond, the researcher is treating these respondents unethically and misrepresenting them and their responses (Borgatti, 2003). For many of the analyses conducted for this study, data were limited to respondents only with information about ties with non-responders also removed. In cases where information has been presented about non-responders, care has been taken to avoid the over-excessive reporting of a combination of incidental details which could lead to a non-responder being identifiable.

The study received a favourable opinion from the NHS North West 1 Research Ethics Committee in February 2010 (Appendix F). The University of Manchester’s Committee on the Ethics of Research on Human Beings also granted ethical approval for the project and NHS R&D management approval was granted by all PCTs involved.
4 OVERVIEW OF CASE STUDY SITES

This chapter provides an overview of the four case study sites selected for this study. It provides a description of the demographic and geographic characteristics of the areas, an overview of the characteristics of the GP and pharmacist respondents, as well as information about non-responders.

4.1 Description of the sites

Demographic and geographic information for each site is presented in Table 4-1.

4.1.1 Site 1

Site 1 focused on a large town centre area with medium to high levels of deprivation. The sample was defined by all those possessing the town centre postcode. This area covered 12 GP practices with a total of 34 GPs, and 10 pharmacies with a total of 11 community pharmacists (CPs). Opportunity also arose to conduct a study of a village/rural location within the same PCT; an area which encompassed only one practice (2 GPs) and one pharmacy (2 CPs), co-located in the same premises. This small study (referred to as site 0) served as a method for testing the applicability of the questionnaire and interview schedule for more remote areas outside of the town and city centre (as outlined in chapter 3, section 3.4.7).

4.1.1.1 Researcher observations of site 1

Previously an important industrial centre, many of these industries have since declined and the area is now largely commercial. The town suffers from some high levels of deprivation particularly around the town centre area (the area of focus). The centre has a compact pedestrianised shopping area with several retail parks on the outskirts. The area is not ethnically diverse with approximately 98% of the population describing themselves as ‘White British’ (in 2001 Census). All of the GP practices and pharmacies in the sample at this site were within walking distance of one another and based around the town centre. Two pharmacies were located within the main pedestrianised shopping area, slightly further from the GP practices than the other pharmacies in the sample.
Table 4-1: Demographic and geographic characteristics of case study sites

<table>
<thead>
<tr>
<th>Site</th>
<th>Population covered by GP practices in sample (List size)</th>
<th>No. of practices &amp; pharmacies</th>
<th>IMD* Decile of Deprivation* by LSOAs**</th>
<th>Rural / urban definition† by OAs‡</th>
<th>% population over 65 years³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 0 Pilot area</td>
<td>3,653</td>
<td>1 Practice 1 Pharmacy</td>
<td>Least deprived 40%</td>
<td>Hamlet and Isolated Dwelling</td>
<td>15.8%</td>
</tr>
<tr>
<td>Site 1 Large town</td>
<td>58,149</td>
<td>12 Practices 10 Pharmacies</td>
<td>Most deprived 30%</td>
<td>All Urban &gt; 10K</td>
<td>15.4%</td>
</tr>
<tr>
<td>Site 2 Village area</td>
<td>Village A: 10,870 Village B: 6,812 Village C: 0 (no practice) Village D: 12,881</td>
<td>A: 2 Practices 2 Pharmacies B: 1 Practice 1 Pharmacy C: 0 Practice 1 Pharmacy D: 3 Practices 3 Pharmacies</td>
<td>A: Least deprived 30% B: Least deprived 20% C: Least deprived 30% D: Most deprived 40% and least deprived 40%</td>
<td>A: Town &amp; Fringe/Village B: Town &amp; Fringe/Hamlet &amp; Isolated Dwelling C: Hamlet and Isolated Dwelling D: Town &amp; Fringe</td>
<td>A: 21.1% B: 17.3% C: 14.9% D: 15.5%</td>
</tr>
<tr>
<td>Site 2 City area</td>
<td>35,191</td>
<td>6 Practices 9 Pharmacies</td>
<td>Most deprived 20%</td>
<td>All Urban &gt; 10K</td>
<td>12.7%</td>
</tr>
<tr>
<td>Site 4 Small town</td>
<td>22,852</td>
<td>3 Practices 6 Pharmacies</td>
<td>Ranges from least deprived 20% to most deprived 40%</td>
<td>All Urban &gt; 10K</td>
<td>24.0%</td>
</tr>
</tbody>
</table>

*Index of Multiple Deprivation (IMD) Decile of deprivation – A decile is a group that represents one tenth of the whole. The Indices of Deprivation can be used to rank the 32,482 LSOAs in England from most to least deprived. Splitting the LSOAs into ten groups of equal size creates deciles which contain 10% of the total number of areas.

**Lower Super Output Areas (LSOAs) – LSOAs were built using 2001 Census data and had a minimum size of 1,000 residents and 400 households, but average of 1,500 residents. There are 32,482 LSOAs in England.

† Output Area (OA) – OAs are smaller than LSOAs. They are based on data from the 2001 Census and were built from postcode units. There are 165,665 OAs in England.

1 English Practice information as at 31 December 2009, Freedom of Information Request Number 498916, NHS Business Services Authority, Prescription Pricing Division
2 Office for National Statistics, 2001 Census
3 Office for National Statistics, Rural and Urban Area Definition for Output Areas, 2005
Two chain pharmacies appear to dominate the pharmacies in the town. Out of the 10 pharmacies in the sample, four were owned by one chain and three by another. The remaining three pharmacies comprised one chain and two independents. The GP practice premises in the area vary in age, some being based in traditional older buildings and others in more modern purpose built premises. A new health centre had recently opened three months before the start of data collection. Four of the existing GP practices had relocated into this health centre, along with one of the existing chain pharmacies, which was previously located next door to one of these practices. Situated over three floors, the centre is bright and colourful with each practice identifiable by a different colour scheme. The health centre pharmacy was the largest and probably the busiest out of the sample of pharmacies and operated on a ticket queuing system. Situated at the front of the building the pharmacy becomes a busy thoroughfare to reach the rest of the centre. In the corners of the pharmacy building are several consultation rooms. The health centre also houses a number of other out-patient and community services.

In contrast, site 0 was situated in one of the least deprived areas of the PCT. The area is mostly rural with large expanses of green fields. The pharmacy and practice studied here were co-located in modern purpose built premises (built in 2007), described as a primary care centre and leased by the PCT. The pharmacy is an independent pharmacy and the owner works in the pharmacy part-time along with another full-time pharmacist. The pharmacy can be accessed by its own separate entrance and also from within the practice. The centre is situated near to a residential development and community centre; there are very few shops or other services nearby.

4.1.2 Site 2

Unlike site 1, site 2 had no obvious geographical boundary. The area comprised of four rural villages clustered together geographically, but still distinctly separate, and generally of high affluence. These included a hamlet, two medium sized villages and one large village (historically a village but now more characteristic of a small town). All GP practices and pharmacies situated in these villages were included in the sample. The hamlet area contained one community pharmacy with 1 CP and no GP practice; the other areas included 6 GP practices with a total of 20 GPs and 6 pharmacies with a total of 6 CPs.
4.1.2.1 *Researcher observations of site 2*

**Village A:** A fairly large and busy village, with a history of farming and smallholdings. There is a small shopping parade where one of the pharmacies (a chain pharmacy) is located, along with other amenities such as a grocery shop, post office, library and the GP practice. Away from the main centre, the other pharmacy (an independent pharmacy) is located in another part of the village, close to the other GP practice. This part of the village appears less affluent than the centre.

**Village B:** A compact small village. The independently owned pharmacy is located at the heart of the village on a small row of shops. Nearby there are a few pubs, a bank and a library. The GP practice is located across the road from the pharmacy. The pharmacy and practice are surrounded by some very affluent looking residential houses, and countryside views.

**Village C:** A very small affluent rural village, which attracts tourists due to local areas of historic and natural interest. There are few shops in the village, with amenities catering more for tourists, such as cafes, guesthouses and pubs. The pharmacy is situated on its own, with no GP practice in the village.

**Village D:** A large busy village, which is more on the scale of a small town. The three pharmacies are all situated on the main high street; two being part of the same chain and one independent pharmacy. The three GP practices are set away from the high street on side streets. There are many shops including a large supermarket. The village is surrounded by farmland.

4.1.3 **Site 3**

Site 3 was an urban city area of high deprivation. There was no distinct identifiable boundary for this area due to the sprawling nature of the city area. A central hub of the area was identified and a one-mile radius set around this. All GPs and pharmacists situated within the one-mile radius were included in the sample. This area included 6 GP practices containing 23 GPs and 9 pharmacies with a total of 12 CPs.
4.1.3.1 Researcher observations of site 3
This inner city area incorporated two neighbouring areas. The level of deprivation in one of these areas was stark, with flats and houses boarded up and in states of disrepair. Crime is a large problem in this area and this was reflected by the security measures taken by some of the pharmacies and GP practices in the location (e.g. metal shutters on windows and controlled access locks). In the first area, one GP practice and pharmacy were located in a mainly residential area, with a small number of shops, a takeaway, and a social club. The other pharmacies and practices were located more centrally with other amenities and shops close by. In the second area, the pharmacies and GP practices studied were all close to each other, situated in a busy shopping and market area. The two areas vary in relation to ethnic group composition. The first area is primarily white, with around 90% describing themselves as ‘white British’ (2001 Census). In the second area, after ‘White British’ (40%) the largest ethnic group represented is ‘Asian or Asian British: Pakistani’ (25%).

4.1.4 Site 4
Site 4 focused on a small town; an area with both high levels of affluence and some medium levels of deprivation. At this site, the boundary of the sample was geographically obvious with all practices and pharmacies serving the town located close together in the town centre. This area included 3 GP practices with a total of 15 GPs all housed together in a health centre and 6 pharmacies (one which was also co-located in the health centre) with a total of 11 CPs.

4.1.4.1 Researcher observations of site 4
Site 4, is a fairly affluent historical market town, with a long tradition of farming and local produce. The area is not ethnically diverse with approximately 97% of the population describing themselves as ‘white British’ (2001 Census). Around a quarter of the population living in this area are over 65 years of age. One chain pharmacy appears to dominate the town – owning three of the six pharmacies, one of which is based in the health centre. The health centre is a modern purpose built building, with the pharmacy situated on the ground floor. The pharmacy cannot be accessed from within the health centre only from outside and therefore differs in design to the health centre at site 1. All other pharmacies
are within a short walking distance of each other; one is based over the road from the health centre (previously serving the old GP practices that were based there); two pharmacies are based in the pedestrianised shopping centre area, alongside other recognisable high street shops; and one is based in a supermarket in the town centre. Another supermarket pharmacy is located further away from the centre, about four minutes walk, in a more residential area. There are no independent pharmacies in the town.

4.2 Who is in the networks?

4.2.1 Responders
Response rates varied between the sites as shown in Table 4-2. Overall response rates for pharmacists were good and much higher than those for GPs, the consequences of which are discussed below. In total, 90 individuals responded to the questionnaire (an overall response rate of 65%). The responses of these 90 individuals yielded reports on 1,027 potential relationships. The majority of respondents (n=79) completed a paper version of the questionnaire, with nine GPs and two pharmacists completing the online version. Twenty GP and 23 community pharmacist respondents also took part in the qualitative interviews, as shown in Table 4-3. The characteristics of questionnaire respondents are presented in Table 4-4. The average length of time qualified was similar for GPs and pharmacists. The range of the length of time working at the pharmacy and practice was also similar, with a slightly lower average time for CPs. One of the main observable differences was the level of full and part-time working – approximately half of the GP sample were working full-time compared with around 80% of the CP sample. As the response rate for CPs was high, it could be concluded that the majority of the CPs in the sample were working full-time. However, the full or part-time status of the non-responder GPs is not known. Potentially a high proportion of the non-responder GPs may have been working full-time. The large proportion of part-time working GPs in the sample may impact on the findings, simply because those that work part-time may have fewer opportunities for interaction.
Table 4-2: Questionnaire response rate by site

<table>
<thead>
<tr>
<th></th>
<th>Total no. of GPs in area</th>
<th>GP response (%)</th>
<th>Total no. of CPs in area</th>
<th>CP response (%)</th>
<th>Overall response (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 0</td>
<td>2</td>
<td>2 (100%)</td>
<td>2</td>
<td>2 (100%)</td>
<td>4 (100%)</td>
</tr>
<tr>
<td>Site 1</td>
<td>34</td>
<td>20 (59%)</td>
<td>11</td>
<td>9 (82%)</td>
<td>29 (64%)</td>
</tr>
<tr>
<td>Site 2</td>
<td>20</td>
<td>6 (30%)</td>
<td>8</td>
<td>7 (88%)</td>
<td>13 (46%)</td>
</tr>
<tr>
<td>Site 3</td>
<td>23</td>
<td>12 (52%)</td>
<td>12</td>
<td>10 (83%)</td>
<td>12 (34%)</td>
</tr>
<tr>
<td>Site 4</td>
<td>15</td>
<td>11 (73%)</td>
<td>11</td>
<td>11 (100%)</td>
<td>22 (85%)</td>
</tr>
<tr>
<td>Total</td>
<td>94</td>
<td>51 (54%)</td>
<td>44</td>
<td>39 (87%)</td>
<td>90 (65%)</td>
</tr>
</tbody>
</table>

Table 4-3: Number of GPs and community pharmacists interviewed by site

<table>
<thead>
<tr>
<th></th>
<th>Total no. of GPs in area</th>
<th>GPs interviewed</th>
<th>Total no. of CPs in area</th>
<th>CPs interviewed</th>
<th>Total no. interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 0</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Site 1</td>
<td>34</td>
<td>4</td>
<td>11</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Site 2</td>
<td>20</td>
<td>4</td>
<td>8</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Site 3</td>
<td>23</td>
<td>5</td>
<td>12</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Site 4</td>
<td>15</td>
<td>6</td>
<td>11</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>94</td>
<td>20</td>
<td>44</td>
<td>23</td>
<td>43</td>
</tr>
</tbody>
</table>

Table 4-4: Characteristics of questionnaire respondents

<table>
<thead>
<tr>
<th>Responders</th>
<th>GPs (n=51)</th>
<th>CPs (n=39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of time at Practice/pharmacy</td>
<td>6 months – 34 years (12 years)</td>
<td>2 months – 40 years (7 years)</td>
</tr>
<tr>
<td>Range (mean)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of time qualified</td>
<td>1 year – 39 years (16 years)</td>
<td>9 months – 40 years (17 years)</td>
</tr>
<tr>
<td>Range (mean)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>26 (51.0%) Male</td>
<td>22 (56.4%) Male</td>
</tr>
<tr>
<td></td>
<td>25 (49.0%) Female</td>
<td>17 (43.6%) Female</td>
</tr>
<tr>
<td>Practice / pharmacy type</td>
<td>2 (3.9%) GP from Single handed Practices</td>
<td>29 (74.4%) CPs from Chain Pharmacies</td>
</tr>
<tr>
<td></td>
<td>24 (47.1%) GPs from 2-4 GP Practices</td>
<td>10 (25.6%) CPs from Independent Pharmacies</td>
</tr>
<tr>
<td></td>
<td>25 (49.0%) GPs from 5+ GP practices</td>
<td></td>
</tr>
<tr>
<td>full-time</td>
<td>27 (52.9%)</td>
<td>33 (84.6%)</td>
</tr>
<tr>
<td>Role</td>
<td>38 (74.5%) GP partner</td>
<td>26 (66.7%) CP Manager</td>
</tr>
<tr>
<td></td>
<td>10 (19.6%) Salaried GP</td>
<td>5 (12.8%) CP Proprietor/owner</td>
</tr>
<tr>
<td></td>
<td>1 (2.0%) Locum GP</td>
<td>4 (10.2%) Second Pharmacist</td>
</tr>
<tr>
<td></td>
<td>2 (3.9%) GP Registrar</td>
<td>1 (2.6%) Pharmacist in charge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 (2.6%) Relief pharmacist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 (5.1%) Locum pharmacist</td>
</tr>
</tbody>
</table>

4.2.2 Non-responders

As noted in section 4.2.1 above, few details were available for non-responders. The details presented in Table 4-5 were obtained from the online registration details held by the
General Medical Council and from knowledge acquired during the data collection process at the various sites. Details about the gender of non-responders show that the response rate was slightly higher for female GPs than male GPs. 62.5% of female GPs responded to the questionnaire compared with 48.1% of male GPs. The range of time qualified was also greater for respondent GPs compared with non-responders. All non-responders had been qualified for at least six years compared with only one year for responders. The mean time qualified was 16 years for responders and 21 years for non-responders. This could suggest that newly qualified GPs may have been more willing or inclined to complete the questionnaire.

Table 4-5: Characteristics of non-responders

<table>
<thead>
<tr>
<th>Non-responders</th>
<th>GPs (n=43)</th>
<th>CPs (n=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length of time qualified</strong></td>
<td>6 years – 41 years (21 years)</td>
<td>Unknown (the General Pharmaceutical Council does not make registration dates publicly available)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>28 (65.1%) Male</td>
<td>3 (60%) Male</td>
</tr>
<tr>
<td></td>
<td>15 (34.9%) Female</td>
<td>2 (40%) Female</td>
</tr>
<tr>
<td><strong>Practice / pharmacy type</strong></td>
<td>1 (2.3%) GPs Single handed Practices</td>
<td>4 (80%) CPs from Chain Pharmacies</td>
</tr>
<tr>
<td></td>
<td>26 (60.5%) GPs from 2-4 GP Practices</td>
<td>1 (20%) CPs from Independent Pharmacies</td>
</tr>
<tr>
<td></td>
<td>16 (37.2%) GPs from 5+ GP practices</td>
<td></td>
</tr>
</tbody>
</table>

4.2.2.1 How does non-response affect analysis of the networks?

Non-response is more of a concern for the GP data than the CP data. The design of the questionnaire tried to pre-empt the potential issue of non-response by capturing data from each individual about the ties they make and also the ties they receive. This means that despite not having a 100% response rate, some insight into relationships with non-responders is provided through those that did respond. Reports of received ties can therefore be substituted for non-responder’s reports of making a tie. However, as the analysis will reveal, the level of agreement between GP and pharmacist reports on the same ties from the responders is in some cases low. It is therefore questionable as to how reliable these one-sided reports are for non-responders. Knoke and Yang (2008) advise caution when using proxy responses. They argue that network reliability needs to be high (the proportion of all dyadic relations described identically by both members indicates how reliable the proxy report may fit). Kossinets (2006) agrees with this point, but adds that non-response also needs to be low (but what is considered ‘low’ is not defined).
For certain types of analyses, especially concerning matters of reciprocation, a subset of the matrix has been used, which includes responders only (all non-responders and responders’ reports on non-responders have been removed). Comparisons have then been made between the nodes within this matrix. However further caution needs to be outlined in relation to the analysis of this subset. As a consequence of the response rate being better from some practices than others, this could over-inflate a CP’s in-degree. For example, if a practice has 5 GPs, all of whom respond to the survey reporting a tie with CP1, this results in CP1 having an in-degree of 5. Another practice may also have 5 GPs, but only 1 GP responds to the survey reporting a tie with CP2. CP2 therefore only has an in-degree of 1 (and appears less well connected than CP1). This difference could well be an artefact of the high levels of non-response from that GP practice.
5 NETWORK CHARACTERISTICS

This chapter examines the characteristics of the networks at each of the four sites. It primarily focuses on the findings from the network questionnaire, but also presents quotes from the qualitative interviews to accompany these findings. Firstly this chapter examines the level of contact in the network, in terms of the densities of the networks (how connected the networks are), the frequency of contact reported to occur and the level of reciprocation of contact. Secondly, it examines the nature and subject of the contact. The chapter concludes with an examination of the quality and strength of relationships and the identification of some of the central players in the networks.

5.1 Level of contact

5.1.1 How connected are the networks?
This section examines the level of contact reported to occur in the networks. The overall density of a network indicates how connected and integrated the network is. However, the density of a network may vary depending on the type of tie examined. This study collected information on several types of ties (outlined in chapter 3, section 3.7.2, Table 3-1), thus the density of a network measuring contact made by pharmacists may be different from the density of a network measuring contact made by GPs.

Table 5-1 presents varying density levels determined by the type of tie being measured. One of the main findings was that in terms of making contact, GPs at three of the four sites (site 1, 3 and 4) reported a less dense network than pharmacists. For example at site 1, GPs reported making contact with 47% of the potential community pharmacist (CP) ties, whilst pharmacists reported making contact with 84% of the potential GP ties. This finding appears to resonate with existing literature identified in chapter 2, which suggested that pharmacists made most of the contact in the relationship (Tanskanen et al., 1997; Kennedy et al., 1997). However, when compared with the density levels of pharmacists’ reports of contact received from GPs (CP in-degree), at sites 1 and 4, the findings indicate that pharmacists perceived to receive only marginally fewer contact ties from GPs than they themselves made. Only pharmacists at site 3 reported receiving
Table 5-1: Densities of the networks

<table>
<thead>
<tr>
<th>Network site</th>
<th>No. in the network</th>
<th>Potential ties*</th>
<th>Actual reported ties</th>
<th>Density of network</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network site 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GP reports making contact tie (GP out-degree)</td>
<td>11 CPs, 20 GPs</td>
<td>187</td>
<td>87</td>
<td>0.465</td>
</tr>
<tr>
<td>CP reports making contact tie (CP out-degree)</td>
<td>9 CPs, 34 GPs</td>
<td>255</td>
<td>215</td>
<td>0.843</td>
</tr>
<tr>
<td>GP reports receiving contact tie (GP in-degree)</td>
<td>11 CPs, 20 GPs</td>
<td>187</td>
<td>95</td>
<td>0.508</td>
</tr>
<tr>
<td>CP reports receiving contact tie (CP in-degree)</td>
<td>9 CPs, 34 GPs</td>
<td>255</td>
<td>208</td>
<td>0.816</td>
</tr>
<tr>
<td>GP and CP reports of presence of tie (made or received)</td>
<td>11 CPs, 34 GPs</td>
<td>374</td>
<td>252</td>
<td>0.674</td>
</tr>
<tr>
<td><strong>Network site 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GP reports making contact tie (GP out-degree)</td>
<td>8 CPs, 6 GPs</td>
<td>30</td>
<td>24</td>
<td>0.800</td>
</tr>
<tr>
<td>CP reports making contact tie (CP out-degree)</td>
<td>7 CPs, 20 GPs</td>
<td>92</td>
<td>71</td>
<td>0.772</td>
</tr>
<tr>
<td>GP reports receiving contact tie (GP in-degree)</td>
<td>8 CPs, 6 GPs</td>
<td>30</td>
<td>23</td>
<td>0.767</td>
</tr>
<tr>
<td>CP reports receiving contact tie (CP in-degree)</td>
<td>7 CPs, 20 GPs</td>
<td>92</td>
<td>71</td>
<td>0.772</td>
</tr>
<tr>
<td>GP and CP reports of presence of tie (made or received)</td>
<td>8 CPs, 20 GPs</td>
<td>99</td>
<td>74</td>
<td>0.747</td>
</tr>
<tr>
<td><strong>Network site 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GP reports making contact tie (GP out-degree)</td>
<td>12 CPs, 12 GPs</td>
<td>72</td>
<td>28</td>
<td>0.389</td>
</tr>
<tr>
<td>CP reports making contact tie (CP out-degree)</td>
<td>10 CPs, 23 GPs</td>
<td>105</td>
<td>65</td>
<td>0.619</td>
</tr>
<tr>
<td>GP reports receiving contact tie (GP in-degree)</td>
<td>12 CPs, 12 GPs</td>
<td>72</td>
<td>30</td>
<td>0.417</td>
</tr>
<tr>
<td>CP reports receiving contact tie (CP in-degree)</td>
<td>10 CPs, 23 GPs</td>
<td>105</td>
<td>52</td>
<td>0.495</td>
</tr>
<tr>
<td>GP and CP reports of presence of tie (made or received)</td>
<td>12 CPs, 23 GPs</td>
<td>139</td>
<td>109</td>
<td>0.784</td>
</tr>
<tr>
<td><strong>Network site 4</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GP reports making contact tie (GP out-degree)</td>
<td>11 CPs, 11 GPs</td>
<td>121</td>
<td>54</td>
<td>0.446</td>
</tr>
<tr>
<td>CP reports making contact tie (CP out-degree)</td>
<td>11 CPs, 15 GPs</td>
<td>165</td>
<td>128</td>
<td>0.776</td>
</tr>
<tr>
<td>GP reports receiving contact tie (GP in-degree)</td>
<td>11 CPs, 11 GPs</td>
<td>121</td>
<td>74</td>
<td>0.612</td>
</tr>
<tr>
<td>CP reports receiving contact tie (CP in-degree)</td>
<td>11 CPs, 15 GPs</td>
<td>165</td>
<td>124</td>
<td>0.752</td>
</tr>
<tr>
<td>GP and CP reports of presence of tie (made or received)</td>
<td>11 CPs, 15 GPs</td>
<td>165</td>
<td>141</td>
<td>0.855</td>
</tr>
</tbody>
</table>

* For these sites the potential ties denominator does not equal the number of GPs multiplied by the number of CPs (as it would in the calculation of normal two-mode density). At site 1 this is as a result of some GPs and CPs being presented with fewer names listed on their questionnaire rosters early on in data collection, resulting in these individuals being questioned about a smaller number of potential ties. Being a pilot site, the sampling and boundary of the network was tested and evolved during the data collection period with additional GPs and CPs added to the sample and roster list where necessary. For sites 2 and 3 this is a result of the nature of the areas. At site 2, four villages were included and therefore respondents were presented with different rosters depending on their area. At site 3, two different rosters were used as there was a clear geographical divide within the site. The potential ties denominator at these sites has therefore been adjusted to accurately reflect this. Without this adjustment the density would appear lower.
considerably fewer contact ties from GPs than they reported to make themselves (62% compared with 50%). These findings indicate that at sites 1, 2 and 4, pharmacists perceived the networks of contact that they made with, and received from GPs, to look quite similar. In comparison, pharmacists at site 3 appeared to recognise an asymmetry and one-sidedness to their network of contact with GPs. GP reports at site 4 show much higher density levels for in-degree (contact ties received from pharmacists) than out-degree (contact ties made by GPs) (61% and 45% respectively). The same trend was also apparent at sites 1 and 3, but again at very marginal levels. These findings indicate that at sites 1, 3 and 4 there was a perception amongst GPs that they made less contact with pharmacists than they received. This asymmetry in contact was most recognised by GPs at site 4. However, despite this recognition, GP reports of receiving contact were of a much lower proportion than CP reports of making contact at these three sites.

In many cases, site 2 appeared to be an exception to these findings, with GP and pharmacist reports on making and receiving contact being of similar levels, indicating greater agreement about the level of contact occurring in this area. Contrary to the other sites, GPs at site 2 reported higher density levels than pharmacists for both making and receiving contact.

The final density measure presented in Table 5-1 combines both GP and CP reports of the existence of a tie, using the highest value present. This means that even if only one member of the dyad reported the existence of contact between the pair, this is still counted as a tie. The ties of non-responders are therefore projected using the reports of ties by the responders. This adjustment goes some way towards dealing with missing data from non-responders, although it can only be considered an estimation of possible density for the whole network. This figure gives an indication that the densities of the four networks ranged from 67% - 86% completion.

The findings on the density of these networks indicate that the level of contact appears to be perceived differently by the two professional groups. At most sites, the perceived contact networks of pharmacists appear more wide-reaching than those of GPs. Whilst some of these networks appear dense and connected in nature, it is important to examine
the frequency of these ties in order to gain a fuller picture of the level of contact. This is examined in the next section.

5.1.2 Frequency of contact
Respondents were asked to rate the frequency of the contact they made with and received from each other on a five point scale (0=never, 1=rarely, 2=sometimes, 3=fairly often, 4=very often). Overall, the frequency of contact made was considered by respondents to be fairly infrequent. The frequency of contact is demonstrated on the visual sociograms presented throughout this chapter, with higher frequency of contact represented by darker lines and larger arrow heads.

5.1.2.1 Frequency of contact and professional group
Across all sites (including site 0), the average frequency of contact made by community pharmacists was 2.171 (>sometimes), and for GPs, only slightly lower at 1.783 (<sometimes), shown in Table 5-2 (row c). Therefore, across all respondents, overall contact was perceived to be fairly infrequent. Although the difference in average frequency of contact made appears small between professional group, t-test results (also shown in row c) indicate a significant difference between the means of GPs and CPs (p=0.002). It must be noted that the values used for the tests of significance (t-test and ANOVA), throughout this chapter, often differ from the overall values provided (i.e. the difference in means may be smaller or larger). Chapter 3 section 3.7.4.1, explains the grounds for these differences and the caution required when interpreting these tests.

At each site, pharmacists reported a higher frequency of contact with GPs than vice versa, although again differences in mean frequency reported were also small, ranging from a difference of 0.293 (site 4) to 0.555 (site 2). The difference at the latter site was shown to be significant (p=0.050), however the difference in mean used in this test was considerably larger (0.921), and therefore the validity of this result is questionable.

The infrequency of contact observed was confirmed by interview respondents. GPs, in particular, reported very limited contact with individual community pharmacists, as the majority of their contact was said to be indirect through others, such as practice receptionists. Pharmacists also reported infrequent contact, with only a limited few
reporting more frequent contact with a small number of GPs. More frequent contact also tended to be indirect through receptionists and pharmacy staff (see section 5.2.2).

As discussed in chapter 3 (section 3.4.4.3), the scale adopted for this question aimed to give a general sense of the level of contact made or received, and it was acknowledged that perceptions over the definitions of ‘rarely’, ‘sometimes’, ‘fairly often’ and ‘very often’ would vary amongst respondents. During the interviews, respondents were asked to try to define or quantify how often they perceived their contact to occur. Again, similar to the pre-piloting phase, respondents found it difficult to specifically label the quantity of contact they had. Throughout the interviews, respondents tended to use language similar to that presented in the questionnaire scale, such as ‘that’s quite rare though’ or ‘we speak quite often’. For those that did provide a definition, the most common descriptions were, rarely = once a year or less, sometimes = once a month, fairly often = once or twice a week, and very often = more than once a week.

These findings suggest that despite some of the networks appearing quite dense (at least from the pharmacist’s perspective), the perceived level of contact within these networks was not particularly frequent. Repeated, frequent interaction is often cited as important in the formation of strong ties (Granovetter, 1973; Krackhardt, 1992), and has been associated with lower levels of across-group conflict within organisations (Nelson, 1989). Thus, the limited frequency of contact evident in these networks may have consequences for the successful formation of relationships between GPs and pharmacists.

**Table 5-2: Differences in degree and reciprocation between GPs and CPs across all sites**

<table>
<thead>
<tr>
<th></th>
<th>CPs (n=39)</th>
<th>GPs (n=51)</th>
<th>Difference in means (CP – GP)</th>
<th>P Value (1-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Mean normalised out-degree self-reported</td>
<td>0.777</td>
<td>0.473</td>
<td>0.304</td>
<td>CP &gt; GP* &lt;0.0005</td>
</tr>
<tr>
<td>T-test results</td>
<td>0.766</td>
<td>0.497</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Mean normalised in-degree self-reported</td>
<td>0.738</td>
<td>0.544</td>
<td>0.195</td>
<td>CP &gt; GP* 0.010</td>
</tr>
<tr>
<td>T-test results</td>
<td>0.716</td>
<td>0.548</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Mean frequency of contact made (label)</td>
<td>2.171 (&gt;sometimes)</td>
<td>1.761 (&lt;sometimes)</td>
<td>0.410</td>
<td>CP &gt; GP* 0.002</td>
</tr>
<tr>
<td>T-test results</td>
<td>2.395</td>
<td>1.840</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) % outgoing ties not reciprocated</td>
<td>25.5%</td>
<td>6.0%</td>
<td>19.5%</td>
<td>CP &gt; GP* &lt;0.0005</td>
</tr>
<tr>
<td>T-test results</td>
<td>23.9%</td>
<td>5.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) % reported ties not reciprocally reported</td>
<td>19.3%</td>
<td>7.0%</td>
<td>12.3%</td>
<td>CP &gt; GP* 0.005</td>
</tr>
<tr>
<td>T-test results</td>
<td>19.6%</td>
<td>6.3%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 5-3: Differences in degree and reciprocation between GPs and CPs at site 1

<table>
<thead>
<tr>
<th>Site 1 (n=29)</th>
<th>CPs (n=9)</th>
<th>GPs (n=20)</th>
<th>Difference (CP – GP)</th>
<th>P Value (1-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Mean normalised out-degree self-reported</td>
<td>23.9 (0.843) 0.841</td>
<td>4.4 (0.465) 0.446</td>
<td>0.378 0.395</td>
<td>CP&gt;GP* 0.004</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Mean normalised in-degree self-reported</td>
<td>23.1 (0.816) 0.812</td>
<td>4.8 (0.508) 0.486</td>
<td>0.308 0.326</td>
<td>CP&gt;GP* 0.013</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Mean frequency of contact made (label)</td>
<td>1.979 (&lt; sometimes) 2.038</td>
<td>1.536 (&lt; sometimes) 1.570</td>
<td>0.443 0.468</td>
<td>CP&gt;GP 0.064</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) % outgoing ties not reciprocated</td>
<td>23.6% 24.7%</td>
<td>1.1% 0.6%</td>
<td>22.5% 24.1%</td>
<td>CP &gt; GP* &lt;0.0005</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) % reported ties not reciprocally reported</td>
<td>21.3% 22.5%</td>
<td>2.0% 1.5%</td>
<td>19.3% 21.0%</td>
<td>CP &gt; GP* &lt;0.0005</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 5-4: Differences in degree and reciprocation between GPs and CPs at site 2

<table>
<thead>
<tr>
<th>Site 2 (n=13)</th>
<th>CPs (n=7)</th>
<th>GPs (n=6)</th>
<th>Difference (CP – GP)</th>
<th>P Value (1-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Mean normalised out-degree self-reported</td>
<td>10.1 (0.772) 0.777</td>
<td>4 (0.800) 0.806</td>
<td>-0.028 -0.029</td>
<td>GP &gt; CP 0.597</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Mean normalised in-degree self-reported</td>
<td>10.1 (0.772) 0.777</td>
<td>3.8 (0.767) 0.750</td>
<td>0.005 0.027</td>
<td>CP &gt; GP 0.407</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Mean frequency of contact made (label)</td>
<td>2.722 (&lt; fairly often) 2.979</td>
<td>2.167 (&gt; sometimes) 2.058</td>
<td>0.555 0.921</td>
<td>CP &gt; GP* 0.050</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) % outgoing ties not reciprocated</td>
<td>0.0% 0.0%</td>
<td>8.7% 11.1%</td>
<td>8.7% -11.1%</td>
<td>GP &gt; CP 0.197</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) % reported ties not reciprocally reported</td>
<td>0.0% 0.0%</td>
<td>8.7% 11.1%</td>
<td>-8.7% -11.1%</td>
<td>GP &gt; CP 0.197</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 5-5: Differences in degree and reciprocation between GPs and CPs at site 3

<table>
<thead>
<tr>
<th>Site 3 (n=22)</th>
<th>CPs (n=10)</th>
<th>GPs (n=12)</th>
<th>Difference (CP – GP)</th>
<th>P Value (1-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Mean normalised out-degree self-reported</td>
<td>11.8 (0.619) 0.635</td>
<td>2.3 (0.389) 0.389</td>
<td>0.230 0.246</td>
<td>CP &gt; GP* 0.044</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Mean normalised in-degree self-reported</td>
<td>5.2 (0.495) 0.491</td>
<td>2.5 (0.417) 0.417</td>
<td>0.078 0.074</td>
<td>CP &gt; GP 0.296</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Mean frequency of contact made (label)</td>
<td>2.556 (&lt; fairly often) 2.464</td>
<td>2.080 (&gt; sometimes) 2.156</td>
<td>0.476 0.308</td>
<td>CP &gt; GP 0.163</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) % outgoing ties not reciprocated</td>
<td>36.1% 43.7%</td>
<td>20.7% 10.3%</td>
<td>15.4% 33.4%</td>
<td>CP&gt; GP* 0.036</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) % reported ties not reciprocally reported</td>
<td>35.1% 43.7%</td>
<td>20.0% 10.3%</td>
<td>15.1% 33.4%</td>
<td>CP&gt; GP* 0.036</td>
</tr>
<tr>
<td>T-test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Table 5-6: Differences in degree and reciprocation between GPs and CPs at site 4

<table>
<thead>
<tr>
<th>Site 4 (n=22)</th>
<th>CPs (n=11)</th>
<th>GPs (n=11)</th>
<th>Difference (CP – GP)</th>
<th>P Value (1-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Mean normalised out-degree self-reported</td>
<td>11.6 (0.776)</td>
<td>4.9 (0.446)</td>
<td>0.330</td>
<td>CP&gt;GP* 0.019</td>
</tr>
<tr>
<td>T-test result</td>
<td>0.776</td>
<td>0.446</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Mean normalised in-degree self-reported</td>
<td>11.3 (0.752)</td>
<td>6.7 (0.612)</td>
<td>0.140</td>
<td>CP&gt;GP 0.195</td>
</tr>
<tr>
<td>T-test result</td>
<td>0.752</td>
<td>0.612</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Mean frequency of contact made (label)</td>
<td>2.014 (sometimes)</td>
<td>1.721 (&lt; sometimes)</td>
<td>0.293</td>
<td>CP&gt;GP 0.304</td>
</tr>
<tr>
<td>T-test result</td>
<td>1.960</td>
<td>1.746</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) % outgoing ties not reciprocated</td>
<td>32.8%</td>
<td>6.2%</td>
<td>26.6%</td>
<td>CP&gt;GP* 0.013</td>
</tr>
<tr>
<td>T-test result</td>
<td>26.7%</td>
<td>5.4%</td>
<td></td>
<td>21.3%</td>
</tr>
<tr>
<td>e) % reported ties not reciprocally reported</td>
<td>14.7%</td>
<td>8.6%</td>
<td>6.1%</td>
<td>CP&gt;GP 0.267</td>
</tr>
<tr>
<td>T-test result</td>
<td>13.0%</td>
<td>9.7%</td>
<td></td>
<td>3.3%</td>
</tr>
</tbody>
</table>

5.1.2.2 Frequency of contact and site

Each case study site was purposively selected to provide examples of different pharmacy and GP practice configurations in varying geographical areas, serving different sizes and types of patient populations. It was therefore expected that levels of contact may potentially vary at each site. Overall, there was only a slight difference observed in the average frequency of contact at each site (site 1 = 1.843, <sometimes; site 2 = 2.500, >sometimes; site 3 = 2.405, >sometimes; site 4 = 1.904, <sometimes). An ANOVA test indicated that the variance in mean frequency between the four sites was significant (p=0.006) and a Post-hoc test (Tukey HSD) indicated that the difference was significant between site 2 and site 1 (p=0.015). This information is contained in row c of Table 5-7. These findings suggest that the respondents at the villages case study site perceived their contact to be more frequent than those at other sites.

Across all pharmacists, higher frequency of contact was reported at sites 2 and 3 (2.722 <fairly often and 2.556 <fairly often, respectively) than at sites 1 and 4 (1.979 <sometimes and 2.014 =sometimes), although these differences were not found to be significant. The same pattern in frequency was also observed for GPs at these sites, although differences were not as large, and again not found to be significant. This information is reported in row c of tables 5-3 to 5-6.
Table 5-7: Differences in degree and reciprocation between sites

<table>
<thead>
<tr>
<th>Across all sites (n=86)</th>
<th>Site 1 (n=29)</th>
<th>Site 2 (n=13)</th>
<th>Site 3 (n=22)</th>
<th>Site 4 (n=22)</th>
<th>F Statistic</th>
<th>P Value</th>
<th>Post-hoc test (Tukey HSD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Mean out-degree self-reported (normalised)</td>
<td>ANOVA test</td>
<td>0.683</td>
<td>0.779</td>
<td>0.525</td>
<td>0.636</td>
<td>1.9890</td>
<td>0.122</td>
</tr>
<tr>
<td></td>
<td>ANOVA test</td>
<td>0.569</td>
<td>0.790</td>
<td>0.501</td>
<td>0.611</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Mean in-degree self-reported (normalised)</td>
<td>ANOVA test</td>
<td>0.686</td>
<td>0.770</td>
<td>0.463</td>
<td>0.692</td>
<td>2.9795</td>
<td>0.036*</td>
</tr>
<tr>
<td></td>
<td>ANOVA test</td>
<td>0.587</td>
<td>0.764</td>
<td>0.451</td>
<td>0.682</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Mean frequency of contact made (label)</td>
<td>ANOVA test</td>
<td>1.843 (&lt; sometimes)</td>
<td>2.500 (&gt; sometimes)</td>
<td>2.405 (&gt; sometimes)</td>
<td>1.904 (&lt; sometimes)</td>
<td>4.3467</td>
<td>0.006*</td>
</tr>
<tr>
<td></td>
<td>ANOVA test</td>
<td>1.715 (&lt; sometimes)</td>
<td>2.554 (&gt; fairly often)</td>
<td>2.296 (&gt; sometimes)</td>
<td>1.853 (&lt; sometimes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Mean % reported ties not reciprocally reported</td>
<td>ANOVA test</td>
<td>12.7%</td>
<td>4.5%</td>
<td>28.4%</td>
<td>11.7%</td>
<td>3.0303</td>
<td>0.031*</td>
</tr>
<tr>
<td></td>
<td>ANOVA test</td>
<td>8.0%</td>
<td>5.1%</td>
<td>24.7%</td>
<td>11.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Mean % outgoing ties not reciprocated</td>
<td>ANOVA test</td>
<td>13.8%</td>
<td>4.5%</td>
<td>29.2%</td>
<td>21.7%</td>
<td>2.6257</td>
<td>0.053</td>
</tr>
<tr>
<td></td>
<td>ANOVA test</td>
<td>8.1%</td>
<td>5.1%</td>
<td>24.6%</td>
<td>16.1%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.1.3 Reciprocation of contact

5.1.3.1 Reciprocation of outgoing ties

For this measure, CP reports of making a tie (any frequency) were compared with GP reports of making a tie (any frequency), using responders only (with all reports on non-responders also removed). For pharmacists, across the whole sample (all sites), 25.5% of the contact ties that they reported to make with GPs were not reciprocally made by the same GPs. In comparison, only 6.0% of the contact ties GPs reported to make were not reciprocally made by pharmacists. As shown in row d of Table 5-2, this difference was found to be significant (p<0.0005).

The corresponding row of tables 5-3 to 5-6 provides the same measures for individual sites. At sites 1 and 4 the same trends hold, and also at site 3 (although the significance test is questionable for this site, due to a large discrepancy observed between the two mean values). For site 2 the trend is reversed with all GPs in that area reciprocally making contact with the pharmacists there, although this difference was not found to be significant.

Overall, these findings, and those related to the frequency of contact, suggest that most of the contact made in these networks was perceived to be made by the pharmacists rather than the GPs.

5.1.3.2 Is there agreement that a contact tie exists?

In some cases, GPs confirmed that they did receive contact from pharmacists but did not reciprocate this contact. In these cases, there was agreement that a contact tie existed despite it not being reciprocated. To measure whether there was agreement concerning the presence of a contact tie, CP reports of a tie (any frequency, either made or received) were compared with GP reports of a tie (any frequency, either made or received). The findings are presented in Table 5-2, row e. For pharmacists across the whole sample (all sites) 19.3% of the contact ties that they reported to exist were not reciprocally reported to exist by the GPs, compared with only 7.0% of the contact ties GPs reported to exist. These differences were also found to be significant (p=0.005).
Broken down by site (row e tables 5-3 to 5-6), this trend was also apparent at sites 1, 3 and 4, although only found to be significant at site 1 (with the significance at site 3 again questionable, as presented above). At site 2, the trend was reversed, with pharmacists having all their ties confirmed and a small proportion (8.7%) of GPs not having their ties reciprocated. This was not found to be significant, as per the reciprocation of out-going ties presented above.

At site 4, for CPs the percentage of non-reciprocally reported ties was lower than the percentage for non-reciprocated outgoing ties (Table 5-6 c.f. rows d and e). This provides an example of GPs acknowledging the existence of a contact tie but not reporting making contact themselves. At sites 1 and 3, there is an obvious distinction between CP and GP perceptions about the existence of contact.

At an individual node level, for two CPs at site 1, 43% and 47% of the ties they reported to exist were not confirmed by the GPs in question. At site 3, for three CPs, none of the ties they reported to exist were confirmed by the GPs in question. These findings indicate an apparent misalignment between GPs and pharmacist reports at these sites, suggesting that CPs perceive that they have contact, but the associated GPs are either unaware that this contact has occurred or have chosen not to report this.

5.1.3.3 Reciprocation differences between the sites

As demonstrated by sections 5.1.3.1 and 5.1.3.2 above, there were some differences in reciprocation levels across the four sites. These differences can be seen visually in Figure 5-1, with the pink lines indicating non-reciprocally reported contact.

At most sites the percentage of non-reciprocally reported ties for GPs was fairly low, although slightly higher at site 3 (20%). The percentage of pharmacist reported ties not reciprocally reported by GPs, tended to be higher than the GP equivalent, but also varied more widely across the sites.

Findings suggest that at site 2 (village area) agreements about the presence of ties were well aligned between GPs and CPs, with 91.0% of ties reciprocally reported. At site 3 (city area), there was misalignment of reports about the existence of contact, with only
Figure 5-1: Presence of tie reciprocal reporting, respondents only (Grey lines = reciprocal reporting of contact tie, pink lines = contact tie not reciprocally reported)
58.6% of ties reciprocally reported to be present. Site 3 also had the highest levels of non-reciprocated reporting for both GPs and pharmacists out of all the sites, which indicates that both professional groups may have been unaware of each other. ANOVA tests indicated no significant differences between the non-reciprocation scores for GPs between sites. Differences were found between pharmacists at sites 3 and sites 2, with site 3 having higher levels of non-reciprocal reporting (p=0.012) and non-reciprocated outgoing ties (p=0.022) than site 2.

These findings could be indicative of greater familiarity between those in smaller geographical areas with lower CP and GP concentrations, and a lack of awareness or knowing of each other in more highly concentrated areas such as city locations.

5.1.4 Summary

Case study boundary areas were drawn by the researcher based on the likelihood of contact, it was not surprising, therefore, that the contact networks in the areas were quite dense. However, pharmacists’ perceptions of the network of contact tended to be denser than GPs’ perceptions. GPs at three sites (site 1, 3 and 4) reported less dense networks of contact than pharmacists, indicating a difference in perception about the occurrence of contact. At site 2, however, density levels reported by GPs and pharmacists appeared more aligned.

Frequency of contact was found to be low across the sites, although pharmacists reported making more frequent contact than GPs. Slightly higher frequency of contact was reported at site 2.

Across the sites, pharmacists’ reports of contact were not always reciprocally confirmed by GPs, with particularly high levels seen at site 1 and 3. Reports about the occurrence of contact appeared to more aligned between GPs and pharmacists at site 2, suggesting greater familiarity in this smaller geographical area.
5.2 Nature of contact

This section examines the reported nature of contact, in relation to the method and form of contact. Interviewees stated that the majority of their contact was by telephone, with some written communication (such as MUR forms, or ‘Dear Dr’ notes). Face-to-face contact was not common across the sites. Contact was often indirect and channelled through a number of brokers, primarily the practice receptionist, as well as pharmacy staff and, interestingly, also the patient.

5.2.1 Direct contact

Questionnaire respondents were asked to characterise the contact that they had with each other as either ‘mostly direct’ (between GP and pharmacist) or ‘mostly indirect’ (through others such as practice receptionist or pharmacy staff) or ‘equally indirect and direct’. Of the ties reported by all respondents, 18.7% were reported to be ‘mostly direct’, 57.0% were reported to be ‘mostly indirect’ and 24.3% were reported to be equally both.

Between GPs and pharmacists, GPs reported a higher percentage of direct contact ties than pharmacists (24.5% compared with 15.5%). Difference in means, using individual scores were found to be significant (p= 0.047) by t-test. Nearly half of the ties reported by GPs at site 3 were described as mostly direct in nature (48.1%), compared with only 13.2% of CP reported ties. Using individual scores, these differences were found to be significant (p=0.044), although overall mean values varied somewhat from those presented above (7.2% for CPs and 36.7% for GPs). At the other three sites, none of the differences between the GP and CP reported proportions of mostly direct contact were found to be significant.

Between the sites, pharmacists at sites 2 and 4 reported higher proportions of direct contact with GPs (20.5% and 22.9% respectively) than the other two sites (11.4% at site 1 and 13.2% at site 3). For GPs, higher proportions of direct contact ties were reported at sites 3 and 4 (48.1% and 29.4% respectively) than sites 1 (15.6%) and 2 (16.7%). Although there was some variation for the values for each site, no significant differences were found.
Figure 5-2 shows the reciprocal reporting of mostly direct contact at each of the sites. The pink lines represent non-reciprocally confirmed reports of a mostly direct contact tie and the black lines represent reciprocally confirmed reports. The small number of black lines indicates that there was little alignment between GP and pharmacist reports of direct contact. In contrast to the reciprocation of general contact, presented above in 5.1.3, in many cases the mostly direct contact tie was reported by the GP but not reciprocally reported by the pharmacist. Potentially this finding offers further insight into non-reciprocal reporting about the existence of contact ties presented in section 5.1.3.2. If GPs consider most of the contact to be direct but pharmacists do not, this could indicate that GPs are not aware of the scale of indirect contact potentially taking place and hence not aware of the existence of contact from pharmacists.

5.2.2 Indirect contact
As reported in section 5.2.1 above, more than half of all the contact ties reported were described as ‘mostly indirect’ in nature. Due to the organisation of GP practices, the indirect nature of contact is understandable, as all telephone calls need to be filtered through the practice receptionist with messages left for the GP when they are busy seeing patients or out of the practice on visits. However, what was found to differ amongst interviewees was the way in which the contact was reciprocated. Those pharmacists reporting mostly direct contact with a GP, described how they would often receive contact directly back from this GP. Those reporting mostly indirect contact would receive contact back from the receptionist with a message from the GP rather than actual contact with the GP.

The topic and urgency of the contact was also understandably a decisive factor in relation to the directness of contact. Interviewees stated that a clinical matter would be more likely to involve direct contact than a routine administrative query which could be dealt with by the practice receptionist. The interviews did reveal apparent differences in the style and approach of GPs and pharmacists, with some dyads possessing the type of relationship whereby the GP was keen to speak to the pharmacist directly and the pharmacist felt comfortable and able to ask to speak directly to the GP. Pharmacist interviewees also perceived differences between practices in their local area in terms of
Figure 5-2: ‘Mostly direct’ contact, respondents only  (Black lines = reciprocal ties, pink lines = non-reciprocal ties)

Site 1 – Large town
23.5% reciprocity

Site 2 – Village area
0% reciprocity

Site 3 – City area
6.3% reciprocity

Site 4 – Small town
12.0% reciprocity

Site 1 – Large town

Site 2 – Village area

Site 3 – City area

Site 4 – Small town
approach to direct contact. Some practices were perceived as more open to direct contact than others, with some receptionists considered more willing to facilitate this. Whereas others were described as not welcoming of direct contact, with receptionists perceived as actively trying to minimise direct contact (this is discussed later in chapter 7, section 7.3.2).

5.2.2.1 The role of the broker

In social network analysis, a broker is a node that others must go through in order to reach another node (Burt, 2005). As such, the position of the broker holds a certain level of power by possessing the option to either facilitate contact or the flow of information or to impede this. Applying this concept to the contact between GPs and pharmacists, the practice receptionist can be viewed as the main broker, as shown in Figure 5-3 below:

Figure 5-3: The receptionist as ‘broker’

Some pharmacists interviewed expressed frustration at the broker role of practice receptionists and concern regarding their ability to make appropriate judgements regarding the seriousness of the query and necessity for direct contact between the GP and pharmacist:

...I’d always been able to ring and say who I was, get put through to a GP and they’d answer a question...[one of the doctors] put a stop to it and you have to go through the receptionist now. You have to tell the receptionist what your question is. They type it and then the GP replies to their question but you don’t know what the question is that they’ve typed. So it’s, you know, Chinese whispers. Site 1 CP1

the main problems that we have are with the surgeries is that we cannot get through to the doctors, it can be very very difficult to kind of get through the receptionist sometimes, to actually get access to speak to the doctor. Sometimes it’s fine to go through the receptionist, but if it’s like an interaction or a query that you need to speak to a doctor about, that can be quite tough sometimes. Site 1 CP3
It would be ideal if most GPs realised that pharmacists occasionally need to speak only to them not via a receptionist who often do not grasp the complexity of a medical issue being raised but also refuse to allow you to speak to the GP. Site 1 CP [Questionnaire comment]

Other pharmacists interviewed spoke of the importance of forming good relationships with practice receptionists to ensure that the broker role facilitated their queries rather than impeded them:

...if you’ve got good reception staff it does make a big difference...Because it’s a nightmare if you ever get calls from somewhere outside of here, because obviously we don’t know the receptionist so it’s a lot harder to kind of explain what you’re doing. Site 2 CP3

The interviews also revealed another perhaps more unusual brokerage role. A respondent at site 4 who worked as both a PCT pharmacist and a locum pharmacist for a supermarket pharmacy stated that he had several times adopted a brokerage role between the pharmacy and a local GP practice. Through his PCT role this pharmacist had regular direct face-to-face contact with the GPs at this practice. If the regular pharmacists at the supermarket pharmacy had any queries related to prescriptions or patients from this practice, the locum/PCT pharmacist stated that he would, if possible, take the prescription or query directly to the GP on his next visit to the practice:

...it depends on the urgency of whatever the question is that's been asked. But if it’s a relatively non-urgent thing, sometimes [the regular pharmacist will] deal with it, and other times, I’ll sort of follow it through. So again, I suppose the pharmacy have got the benefit as well from that perspective...particularly if the prescription needs something amending or re-doing, I’ll say well, give me that and I’ll bring you a new one back. Site 4 CP6b

For the regular pharmacist the contact may still be indirect, but by using the locum/PCT pharmacist as a broker the receptionist is bypassed and direct contact with the GP on behalf of the pharmacy is ensured.

Some pharmacist interviewees and questionnaire respondents cited frustrations with the lack of direct contact between themselves and GPs or the lack of a timely response to their queries from the practice or the GP:
It is difficult to speak to a GP in all but a few practices. You have to phone after surgery or leave details with the receptionist and then phone back, only to be told to phone back again etc. In these situations you find the receptionists haven’t passed on all the details and the GPs’ response is meaningless. In 3 out of 4 cases it ends up sending the patient back to the surgery. Site 1 CP [questionnaire comment].

The outcome of this ‘failed’ communication was the patient being sent back to the practice by the pharmacist. This was perceived as a negative outcome by pharmacists who felt that it inconvenienced the patient and also potentially created more work for the practice. In this sense the contact between the pharmacist and practice and/or GP has not been successful or yielded the desired result and has led to the patient now becoming the broker or bridge between the pharmacy and the practice (see Figure 5-4). One of the perceived main benefits of possessing good relationships for both pharmacists and GPs alike was the ability to utilise direct, responsive and reciprocal communication channels in order to minimise patient inconvenience, which is discussed later in chapter 7, section 7.1.2.

**Figure 5-4: The patient as ‘broker’**

The questionnaire also gave respondents the option of answering generally about the whole GP Practice or whole community pharmacy if they did not know the individuals listed or did not have particular contact with those individuals. Of all the contact ties reported by pharmacists across all sites, 86.5% of these were reported for individual GPs. In comparison, out of all the ties reported by GPs across the sites, 58.3% were reported for individual pharmacists. Some variety was seen across the sites, particularly for the reports by GPs. At site 1 (large town) and site 3 (city area), only 50.0% and 28.0% (respectively) of the ties reported by GPs were reported for individual pharmacists, compared with 72.1% at site 4 (small town) and 87.5% at site 2 (village area). An ANOVA test revealed that the difference in mean levels of reporting for individuals was significantly different between GPs at site 3 (city area) and site 2 (village area) (p=0.0176).
Interestingly though, this high level of reporting for individuals by the GPs at site 2 was not matched by a high level of reporting for individuals by pharmacists at this site. Only 58.3% of the ties pharmacists reported at this site were reported for individual GPs. Reporting for individual GPs by pharmacists was, in comparison, high at the other three sites (ranging from 80.6% - 93.3%).

5.2.3 Face-to-face contact

Respondents were asked whether, in the last 12 months, they had met any of the individuals they reported to have contact with. Across all respondents and sites, 27.8% of the contact ties reported were said to have involved face-to-face contact in the last 12 months. Therefore, over a quarter of contact ties were reported to have involved some face-to-face contact. Taken as a proportion of all potential contact ties however, the overall percentage of face-to-face contact ties in the last 12 months was 14.4%.

GPs reported a slightly higher proportion of face-to-face contact ties than pharmacists, 31.1% compared with 26.1%. Across the sites, higher proportions for all respondents were seen at sites 2 and 4 (43.4% and 40.0% respectively,) than at sites 1 and 3 (19.7% and 19.0% respectively). However, ANOVA tests revealed no significant differences for face-to-face contact across the sites.

5.2.3.1 Reciprocal reporting of face-to-face contact

Figure 5-5 presents responder-only reports of face-to-face contact in the last 12 months at each site and demonstrates whether or not these reports were reciprocal. It can be seen that at each site, despite reports of face-to-face contact occurring, the reciprocity levels are not high. Not one site has more than half the face-to-face contact ties reciprocally confirmed. As reported above, sites 1 and 3 had the lowest levels of face-to-face contact reported, although in terms of reciprocal reporting, site 1 had the highest level of reciprocal reports of face-to-face contact at 46.7%. In contrast, site 2 had a high percentage of face-to-face contact reported, but approximately two-thirds of these contact ties were not reciprocally confirmed.
Figure 5-5: Face-to-face contact in the last 12 months, respondents only  
(Black lines = reciprocal ties, pink lines = non-reciprocal ties)

Site 1 – Large town  
46.7% reciprocity

CP6b reports 7 GPs met face-to-face, 6 of these are reciprocally reported.

Site 2 – Village area  
36.4% reciprocity

CP4 reports meeting 5 GPs but only 1 GP reciprocally reports this.

Site 3 – City area  
33.3% reciprocity

A small proportion of face-to-face ties were reported at the city area and only a third were reciprocally reported.

Site 4 – Small town  
43.8% reciprocity

CP6b (Locum and PCT pharmacist) reports 9 face-to-face ties but only 3 are reciprocally reported.

CP4 has 3 out of 4 face-to-face ties reciprocally reported by GPs.

CP6 reports meeting GP5b but this is not reciprocated. A GP at the same practice reports meeting CP6, but CP6 does not reciprocate this. A similar situation is seen with CP2.

All of CP3a's face-to-face ties are reciprocally reported.
These findings indicate an obvious misalignment in GP and pharmacist reports and a potential confusion over whether or not individuals have met and with whom they have met. Highlighted in Figure 5-5 are particular individuals in the networks. Some individuals, such as CP3a at site 4 and CP6b at site 1, have all or most of their face-to-face contact ties confirmed by the other party involved. These two pharmacists were also co-located in the same premises as several of the GPs, potentially removing the confusion surrounding face-to-face contact that seems apparent amongst some of the other dyads. At site 4, CP6b reports a relatively large number of face-to-face contacts with GPs, but only a third of these are reciprocally reported. When interviewed, this pharmacist, (who was the PCT pharmacist referred to in section 5.2.2.1) spoke about meeting several GPs through his PCT work. When presented on the questionnaire for GPs however, this pharmacist’s name was (in line with the questionnaire design), presented under the pharmacy where he also worked as a locum pharmacist. It seems likely that when completing the questionnaire the GPs may have not associated the PCT pharmacist with this particular pharmacy, perhaps not even being aware of his locum role. Presenting this pharmacist in this unfamiliar context could explain why these GPs did not state that they had met this pharmacist.

5.2.4 Summary
The nature of contact between GPs and pharmacists across the sites tended to be of an indirect nature, through practice receptionists or pharmacy staff. Over half the reported ties across all sites were described as mostly indirect in nature. Higher proportions of direct contact with GPs was reported by pharmacists at the smaller geographical sites — site 2 and 4, although not found to be statistical significant. Reciprocal reporting of the presence of mostly direct contact was also found to be low across the sites, in contrast however, this tended to be reported by GPs and not reciprocally confirmed by pharmacists. This may indicate that GPs were not aware of the scale of indirect contact taking place and hence not aware of the occurrence of contact from pharmacists.

Face-to-face contact was not the norm across the sites, but higher proportions were reported at sites 2 and 4 (although not found to statistically significant). Reports of face-to-face meetings in the last 12 months were not well aligned between GPs and
pharmacists. Less than half the face-to-face contact ties at each site were reciprocally confirmed by the other party. This indicates potential confusion over whether or not these individuals have met.

5.3 Subject of contact
Following the question on frequency of contact made and received, respondents were asked what their contact was about. Several categories were provided and a brief description of each category was listed. These included:

- Drug therapy - any clinical issues, including those related to drug interactions, dose, or potential contraindications
- Prescription processing - technical queries such as illegibility and legal issues (e.g. missing date/signature or controlled drugs)
- Equipment/stock/delivery requests - requests for equipment, oxygen or prescription delivery, stock or supplies
- Local health events or meetings - e.g. conferences, meetings or events run by PCT, LMC / LPC or professional bodies etc.
- Medicines Use Reviews (MURs) - any contact associated with the MUR advanced service
- Pharmacy services - contact related to enhanced services or similar, e.g. diagnostic testing, Emergency Hormonal Contraception (EHC), smoking cessation etc.

Respondents were also asked to rate the frequency of this type of contact using the same 0-4 scale as for the contact made or received question. Sociograms (Figures 5-6 to 5-9) have been produced showing the responses for each category, giving the percentage of ties reported to be related to each particular subject. This has been calculated using the total number of ties reported for each subject as a percentage of the total number of contact ties reported overall for each site. For this calculation the valued data (0-4) was transformed into binary data (0-1). In some cases, the percentage of contact ties related to a particular subject may appear relatively high as a result of using binary data. To balance this, the average frequency of the contact for each subject has also been included.
in this figure and the darker lines and larger arrow heads on the sociograms represent a higher frequency of contact.

Across all respondents (n=90), the most common subjects of contact were drug therapy (81.7% of contact ties were reported to involve this subject) and prescription processing (79.9% of contact ties). These were followed by equipment/stock/delivery requests (49.4% of ties), and MURs (47.0% of ties). Contact related to pharmacy services was less widespread (35.0% of ties). Meetings and local health events were the most limited with only 6.5% of all contact ties reported to involve this type of contact. In terms of frequency of contact for each subject a similar order is also present. The average frequency of drug therapy contact ties was 2.138 (>sometimes); prescription processing, 2.043 (=sometimes); equipment/stock/delivery, 1.790 (<sometimes); MURs, 1.633 (<sometimes); pharmacy services, 1.301 (>rarely) and meetings/events 1.333 (>rarely).

Previous research auditing contact between GPs and pharmacists indicated that contact was mostly confined to routine administrative queries (Kennedy et al., 1997), which seems to align with the finding here about the frequency of prescription processing queries. The high levels of drug therapy contact however, could be related to a ‘safety net’ role of pharmacists, with queries regarding dosages and potential interactions (this role is discussed further in chapter 7 section 7.1.1). For GPs, there appeared to be a sense that the contact made by pharmacists was often related to quite trivial matters:

[the pharmacist] gets in touch perhaps once a fortnight, or once a month to say, you know, I’ve put this but it’s out of stock or something, or is it alright if he gives 28 instead of 30, or some sort of nonsense…in terms of what I might call interesting things to talk about, he doesn’t get in touch very often, that might be twice a year. Site 4 GP2e

If GPs’ experiences of interaction with pharmacists are considered to be of a trivial nature, this may form GP opinions above the level of pharmacists’ knowledge and skill – being technical rather than clinical. This then may be reflected in the types of queries that GPs consult pharmacists about and the delegation of ‘the trivial’ to the pharmacist. The same GP quoted above went on to say:
I mean the thing about [the pharmacist] is, if I ring him with a funny query he will look it up and get back to me. So if I think to myself, okay, this nonsense query about support stockings or whatever it may be...[he’ll] be able to look this up, you know, then I would always send it his way...any work that I can delegate I will delegate! Site 4

GP2e

The sociograms (Figures 5-6 to 5-9) demonstrate that on the whole a similar pattern of contact is seen at each site, with drug therapy and prescription processing being the denser and more frequent contact networks. However, some variance can also been seen particularly at site 2, the villages area site. This site has a large proportion of equipment/stock/delivery related contact (81.6%) compared with the other three sites. This is perhaps understandable, given the geographical area being sparser generally and patients potentially situated further away from GP practices and pharmacies than in more urban environments. Combined with an older population (over 65 years) than some of the other sites (see chapter 4, Table 4-1), it seems likely that much of this type of contact may be related to prescription collection and delivery services:

[They’ll ask us] what we’ve got in stock and also to drop-off, erm, urgent prescriptions for us to deliver antibiotics, etc. when they’ve come back from their home visits. Site 2 CP6

...normally they get in touch if there’s an emergency delivery, or if there’s...someone’s gone onto antibiotics or something and it needs to go out today. They will normally phone ahead and just say, ‘Can we do this in a rush?’ Site 2 CP3

Site 2 also had the highest proportion of contact ties reported to concern pharmacy services (56.7%). It was hypothesised that this higher level of contact could be a result of the level of service provision in the area and the types of services provided. A breakdown of service provision per pharmacy by site is given in Table 5-8. These data, however, do not show any striking differences in service provision at site 2 compared with the other three sites. The average number of services per pharmacy is slightly higher than sites 1 and 3, but lower than site 4. Similarly, MUR provision is higher than sites 1 and 3 but matched at site 4. The only difference being a higher percentage of Chlamydia screening service provision.
Figure 5-6: Variation in subject of contact at site 1

(Darker lines and larger arrow heads indicate higher frequency of contact)

Drug therapy queries = 71.5% of contact ties
Mean frequency of tie = 2.020 (sometimes)

Prescription processing = 75.1% of contact ties
Mean frequency of tie = 2.010 (sometimes)

Equipment/stock/delivery = 44.5% of contact ties
Mean frequency of tie = 1.828 (<sometimes)

MURs = 36.1% of contact ties
Mean frequency of tie = 1.414 (>rarely)

Pharmacy services = 26.3% of contact ties
Mean frequency of tie = 1.153 (>rarely)

Meetings/events = 1.5% of contact ties
Mean frequency of tie = 1.750 (<sometimes)
Figure 5-7: Variation in subject of contact at site 2  (Darker lines and larger arrow heads indicate higher frequency of contact)

Drug therapy queries = 98.3% of contact ties
Mean frequency of tie = 2.085 (sometimes)

Prescription processing = 86.7% of contact ties
Mean frequency of tie = 2.942 (<sometimes)

Equipment/stock/delivery = 81.6% of contact ties
Mean frequency of tie = 1.939 (<sometimes)

Meetings/events = 0.0% of contact ties
Mean frequency of tie = 0.000 (never)

MURs = 53.3% of contact ties
Mean frequency of tie = 1.531 (<sometimes)

Pharmacy services = 56.7% of contact ties
Mean frequency of tie = 1.412 (>rarely)

Meetings/events = 0.0% of contact ties
Mean frequency of tie = 0.000 (never)
Figure 5-8: Variation in subject of contact at site 3  (Darker lines and larger arrow heads indicate higher frequency of contact)

- **Drug therapy queries = 88.3% of contact ties**
  - Mean frequency of tie = 2.138 (>sometimes)

- **Prescription processing = 78.7% of contact ties**
  - Mean frequency of tie = 2.043 (sometimes)

- **Equipment/stock/delivery = 45.7% of contact ties**
  - Mean frequency of tie = 1.790 (<sometimes)

- **MURs = 47.9% of contact ties**
  - Mean frequency of tie = 1.633 (<sometimes)

- **Pharmacy services = 31.9% of contact ties**
  - Mean frequency of tie = 1.301 (rarely)

- **Meetings/events = 17.0% of contact ties**
  - Mean frequency of tie = 1.333 (>rarely)
**Figure 5-9: Variation in subject of contact at site 4**  
(Darker lines and larger arrow heads indicate higher frequency of contact)

- **Drug therapy queries = 90.4% of contact ties**  
  Mean frequency of tie = 2.144 (>sometimes)

- **Prescription processing = 87.0% of contact ties**  
  Mean frequency of tie = 2.090 (sometimes)

- **Equipment/stock/delivery = 43.5% of contact ties**  
  Mean frequency of tie = 1.620 (<sometimes)

- **MURs = 65.2% of contact ties**  
  Mean frequency of tie = 1.720 (<sometimes)

- **Pharmacy services = 42.6% of contact ties**  
  Mean frequency of tie = 1.265 (>rarely)

- **Meetings/events = 10.4% of contact ties**  
  Mean frequency of tie = 1.417 (>rarely)
Interviewee respondents, on the whole, stated that the pharmacy services that they provided did not require frequent, if any, contact with GPs or GP practices. Unlike the contact concerning equipment/stock/deliveries which was reported as a subject of contact by both GPs and pharmacists, contact about pharmacy services tended to be reported by pharmacists only. For example, at site 2, GPs reported 75.0%, and pharmacists reported 86.1% of their contact ties to involve equipment/stock/delivery requests. In contrast, for pharmacy services, pharmacists at site 3 reported 88.9% of their contact ties with GPs to involve pharmacy services, compared with only 8.3% of the ties reported by GPs. This is displayed on the sociograms (Figures 5-6 to 5-9) with arrow heads mostly directed towards the GPs and practices rather than towards the pharmacists and pharmacies, and this trend is seen across all sites. Pharmacist interviewees did report however, that the provision of enhanced pharmacy services and raising awareness of these, often served as a legitimate reason for requesting a meeting with a local GP practice. It is therefore likely that the contact reported in relation to pharmacy services by pharmacists is not sustained frequently, but may relate to a one-off visit to the practice to explain the services provided by the pharmacy:

If you were doing a service, like the first time I met Dr [X] and Dr [Y] was through the Parkinson’s service. I had never come face to face with them before...if you were doing an enhanced service you’d have reason to get to know them more...it’s just an excuse really to go in and actually meet them because they’d never invite you...I’ve no objection to go and see them, but I’d have to have a reason. Site 1 CP1

Table 5-8 also indicates some noticeable differences in type of service provision across the sites. For example, all pharmacy respondents at sites 2 and 4 reported minor ailments...
service provision and all but one reported this at site 1. In contrast, at site 3, no minor ailments service provision was reported at all. However, at site 3, 44.4% of pharmacy respondents reported provision of the NHS health check service (including vascular screening); this service was not reported at any of the other sites. These findings could be indicative of different local population needs and priorities in terms of provision and funding at PCT level.

5.3.1 Summary
The most common subjects of contact centred on drug therapy and prescription processing queries, indicating that contact related to routine administrative queries as well as ‘safety net’ role queries. There was a perception amongst GPs however that often the contact made by pharmacists related to what they considered to be trivial matters. There was little contact concerning enhanced pharmacy services or local health events or meetings. Fairly similar patterns of subject of contact were seen at each site, although respondents at site 2 (village areas) reported higher levels of contact about equipment/stock/deliveries. This difference perhaps reflects the geographical area and demographics of the population which may necessitate more delivery services.

5.4 Centrality and strength of relations
The first objective of this study was to explore the type and strength of relationships between GPs and pharmacists. The preceding sections of this chapter have explored and described the type of relations; this section examines the strength of these relations.

5.4.1 Perceived quality of relationship
Respondents were asked to rate the quality of their relationships on a scale of 0-4 (0= no relationship formed, 1=poor, 2=satisfactory, 3=good, 4=very good). Quality ratings varied at each site and also by GP and pharmacist group. Across the four sites, there appeared to be perceptions of higher quality relationships at site 2 (villages area) and site 4 (small town). GPs, in particular, at these sites rated very high proportions of their relationships with pharmacists as ‘good’ or ‘very good’ (91.7% at site 2, 95.3% at site 4), and at site 4, the average quality rating of ties to pharmacists by GPs was ‘very good’. Pharmacists
reported lower proportions of high quality relationships with GPs at both these sites however. Lower levels of high quality relationship reporting were seen at site 1, with only around a third of all contact ties rated as high quality. On average, both GPs and pharmacists at this site reported their ties to be ‘satisfactory’. Figure 5-10 provides further details of these measures and also presents sociograms for each site showing the level of reciprocal reporting concerning high quality ties. In this study, ‘high quality ties’ are defined as those ties reported to be either ‘good’ or ‘very good’ by the questionnaire respondents. The black lines on these sociograms indicate those ties that both parties agree are of ‘good’ or ‘very good’ quality. The pink lines indicate that one member of the dyad has reported that the tie is of high quality but this has not been reciprocally reported at the same level by the other member of the dyad. The reciprocation levels at all sites indicate that agreement between GPs and pharmacists about the quality of their relationships was not high. For example at site 3, only 18.2% of high quality ties were reciprocally reported. Again, sites 2 and 4 had greater levels of reciprocal reporting, with perceptions of quality appearing to be more aligned at these sites.

The higher quality relationship reporting observed at sites 2 and 4 may reflect the greater familiarity reported at these sites in relation to face-to-face contact. It may also be the case that these smaller geographical sites are more consistent with closed networks whereby actors feel closer and more attached to one another (Burt, 2005). However, the difference in GP and pharmacist levels of high quality relationship reporting at these sites alludes to a potential underlying problem – when one member of the dyad feels the relationship is not as good as the other member. If GPs are happy with their relationships, they may not be aware of the concerns or problems which pharmacists could potentially face in the relationship. It also indicates potential inequality in the reward and benefit of the relationship. GPs may be content with these relationships because they are serving their requirements satisfactorily; pharmacists may, on the other hand, feel dissatisfied because they may not be receiving the same reciprocal rewards.
Figure 5-10: Relationships reported to be good/very good quality, respondents only (Black lines = agreement about high quality, pink lines = high quality not reciprocally reported)

Site 1 – Large town
28.6% reciprocity
Mean quality:
GPs = ‘satisfactory’
CPs = ‘satisfactory’
% ties reported as good / very good:
GPs = 33.3%
CPs = 38.9%

Site 3 – City area
18.2% reciprocity
Mean quality:
GPs = ‘satisfactory’
CPs = ‘good’
% ties reported as good / very good:
GPs = 41.4%
CPs = 55.4%

Site 2 – Village area
52.2% reciprocity
Mean quality:
GPs = ‘good’
CPs = ‘good’
% ties reported as good / very good:
GPs = 91.7%
CPs = 58.3%

Site 4 – Small town
38.2% reciprocity
Mean quality:
GPs = ‘very good’
CPs = ‘good’
% ties reported as good / very good:
GPs = 95.3%
CPs = 63.9%
5.4.2 Central GPs and pharmacists – the stars

As outlined in chapter 3 (section 3.7.3.2), centrality is the concept of network position and is said to determine the importance of a node in the network (Bavelas, 1950). When considering degree centrality in relation to GP and pharmacist contact, it is useful to identify some of the ‘key players’ in the network. Those pharmacists who receive a lot of contact from GPs could be considered an important and potentially trusted source of information, an individual that GPs know and feel comfortable consulting. Similarly, a GP who receives a lot of contact from pharmacists may be considered locally to be an approachable GP, welcoming of contact from pharmacists and appreciative of inter-professional contact. It could be hypothesised therefore, that if some type of collaboration was required between GPs and pharmacists in the area, it may be advantageous to involve these key players. On the other hand, the pharmacist who receives a lot of contact from GPs may do so because they themselves direct many queries to these GPs that require a response. The GP who receives a lot of communication from pharmacists may do so because of potential errors they may have made or as a result of the way in which they prescribe. Therefore, in the context of GP-pharmacist relationships, making contact with many, and making this frequently, may not necessarily equate with being the most central or popular GP or pharmacist in the network. It is therefore important to examine factors beyond frequency and in/out degree, and use the interview data to interpret some of the network analysis findings.

Figure 5-11 and Figure 5-12 present sociograms demonstrating a variety of degree centrality measures. The nodes have been sized by their normalised centrality scores – the larger the node the more central they are.
Figure 5-11: Centrality measures at site 1 (large town)

a) Nodes sized by self-reported out-degree (Normalised - total number of contact ties made as a proportion of total number of possible ties)

The respondents’ self-reported out-degrees indicate that:

CP2 and CP3 are the most central pharmacists. GPs 1a, 1b, 1e and GP8a are the most central GPs.

Several GPs are quite isolated, with GP2b being the most isolated. CP8 and CP6a are the most isolated pharmacists.

b) Same nodes sized by one groups’ perception of the other groups’ out-degree (Normalised - total number of contact ties made as a proportion of total number of possible ties)

When using the perceptions of the other group about out-degree the picture is different. Several GPs are perceived by the pharmacists to be more central than the GPs report themselves. Many of the pharmacists are perceived by the GPs to be less central than the pharmacists report themselves. GP2b is still considered the most isolated GP. Consistency of reporting is seen with CP8, CP1, GP8a and GP4a.

c) Same nodes sized by a composite score of centrality (face-to-face contact, mostly direct contact, high quality tie centrality)

Rather than measuring simple number of contact ties made and received, this composite score of centrality aims to demonstrate those nodes who report to possess ties which could be considered stronger in nature, incorporating face-to-face contact, direct contact and high quality of tie.

Using this measure CP6b, CP2 and GP7a appear most central to the network.
Figure 5-12: Nodes sized by a composite score of centrality
(Face-to-face contact, mostly direct contact, high quality tie centrality)

Site 2 (villages)
CP1 and CP6 appear to be the most central pharmacists
GP2a and GP5a appear to be the most central GPs

Site 3 (city area)
CP9 and CP8 appear to be the most central pharmacists
GP1a appears to be the most central GP

Site 4 (small town)
CP6b and CP5a appear to be the most central pharmacists
GP2b and GP2a appear to be the most central GPs
In Figure 5-11, sociograms A and B give a comparison of out-degree, as self-reported, and reported by the other member of the dyad. This indicates that those pharmacists at site 1, who consider themselves to be quite central to the network, were not necessarily perceived in this way by GPs. Some GPs who considered themselves not particularly central to the network were considered central by some pharmacists. Sociogram C, in this figure, demonstrates centrality in relation to a composite score of self-reported presence of face-to-face contact, direct contact and high quality relationships. This measure attempts to move away from a focus on centrality in terms of frequency of contact or number of ties possessed, and focus more on aspects which could be related to the strength and quality of the tie. This sociogram demonstrates that, when using this composite measure, the centrality of some nodes increases, whilst for others this decreases. Figure 5-12, illustrates the composite centrality score for the remaining three sites. At most sites, only two pharmacist nodes are shown to be most central. At sites 3 and 4, GPs at these sites are not shown to be particularly central. At site 2, however, most of the respondent GPs appear to be very central. This finding is again reflective of GPs from this site tending to report familiarity and high quality relationships with the pharmacists at this site.

5.4.3 Strong ties

When considering what makes a strong tie, the reciprocation measures presented throughout this chapter can be considered important. If agreement is reached between the two members of the dyad, this validates the tie and suggests the tie may be strong. If accompanied by reciprocal agreement about certain characteristics of the relationship, which may typify more personalised contact (such as the occurrence of face-to-face contact, presence of direct contact, high quality ratings for the relationship and a high frequency of contact) these ties could be considered some of the strongest in the network. The questionnaire also asked respondents if any of their contact concerned non-work related social activities. Although, very rare amongst the respondents, some dyads did reciprocally report social contact.

Those dyads found to meet the above criteria could be considered to have the strongest relationships in the networks. As the centrality measures presented above in section 5.4.2
involved a composite measure of degree centrality in relation to face-to-face contact, direct contact and high quality rated contact, it was expected that several of these strong tie dyads would involve these central nodes.

Table 5-9: Dyads possessing strong reciprocal ties

<table>
<thead>
<tr>
<th>Site</th>
<th>CP</th>
<th>GP</th>
<th>Mostly direct</th>
<th>Face-to-face</th>
<th>Good/v good quality</th>
<th>Often/v often contact</th>
<th>Social contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CP6b</td>
<td>GP1d</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1</td>
<td>CP6b</td>
<td>GP1e</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1</td>
<td>CP6b</td>
<td>GP1a</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1</td>
<td>CP6b</td>
<td>GP1b</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1</td>
<td>CP6b</td>
<td>GP8a</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1</td>
<td>CP5</td>
<td>GP2a</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1</td>
<td>CP2</td>
<td>GP1b</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>0</td>
<td>CP1a</td>
<td>GP1a</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>0</td>
<td>CP1b</td>
<td>GP1a</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3</td>
<td>CP8</td>
<td>GP6b</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3</td>
<td>CP8</td>
<td>GP6c</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4</td>
<td>CP6b</td>
<td>GP3a</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4</td>
<td>CP6b</td>
<td>GP3b</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4</td>
<td>CP3a</td>
<td>GP2f</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4</td>
<td>CP3b</td>
<td>GP2f</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

No dyads possessed all five strong tie qualities, but six dyads possessed four of these. For two of these dyads, there was only a slight variation in direct contact reporting, with one member of the dyad reporting mostly direct contact and the other stating that the contact tended to be equally direct and indirect. Ten dyads possessed three of these qualities. Table 5-9 outlines these 16 strong tie dyads. Of the remaining dyads, five possessed two of these reciprocal qualities, 23 possessed one and the remaining 308 dyads did not possess any. Most of the strong tie dyads were present at site 1 and site 4 and, as suspected, tended to involve several of those identified as central to the networks in section 5.4.2. As shown in Table 5-9, many of these strong dyads involved the same pharmacists (or pharmacies) with GPs from the same practices. For example, at site 1, CP6b was particularly prominent with five reciprocally reported strong ties (four with GPs from the same practice), involving three or more of the qualities outlined above. Despite respondents at site 2 reporting high quality relationships (relationships reported to be ‘good’ or ‘very good’) and the highest levels of reciprocation about these high quality relationships, none of the strong dyads identified were based at site 2. The lack of
reciprocal strong tie reporting seen at sites 2 and 3 may be an artefact of the lower response rate (particularly from GPs) at these sites. For example, one pharmacist at site two (CP1) reported strong relationships with GPs at her local practice, including face-to-face, mostly direct, frequent contact and high quality relationships, but none of the GPs in this practice responded to the questionnaire. Thus this pharmacist may possess strong ties but the reciprocation level of these could not be determined.

Across those dyads possessing one or more reciprocal qualities, mostly direct contact was not found to exist alone, that is none of the respondents reciprocally reported direct contact without also reciprocally reporting a good/very good quality relationship. Similarly, the frequency of contact was not reciprocally reported to be often/very often without also being reciprocally reported alongside face-to-face contact and a good/very good quality relationship. Good/very good quality relationships were however reciprocally reported alone without the presence of frequent contact, direct contact or face-to-face contact, indicating that a relationship can still be considered to be of good quality without possessing these factors. Similarly, face-to-face contact was reported without the presence of the other factors too, indicating that face-to-face contact is not always accompanied by a good quality relationship.

Despite this, an association between face-to-face contact reporting and high quality relationship (good/very good) reporting was demonstrated by QAP analysis in UCINET (see chapter 3, section 3.7.5). Although based on self-reports of these relationships, a significant correlation between these factors was observed at all four sites (see Table 5-10). Significant correlations were also observed between face-to-face contact and mostly direct contact at all sites. High quality ties and mostly direct contact reporting were also significantly associated at three of the sites.
### Table 5-10: QAP correlations

#### High quality and mostly direct contact

<table>
<thead>
<tr>
<th>Jaccard coefficient</th>
<th>site 2</th>
<th>site 3</th>
<th>site 4</th>
<th>site 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-value</td>
<td>0.001*</td>
<td>0.051</td>
<td>0.024*</td>
<td>0.025*</td>
</tr>
</tbody>
</table>

#### High quality and face-to-face contact in last 12 months

<table>
<thead>
<tr>
<th>Jaccard coefficient</th>
<th>site 2</th>
<th>site 3</th>
<th>site 4</th>
<th>site 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-value</td>
<td>0.000*</td>
<td>0.001*</td>
<td>0.000*</td>
<td>0.007*</td>
</tr>
</tbody>
</table>

#### Face-to-face contact in last 12 months and mostly direct contact

<table>
<thead>
<tr>
<th>Jaccard coefficient</th>
<th>site 2</th>
<th>site 3</th>
<th>site 4</th>
<th>site 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-value</td>
<td>0.001*</td>
<td>0.020*</td>
<td>0.020*</td>
<td>0.001*</td>
</tr>
</tbody>
</table>

### 5.4.4 Summary

Respondents’ ratings of the perceived quality of their relationships varied between sites. GPs at site 2 and 4 rated their relationships more highly than those at the other sites. Reports of high quality relationships were not well aligned between GPs and pharmacists. A number of ties were identified as characteristic of more personalised contact including, face-to-face contact, mostly direct contact, social contact and high quality relationships. The centrality of individuals in the networks was assessed in relation to the possession of these types of ties. The reciprocation (i.e. agreement) about the presence of these types of ties was also considered important. A number of dyads were identified which possessed these strong reciprocal ties. Significant correlations were also found at all sites between face-to-face contact reporting and high quality tie reporting, and face-to-face contact reporting and mostly direct contact reporting.

### 5.5 Discussion

The findings presented in this chapter have addressed the first two objectives of this study – to explore the type and strength of relations, and to map and profile these relations using social network analysis. The style of contact reported to occur in these networks appears to be at odds with collaborative working, characterised as de-personalised, indirect and channelled through a number of brokers, who have the capacity to either
facilitate or impede contact. Pharmacists tended to report higher levels of contact than GPs and there was limited reciprocal confirmation of pharmacist reported ties by GPs. Limited reciprocation of contact indicates a lack of two-way information sharing and any form of collaborative behaviour. Misalignment in GP and pharmacist reports about the existence of contact also indicates different perceptions about the occurrence of contact, possibly as a result of general unfamiliarity with each other. The high level of indirect brokered contact may also result in a lack of awareness about the occurrence of contact, or the sender of the contact, which could explain the limited reciprocal reporting of contact observed. Some greater familiarity in the smaller geographical areas, particularly the villages site was apparent however, indicating that these types of areas may lend themselves to more personalised contact. Some individuals hold positions in the networks which appear to be favourable in terms of possessing strong reciprocated ties. These strong ties were characterised by a more personalised and direct style of contact, recognised by both members of the dyad.

The review of the GP-pharmacist literature concerning the nature or type of interaction presented in chapter 2 (section 2.2.2), identified a gap in knowledge about dyad level interaction and reciprocation. Previous work does indicate that communication is principally pharmacist initiated (Kennedy et al., 1997; Tanskanen et al., 1997) and some studies on the outcomes of collaboration indicate low levels of response to pharmacist recommendations, which could be considered non-reciprocated communication. One such study found 47% of pharmacist recommendations were approved, 16.5% were denied, whilst 36% simply received no response from the physician (Perera et al., 2011).

Adopting a relational network approach however, not only enabled the measurement of reciprocation in terms of contact made, it also enabled the examination of reciprocal reporting of contact, i.e. alignment of perceptions about contact and its occurrence. The misalignment of reporting at some of the sites not only indicates different perceptions between GPs and pharmacists about the level of contact occurring but a potential lack of knowledge about each other as individuals. The possibility of GPs and pharmacists over or under reporting contact must be acknowledged however. Possible motivations for such could relate to power and status - pharmacists may wish to over-emphasise their contacts with GPs to appear more central and GPs may under-report contact for fear of appearing dependent on the ‘lower status’ pharmacist. Problems with recall must also be
acknowledged, although it could be argued that if a person is not memorable to another person then this again indicates no knowledge of that person. However, some questions may have been more susceptible to problems of recall than others, such as meeting face-to-face in the last 12 months and mostly direct or indirect contact, which requires more specific information recall than just having had contact with someone.

The conceptual model previously developed by the author and presented in chapter 2, Figure 2-2 (Bradley et al., 2012), highlighted the importance of ‘knowing each other’ and reciprocal communication in collaborative relationships. The lowest level of the model - ‘isolation’ - is characterised by asymmetrical relationships, not knowing each other and non-reciprocal communication. The highest level - ‘collaboration’ - represents a convergence of perceptions and symmetry in the relationship. The reciprocal agreement observed amongst those classified as ‘strong dyads’ in this chapter, appears to represent this convergence of perception, meaning that these dyads could be placed at the collaborative end of this model. The norm across the sites, however, was more depersonalised, non-reciprocal communication, with divergence of perception observed. These weaker dyads, and thus the majority of the networks themselves, appear more akin to the ‘isolated’ and ‘communication’ levels of this model.

In relation to existing theories of networks (outlined in chapter 2, section 2.3.3.2), the context of the ties presented in this chapter is crucial to their interpretation. The ties can be considered ‘instrumental’ ties; they are formed for some instrumental purpose such as the sharing of information or exchange of resources, rather than ‘affective’ ties, which may exist between family members or friends (Knoke and Yang, 2008). The ties are also bound to the geographical area. The patient can be viewed as an important factor too; dictating not only the need for these ties, but also directing when and between whom these ties might form, as a result of their choice of GP practice and pharmacy. The term ‘strong ties’ has been used in this study to distinguish those in the networks reporting more personalised frequent contact and high quality relationships, reciprocally confirmed by the other member of the dyad. However, in the network and social capital literature, strong ties are often associated with more affective bonds of family and friends and weaker ties are reserved for more distant connections such as those with work colleagues or acquaintances. In 1973, Granovetter put forward the idea of ‘the strength of weak ties’ in
relation to securing a job. Strong ties were useful for accessing job opportunities in workplaces where friends and family already worked, whereas weaker ties with other acquaintances were helpful in accessing wider opportunities in the job market (Granovetter, 1973). In contrast, Krackhardt (1992) argued that, in the context of organisations, strong ties were important, particularly in times of change and uncertainty. People are said to resist organisational change, but can draw comfort from the trust based in these ties, which can reduce resistance to change. Krackhardt thus concludes that strong ties, rather than weak ties as proposed by Granovetter, can facilitate change.

Taken out of the GP-pharmacist context, in comparison with all the other relational ties these respondents may possess, these ‘strong ties’ would probably not be considered particularly strong in the affective sense (which is the basis of Krackhardt’s definition), especially as social contact was very rare amongst the respondents. However, they do not necessarily fit Granovetter’s weak tie definition either, as they are not characterised by distance or infrequent interaction. It is fair to say that, in the GP-pharmacist relationship context, these ties constitute strong instrumental ties and, outside of this context, weak affective ties.

Turning attention to social capital and the resources embedded in these relations, it is helpful to distinguish between different types of social capital. Distinctions have been made between ‘bonding’ and ‘bridging’ social capital (Gittell and Vidal, 1998; Putnam, 2000). The former is said to be embedded in close ties with those considered similar to ourselves, either socio-demographically or through a shared identity. The latter is embedded in ties to people who are dissimilar in these respects (Szreter and Woolcock, 2004). These distinctions may parallel the strong-weak ties definitions presented above, but they are not synonymous (Ferlander, 2007). Woolcock (2001) adds a third dimension to these definitions – ‘linking’ social capital – a form of bridging social capital. Whilst bridging social capital is viewed on a vertical level, linking social capital takes account of horizontal relationships and power differentials, and is defined as “networks of trusting relationships between people who are interacting across explicit, formal or institutionalised power or authority gradients in society.” (Szreter and Woolcock, 2004:655). In the GP-pharmacist context, there are historic power and authority differentials (see chapter 2, section 2.2.1) and continuing perceptions of these (Hughes and McCann, 2003). The asymmetry observed in this study amongst many of the non-reciprocal dyads would also
appear to reinforce this. Bridging and linking social capital is said to offer more than bonding social capital in terms of providing greater exposure and leverage to resources, ideas and information (Woolcock, 2001). However, it can also be considered the hardest form of social capital to build. Lin (2001) distinguishes between homophilous and heterophilous interactions, stating that the latter (interaction with those unlike ourselves), requires more effort due to lack of shared sentiments. Thus building bridging and linking capital may require more effort than bonding capital, and considering its horizontal nature, linking social capital could be viewed as the most difficult to build. Such difficulty, thus could explain the limited incidence of strong ties apparent in these networks. The next chapter examines this building process, exploring GP and pharmacist perceptions of how ties are established, maintained and strengthened.
6 ESTABLISHING, MAINTAINING AND STRENGTHENING TIES

This chapter aims to explore the process of establishing relationships, maintaining these relationships and then developing and strengthening these further. It draws primarily on the experiences and perceptions of the interviewees but also, where appropriate, discusses and draws on the social network analysis findings. The findings in this chapter are presented in a linear fashion to demonstrate the potential evolution of the GP-pharmacist relationship, from the basic fleeting encounter (section 6.1), to more sustained familiar contact (section 6.2), on to the development of strong ties (section 6.3). This section draws on the experiences of individuals and dyads possessing varying strengths of ties, as identified in the last chapter, and presents their perception of how these different levels may or may not have been achieved.

6.1 The GP-pharmacist encounter

For many of the pharmacists and GPs at the four sites, interaction between the two professional groups was limited. As previously presented, the majority of contact was by telephone and concerned routine prescription related queries. For many GPs and pharmacists, this type of interaction and encounter defined the totality of their relationship and no further contact or collaboration had occurred, with only a small number having developed stronger ties. Understandably, for those falling into the ‘weaker tie’ category, their main concern associated with building relationships was to try and ensure that these types of encounters went smoothly and without conflict. The encounter itself can be viewed as a constant source of potential conflict with the majority of queries instigated by the pharmacists relating to omissions on the prescriptions, dosage queries, or potential medication interactions, all of which hold connotations of fault or error on the part of the GP. The potential for conflict to arise from such a situation was an important consideration for the pharmacists interviewed.

6.1.1 ‘The approach’

Pharmacists spoke about the need for a certain approach to be adopted when contacting GPs, to avoid damaging the relationship or potential relationship. The necessity to raise the query with the GP, in order to protect the patient and abide by the ethical
responsibilities of the pharmacist, was said to override any possible fear of conflict. However, the need to adhere to ‘the approach’ or employ certain tactics with the GP was also recognised. These ‘unwritten rules’ appeared to underpin the very basics of the GP-pharmacist relationship. The views expressed by the GPs interviewed sometimes dispelled these rules and at other times confirmed them. On the surface, the approach appeared to be focused on obvious methods of avoiding conflict, such as being polite, kind and friendly. However, an undercurrent of medical dominance was also evident throughout. The following sections detail some of the main features of ‘the approach’ as described by interviewees.

6.1.1.1 No blame – more gain

One of the overriding features described by pharmacists was the importance of not implying or directing blame towards the GP during the conversation. This was said to be achieved through adopting a benevolent approach when raising the issue, for example:

Well you can’t be abrupt really, and you have to put things nicely! Rather than just tell them, ‘Right, this is wrong.’ You just give them the alternative basically and see what they say. Site 3 CP9

...obviously don’t make a fool of them...Just go round it gently, don’t say, “I’ve noticed this, you’ve done it wrong”...kindly say, “Can you check this?”...Quietly suggesting to them seems to get more than telling them. Site 1 CP6b

The pharmacist quoted above was one of the most central to the network at site 1, and was involved in five of the 16 strong reciprocal dyads identified in chapter 5 (Table 5-9). He possessed strong relationships with GPs at one practice, built up over a 10 year period, and felt that the way in which he approached GPs had partially contributed to the strength of these relationships. The use of passive language and deferential behaviour towards the GPs was, in some respects, a tactic employed by this pharmacist in order to deal more efficiently with queries and issues, and not necessarily a reflection of how he viewed his professional status in relation to the GPs. Similar sentiments were expressed by other pharmacists interviewed, with this style of ingratiating behaviour being recognised as a tactic in order to establish and maintain good working relationships:
Choose your words carefully, never make them feel that they’re at fault or error...you could say well really are you sucking up to them, but I would have to say well if you want to keep the working relationship maybe going with them and build one you’re better off doing it that way than being antagonistic. Site 2 CP5b

It was recognised that some pharmacists deviated from this approach, being too aggressive and directing blame towards the GP, which resulted in conflict:

...you’ve got to be, sort of, tactful and diplomatic at the beginning rather than phoning them up almost gloating, ‘oh you’ve made a mistake’...I know my predecessor here that’d be all he’d do...and I think he just used to clash heads. Whereas, I think if you give them the chance to say, ‘oh actually, no, I didn’t mean to do that’...but that’s just me, I suppose. Site 2 CP1

Overall, pharmacist advice in relation to ‘the approach’ was to try to raise the query without causing offence to the GP. Complementary to this, several GPs suggested that there was a need for GPs not to be offended by the pharmacist raising the query and to appreciate the potential benefit associated with this. This could indicate that the cautious ‘softly softly’ approach adopted by some of the pharmacists was perhaps not as necessary as they presumed, although, as the quote below demonstrates, the pharmacist adopting a kindly and respectful manner was still considered important to the GP:

Don’t get offended if a pharmacist points out a mistake because they’re being helpful. I mean obviously if the pharmacist is doing it in a horrible way then it’s a different story but if they are being polite and nice and they’re actually helping you out. Site 2 GP5b

6.1.1.2 Submissive behaviour – options not opinions

Some pharmacists when adopting the ‘no blame’ approach appeared to do so more submissively then others. A newly qualified pharmacist at site 1 spoke about how he approached GPs. His account indicates a belief that it would be advantageous to play a subservient role to the GP. Limited experience and thus lack of confidence could explain his perception that he should not assert his opinion during his interaction with GPs. However, his words do also indicate conformity with the idea of medical dominance after only a few months in practice:

...kind of show them like respect, a lot of respect...almost accept that, you know, in any meeting that you’re in they are kind of, almost in charge...that’s where I kind of
approach them, I’d never try and like force my opinion on to say what they’re doing is wrong or anything like that, you know. If ever there’s a question about something I’ll always give an alternative or options. Site 1 CP6a

This pharmacist was also working with the central pharmacist CP6b, discussed above in section 6.1.1.1. Witnessing CP6b’s successful interactions with the GPs, this pharmacist may have tried to follow a similar ‘softly softly’ approach, but with greater caution due to inexperience, which may have resulted in a more subservient approach.

Other pharmacists with several years’ experience in community pharmacy spoke of the interactions they had experienced with GPs in their early formative years and how these experiences had influenced their current way of approaching GPs:

…it doesn’t take long for you to realise that the GP doesn’t really want to be talking about things with the pharmacist….some of them were quite, you know, very abrupt, very off...once you’ve had a couple of phone calls like that, you realise that it’s easier to deal with the front line staff and let them deal with the narky GP...That’s fifteen years ago so, I expect if you asked a lot of pharmacists, they’d have a similar experience and once you’ve had a few of those you think, well, I don’t really want to have to go through that each time, I’ll deal with the intermediary. Site 2 CP 5a

The important role of the reception staff as a broker between the GP and pharmacist was outlined in chapter 5, section 5.2.2.1 and is discussed further in chapter 7 section 7.3.2.1. Other pharmacists had experienced negative interaction with GPs early in their careers, but now felt that the attitude of GPs towards pharmacists had changed and that the stereotypical image of the dogmatic, self-righteous GP often held by pharmacists was no longer relevant:

I certainly did come across it when I first qualified..., you know, “I’m the doctor, what are you talking about?” you know...But that, that’s gone, I can’t say that I ever come across that now. Site 0 CP1a

However, other pharmacists did suggest that, although rare, they did occasionally experience encounters with GPs during which some of these stereotypical characteristics were still apparent:
...sometimes it’s more their pride because you’re ringing them and telling them that they’ve done something wrong and sometimes they just say no and they keep it like that when you know that’s not the best thing for the patient and that’s quite frustrating. Site 3 CP5

R: [in relation to MURs] I’ve had a feeling that I am going too far and I’m not supposed to do that because I’m a pharmacist, but it is part of my job as well...the doctor, it wasn’t in this area, he wasn’t happy, not at all. So what can we do? Nothing
I: What did they say to you?
R: Kind of ‘go back to your corner’
I: Do you feel that has affected how you’ve approached GPs since or not?
R: No, no. I know they are much better than me because they have different knowledge than I have, but anyway I am learning when I am speaking with them. Site 3 CP1

The scenario given in the quote above relates to a confrontation over a Medicine Use Review (MUR), which the pharmacist had carried out with a patient, and the subsequent recommendations the pharmacist had made to the patients’ GP. According to the pharmacist, the GP was unhappy with the pharmacist carrying out this role and attempted to remind her that she was crossing some sort of professional boundary. The pharmacist also speaks about her own sense that she was ‘going too far’ and expresses powerlessness in relation to being subject to the demands of the pharmacy profession (in terms of being required to perform MURs) and in doing so facing anger from the GP. She states that this experience has not affected how she will continue to approach GPs in the future. Her closing remark that GPs ‘are much better than me’ and that she is learning new knowledge through her conversations could suggest that she is utilising these encounters positively to further her own professional development. On the other hand, it could also indicate that through these encounters she is learning to play a submissive role in the relationship.

Sometimes, pharmacists expressed acceptance of the nature of some GPs - an awareness that the GP may be difficult to deal with, but that it was necessary to interact with them in order to carry out their role as a pharmacist. However, having a prior negative experience of dealing with a certain GP can create a sense of apprehension when making contact again:
R: ...I just have to be professional and get on with it but he’s been quite...I don’t want to say rude but yeah rude sometimes [laughs].
I: How do you feel when you need to call him?
R: You sort of have that sinking feeling when you’ve got to ring up but you just have to do it anyway. Site 3 CP5

Some pharmacists did not adopt a submissive approach and this was often related to confidence and experience. One pharmacist at site 2 expressed a need for pharmacists to be confident when speaking to GPs. This pharmacist possessed several years’ experience in a range of roles including hospital pharmacy, medicines management consultancy and as a clinical support pharmacist at PCT level. Despite being new to the area and not yet having established strong links with his local GP practice he felt confident in his clinical skills and knowledge to approach GPs and express his opinions:

...if you’re confident about something don’t be afraid to speak to the GP because quite often they come across as being very positive and confident but they’re not always as confident and expert on a particular subject as you may think they are. Sometimes they want you to express a view, so don’t be frightened to express a view but always, make sure that you’ve got something to back it up and make sure that whenever you express an opinion it’s evidence based. Site 2 CP6

Another pharmacist at site 4, involved in one of the strong reciprocal ties identified in chapter 5 (Table 5-9), also felt confident enough to challenge GPs on their decisions and ways of working. This pharmacist was co-located with three other GP practices and whilst he felt that the co-location had not necessarily brought the level of integration expected, his quote demonstrates the advantage of being able to sit down with the GP to discuss the issue face-to-face. In his example, the pharmacist portrays the GP as stereotypically self-righteous in approach and closed off to his suggestions. It is only through one-to-one contact and physically demonstrating the problem, that he is able to change the GP’s mind:

[GP says] “I’ve done it like that, and that’s how it’s always been, it’s right”
[CP says] “No, it’s not right”
[GP] “Yes it is”
[CP] “No it’s not...okay right, let’s sit down...this is...there in black and white”
[GP] “Oh, no one’s ever shown me that before... fine, we’ll do it like that then”
So, it’s all that about how you approach it. Site 4 CP3a
6.1.1.3 The art of discretion

Another important aspect to ‘the approach’, in relation to building and maintaining relationships, was the need for discretion when finding an error. This involved contacting the GP concerned directly to discuss the error rather than involving others or reporting this to an external third party:

...not trying to be naughty, as some chemists do....when we’ve found a problem, we’ve took it to them, not to go through other channels, we’ve just said the script is wrong and given it back and saving their bacon a few times (laughter) because that always helps...just not making a big fuss about it...just going up and nicely explaining to him, “Can you just double check this, please?” Site 1 CP6b

GPs also spoke of the importance of the pharmacist not undermining the patient’s trust in them by contacting the GP first rather than highlighting the error to the patient:

Some chemists would tell the patient “Your doctor shouldn’t have prescribed this,” or, “Your doctor has prescribed this wrong dose,”...obviously we would be annoyed about that...if what is said has damaged the doctor/patient relationship...a certain chemist would drop us in it if we make a mistake rather than, trying to sort it out. Site 1 GP8b

Similarly, another pharmacist stated that the ‘no blame’ approach taken with GPs needed to be accompanied by discretion in front of the patient in order to demonstrate a collegial attitude to the GP:

...I’m always very careful when I’ve got a problem with a prescription, certainly if it’s an error or mistake, I’m always very careful how I communicate that to the patient, so as not to diminish their faith in the doctor...Because there’d be no good me phoning up and being quite tactful on the phone [to the practice] and then saying [to the patient], actually the doctor made a complete pig’s ear of this and gave you something completely wrong, so this is what you’re having in its place!...It’s things like that, I suppose, it just shows that you’re trying to be part of the team. Site 2 CP1

GPs also spoke about this collegial attitude, stating that they would try to be discrete in front of the patient if the pharmacist had made a mistake in the hope that the pharmacist would also act in the same way:

...one day I might do something wrong and I would hope that they would point it out without causing ructions with the patients and similarly, you know, they definitely did something wrong, and hopefully I sorted it out without causing ructions with the patient as well. What goes around comes around! Site 4 GP2e
In this sense the pharmacist becomes a useful ally for the GP by ‘covering their back’ and protecting their professional reputation. This type of alliance could be disconcerting for the pharmacist, in terms of wanting to keep the GP ‘onside’ and maintain a good working relationship, but also being aware of potential poor prescribing practices. However, if the pharmacist considers the relationship to be poor and feels no allegiance towards the GP, this situation could potentially be more disconcerting and professionally threatening for the GP. The quote given below outlines a scenario where the pharmacist informally mentioned a prescribing error that had occurred to PCT personnel. She does so because she feels that the GP in question has refused to follow-up her query. The GP, as a result, confronts the pharmacist, asking for more discretion when dealing with potential errors. The pharmacist however rejects any form of alliance with the GP as a consequence of the unfair treatment that she perceives she has received:

...I wasn’t making an official complaint, I just mentioned it to somebody...and the next thing [the GP] was over here and he said, “If ever there’s a problem, before you go to PCT, mention it to me first” and I thought, well no, I wouldn’t because you know, it’s the way he’s treating us and I wasn’t making an official complaint, I was just making an enquiry about him and I thought no...he was just upset because it had come back, it was just er, somebody talking to him about it. Site 1 CP1

6.1.1.4 Quality not quantity

Another feature of the approach which was said to maintain good relationships was judgement on the necessity of the contact:

Well, they don’t mither me about unnecessary things; they ring up with perfectly sensible queries. Site 4 GP2e

Some pharmacists felt that they had earned the respect of GPs by demonstrating good judgement in terms of when contact was necessary and an appreciation of the time constraints GPs face:

I don’t waste the doctor’s time basically, so like the cases I do send are like shingles. Eye infections I’m not going to send them, ‘cos I can sort it out myself...so I think they understand that when I refer someone it’s, it’s not wasting their time basically. Site 2 CP2
I've had them comment in the past, saying 'Thank you for doing that. That was common sense. There wasn’t any need to ring me. You know I’d have said ‘fine’. Otherwise you’d have been on the phone for ten minutes and wasted their time for two or three minutes, when they’ve got other stuff to do. Site 4 CP3a

The quote above was from a pharmacist at site 4, co-located in a health centre with three GP practices. The pharmacy possessed a strong historical relationship prior to the co-location with one of the practices (practice 2) and the comments given by this pharmacist are in relation to this particular practice. This pre-empting of the GP’s decision and confidence that the GP would be happy with his actions and judgement only applied to certain GPs that he felt he knew well. This pharmacist stated that he would not make these judgement calls himself in relation to prescriptions issued by the GPs he did not know so well in the other two practices or GPs that he knew through previous experience would prefer to be asked. He goes on to say:

I know there’s not going to be a problem with that and I know [practice 2] are happy with that because of the relationship that we’ve got. Probably the other two surgeries, I might have asked for the GP to give us a “yes” or “no”. Not so much [practice 1], more so definitely [practice 3] really, purely because I don’t see them that often and I know that [GP3a at practice 3] does like to know everything that’s going on, which is fair enough. Site 4 CP3a

These comments indicate that this part of the approach has to be modified depending on the GP’s preference and personality. Some GPs may be happy for the pharmacist to be proactive with decisions, whereas others will want to be consulted first. A GP from practice 2 at site 4 confirmed the strong relationships between the practice and the pharmacy, outlined above, and a feeling of familiarity between herself and pharmacist CP3a. This GP falls into the category of preferring pharmacists to be proactive and make common sense decisions. She expressed some annoyance with what she considered to be excessive contact and querying made by another pharmacist in the area (CP4). Whilst appreciating the patient safety aspect of pharmacist checks, she felt that CP4 queried her prescriptions more than other pharmacists in the area. She associated this with the personality of CP4, being ‘super-cautious’ implying that this is the reason for the query rather than necessity:

When I get a message that I need to phone [CP4] it is a bit of a heart sink type of feeling...It is a bit of a, ‘Oh it’s [CP4] again,’ type of conversation...I’m quite happy that
people look at my prescriptions, I think that’s an important safety thing, but I seem to have more issues with her than I do with the others...that’s obviously the way she works and she’s obviously super cautious, but yes, you do get a bit fed up with her. Site 4 GP 2f

CP4 however, was critical of the practice and expressed annoyance at having to query so many of their prescriptions. She appreciated that GPs may get annoyed by frequent querying from pharmacists but did not classify herself as this type of pharmacist. Her comments indicate a marked difference between GP and pharmacist perceptions of what constitutes excessive and necessary contact:

I don’t think [the GPs] realise that sometimes when you ring up, we’re not ringing up for a chat, we’re ringing up because we need to. Unless, I don’t know, unless some people do ring up all the time and they get fed up of it, but I don’t, so [chuckles]. Site 4 CP4

The idea of the personality of the pharmacist playing an important part in the frequency and necessity of queries was also raised at other sites. Some GPs characterised the pharmacist as ‘pernickety’, ‘fussy’ ‘picky’ and ‘precise’ and expressed frustration at the inflexibility in approach:

I think the pharmacist has to respect clinical autonomy and I think some pharmacists are very kind of, what shall we say, inflexible in their approach and they’ve got a very rigid idea of this says this in the BNF and it has to be this dose...sometimes they’re very unreceptive of the fact, well yes I know that’s right but I’ve departed [from] it because...So some of them have a great deal of problem with that, but that’s difficult because that’s...the sort of person that makes a good pharmacist...someone who’s quite precise and picky and checking things...but I think it helps if they can be flexible and respect clinical autonomy. Not assume there’s a fault, look at the reasons for it. Site 3 GP1b

This opinion was not however limited to GPs. A pharmacist at site 2 was critical of this type of approach by pharmacists. He felt, being new to the area that he was struggling to formulate relationships with the local practices due to general animosity between GPs and pharmacists in the area, caused by this type of approach from pharmacists:

...if that’s some of the antics that go on...phoning the odd doctor up because he’s forgotten to cross the T or whatever and it looks like an L...maybe it’s just got their back up to the point that they think oh we’re just a waste of space and that’ll take a long
time to then undo. It’s easy to get a bad reputation but you have to work a lifetime to get a good reputation and be seen as a valuable asset to the team...but at the moment there isn’t really a team in this area, I don’t feel. Site 2 CP5b

Another pharmacist at site 3 also stated that he felt there was a tendency for new pharmacists to focus on small interactions rather than assessing the overall medication regime for benefits. In his role, he advised them to use more judgement before querying an issue with the GP:

...you have to say ‘okay, we’ll keep that as long as the patient is stable’...So I advise them; try not to call every minute because you’ll always find some minor detail, and eventually they all start...picking that up from work, especially when it’s busy and then you can’t call every single minute. Site 3 CP3

However, this ‘pernickety’ approach was sometimes appreciated by GPs. Contrary to the opinion expressed by the pharmacist from site 2 above, a GP in the same area stated:

In the pharmacies you need somebody who’s quite pernickety and fussy and that’s really helpful, for me...you want somebody who will check, dot the I’s and check the T’s and I think that’s vital really...you’ll say, “oh it’s [name of pharmacist] on the phone again” but, actually, I find it very reassuring, I like the double checking and I like to know the patients are protected. Site 2 GP2c

This GP also felt that the confidence of the pharmacist determined the frequency of queries made, with those pharmacists lacking confidence querying more prescriptions. This GP had been working in the same practice for over 30 years and stated that she often advised GP registrars training at the practice to be tolerant when pharmacists telephone them, and ‘not to get cross’. Her advice however, indicates that the potential for GPs to be annoyed by pharmacist queries is a constant undertone in the relationship.

This section demonstrates the difficulties faced by pharmacists over whether their queries are appreciated or viewed as an annoyance by GPs. Some GPs prefer pharmacists to be more confident and proactive with decisions regarding the necessity of the query, others would prefer to be consulted first, and some find the queries reassuring regardless of their necessity. This raises the notion of whether good working relationships and respect from the GP is earned through demonstration of good judgement, in terms of when to contact the GP, or whether it is only through the possession of good relationships and familiarity
with the GP’s preferences that the pharmacist can have the confidence to make this judgement. The quote below indicates how sometimes GPs expect pharmacists to innately understand and pre-empt their preferred way of working:

*I think they need to appreciate fitting in with work patterns really, just being mindful of what works and what doesn’t and just trying to work appropriately. Or differentiating what is urgent and what can wait... you get a new member of staff or something, they don’t appreciate these things, so when’s convenient for you, trying to anticipate things.*

*Site 3 GP1b*

### 6.1.2 Summary

This section has described GP and pharmacist perspectives and experiences of their encounters. As the majority of contact was said to concern prescription or drug therapy queries, this encounter can be viewed as a constant source of potential conflict, with connotations of fault by the GP being implicit throughout. This section describes ‘the approach’ adopted by many pharmacists in order to prevent conflict and avoid damaging the relationship or potential relationship with the GP. For some pharmacists, ‘the approach’ can be viewed as a tactic to ensure that the pharmacist receives a satisfactory outcome to the encounter without offending the GP. The key parts of the approach involve the importance of not implying or directing blame towards the GP during the conversation and this was characterised by adopting a kind and friendly manner, using passive language and sometimes being deferential towards the GPs. It was recognised that some pharmacists deviated from this approach, being too aggressive and directing blame towards the GP which resulted in conflict. Some pharmacists adopted a more submissive approach when encountering GPs, often related to their level of confidence or experience. For some pharmacists, ‘the approach’ had been adopted in response to previous or early career negative experiences interacting with GPs, when GPs had been unwelcoming of their queries.

Another important aspect was the need for discretion when finding an error. GPs also spoke of the importance of the pharmacist not undermining the patient’s trust in the GP by contacting them first rather than highlighting the error to the patient, and pharmacists felt that by doing so they were demonstrating a collegial attitude to the GP. Another feature of ‘the approach’ concerned judgement on the necessity of the contact. Some GPs
expressed annoyance at the level of contact made by some pharmacists and characterised pharmacists as ‘pernickety’ and ‘fussy’ ‘with an inflexible approach. Some pharmacists were also critical of this type of approach, claiming that it did not help the reputation of pharmacists with GPs. On the other hand, some GPs found the attention to detail and double-checking by the pharmacist reassuring. These differences in preferences demonstrated by GPs ultimately highlight the difficulties faced by pharmacists when not familiar with these GPs or their preferences.

6.2 Building ties – getting to know each other

This section focuses on moving beyond the fleeting and limited encounter towards forming ties, getting to know each other, and becoming familiar with working styles and patterns. As mentioned in the previous section, short and infrequent encounters often characterised the totality of the relationship for many GPs and pharmacists. For some GPs and pharmacists there was little sense of ‘knowing each other’ and a general feeling of anonymity. This is also demonstrated by findings from the network questionnaire, such as the high levels of non-reciprocal reporting regarding the occurrence of contact, and high levels of response at practice/pharmacy level rather than at individual GP/pharmacist level, at some of the sites.

6.2.1 The anonymous pharmacist

Some GPs interviewed expressed uncertainty as to whether they knew the names of particular pharmacists. As outlined in chapter 5, section 5.2.2.1, when completing the network questionnaire, more GPs than pharmacists chose to answer the questions for the pharmacy rather than the individual pharmacists listed, indicating that they did not know the names of the pharmacists they had dealings with. Some GPs associated names with particular pharmacies but were unsure whether these related to the pharmacist or another member of staff at the pharmacy:

*I know [name A] at [pharmacy 2] and [name B], I think, but I’m not sure whether she’s a pharmacist or, you know, that’s terrible, isn’t it?! We’ve worked together for ages. Site 2 GP 2c*
Indirect contact through the practice receptionist was the norm for most GPs and pharmacists, and this system served to de-personalise their contact. This GP felt that she knew the pharmacy manager of the pharmacy in the same health centre because of the frequent direct contact she had with him. Contact with other pharmacies in the same town tended to be indirect through the receptionist and therefore more anonymous:

...I get sort of practice notes from time to time on the computer that say...‘Pharmacist from [name of pharmacy] rang and wants you to ring about something’ and so I will ring them, but I’m not ringing a person, I’m just ringing that telephone number as it were. Site 4 GP2e

According to some GPs, the anonymity of the pharmacist was said to be perpetuated not only by indirect contact but by the pharmacists’ own style of contact. For example, some pharmacists reportedly did not introduce themselves by name, emphasising the pharmacy company rather than the individual:

Most of them I don’t know them by name. I just get a phone call to say, “This is the pharmacist from such and such”. Site 1 GP 8b

Similarly when receiving written information in relation to MURs, the anonymity of the pharmacist was again preserved, with no individual presence apparent:

If I get an MUR form with just a pharmacist’s squiggle [signature]...I don’t know...it could be any one of their team. It may not necessarily have the branch details...the [chain pharmacy] has so many branches; it could be any of those five. So it is difficult to tell exactly which pharmacist colleague is feeding back to you. Site 4 CP3a

Pharmacists also spoke about a sense that their pharmacy had ties with a practice forged indirectly through their contact with the practice reception or even more indirectly through the pharmacy staff’s contact with the practice reception, but they themselves felt little presence:

Our driver drives to those surgeries every single day, so the receptionists are used to dealing with [our pharmacy], from that point of view, but with the actual doctors, they don’t know me, they’ve never met me and I’ve never met them, so from that point of view it is, it is a bit anonymous really. Site 1 CP3
Or a feeling of uncertainly regarding whether or not the indirect style of contact that they had meant that they were identifiable to the GPs:

I: Do you feel the GPs know you? Do you think they know you by name or...?
R: Erm...at a guess, I think they probably would know me by name just because I’m always on the phone...you know, like via the receptionist I think. I don’t think...like I wouldn’t...I don’t know, to be honest. I don’t really know, to be honest. Site 2 CP3

6.2.2 Nice to know or need to know?

GP opinions were divided regarding the necessity to ‘know’ particular pharmacists. Some placed emphasis on the importance of getting to know a pharmacist to understand their level of experience and to build trust:

I’m more inclined to speak to somebody that I know and know by face to ask some advice from...I suppose it’s a trust thing isn’t it, about speaking to somebody who you don’t know. Site 3 GP3f

Other GPs questioned the necessity of getting to know a pharmacist at all and whether this would have any effect on day-to-day working:

...I suppose it would be polite but, yes...I can’t think of a situation where it would be necessary. I mean there hasn’t been a situation where I’ve thought, “oh it would have helped if I knew the pharmacist by name.” Site 3 GP1d

For some GPs, the emphasis was placed not on the need to know the pharmacist in order to understand their expertise and to build trust, but for the pharmacist to be familiar enough with the practice and GPs to understand and know particular working styles, for example:

...I would be a bit annoyed if...the [pharmacist queried the] same thing again repeatedly, I would hope that she’d get to understand if we had a particular style of doing something. Site 3 GP1b

For pharmacists who were new to their pharmacy, without prior knowledge of the local GPs’ working styles, existing pharmacy support staff provided continuity and were said to be important sources for relaying this information to the new pharmacist. Although, as
this pharmacist states, she felt more comfortable double checking certain information with the practice, to understand and learn the practice’s approach for herself:

...I think [the previous pharmacist] got used to their ways of prescribing whereas we came along new and thought, “oh hold on a minute, that’s not right, we’re going to check it out”...I’m already getting used to [the practice’s approach]. So some things that I’ve said to the girls, they’ve said, “Oh they always do that, you know, don’t worry about it,” but it’s always best to check isn’t it?, especially when you’re still finding your feet. Site 3 CP5

6.2.3 Face-to-face

A significant association was found between ties reported to be of high quality (good or very good relationship) and those reported to have involved face-to-face contact in the last 12 months (chapter 5, section 5.4.3). However, across all sites meeting face-to-face was uncommon. Face-to-face contact was often linked with ‘knowing’ the pharmacist or GP and cited as an important method of moving from the basic encounter to forming ties:

...if you talk to somebody on the phone [and] you’ve had no problems with them that’s [a] satisfactory [relationship]. You can’t say it’s very good because I don’t even know them...I haven’t even met them, you just talk to them over the phone. Site 3 GP6b

Several pharmacists stated that they had made an introductory visit to GP practices when they had first started working in the area, but meeting GPs during these visits was rare. Some pharmacists, including one pharmacist who also worked for the PCT, stated that they considered it crucial for community pharmacists to introduce themselves to local GP practices:

...a lot of people start and they don’t go and say “Hello” and I think that’s really bad form because they’ll know a new bloke has started down the road but they haven’t been introduced and you haven’t made the effort to go and say “Hello”, you’ve got to start like that...[then] you’ve opened the door, haven’t you, and say “If ever you want anything, give us a ring and we’ll see what we can do” and then, you know, occasionally they will. Site 0 CP1a

I actually think it’s vital and I do know that pharmacists will go and visit surgeries to introduce themselves. I would be worried if a pharmacist new into the area, or taking over a pharmacy didn’t do that. Site 4 CP6b
However, the PCT pharmacist (CP6b at site 4) indicated that, beyond the initial meeting, there was a need for more sustained contact, through which the pharmacist could demonstrate to the GP their ability and knowledge:

...if I came in during a meeting for ten minutes and introduced myself, and went away again, I know personally [laugh] I'd have to think back, oh I vaguely remember meeting that person, but I've still no idea what they're like to work with. Whereas once you've done it, that's far more powerful in the context of regarding Mrs. Smith's prescription...I think that, you know, pays far greater dividends than meeting. Site 4 CP6b

Similar ideas that the one-off introductory meeting was simply not enough to form a tie were also expressed by GPs. This GP had received a visit from a new pharmacy manager from the local supermarket pharmacy:

...the guy who came [to visit us] yeah we knew his name but you know you never see them again, if he asked me now I have no idea – I'd pass him down in the street and I wouldn't know. So a lot of this is actually to do with frequent contact with people really because otherwise we see so many people and we’re actually in communication with loads of other healthcare professionals and at the end of the day if you don't see them that often they’re just like, anybody. Site 3 GP6b

Contact simply not being sustained enough to memorable could explain why high proportions of face-to-face contact ties were not reciprocally confirmed, as shown in chapter 5, section 5.2.3.1.

6.2.4 Propinquity
There was often an assumption amongst pharmacists who were not co-located with GPs that relationships would improve if they were based in the same building. However, those pharmacists who were co-located at sites 1 and 4 felt that the anticipated increase in and enhancement of communication had not materialised as expected. At both sites, the main pharmacist in each health centre already possessed good working relationships with one of the practices prior to co-location. Whilst these historical relationships had remained, new relationships with the other practices in the health centres had not yet materialised or progressed to the same level. Furthermore, both pharmacists felt that their existing strong ties to one particular practice had been somewhat diluted and de-personalised.
They were now faced with more practices and GPs to maintain relationships with and a constant stream of patients from several practices, making for a very busy workload:

[At the old premises] when it wasn’t as busy, because we weren’t dealing with the other two surgeries’ prescriptions as well, I could, if the phone was engaged, I would just nip down the corridor and be in reception, nip into the doctors’ room in between, say “Can you just alter this…Whereas now, it’s a case of going up three flights of stairs, and if I’ve not got double cover when I come back down, you’ve got baskets round the corner, and a waiting time of twenty-five minutes. It just doesn’t happen. Site 4 CP3a

Both pharmacists stated that the design of their health centre buildings had somehow de-personalised their contact, despite being under the same roof. For example:

[At the old site] we had a backdoor into [practice 2], so in the summer when the doors were open, there was a courtyard, you’d find the GP would come out of the surgery into the courtyard, into the back of the pharmacy, and you’d be like “Oh alright”. But that’s how it was. But we can’t do that now. Site 4 CP3a

It’s changed from moving here, because it’s - you used to be able to walk in the back but now it’s been well locked with all the security doors, it is less friendly now to go in...it is further, even though it’s in the same building, we’ve gone further away...when we was next door to them, with that [practice] we were so close and it was easy for them to just walk in, the distance and three flights of stairs to get to the top, makes it difficult. Site 1 CP6b

One of the GPs from site 1, with strong ties to the pharmacist quoted above, also stated that he had noticed a decrease in personal contact since the co-location, but was unsure why this might be so:

...I’ve certainly spoken to him a little bit less [since co-location] than I probably remember doing, but why that’s the case I don’t know. I’m not quite sure whether that’s anything to do with the geography or just, you know, the queries haven’t just sort of come, come up. Site 1 GP 1d

However, those pharmacists co-located or situated very close to GP practices did possess more opportunity to meet face-to-face with GPs. Unlike, the example of the supermarket pharmacist who visited the surgery to introduce himself, but has since been long forgotten (as described by GP6b at site 3, in the previous section), those pharmacists situated close to or co-located with GP practices held the advantage of a more continuous presence. Not
necessarily through the arrangement of formal meetings but through opportunistic or convenient encounters, simply ‘bumping’ into one another due to their close proximity:

_We have a brilliant relationship, we just walk in, see the doctors, even this morning I was talking to a doctor on the way in, in the car park._ Site 1 CP6b

_[I see the pharmacist] just passing by really...It’s a shortcut to my car park, so if I see them I just say hello._ Site 1 GP8b

_Occasionally I go in about a specific query if I’m passing...rather than picking up the phone I vaguely like seeing people from time to time and saying hi...I will call in and then I’ll put my query about support tights or whatever it might be to him there and then. There’s always something._ Site 4 GP2e

Another pharmacist at site 1, situated in very close proximity to a practice, stated that all the doctors there would know her by sight, mainly because of the length of time she had been working there and the GPs’ tendency to come over to the pharmacy for their own personal purchases. At one time, the pharmacy sold drinks and snacks and the GPs and other practice staff would visit the pharmacy to purchase these. The pharmacy then stopped selling these and the pharmacist noticed a reduction in visits from the GPs and other practice staff. This example appears somewhat ironic, given that ‘the shopkeeper’ image of community pharmacy is often cited as a barrier to closer co-operation between GPs and pharmacists. This pharmacist described how, during these brief visits, several GPs would informally chat with her regarding non-work related matters and it was through these interactions that many of her perceptions about the approachability and the personality of the GPs were formed.

6.2.5 Summary

This section has outlined GP and pharmacist perceptions about moving beyond the simple encounter to becoming familiar with each other and forming relationships. GPs often did not know the names of local pharmacists, but also claimed that pharmacists often perpetuated their own anonymity by not introducing themselves by name or not clearly including their name on communications sent to the GP. The prevalence of indirect contact through brokers also served to maintain anonymity and de-personalise the contact, with the individual pharmacist unrecognisable from the pharmacy company brand. Some GPs felt little desire to get to know local pharmacists, questioning the need
for this. Other GPs felt it was necessary to know pharmacists in order to understand their level of skill or knowledge. For other GPs, the onus was placed more on the pharmacist needing to know and understand their working styles and preferences. Face-to-face contact was reported to be an important factor in getting to know each other. It appeared to be considered good practice amongst pharmacists to introduce themselves to GPs, if new to the area, although not all pharmacists in the sample had done this. However, these meetings may not be sustained enough to make the pharmacist memorable to the GP, and this could explain the high levels of non-reciprocal confirmation of face-to-face contact reported in chapter 5. Pharmacists who were geographically isolated from GP practices felt that being co-located with GPs would lead to better relationships and more frequent face-to-face contact. Although, those pharmacists who were co-located, felt that their contact had become less personalised then their previous arrangements, due the designs of their buildings and being more busy generally. Those who were co-located or shared a geographical space in some way (e.g. a car park) did however have greater opportunity to informally bump into each other, begin conversation and become more familiar with each other.

6.3 Strong ties – becoming central
This section focuses on those individuals and dyads possessing strong ties in the networks and how they may have achieved such positions. As presented in chapter 5, strong ties were characterised by reciprocally reported contact, speaking directly to each other, face-to-face contact and perceiving the relationship to be of high quality. This section examines the characteristics of those with strong ties and their perceptions of how these ties may have been formed.

6.3.1 Social ties
The questionnaire asked respondents whether they perceived any of the contact that they had to be ‘social - non-work related’. Social ties were found to be low across the sites. Pharmacists tended to report more social ties than GPs. Eight pharmacists reported 24 social ties with GPs and 5 GPs reported 5 social ties with pharmacists across the four sites. The majority of the ties reported by pharmacists were not reciprocally reported by the corresponding GP (18 ties out of 24 not reciprocally reported); whereas most of the ties
reported by the GPs were reciprocally reported by the pharmacists (1 tie out of 5 not reciprocally reported). Overall, the social ties reported were said to be rare in frequency:

...they’ll pop in and are quite sociable. I see them about town as well and have a chat. But that’s really it. Site 4 CP3a

One social tie, that was reciprocally reported by both parties, was between the co-location pharmacist at site 1 and a GP from the practice with whom the pharmacist already had historical strong ties (as outlined in section 6.2.4). The relationship was described as such:

I think we, we like to think, you know, [we’re] more than just work as colleagues. There is a, a sort of level of friendship as well. Site 1 GP1d

R: We’ve just had a baby and the doctors bought me a present for the baby...It’s unusual for doctors.
I: So do you have a kind of informal social contact as well?
R: We do but only through work, it’s not outside...although I do get invited to all the doctors, if one leaves or a person leaves, I do get invited to the leaving do, yeah, but otherwise, no, we don’t see or talk to each other at any other time bar work. Site 1 CP6b

CP6b’s quote above that it is ‘unusual for doctors’ acknowledges the rarity of this kind of relationship, which again is confirmed by the findings from the questionnaire. However, this pharmacist also reported social ties with three other GPs in the same practice who did not reciprocally confirm these. This, along with the majority of the social ties reported by pharmacists not being reciprocally reported, indicates a difference in perception about what constitutes a social non-work related tie. If the tie is bound by the workplace, as in the example above, it may be difficult for respondents to establish whether the interactions are simple pleasantries or something more sociable.

Although, in this example, the relationship is bound by the workplace, there is a sense that this pharmacist is considered to be a colleague and included as part of the team by being invited to the practice’s social occasions. This type of inclusion in social events was not the norm across the sites and tended not to be extended to the ‘average’ community pharmacist. For example at site 4, the locum pharmacist who worked alongside GP practices through his PCT role and had developed strong ties with one particular practice
through this work, was also included in practice social events because “he’s virtually embedded in the practice” (Site 4 GP3a).

In these examples, the working relationship had developed first and then the social element of the relationship had followed. However, some interviewees felt that one way to develop closer working relationships might be to develop the social relationship first:

_Not necessarily a drug related matter but just like a social event like, a professional ball or something which is once a year for all GPs and pharmacists...if you have the social network then it would work for you to build up that relationship and for them to seek advice irrespective of circumstances, but if you don’t have that social network then I don’t think it will break that stigma._ Site 3 CP6a

Other pharmacists felt that social contact was more important with practice reception staff than individual GPs. One pharmacist at site 2 had built up a social network with the local reception staff and had utilised the social networking website ‘Facebook’ to maintain these relationships:

_R: We have really good relationships with all the receptionists from these three surgeries...they’re all my Facebook friends as well, we get on well._
_I: And you’ve put rarely for social contact with the doctors there..._
_R: Not with the doctors so much...no, [it’s] more with the staff._ Site 2 CP2

This pharmacist felt that these social relationships were advantageous in two ways. Firstly, in terms of resolving prescription queries quickly as those receptionists he knew socially would put him through to speak to the GP directly, so that the issue could be resolved immediately. Secondly, in relation to business advantage over his competitors as he felt these relationships led to some favouritism from the practice staff who would refer patients to him for medication blister packing. These advantages are discussed further in chapter 7, section 7.1.

### 6.3.1.1 Homophily

A key concept in social network analysis is the idea of homophily, that is the concept that people are drawn towards and form ties with those similar to themselves (McPherson et al., 2001). Whilst the existence of contact ties between GPs and pharmacists may be dictated by location and the flow of patients (and are in this sense, instrumental ties), in
terms of building stronger or more social ties, homophily may play a role. As discussed in chapter 5, section 5.5, homophilous ties are said to require less effort to build than heterophilous ties (Lin, 2001). Individuals may find that once they have some awareness of and familiarity with the GP or pharmacist, knowing that they have something in common may make approaching them in the future easier. One pharmacist from site 3 felt that sharing the same ethnic background as the GP was helpful for him. At site 3 around a third of the population described themselves as Asian or Asian British, primarily from a Pakistani background in the 2001 census:

I: What do you think it is that makes some GPs more approachable than others?
R: Probably personality and being from the same ethnic background because a lot of the doctors in and around the area are from the same ethnic background due to the demographic of the area. Site 3 CP6a

Age was also another consideration in terms of approachability. One GP at site 4, with a good relationship with the pharmacist co-located with the practice, felt that it was easier for her to talk to those who were a similar age, which the pharmacist was. They also shared a common link regarding their children both attending the same nursery, providing them with a non-work related subject to discuss:

It’s sometimes easier to speak to people who are about the same age, and have the same sort of things...you know. I can talk to [CP3a] about his daughter because she’s the same age as my daughter...I don’t know him socially, I don’t go out for drinks with him! [laughter] But saying that, we do have a lot in common, our daughters go to the same nursery, you know?...we discuss school entry and all sorts of bizarre things. Site 4 GP2f

This GP goes on to say that she assumes, but cannot be sure, that another local pharmacist with whom she only has telephone contact with, is older than her. She suggests that it is only through face-to-face and regular contact that she has become aware of the things that she has in common with CP3a and contemplates that if she had met this other pharmacist, she may realise that they also have something in common.

These findings indicate that homophily may play a role in shaping how approachable GPs and pharmacists consider each other to be. However, as the contact is fairly restricted between the two groups, there is limited opportunity for them to recognise elements of
commonality which could lead to stronger or more sociable ties. Furthermore, the limited face-to-face contact and fleeting nature of the contact could lead to assumptions of heterophily rather than homophily between the two professions.

6.3.2 Stability
It may appear obvious that in order for strong ties to develop the relationship needs to be stable with both parties remaining in the same place over a period of time:

...apart from anything else they do seem to change fairly rapidly at some of the pharmacies...one of the reasons why I know [CP3a] is because he has been a consistent face for some time...because a lot of them...come for a while and then move on...if I only have cause to contact them every six months and they're only there for eighteen months, I've only contacted them three times and it isn't enough to make an impression. Site 4 GP2e

6.3.2.1 Continuity
In previous studies, GPs have been reported to be critical of the lack of continuity of pharmacists in community pharmacy (Bradley et al., 2012). Concerns expressed related to lack of continuity of care and not having knowledge of the patient. According to the 2008 Pharmacy workforce Census, over a third (36.9%) of community pharmacist respondents worked as a locum. Community pharmacy locums were also found to be four times more likely to work in supermarket pharmacies than employed community pharmacists (Seston and Hassell, 2009). As supermarket pharmacies tend to operate extended hours, the high concentration of locums in this type of pharmacy is unsurprising as several pharmacists will be required to work in shifts to cover these hours.

On the whole, GPs interviewed at the four sites expressed little concern about the continuity of the pharmacists at the pharmacies they had contact with. This could however be an artefact of the sample, as the majority of the pharmacies included did have a regular pharmacist working there. GPs stated that there were advantages to regular pharmacists in relation to continuity of care and possessing knowledge of the patient. Some GPs reported that a regular pharmacist who knows their patients and their medication well was a useful information source for the GP and that a locum pharmacist could not provide the same insight:
...it probably highlights things more and does pick up patients who have perhaps been abusing the system and that kind of thing...we’ve had a lot of information through about people who’d claimed lost prescriptions and that kind of stuff...if there’s regular pharmacists they will probably pick up problems whereas if you’ve got locums and things they wouldn’t because they’re not there for very long. Site 4 GP3d

The regular pharmacist was the preferred pharmacy model for the GPs interviewed, but several did state that the use of locums was necessary and it would be unrealistic to expect otherwise:

...sometimes we’ve had to leave the query till the regular person comes...I think continuity is important but then one has to realise it’s not a perfect world and...people have to go on holiday. I wasn’t here for the last two weeks so the patients had to do without me...sometimes they can’t help it. Site 2 GP5b

This GP stated that use of locum pharmacists was acceptable as long as it was accompanied by some continuity from a regular pharmacist as well:

So long as locums are providing a certain element of service, and not the predominant service provider. Then it’s okay. Because just as it is with doctors and other community health professionals, I think pharmacists also do well when they get to know the patients, because they know the idiosyncrasies and the eccentricities of certain patients, and they know when a patient is a cause for concern and that can only come through continuity of care. So, if the locums are predominating any particular unit then that would be a cause for concern, but not otherwise. Site 4 CP3a

For some GPs, the continuity of the pharmacist was of little concern. These GPs tended to be those that reported not knowing their local pharmacists and having only limited contact. Consequently, they were not aware if there was any continuity of pharmacists in these pharmacies. Continuity was however important for those that had particularly strong links. For example, a GP who regularly instigated contact with her local pharmacists to ask for advice stated:

I think in order for me to have the relationship I do with them, where I can ask questions, I need to know that it’s the same person that I’m asking questions to, otherwise I’d feel a bit silly. Site 4 GP2f

For the pharmacists interviewed, being a locum or relief pharmacist was reported to be a barrier to forming close links with GPs. Physically moving from place to place is an obvious
barrier to the formation of any relationship. One pharmacy manager spoke about her previous experience as a relief pharmacist. She stated that being a relief pharmacist prevented co-operation between the pharmacy and GP practice due to lack of continuity:

...when you are a relief pharmacist, you have to be really careful, you can’t work like I’m co-operating with them [now], that if something is not signed, okay they’re going to do it early morning for me and I can send it back, I would have to send ill patients back there waiting for an hour until somebody will sign the script for them. Site 3 CP1

She went on to say that prior to her becoming a permanent pharmacy manager, several relief and locum pharmacists were used at the pharmacy. She felt that this had had a detrimental effect on the practice’s perception of the pharmacy:

With our surgery I know they don’t like changes. Before I came here [there] was a few pharmacists changing...so they don’t like it, they want somebody permanently who’s going to be taking care about the patients. Site 3 CP1

Pharmacists not only reported that moving from place to place as a relief or locum pharmacist prevented co-operation and the building of ties with GP practices, but also that it was not considered the domain or responsibility of a locum pharmacist to be involved in the formation of relationships:

As a locum you only need to do work in a pharmacy and not really have any interaction with the outside pharmacy world...because you are a manager you get to get involved with surgeries and just part of being and supporting each other on that basis. Site 3 CP6a

So far this section has concentrated on the employment patterns in pharmacy and how lack of continuity can prevent the formation of strong ties. However, the interviews also indicate that this works both ways. Several of the GPs at the sites were locum GPs or worked on a part-time basis. Often when describing their questionnaire responses, pharmacists stated that they did not know a particular GP very well, or had not met them because the GP only worked a small number of sessions a week. Similarly, these GPs often reported that their working patterns were the reason why they had limited contact with local pharmacists. There tended to be a general assumption that their full-time colleagues would be more familiar with local pharmacists:
I’m only actually here one session a week, because this is a locum post, but a regular locum post...that’s probably why I don’t have that much contact with them, because yes, it’s literally one morning...working part-time can be a barrier to a lot of things. I suppose if you’re working full-time you are more likely to have more contact with them and if they are ringing you up a lot of times, I suppose you do get more friendly with them, really. Site 4 GP3e

The questionnaire captured the respondents’ full or part-time status. T-tests were performed in UCINET to establish whether there were any significant differences between full and part-time workers in relation to average degree, average frequency of contact, average proportion of ties met face-to-face, average proportion of ties considered to involve mostly direct contact, and average proportion of ties classified as good or very good quality. No significant differences between the means for the two groups were found at any sites.

6.3.2.2 History

One of the overriding features of strong ties between GPs and pharmacists was length of time the two parties had known each other. Often interviewees when asked about what they thought had contributed to good relationships stated that they ‘just happen over time’. This indicates that the factors influencing the development of these relationships are quite nebulous to the interviewees. Time offers the opportunity for both parties to experience recurrent successful interactions, through which opinions may be formed. It is likely that length of time interplayed with the other factors discussed in this section contribute to the development of these strong ties.

The network analysis performed demonstrated that the frequency of contact between the professional groups was low and that the nature of the interaction tended to focus on routine queries rather than in-depth clinical discussions. If repeated successful interaction is required to form strong ties and opportunities for interaction are limited it is unsurprising that several years may be required to form strong relationships:

Well as time goes on, I’m sure I would be getting in touch with them more, because, you know, once a month, that is 12 times a year on average, so three years is 36 times. Site 3 GP 1d
I think we’re just building up a relationship more with [practices 7, 8 and 9]…we’ve only been here three months and it’s not really a lot of time especially with some of them like [practice 8] they give two-monthly prescriptions so…you’re not seeing the customers as well, so there’s less queries and things that arise. Site 1 CP6b

The pharmacists that were fairly new in their posts were confident that they would build up stronger relationships with GPs over time. However, there was a sense that again this would happen naturally rather than through any specific action on their part:

[The pharmacy manager has] been here for like ten years of whatever…So [the GPs] will know him and they’ll have already built up a good relationship with him but if he’s…busy, solving all these problems, they will speak to me and I think, you know, in time they will get to know me. Site 1 CP6a

The impact of long-standing historical relationships was particularly apparent at one GP practice at site 3. This practice had strong historical links to an independent pharmacy next door, but this pharmacy had recently been taken over by a chain pharmacy. After 12 months, the GPs there did not feel that they knew the new pharmacy or pharmacist particularly well. The pharmacist and two GPs interviewed from this area were both keen to develop relationships further, but again the prevailing idea that this would just happen over time was apparent. This quote by one of the GPs demonstrates the familiarity and loyalty that the practice had with the previous independent pharmacist and that adjusting to change was an ongoing and lengthy process, not only for the practice but possibly for the patients as well:

I:  Do you know the name of the pharmacist, the regular pharmacist there at [pharmacy 5]?
R: No. You see I suppose that speaks volumes doesn’t it? And in fact we still call the pharmacy [the previous owner’s name]…on our scripts, I think we’re trying to change it so it doesn’t say deliver to [x]’s…I think we may have just changed it or just about to change it, but I think for a long time it still said deliver to [x]’s and if I’m talking to patients we still collectively all call the pharmacy behind the practice [x]’s. It clearly isn’t, but I think he would…most of the patients would talk to [x] on first name terms. Site 3 GP3d

This example also demonstrates how these long-standing historical relationships can be inherited by new GPs joining the practice. If a long-standing relationship exists between the pharmacist and the more established GP partners, this relationship can become part of
the practice’s culture. As new GPs start to learn about the culture of the practice, through the process of socialisation, they may also adopt these relationships:

*I think, initially when I came to this practice that relationship was already there...because [the pharmacist] had been there for twenty years and obviously a lot of the GPs have been here for the same time so I think for them it grew over time. With me it was just because everyone trusted him anyway so that’s kind of inferred when I started*.

Site 3 GP3f

That is not to say that all GPs at the same practices shared similar opinions of, or relationships with, their local pharmacists. But the potential influence of the practice’s collective perception of local pharmacists on newly qualified GPs joining the practices should be acknowledged.

### 6.3.3 Trust and dependency

For the small number of GPs and pharmacists possessing strong ties, it was apparent that there was a level of trust between these dyads. Previous work in this area has argued that GPs place more emphasis on the need to trust pharmacists than vice versa, due to the commercial aspects and potential conflict of interest in community pharmacy, and that pharmacists tend to be more reliant and dependent on GPs than vice versa (Bradley et al., 2012). Again this theme was prominent here, demonstrating the imbalance of power in the relationship. However, for those possessing stronger ties, trust and reliance appeared to be more mutual in nature.

One strong tie identified at site 1 between CP6b and GP1e appeared to exhibit some dependency on GP1e’s part. CP6b’s description of the relationship indicates a perception that GP1e used the tie for reassurance:

*Dr [1e] will ring worrying and ask me questions a lot...he rings once, twice a day...I think he just lacks confidence...So he rings, double checking himself.* Site 1 CP6b

However, because GP1e did not take part in an interview, it is questionable as to whether this GP would perceive the relationship in the same way. Overall, amongst those few GPs with strong ties to pharmacists, there tended to be a sense that whilst they trusted the
pharmacist, and they found them a convenient and useful source of information, they were not dependent on the relationship:

...You have to be resourceful; you can’t depend on one particular service provider. So community pharmacists are one aspect of that support that I need. Most of the time it’s just the BNF, sometimes community pharmacists, and less often, the hospital pharmacists. Site 4 GP3a

One GP at site 4 with a strong tie to CP3a stated that whilst not dependent on the pharmacist for advice, it simply made more sense and saved time for her to utilise the pharmacist. She indicates that there may be, amongst GPs, some perceived stigma attached to seeking advice from others and that it was not the norm for her GP colleagues to discuss when advice has been sought from the pharmacist. In this sense, even when the pharmacist is utilised for advice, they may be a hidden and unrecognised resource:

I shouldn’t say this should I? But I think a lot of GPs like to think that they’re very good at everything and they don’t need help with anything and yes, I am quite capable of sorting out my conundrums, but I think it just saves time to pick up someone else’s expertise really and so therefore I do use the pharmacy probably more than the other [GPs] do. I have occasionally seen people say they’ve been to speak to the pharmacist, but it’s more of an occasion than a regular occurrence. I don’t know. I don’t obviously sit in their rooms and monitor what they do, but I imagine they probably don’t...but then again I guess I don’t really talk about when I go down, so maybe they do. Site 4 GP2f

For several of the strong dyads the development of trust was intertwined with the length of time that they had known each other, the frequency of their interaction and their repeated experiences of successful interactions. Location appeared to also be an important factor, with many of those strong tie dyads being co-located or situated in close proximity to one another. This links with the idea of propinquity discussed in section 6.2.4 whereby close proximity facilitates interaction through convenience and opportunity. The flow of patients from GP to pharmacist which necessitates contact and provides opportunity for interaction is also linked to geographical space. It must be recognised, however, that this study was designed so that the sample were contained within small geographical locations. Despite allowing respondents to add other ties they possessed outside the sample on to the questionnaire and the opportunity to discuss these further in the interviews, the study could have failed to capture ties outside of the presented
sample. There was however, a suggestion by some interviewees, that trust could transcend location if strong enough. One GP spoke of her previous experience at the practice where she worked as a registrar. A large city area with many pharmacists, the practice often collectively consulted one particular pharmacist for advice. The pharmacist was not the nearest to the practice, but he was a trusted resource:

_It just comes back to the question of how important it is to have those links and as long as you do have a link with someone who can give you good trusted advice...it doesn’t really matter where they are in relation to the practice._ Site 3 GP3f

Another example was provided by the pharmacist at site 4 who possessed strong links to some of the GPs with whom he was co-located. He stated that he also received phone calls from other GPs based in another health centre, approximately four miles away, asking for his advice. A pharmacy of the same chain was also located in this other health centre. This indicates that gaining a good reputation for being helpful or knowledgeable in certain areas, and therefore distinguishing oneself from others, can help to build trusting relationships:

_...we do tend to get used as quite a hub of information and we’ll always try and answer the queries. If we can’t answer it there and then, we’ll do a bit of research and get back to them. There’s usually an answer somewhere._ Site 4 CP3a

### 6.3.3.1 Being recognised as an expert

As discussed previously in section 6.1.1.4, GPs often described the community pharmacist as an important safety check, characterising their nature as someone who is ‘fussy’ and ‘particular’. Additionally, they were commonly viewed as a resource in relation to information concerning stock and supply issues. This idea again reinforced the pharmacist’s status as a retailer and supplier of a product. It was rare for the GPs interviewed to consider community pharmacists as an information resource beyond the more administrative and technical checking type aspects of the role. This idea also links with those discussed in chapter 5, section 5.3 regarding GPs’ perceptions of the triviality of the nature of their interactions with pharmacists. Some GPs did however consider community pharmacists to be experts in medicines:
They are a useful source of information. They know more about drugs than we do. I think it’s good to ask. Site 4 GP3a

There was some evidence that trust had developed when GPs recognised certain pharmacists as experts in particular areas. For example, at site 3 GP3f stated that the pharmacist her previous practice regularly consulted was chosen as a trusted resource because, he was, “…a real kind of expert...especially when we were talking about Vitamin D and things like that, he gave us quite a lot of good advice.” The co-located pharmacist at site 1 stated that the queries he had from several GPs with whom he possessed strong ties often tended to be related to diabetes and diabetes medication. One of these GPs, recognising that this pharmacist had a particular interest in the area, asked to meet with him to share his knowledge and to learn about various treatment options:

…I was trying to get some updating on available insulin products...and [CP6b] having a particular interest in that area, we had a lunchtime meeting where he went through all the various pens and the insulin devices that were around. I think I took from that that it was actually quite a difficult thing to actually keep on top of, you know, in your head all the time...’cos it’s constantly changing. So I think I went away with the knowledge of where to look should I have a query, rather than an in depth understanding...it was just more about how to look for the information that I wanted. Site 1 GP1d

When asked if he considered CP6b to be an expert in that area, GP1d stated that he did as he knew CP6b had a particular interest in and kept up to date with the area. This statement was however accompanied by the caveat “...I mean there are other professionals I could also, I could go to, but [CP6b]‘s downstairs and he’s usually quite happy to talk on the phone, even at the drop of a hat, you know.” This could be reflective of the idea presented in section 6.3.3 that perhaps GPs do not wish to be viewed as dependent on the community pharmacist for advice. However, it also indicates that the pharmacist is being chosen over these other professionals because he is accessible and can provide more immediate advice. The pharmacist is also preferred over and above these others because he has shown a willingness and eagerness to help the GP.

Those pharmacists with strong ties felt that it was important to repeatedly demonstrate their knowledge and expertise to GPs in order to build the GPs’ confidence and trust in them:
Make sure you have the answer for when you actually go and see them, because they will obviously say, “What do you think?” Once you’ve been able to answer them a few times, they’ll have confidence in you. Site 1 CP6b

...if you’re going to end up being in a close relationship with the GPs, there’s always a bit of, to start with, knowing what level you’re at...they’re going to ask you questions, if you’re coming back with the answers, or if you don’t know the answers, you’re quite willing to go away and find out, then they’re more likely to use you and I think that’s probably why they do, especially [practice 2]. They will ring us up and ask us a lot of questions and also when they have issues with other pharmacies in the area, they’ll ring us up to check it, really, which is quite nice. Site 4 CP3a

In the quote above, CP3a implies that the same level of trust does not exist between the GPs at practice 2 and other pharmacies in the area - indicated by the GPs choosing to double check what they may have been told by other pharmacists with CP3a. For CP3a, demonstrating his knowledge and expertise repeatedly to the GPs has, in his opinion, set him apart from other pharmacists and led to him being the ‘trusted local pharmacist’, a position he perceives to be a favourable one.

6.3.3.2 Going the extra mile

Linked to the idea of demonstrating expertise and knowledge to build trust, and already touched upon in the previous section, is the idea of indicating willingness to help. Pharmacists felt that in order to set themselves apart from others, they needed to demonstrate to GPs that they were willing ‘to go the extra mile’:

*Do as much running around as you can for them, you know, whenever they ask anything, do it, you know, that’s the best way to build up a relationship, just showing that they can trust you. Don’t let them down on deliveries, weekly trade, anything like that. Just be reliable and it speaks volumes then.* Site 2 CP2

GPs too indicated that those pharmacists that they did trust appeared very willing to help, were motivated by patient care rather than financial motivation, and were hard working:

*I think [CP6b] is that kind of person. He’s, he’s quite willing, he’s quite enthusiastic, he’s knowledgeable...[has] enthusiasm for the job and [he’s] accessible...so a combination of all those factors, including personality.* Site 1 GP1d

*He was probably a workaholic [laughs] and he would go above and beyond. So if there was a patient...we’d changed the scripts since he’d done his twice a week delivery*
service or whatever and she couldn’t get in, then he would go and make an extra delivery just for that patient...he worked above and beyond probably. Site 3 GP3d

...trust comes with experience...it’s a combination of factors. You develop a certain element of trust based on how proactive they are when they are getting back to you with their concerns about patients and you know that they care. It’s not just a financial element which is important to them. Site 4 GP3a

The financial element of pharmacy and the ‘shopkeeper’ image is often cited as a hindrance to the GP-pharmacist relationship and creation of trust. However, the paradox here is that if the pharmacist adopts an ‘above and beyond’ approach and becomes a trusted associate of the GP and practice, the pharmacist or pharmacy can in some respects financially benefit from this relationship. This theme and its implications are presented in detail in the next chapter (Chapter 7, section 7.1.3). Previous work indicates that GPs place more emphasis on the need to trust pharmacists because of potential financial motivation than vice versa (Bradley et al., 2012). This study indicates that whilst there may be an imbalance in power in terms of the pharmacist feeling that they need to prove themselves and earn the GP’s trust, the demonstration of altruism by GPs in relation to the patient was also an important consideration for pharmacists when developing relationships:

We have no relationship with Dr [X]...he does everything for money, so therefore it alters the way they prescribe, where as some of these doctors are very patient orientated rather than money orientated in that they do, that makes it a lot easier...we’ll see them working when we go home when they should have gone home two hours ago, because they actually are caring and we’ll call them on the Saturday even though they’re not supposed to be working. Site 1 CP6b

There are obvious logistical barriers and constraints to a ‘above and beyond’ style of working, such as time and resource issues, which are discussed in more detail in the next chapter. However, some pharmacists did not consider the action they took to be particularly remarkable. For example, a pharmacist at site 2 with strong ties to her local practice expressed the notion that trust and relationships ‘just happen’. Almost as an afterthought, she then stated that she had previously asked to attend the local practice’s meetings to disseminate information about the pharmacy and the services on offer. Whilst she did not consider this to be particularly remarkable, the network analysis and interviews indicate that meetings between pharmacists and GPs were not the norm:
It just, sort of, happens, I don’t do anything specifically...but if we do have any new services or anything going on or any problems, then I usually do ask if I can attend one of their, sort of, practice meetings and go in and see them face to face, I think sometimes that helps...I’ve done that quite a few times...we started doing flu jabs for people who can’t have them on the NHS, and much to my surprise, they started sending people over. Site 2 CP1

6.3.4 Summary

This section has focused on those individuals and dyads with strong ties and examined their perceptions of how these ties may have been achieved. Social ties were very rare across the sample, but those that did possess them appeared to also have a social connection, albeit limited. These social ties were more reflective of the social connections work colleagues may have, such as attending leaving dos or Christmas parties together. This social inclusion indicates that some pharmacists were considered to be ‘part of the team’ by GPs. There was also some evidence that social ties had developed through homophily, with GPs and pharmacists discovering things that they had in common and this helping to maintain the relationship. As ties were developed instrumentally, for a purpose (to aid the patient), homophily may help to strengthen the tie rather than to the form the tie. However, due to the limited and de-personalised contact many GP and pharmacists have, there may be limited opportunity to recognise any commonality and thus strengthen ties further. The stability of both actors was also necessary for the strengthening of relationships. However, the current patterns of employment in community pharmacy, with a high level of locum pharmacists, do appear to be at odds with the necessary continuity needed to maintain these relationships. History was found to be important, and due to the rarity of contact, it could take several years to establish these relationships. History was said to breed familiarity, loyalty and trust and, in some cases, trusting a particular local pharmacist had become part of the practice culture which was passed on to new GP starters. Location was obviously important in the formation of ties, however trust was also said to transcend location, with some GPs choosing to consult a trusted pharmacist who was not necessarily closest to them geographically. For those pharmacists who had developed and maintained strong ties, they appeared to have earned GP trust by firstly becoming recognised as an expert in a particular area of medication, and/or secondly demonstrating great enthusiasm and willingness to help the GP and/or patient. GPs also stated that those pharmacists who showed they were willing to ‘go the extra
mile’ and placed patient care above financial motivation were the most trusted. However, GPs were often keen to separate trust from dependency stating that they could go elsewhere for the required information, but they choose to consult the pharmacist due to their accessibility and willingness to help.

6.4 Discussion

This chapter has focused on the formation, maintenance and development of ties between GPs and community pharmacists and considered how those situated in different network positions with different tie strengths, perceived that these ties have been achieved. It has addressed the third objective of the study which was to examine individuals’ positions in these networks and how these have been achieved and maintained.

A number of factors in the formation and maintenance of the relationship have been identified, including, the way in which they interact with each other, their perceptions of each other and a number of contextual factors, such as location and history. This chapter has identified what appears to be a set of unwritten rules (labelled as ‘the approach’) played out in the interactions between GPs and pharmacists – particularly on the pharmacist’s behalf – demonstrating, on the one hand, conformity to a traditional fixed hierarchy in healthcare, whilst on the other, employing the approach tactically in an attempt to achieve a desired outcome. Even those pharmacists in possession of strong ties appeared to perpetuate this hierarchy through their interactions, whilst also at the same time attempting to set themselves apart from other pharmacists. GPs with strong ties to pharmacists were appreciative of these and the information received through them, but they were still keen to disassociate themselves from any implied dependency upon the pharmacist.

Similarities can also be drawn between this study and work on face and politeness between physicians and pharmacists (Lambert, 1996). Drawing on Erving Goffman’s (1955) ideas of ‘face’ and Brown and Levinson’s politeness theory, Lambert (1996) hypothesised that those pharmacists who worked directly with physicians, such as those based in hospitals, would be less polite during interactions than those working in the community. Additionally, pharmacists would be more polite when writing
recommendations to physicians than when reporting allergies, as giving a recommendation was a more potentially face-threatening act for physicians. Hospital and community pharmacist respondents were asked to produce written responses to a hypothetical drug allergy situation. The findings supported the hypothesis that recommendations were written more politely than reports (with some pharmacists abstaining from making recommendations) and that community pharmacists were more polite when writing recommendations than hospital pharmacists. However, variations in perceptions of power and social distance were not related to variation in politeness, thus Brown and Levinson’s theory was only partially supported. Lambert concludes that pharmacists need to recognise the socially constructed nature of professional roles and power and how these can be reinforced through everyday encounters such as reporting an allergy or making a recommendation.

Community pharmacists in this study were also using politeness to manage their interactions with GPs which could be viewed as potentially face threatening acts for the GP, such as reporting a potential prescribing error. In an earlier study, along the same lines but with pharmacy students, Lambert offered a word of caution to pharmacy students and pharmacists using these approaches, claiming that they need to be “wary of the strategic communicative choices they make” as these can “impact on their professional identities, sometimes in unfavourable ways”. He claims that the deferential approach adopted only serves to reinforce “existing professional roles, divisions of labour and power relations” (Lambert, 1995:554). These statements have resonance to the findings of this chapter in relation to the way in which pharmacists themselves may perpetuate traditional hierarchies through their interactional approach. GPs were also critical of the way in which some pharmacists maintained their own anonymity during episodes of contact.

Parallels can also be drawn between ‘the approach’ identified in this chapter and observations made by Stein in 1967 about the interaction between doctors and nurses. Stein labelled this approach the ‘doctor-nurse game’. This game involved the dominant doctor being covertly guided in clinical decisions by the subservient nurse. The key rule of the game involved the careful and implicit management of interactions to ensure that the fixed medical hierarchy was not disrupted:
“The cardinal rule of the game is that open disagreement must be avoided at all costs. Thus the nurse must communicate her recommendations without appearing to be making a recommendation statement. The physician in requesting a recommendation from a nurse, must do so without appearing to be asking for it.” (Stein, 1967:699)

Stein claims that doctors and nurses have worked out the rules of the game due to their shared history and that successful game playing is rewarding for both as it creates a successful alliance between doctor and nurse which breeds respect (Stein, 1967). Similarities can be drawn here with the findings of this study, particularly in relation to the need to avoid conflict, not to imply blame towards the GP, and to provide options rather than opinions. The evolving role of nurses since the 1960s has however led to a reassessment of traditional theories of medical dominance (Freidson, 1970) and the doctor-nurse game (Stein, 1967). In response to these changes, Stein re-visited his theory in 1990 and concluded that nurses had unilaterally decided to stop playing the game, through education, and essentially what could be described as a re-professionalisation exercise (Stein et al., 1990). Shaking off the shackles of the professionally oppressive doctor-nurse game enabled greater contributions to patient care and better job satisfaction, but was also disconcerting for those who preferred the security of a traditional hierarchical model (Stein et al., 1990).

It could be argued that in the case of pharmacy, pharmacists have not unilaterally agreed to stop playing the game and/or that the organisational and contractual systems within which they perform have not allowed them to do so. These systems could be considered the real shackles on the pharmacist which, in effect, requires them to tactically play along with the game, to ensure they get their work done and meet the demands of their professional and organisational responsibilities. Such constraints are further explored in the next chapter.

More recent writing on the doctor-nurse relationship has drawn on the symbolic interactionist concept of ‘negotiated order’ first introduced by Strauss et al. (1963) in their study of two psychiatric hospitals. Strauss et al. recognised the stable elements of the organisation, such as rules and policies, hierarchies and organisational objectives, but claimed that inherent uncertainties within the organisation were negotiated either implicitly or explicitly in order for the actual work of the organisation to take place.
(Maines, 1982). Svensson (1996) argues that the interaction between doctors and nurses on contemporary hospital wards is best interpreted through this negotiated order perspective, rather than the doctor-nurse game. Svensson’s focus was on face-to-face negotiations through which the organisation of work is decided – who will do it, when it will be done and how much will be done (Svensson, 1996). Allen (1997) developed these ideas further by drawing examples from an ethnographical study of a UK hospital, which identified incidences of work organisation occurring in the absence of face-to-face negotiations. Changes to and the blurring of the nursing-medicine boundary was found to occur through the actions of individuals but not necessarily through interactions or negotiations (Allen, 1997).

It could be argued that in relation to this study, the limited interaction and face-to-face contact observed between GPs and pharmacists would mean limited opportunity to establish this ‘negotiated order’. Perhaps the medical dominance models, criticised in the nursing literature as being outdated and deterministic, are still applicable to the GP-pharmacist situation. However, amongst those in possession of strong ties with an opportunity to meet face-to-face, such as the case of CP3a at site 4 (who met face-to-face with a GP and effectively changed the GP’s mind about a particular issue), there is the possibility of negotiating directly to establish a particular order. Undoubtedly, a certain level of confidence on the pharmacist’s part is also required. The need for revision to the negotiated order is said to arise from structural change (Fine, 1984). Thus the introduction of new pharmacy services and imminent changes in commissioning responsibilities and the NHS generally could all require continuing negotiations between GPs and pharmacists. However, if the style of interaction is more akin to the ‘GP-pharmacist game’, as in the case of those with weaker ties, there appears to be little room for negotiation.

The next chapter examines perceptions about the benefits of possessing strong ties and whether those with weaker ties feel that they are disadvantaged in any way. It also examines the opportunities and constraints faced both internally and externally to the networks.
7 OPPORTUNITIES AND CONSTRAINTS

Chapter 5 presented overall characteristics of the networks demonstrating the varying positions individuals held based on the nature and strength of their ties. Chapter 6 followed by presenting individuals’ perceptions of how those differing positions and types of ties may have been achieved. This chapter examines perceptions of the consequences of those differing ties and positions, focusing on the opportunities and constraints these may present for those involved. This chapter considers whether it is beneficial and necessary to hold strong ties and whether being isolated from others or possessing weak ties presents any constraints. This chapter then considers the future transformation of these loosely connected structures into more integrated networks and examines the internal and external barriers to change these networks face.

7.1 Benefits of strong ties

This section examines how strong ties between particular GPs and pharmacists across the four sites were perceived to benefit them professionally and personally.

7.1.1 The ‘safety net’

A key feature of the contact between the two professions, particularly appreciated by GP respondents, was the ‘safety net’ role of community pharmacists:

*Prescriptions will never be issued perfectly, bugs will come in the system and [pharmacists] are a vital part of delivering safe medicine to people. Site 0 GP1a*

*...it does facilitate safer medicine management...it’s a useful thing and I try and maintain those kinds of relationships. Site 1 GP1d*

Whilst this theme is included under the benefits of strong ties section, it is not suggested that weaker tie pharmacists perform a lesser patient safety function. The professional and ethical responsibility of the community pharmacist indicates that regardless of the strength of the relationship with the GP, they would act to protect the safety of the patient. However, as the previous chapter outlined, strong ties were often associated with feelings of trust and approachability. When pharmacists feel that their queries and advice
are welcomed and trusted, this may prompt the pharmacist to share more information with the GP, potentially improving the safety or care of patients. For example:

...Perhaps [GPs] ought to listen to us now and again, because [patients] might tell us things that they haven’t told the doctor...if you’ve got the confidence and the contact that you feel you can actually ring up the doctor and say did you realise that Mrs so and so has said this to us. Site 4 CP4

...for the services we provide, the contact is just about adequate...maybe if there was closer contact I could possibly advise the GPs on certain things...prescriptions where I know the patients aren’t taking them. Site 3 CP9

Similarly, GPs recognised that pharmacists may gain insight into aspects of patient behaviour which they may not be party to. The sharing of this information with the GP in order to protect the patient from risk was believed to characterise a good relationship. Additionally for GPs, the possession of strong ties and trust can be reassuring in terms of patient safety. In chapter 6, an example was presented of a GP at site 1 who frequently utilised the pharmacist as a way of double-checking his decisions. Another GP at site 0 stated that he found it disconcerting if there was no contact whatsoever from a pharmacist and questioned the safety implications of this:

I think there are safety issues...it was very noticeable at my previous practice there was a local pharmacist...and they never contacted us ever about prescriptions. Now that’s impossible...I am certain that they used to just amend [the prescription] themselves...which is completely wrong, they couldn’t never contact us. Site 0 GP1a

7.1.2 Efficiency and convenience

Although patient safety was seen as a potential benefit of strong ties, respondents did not indicate that any major patient safety related incidents had been prevented through the possession of good relations. The main benefits of strong ties were perceived to relate to the operation of efficient systems and processes.

7.1.2.1 ‘Makes life easier’

For pharmacists with strong ties there was often the sense that these simply ‘made their life easier’. One of the key frustrations described by pharmacists (as outlined in chapter 5, section 5.2.2.1 and discussed further in this chapter, section 7.3.2.1) was the limited
opportunity to speak directly to GPs to quickly resolve a query, or the length of time it took to receive a response back from the practice or GP. Strong ties were often accompanied by the prospect of more direct contact with the GP or preferential treatment of the query by practice receptionists:

If [the GP has] not got a patient then [reception] will put me straight through...if not, they tend to put a note on the list so as soon as that patient’s left the room, they then call me back, unless I’ve said, “oh, you know, [the patient’s] not waiting, they can call me back at some point this afternoon”, depending what it is that I’m asking...Quite often when I’ve said it’ll wait until the end of the surgery, it still comes after the last patient’s left. Site 2 CP1

7.1.2.2 Patient convenience

Essentially, this feeling of life being made easier was linked to the ability to be able to provide the patient, or ‘customer’ with the product they required, without inconveniencing them:

...maybe you don’t change the outcome but if it is a slick service, [patients] come in, they get their stuff...if there’s a problem it’s sorted there and then and they’re out the doors quick, I think they see it as a well organised service. Site 0 CP1a

Some pharmacists with strong ties felt that these enabled them to resolve prescription issues with the practice on the patient’s behalf. Without these strong ties, pharmacists believed they might encounter resistance from the practice and be forced to send the patient back to the GP. Strong ties provided the possibility of reaching a verbal agreement with the GP by telephone to dispense an alternative product (if the original item was not in stock), correct a dose, make changes to the item (e.g. if the GP had prescribed ointment when the patient required cream), or dispense an unsigned prescription and have this signed retrospectively. The main aim of these informal arrangements was to avoid inconveniencing the patient. Pharmacists also felt that they were saving the practice and GP’s time:

...I’ll phone and say, “look, you know, this is out of stock, are you happy for me to just keep swapping over prescriptions for something similar without phoning you every two minutes” and it was, like, “yeah, fine”...I suppose, if I met quite a lot of resistance, I probably would just end up saying ...“take it back to the surgery and get them to sort it out”...one phone call can then sort maybe twenty prescriptions, whereas, if we didn’t
have that relationship they’d be seeing those twenty prescriptions coming straight back to them. Site 2 CP1

For some pharmacists, possessing strong ties and knowing the GP, resulted in them feeling confident to make minor changes themselves without consulting the GP beforehand:

...yesterday [a prescription for] Oiatum cream came down. We can’t get it at the moment so I’d issue junior Oilatum cream. I know there’s not going to be a problem with that and I know they’re happy with that because of the relationship that we’ve got. Site 4 CP3a

Other pharmacists felt confident to make clinical decisions, if circumstances required, based on the strength of their relationships. CP1 at site 2 indicated that she would feel comfortable utilising the strong ties she had with some of the GPs at her local practice, both in terms of providing the patient with a required product and to make her life easier when busy or unable to contact them. A judgement call is made regarding another GP at the practice with whom she feels she does not possess a strong tie. This weaker tie cannot be utilised in the same way:

I know that picking up the phone, whether I’m going to meet resistance or whether there’s a possibility of meeting resistance. With Dr [x], it depends what mood he’s in...whereas, with the others it doesn’t really matter, almost so much that, if I was busy I could make a judgement call...“I couldn’t get through to you”... or “it was a Saturday, so I’ve done this”, without feeling, will they accept that? Site 2 CP1

CP1 at site 2 went on to say that if she was unable to contact certain GPs and a patient was in need of an item, she knew she could supply this and the GP would provide her with a prescription retrospectively. This also demonstrates a certain level of trust in the GP by the pharmacist. A similar sentiment was also expressed by GP1a at site 0, part of a strong tie dyad, who described an example of this trust being utilised for patient convenience:

...I often say to patients [or] write a note...go and ask the pharmacist for some product, support stockings for example, they’ll sort it out and I’ll sort out the prescription later. Now that’s technically against the rules, but, so what?...It’s better for patients and I can write the right thing later. Site 0 GP1a

These findings do indicate that there was often a sense that strong ties and trust enabled flexibility and a slight ‘bending of the rules’ in order to fulfil patient need.
7.1.2.3 Providing a co-ordinated service

Another benefit linked to patient convenience was the ability to provide a streamlined service by co-ordinating what was prescribed with what was dispensed. At site 2, one pharmacist perceived a willingness from local GPs to heed his advice regarding the co-ordination of prescribing cycles with the required dispensing cycles of the nursing homes he provided a service to. The quote presented below describes the difficulties experienced when interacting with practices, without these strong ties. He attributes these problems to the GPs not knowing him and thus not being open to his advice:

...we deal with a lot of doctors in [nearby large town] and they are hard work...they don't listen to a thing you say...they don't know who I am, they don’t know how I work...The doctors here are really understanding of me, how the whole [nursing home] system works. But they’re just not willing to learn in [nearby town] I've been into see them, I’ve been into their practice meeting, explained how the whole systems works, it works for three months then they go back to their old ways again...patients are always running out of meds...they're not willing to get them back into the nursing home cycle...you can ask them so many times and they just don’t listen. Site 2 CP2

7.1.3 Financial benefit

Providing a convenient and co-ordinated service has the potential to create customer loyalty and repeat business and thus there may be a financial motivation for pharmacists to possess strong ties with GPs. Few pharmacists explicitly spoke about this benefit, except the independent pharmacist at site 2 quoted in section 7.1.2.3 above. This pharmacist was situated in a hamlet without a GP practice, with the nearest practices being situated in the other three villages studied at site 2. The addition of the pharmacy to the area was a relatively recent occurrence and the owner believed that he had worked especially hard to establish strong ties with these practices, to build his reputation locally and to overcome his somewhat isolated location. He credited these achievements to the adoption of the ‘going the extra mile’ approach (discussed in chapter 6, section 6.3.3.2). He espoused the importance of having good relations and communication for patient care but also felt that these relations had been crucial to his businesses success:

Improved business, you get more scripts and that’s the ultimate aim at the end of the day when you have your own business. That’s the pros of having a good relationship, they refer all the patients over to you... it’s all about money! [laughs]. Site 2 CP2
He elaborated further about his perception of gaining the trust of a local GP, through showing willing and demonstrating continuity (again two of the key factors discussed in relation to developing strong ties in chapter 6) and how this trust had resulted in business gains for him at the expense of another local pharmacist:

...a while ago [the practice] asked one of the chemists in the village to do a blister pack...and they turned round and said no to them. So [the GP] phoned me and said, ‘will you do it?’ So then about a month later that pharmacist contacted the doctor and said, ‘why are you not sending blister packs our way?’ and he said, ‘oh, I send them all to [CP2] at [name of village] now,’ and she’s like, ‘why?’ And he said, ‘well, you said no to me once’....So he sends every single new blister pack, seven day patient here now...it’s just that relationship, and I’m always here as well, you’ve not got locums in or anything like that. Site 2 CP2

The General Medical Council’s (GMC) ‘Good practice in prescribing medicines’ guidelines state that “Patients should be free to choose from which pharmacy to have their prescribed medicines dispensed” (GMC, 2008). The directing of patients to particular pharmacies by GPs is therefore considered unethical but these findings indicate that sometimes the strong ties between GPs and pharmacists can make direction appear to be the best option for the patient. As the quote presented above demonstrates, the GP, wanting the best service for his/her patients, recommends the pharmacy that is willing to provide this service. Similarly, with stock related issues, if a pharmacy gains a reputation for being able to source items that other pharmacies cannot, it becomes almost inevitable that some direction of the patient will occur and the pharmacy may benefit financially:

If another pharmacy in town hasn’t got it, or having problems, then [the practice will] tend to ring us to say, “Well how do we get round the problem?” or “Have you got it?” and nine times out of ten, we’ve got it or we’ll suggest an alternative. Site 4 CP3a

7.1.4 Summary
This section examined the perceived benefits related to the possession of strong ties. One of the key benefits, particularly appreciated by the GP respondents, was the ‘safety net’ role of community pharmacists, which some found reassuring. Pharmacists felt that possessing strong ties with GPs could lead to the pharmacist sharing patient knowledge with the GP, potentially improving the care of the patient. Other perceived benefits tended to relate to the operation of efficient systems and processes. For pharmacists with
strong ties there was often the sense that possessing these simply ‘made their life easier’. The familiarity and trust between some GPs and pharmacists was also said to facilitate a more convenient service for patients. Some pharmacists with strong ties felt that these enabled them to resolve prescription issues with the practice on the patient’s behalf, to ensure that the patient was not inconvenienced by having to go back to the practice. These findings do indicate that there was often a sense that strong ties and trust enabled flexibility and a slight ‘bending of the rules’ in order to fulfil patient need. Another benefit linked to patient convenience was the ability to provide a streamlined service by co-ordinating what was prescribed with what was dispensed. Providing a convenient and co-ordinated service has the potential to create customer loyalty and repeat business. There may therefore be some financial incentive for pharmacists to possess strong ties with GPs.

7.2 How important are strong ties?

The previous section considered the benefits of the possession of strong ties between GPs and pharmacists. Strong ties, however, were not the norm amongst the respondents. This section examines the perceived necessity of the possession of strong ties for everyday working and whether those not possessing these perceived that they were constrained in any way.

7.2.1 Necessity or added bonus?

Amongst those classified as having strong reciprocal ties (as outlined in chapter 5, Table 5-9), all those interviewed valued the relationships they had and felt them to be beneficial. Some considered these relationships a necessity for day-to-day working which could be strengthened further; others felt that the need for stronger relationships between GPs and pharmacists would increase, in line with policy changes and patient expectations about integrated working:

* I think it is a necessity...I would like it to be more than, if that were possible...there could be so many ways patient care could be better delivered with closer working with pharmacists. Site 1 GP1d

* If it is not a necessity I think it will become more of a necessity as time goes on...because you’ve got to do extra things and I can see it just being more and more
important...I think people expect that you should be working together at the end of the day. Site 0 CP1a

However, some of those possessing strong reciprocal ties, considered their relationships to be more of a bonus to everyday work than a necessity. Respondents felt that it was possible to ‘get by’ with weaker relationships but stronger relationships were an added bonus:

*It’s a bonus rather than a necessity. I have access to my online BNF and the manual, and if necessary I could pick the phone up and speak to the pharmacists at the local hospital...you have to be resourceful, you can’t depend on one particular service provider.* Site 4 GP3a

The GP quoted above appears to advocate inter-professional contact more widely, rather than specifically valuing the contact he has with individual community pharmacists. Another GP at the same site, whilst also stating that the strong ties she possessed were an added bonus, expressed greater attachment to the pharmacist relationship:

*I think having good relationships is important, I do use the pharmacists a lot to pick their brains and they do laugh at me when I go downstairs and say, ‘Okay what’s the smallest iron tablet you make, so that I can get a child to take it?’ So yes, I think I’d struggle without it...I think I would really miss the relationship I have with them.* Site 4 GP2f

7.2.2 Does being isolated from each other matter?

For those interviewees situated in more isolated positions in the network, and not in possession of strong ties, similar sentiments were expressed in terms of closer relationships being desirable but not necessary for their day-to-day practice. The idea that relationships just needed to be satisfactory to ensure that important information could flow between the two parties was a prevailing idea and expressed by both pharmacists and GPs:

*...as long as you can get important messages to them and if there’s something that you do need to discuss, you can discuss it...how well you get on with [them] I think that’s probably more of a bonus, to be honest...it would probably make it easier to bring in services...if you have that rapport, but on how the shop actually runs, if I’m honest I don’t think it would make that much of a difference.* Site 2 CP3
Having a less than satisfactory relationship was viewed as problematic, but the need to progress the relationship beyond satisfactory was questioned in terms of potential benefits:

*I think a satisfactory working relationship, which is what we manage at the moment, is essential and if more things came along to sour that relationship it would be a big problem...* I think moving up from satisfactory to good would not achieve very much...from good to excellent would achieve a lot...[but] to move from satisfactory to good would take a lot of effort for small gains, so unless there's the prospect of moving it on to excellent, then it's probably not going to be that helpful. Site 1 GP4a

However, one benefit of being less isolated identified by GPs in particular, was the potential of sharing information concerning medication supply issues. Some GPs were frustrated by the possibility of prescribing a particular medication but the patient not actually receiving this due to supply or shortage issues. They felt that community pharmacists had access to supply information which they were not party to, and it would be beneficial for the two professions to share this information with each other:

*...issues like something’s going to be taken off the market or a certain company is not manufacturing that anymore or if there's a certain issue with getting something...if there was a pharmacist who could tell us perhaps once every three or four weeks there's a meeting held, I think that would be pretty useful, because not everything trickles down to us.* Site 3 GP1d

GPs often felt that they were under pressure to reduce drug costs from PCT medicines management pharmacists. After following the PCT pharmacist’s recommendations and making particular drug switches, they sometimes found that the local community pharmacists did not stock that particular medication or could not source it. Respondents at site 1 spoke of a recent situation involving a change in iron tablets:

*...[Pharmacists] weren’t ordering those things in and they weren’t happy to order those things in until they knew that there was a demand...we can’t really prescribe that stuff until we know that patients can actually get it. So it’s a bit complicated and a bit clumsy.* Site 1 GP12b

Pharmacists were in agreement that there was need to communicate in some way regarding these prescribing changes and stock issues. GPs wanted to be notified of supply
issues and pharmacists wanted to be notified when prescribing changes were to occur. Speaking about the same iron tablet changes as GP12b above, CP2 at the same site stated:

…it would be nice to be advised of this before they actually started doing it really, so you can get your stocks right...you notice patterns in prescribing, sort of changing over to things and it would be nice just to be advised beforehand, before it happens really.

Site 1 CP2.

7.2.3 Summary

This section examined the necessity of the possession of strong ties for everyday working and if those not possessing these perceived that they were constrained in any way. Some respondents in possession of strong ties, considered these to be a necessity, whereas others felt that their relationships were more of a bonus and that it was possible to ‘get by’ with weaker relationships. For those interviewees with weaker ties, situated in more isolated positions in the network, similar sentiments were expressed in terms of closer relationships being desirable but not necessary for their day-to-day practice. The idea that relationships just needed to be satisfactory to ensure that important information could flow between the two parties was a prevailing idea and expressed by both pharmacists and GPs. Having a less than satisfactory relationship was viewed as problematic but the need to progress the relationship beyond satisfactory was questioned in terms of potential benefits. However, one benefit of being less isolated identified by GPs, in particular, was the potential of sharing information concerning medication supply issues. Pharmacists also agreed that there was a need for GPs and community pharmacists to communicate more frequently regarding prescribing changes and stock issues.

7.3 Barriers to more integrated networks

This section considers the future transformation of these loosely connected structures into more integrated networks and examines the constraints GPs and pharmacists perceive they face in relation such change. It also presents respondents’ ideas and views about potential solutions to overcoming these barriers.
7.3.1 Perceived limited benefits

As discussed in sections 7.1 and 7.2, there was a general sense that stronger ties were a bonus rather than a necessity and that the benefits of stronger ties were perhaps not rewarding enough for the time and effort required to establish these. This was particularly evident in the responses of some GPs when questioned about the possibility of meeting with pharmacists, and in their perceptions about the benefits of pharmacy services.

7.3.1.1 Nothing to talk about

Pharmacists often felt that meetings with GPs would need to be framed around raising awareness of pharmacy services provided (see chapter 5, section 5.3). Some GPs however questioned what they could actually talk about if they were to meet with pharmacists, potentially indicating a perception that they had little in common or that their professional interests were not aligned or complementary (discussed further in section 7.3.4):

“I don’t think anybody’s got really the appetite to make that work really, how would we meet? just sit in a room and read a book or something?...both parties would be watching the clock and looking for the door!...I don’t think there’s much merit in that really...both pharmacists and GP’s have got busy enough lives, you know! Site 2 GP5a

R: I wouldn’t have thought it was necessary, from my point of view, I think it would be a waste of time really.
I: Do you think there’d be much to talk about or...?
R: No. Please keep checking my scripts, thank you! Site 2 GP2c

The latter quote reinforces the theme of the necessity of having the basic communicative function in place to check and query prescriptions - the safety net role - and that collaboration beyond this is not considered necessary. However, as identified in section 7.2.2, some GPs did identify potential areas to discuss such as stock and supply issues. Other GPs also felt that it could be beneficial to discuss system and process issues to gain a better understanding of each other’s expectations, working styles and how these could be adapted to complement each other more:

“I’d like to meet with them...what normally happens with most disciplines is that they work in their own way...working in isolation they don’t realise what effect it has on other people...working to their best might be very annoying to us and maybe there’s something they could change, and vice-versa...if there’s something I’m doing that is
actually disrupting their day and I’m blissfully unaware...that’s why we need dialogue. Site 3 GP1b

7.3.1.2 Perceptions of MURs

Many of the interviewees felt that the introduction of the MUR service had done little to help improve GP-pharmacist working relationships. As an example of collaborative working, there was a general consensus that MURs had failed in this task. Pharmacists stated that they rarely had any response or feedback from GPs about any of their recommendations and that the only way they knew whether their recommendations had been accepted was when they next saw that patients’ prescription. When direct feedback was provided by the GP, it tended to be negative:

I have experience of MUR’s being a potential source of conflict and an actual conflict as well...I’m very reluctant now to make recommendations because I know that quite often the doctors don’t act upon them. Site 2 CP6

It was Dr [X] and she called, complained about a MUR [that I had conducted], but she changed the prescription the next day based on the MUR [Laughter]. Site 3 CP3a

There was a perception by pharmacists that GPs did not welcome MURs, even amongst those with strong ties. Several pharmacists stated that for those GPs with whom they had good relationships they were more likely to use a more direct form of contact if a problem was discovered rather than the potentially anonymous MUR form:

They [GPs] don’t bother with MURs, they don’t really listen...You don’t really hear anything back...The [GPs] that would actually welcome you...you’re probably just better going up and speaking to them directly, not going through a form...plus, obviously, different pharmacies do different MURs, they probably get some rubbish ones as well that they don’t really want to read so... Site 1 CP6b

CP6b’s statement above implies that he believes that the quality of MURs vary and that the conducting of poor quality MURs by some pharmacists may have a harmful affect on GPs’ perceptions of the service. By contacting the GPs directly with an issue that may have arisen through an MUR, the pharmacist is again attempting to set himself apart and distinguish himself from other pharmacists, a tactic previously discussed in Chapter 6, section 6.3.3.1.
GPs tended to have limited experience of receiving MUR recommendations and those that did have experience felt that the recommendations they had received were of limited benefit and a potential burden on their time:

*By and large I think they’re a complete waste of space...occasionally they point out really obvious things, like they’re taking their paracetamol as required and it says on it take it four times a day...they meant no more than four times a day if it was required, and anyone with any nouse would see that...they point out daft things like that.* Site 4 GP2e

Other GPs felt that in theory MURs may have been useful for patients but the approach taken and the lack of targeting those most in need had failed the service. Pharmacists were also critical of the service and unhappy about the pressure they felt from their employers to conduct MURs:

*...you’re sort of, fully pressed as it is, I found that very onerous really, being from an older generation, we weren’t trained that way...I do do them but I can’t say I feel 100 percent comfortable doing them.* Site 1 CP2

A locum pharmacist at site 3 stated that, being self-employed, she was not currently expected or required to conduct MURs. However, she expressed concern after hearing that one multiple chain pharmacy was apparently enforcing MURs as a requirement for locum pharmacists:

*...they can stipulate these conditions for employees, but for locums?...why a locum...who’s never been to that shop, doesn’t know the patients...they will feel slightly uncomfortable about doing an MUR on someone they don’t know anyway, and secondly they’re not even getting paid for it. There’ll be a queue of people waiting to have their prescriptions dispensed and checked, yet...if you’re going to do an MUR properly, it should take you half an hour, but you’re just rushing it through...I just think it’s a means to make money for the big companies...it’s just greedy and it’s wrong.* Site 3 Locum, PH4

Although critical of MURs generally, some GPs did state that they had an appreciation for some of the pressures pharmacists may encounter in relation to MURs and the design and remuneration of the service:

*I did write to [a pharmacist] about one of the medication reviews recently because I thought that he perhaps rather looked at it with blinkers...they’re trying but they don’t...*
always have the full information there...they’re a bit in the dark sometimes, just kind of having to deduce why people might be taking things really. Site 1 GP12b

...if you give someone a hoop to jump through and then you pay them for it, then I don’t blame them for jumping through the hoop, but I would take the hoop away...I don’t think worse of pharmacists for it...I just think, you know, time to get rid of that pot of money, put it somewhere where it’s more use. Site 4 GP2e

7.3.2 Current system of contact

The current system of contact between GPs and pharmacists can be viewed as a major barrier to stronger ties and a more integrated network. As described in chapter 5, contact between GPs and pharmacists at the four sites was found to be primarily characterised as indirect, non-reciprocal and de-personalised. This section discusses the problems respondents feel that this style of contact creates (or not as the case may be) and their potential suggestions for changing this style of contact.

7.3.2.1 Indirect, brokered contact

The need for contact to be brokered between GPs and pharmacists, because of the nature of general practice, was not questioned; however, pharmacists did express frustration at the lack of direct contact:

...sometimes it does get a little bit frustrating because you think, oh just let me get through to the doctor and I can ask them myself, rather than explaining it all to you and then you explaining it all to the doctor, it could just be direct. Site 3 CP5

However, a distinction can be drawn between these frustrations and preferences, and concerns over the misinterpretation of information by brokers, which could have patient safety consequences. Some of the quotes from pharmacists which were presented in chapter 5, section 5.2.2.1, indicate a perception that clinical matters should not be dealt with by practice receptionists due to a lack of appropriate knowledge in this area.

The interaction between the pharmacist and practice receptionist can be viewed as something of a power struggle. The pharmacist possesses knowledge which they wish to discuss with another fellow health care professional - the GP - whom they may consider to be of similar or higher status than themselves; rather than the receptionist, who may be
perceived as a lower status occupation not qualified enough to fully understand this knowledge, yet someone who possesses power and control over the pharmacist’s access to the GP. Another pharmacist, who also had experience of working with practices as a PCT pharmacist, stated that he believed some receptionists felt unqualified to deal with certain queries and as such responded negatively to pharmacists as a defence mechanism:

…it’s down to really front line reception staff and that varies depending on who you get sometimes…I think it’s when people aren’t sure of what information they’re being asked about…they feel they’re being put on the spot, so they put up a fence…as a first line of attack. Site 2 CP5a

Some pharmacists stated that any negative experiences they had had when communicating with GP practices was related to dealing with practice receptionists rather than actual GPs. Pharmacists were also unsure whether this was as a result of receptionists trying to assert their own authority or a policy decided upon by GPs at the practice. CP6b, one of the strong reciprocal tie pharmacists at site 1, perceived that the more established the GP was in the practice, the more likely they were to delegate communication with the pharmacist to the receptionist:

…if they [pointing to a GP on the questionnaire roster list] see me they’ll speak to me and ask me the questions, otherwise, like Dr [x] with being the chief, he will get one of the receptionists to run round and speak with me…The higher up the food chain, the more they get other people to do it. Site 1 CP6b

A GP at the same practice spoke about his thoughts on interruptions during the working day and the process of deciding which health care professionals or individuals he would welcome interruptions from. He stated that pharmacists were included on his ‘welcomed list’ because of the benefits that he perceived could result from these conversations:

I like to be accessible to pharmacists and I think that there are not many people that I like to interrupt me during the surgery but pharmacists would rank amongst those people where I would say to reception, “if a pharmacy calls saying they want to speak to me, I want to speak to them”…I recognise that the corroboration between us two as professionals is quite important to do a really good service for your patients, and it does facilitate safer medicine management…I don’t see it as an irritant or whatever if a pharmacist calls me during the course of a working day. Site 1 GP1d
It could be envisioned that if GPs consider pharmacist communication to be of a trivial nature (as discussed in chapter 5 section 5.3), that there is little to talk about, or interaction between the two groups has limited benefits (section 7.3.1), pharmacists may not make it onto the ‘welcomed list’ and therefore face barriers when trying to communicate directly.

For many pharmacists, there were few solutions to the issue of indirect contact, other than for GP practices (both receptionists and GPs) to appreciate that direct contact was on occasion necessary and that contact needed to be reciprocated fairly promptly. As their experiences of direct contact and promptness of reciprocated contact varied between practices, pharmacists indicated that certain practices needed to examine and reorganise their current systems for dealing with messages:

...if one surgery can do it I don’t see why the others can’t...Their systems are so different and some of them are brilliant and then other ones, they make life so difficult, they really do. Site 4 CP4

Other suggestions included GP’s ensuring that practice receptionists were more understanding towards pharmacists and their queries, and the possibility of receptionists visiting pharmacies to observe certain processes to gain an appreciation of why particular queries may arise. Other pharmacists suggested more reliance on electronic systems of contact (i.e. email or shared IT systems for sending alerts or messages), to ensure more direct contact occurred but did not physically disrupt the GP during surgery.

However, there may be many barriers to the introduction of IT systems that link GP practices and pharmacies, not least the lack of basic IT systems in some pharmacies:

[At the local pharmacy] their IT over there is useless...they haven’t even got standard software packages, they have to make paper notes about things and keep them on clips...I once asked for a list of all the patients that we had on blister packs and they can’t look that up, they have to write it out each week by hand because they wouldn’t give them spreadsheets and the manager if she wants to do a spreadsheet she has to go home and do it on her own PC in her own time...it gives you an idea of what level they’re at with their IT. Site 3 GP1b
7.3.2.2 Limited face-to-face contact

As shown in chapter 5, face-to-face contact was not common across the sites and reciprocal reporting (i.e. agreement about meeting face-to-face) was found to be low, indicating that respondents were not aware of meeting each other or face-to-face contact was not sustained enough to be memorable. However, face-to-face contact was considered important in the formation of ties, as outlined in chapter 6, section 6.2.3. A significant association was also found between ties reported to be of high quality (good or very good relationship) and ties reported to have involved face-to-face contact in the last 12 months, through QAP analysis (see chapter 5, Table 5-10). It could therefore be concluded that the lack of face-to-face contact between GPs and pharmacists is a barrier to more integrated networks. However, as direct contact by telephone during the working day appeared to be generally problematic for GPs and pharmacists (described in the previous section), face-to-face contact may be even more problematic.

There was not an overall strong desire amongst the respondents for more regular face-to-face contact. GPs were most opposed to the idea, citing their heavy workload and a sense that there would be little benefit to the meetings. The notion that if it was really needed ‘we would already be doing it’ was a prevailing theme. Several pharmacists cited their workload and certain logistics as barriers towards meeting with GPs, such as being ‘tied to the bench’ without second cover from another pharmacist to leave the pharmacy. The pharmacy chain and their staffing decisions were often seen as the main barrier to this:

...we do suffer really with lack of contact...[the company] won’t let us out. They won’t give us a relief pharmacist to actually allow the main store pharmacists to actually go out and meet people. So they’re shooting themselves in the foot really. Site 4 CP1

The responsible pharmacist legislation allowing the pharmacist to be absent from the pharmacy for up to two hours a day, was not used by the pharmacists interviewed to meet with other health care professionals. Some stated that they perceived the Responsible Pharmacist legislation to be for emergency situations only and not for attending planned meetings. Others, such as an independent pharmacy manager at site 2 who had recently opened his pharmacy and was trying to build a reputation in the area with patients stated that:
I could go [to the local GP practice] for two hours every day, you know, justified, ‘I’m going to see the GP’...[but] that wouldn’t do our business any good, would it? Site 2, CP5a

Pharmacists were rarely invited to GP meetings. Even those pharmacists in the unique position of being invited, were not always enthusiastic about attending. Strong tie pharmacist, CP6b at site 1, who was co-located with GPs, stated that he tended to screen the agenda first to see whether it was a good use of his time. Because GPs were not seeing patients at this time, he felt that it was an opportune moment for him to catch up on other pharmacy related work and a welcome respite from the constant stream of patients. Another pharmacist spoke about his experience of attending meetings at the local practice regarding generic prescribing several years ago:

At the time, I can’t say I was over-enthused with it...that only lasted sort of a year or two really...I just found I had less and less time to sort of go to them. Site 1 CP2

For those GPs who expressed an interest in meeting with pharmacists, they stated that due to time constraints, there would be little interest from the GP population in additional meetings on top of their schedule and the best solution would be to incorporate pharmacists into existing GP events or training updates:

...it becomes difficult to find time for yet another formal meeting. But on the other hand, if GP’s and pharmacists were jointly attending certain updates, then one might meet with them. Site 4 GP3a

Although some GPs felt that these events would be a good opportunity to meet pharmacists, there was a perception that these events were potentially already open to pharmacists and their non-attendance indicated a lack of interest:

...I don’t see many pharmacists attending those. Perhaps because it’s not subjects that are of particular interest to them...[it] would be nice if pharmacists could also attend those and at least that would be somewhere where you actually get to interact with each other and there your relationships form in that way. Site 1 GP1d

Pharmacists however stated that these types of events were separate and that they did not feel included or invited to GP events:
All the PCT events are pharmacy only or GP only...The GP afternoons...we’ve never been invited...I wouldn’t have gone because we don’t have the time. You can’t just walk out of a shop and leave it for the afternoon but it’s the principle of just being asked, we might have been able to send someone to go but they’ve never asked. Site 1 CP6b

The statement by CP6b above seems representative of pharmacy’s conflicting identity. On the one hand he wants to be recognised as a health care professional, interact with GPs and feel included in ‘the team’ demonstrating a more modernised view of the community pharmacy profession, on the other hand he recognises that in reality he could never actually go to these events as he is required to conform to the traditional image of pharmacy - being tied to ‘the shop’. The inflexibility of the current organisational structure of community pharmacy is often contrary to greater interaction with other health care professionals.

7.3.2.3 Resignation and satisfaction with current system

For some pharmacists, there was a certain level of pessimism and resignation that any system change could occur, and that this simply ‘was the way it had to be’. The barriers and differences between GPs and pharmacists, and their patterns and cultures of working, were viewed as too great for some. This perception of helplessness and lack of control could also be viewed as a barrier to change:

It would be nice if we could go to training events with GPs and receptionists, being altogether so you know you could explain your points of view, but it’s just not going to happen with retail pharmacies really, is it? there’s too many pressures...you think nothing when you’ve been working all day, you haven’t got the strength to go to an evening meeting...it would be nice to work in a place with GPs on the same premises and have a lot more contact with them but in our situation, it’s just not possible. Site 1 CP2

Perhaps one of the major barriers to greater interaction, both more directly or face-to-face, was the satisfaction that many respondents expressed with the current system of indirect contact. GPs in particular, rarely reported any difficulties with their system of contact, feeling it to be the most efficient in terms of their time; they therefore questioned why any changes to the system would be required. Overall, they did not appear aware of the frustrations concerning lack of direct contact that pharmacists often spoke of:
I think the system seems to be working alright, where I’m concerned. I don’t know what the chemists feel. Site 2 GP5b

One GP did however indicate that they were aware that pharmacists could potentially face difficulties trying to contact them:

…I don’t suppose we are always that accessible really…a lot of the time they must be dealing with receptionists…I suppose some receptionists are dragons that [are] perceived by the patient to be a barrier to accessing the doctors. I suppose it must work the same with pharmacists really, that they don’t necessarily find us very easy to contact. Site 1 GP12b

However, as outlined in Chapter 6, section 6.2.1, the behaviour of pharmacists was also reported by GPs to sometimes perpetuate this system of de-personalised indirect contact; by either not introducing themselves by name in conversations, or not including their name on MUR forms. Pharmacists too stated that they perceived it to be sometimes easier to pass messages through the practice receptionist rather than deal with potential hostility from the GP. A GP at site 1, part of a strong tie dyad, described a scenario of receiving a written recommendation from a pharmacist, and then receiving a further letter from this pharmacist when no response to the recommendation was provided by the GP. This GP stated that he would have found it easier if the pharmacist had just contacted him directly by telephone to discuss the issue. Quoted above in section 7.3.2.1, this GP had previously stated that he was happy to take phone calls from pharmacists during his working day. The pharmacist’s reasoning for using an indirect form of communication was described as a useful insight by this GP:

When I spoke to this lady, the reason she’d written was actually the fact that she thought most GPs get irritable when someone calls them to make those kind [of recommendations]…So it was very much a bit like, you know, “If I write a letter at least I can’t have anyone snapping back at me at the end of a phone,” you know, at least I, I got to see her perspective. Site 1 GP1d

7.3.2.4 Incentivising

Respondents views about meeting each other and/or changing the current system of contact, fell into two groups; those that felt more personalised contact was not required and had little benefit - ‘if it was necessary, we’d already be doing’ - and those who felt that
more contact could be beneficial but there were barriers in terms of lack of time, different priorities and working patterns. It could be argued that if meetings will not occur naturally, these could be encouraged through financial incentives. In the Netherlands, in the 1980’s, pharmacotherapeutic consultation groups were established which involved GPs and community pharmacist regularly meeting with each other. In 1991, to formalise these further, GP attendance was stimulated by remunerating GPs for their attendance. It is claimed that since 1995 all GPs and community pharmacists in the Netherlands have participated in these groups (van Mil, 2005; 1999).

All respondents were asked about their thoughts on the possible use of incentives to encourage GPs and pharmacists to meet each other. Opinions about this topic were very mixed. For those that saw little benefit to meeting or thought there would be ‘nothing to talk about’, it was considered that financial incentives could be better spent elsewhere:

Well, of course, the GP’s would love to meet up if there’s money involved! But I think it’s a bad way to spend the money. Site 2 GP2c

Some GPs expressed resignation that if they were incentivised they would probably take part, but indicated a lack of enthusiasm about doing do:

I mean, okay, we would pay it lip service, that’s what we would do and say, you know, how do we tick this box? Site 0 GP1a

Other GPs claimed that no incentive was large enough to attract them to attend more meetings, due to time constraints. Others stressed that regardless of the financial incentive there still had to be a health care focus and a purpose to the meeting, and that the meeting should not just be about ‘getting to know each other’.

Pharmacists were slightly more positive about the idea of using financial incentives, feeling that it might encourage GPs to interact with them and overcome any potential hostility present in the relationship:

…it would help to build the good relationships…we would have to meet each other even if somebody doesn’t like each other, we would have to co-operate. Site 3 CP1
However, some pharmacists were concerned that if incentives were introduced, pharmacy may lose out, with GPs being incentivised to meet with them rather than vice versa (as is the case in the Dutch system). They indicated that in order to meet with GPs they would need pharmacist cover in the pharmacy which had cost implications, and that they should also be remunerated for this. CP6b at site 1, a strong tie pharmacist, expressed concern about the possible abuse of financial incentives in pharmacy:

*I work together with the doctors as much as I can anyway, there’s no [financial] benefit to me...it’s making sure that it’s not abused, as with the MURs, they’re abused by some people and that will then cloud the rest of us.* Site 1 CP6b

GP1d at site 1, part of one of the strong tie dyads with CP6b above, claimed that financial incentives may encourage GPs and pharmacists to meet, but recognition of the potential benefit to the NHS in terms of improving patient care through co-operation may be a more worthwhile focus. Ultimately, he states, any such co-operation will rely on individuals rather than any other stimulus:

*...there still needs to be the will to do it. I think by and large that probably exists because I think everybody recognises it does make life easier if you have a friendly pharmacist that you can meet with regularly and talk to them.* Site 1 GP1d

### 7.3.3 Location

Analysis of the networks indicated that there were some potential differences in terms of the level of familiarity between GPs and pharmacists in different geographical areas. Respondents also perceived that ties were more difficult to build in larger urban areas with many different GPs and pharmacists – such as the large town or city area. Smaller village areas, such as those at site 2, were viewed by respondents to be more ‘close-knit’ communities, with the pharmacy being a central part of the village community:

*[The pharmacy] it very much is, sort of, part of the community village...if it was a town centre pharmacy, it’s very difficult to have those links because you’re not...I don’t know, it’s not as approachable.* Site 2 CP1

GPs also perceived that smaller town or village areas were more likely to have stable pharmacy staff providing continuity for patients, in comparison with larger urban areas.
As well as greater familiarity between GPs and pharmacists, it was felt that pharmacists in smaller areas would also be more familiar with patients:

...because it’s a village, obviously the pharmacist, they do know most of the patients...here we are sometimes informed when elderly patients, if they’re not picking up their medication we get a call from the chemist saying can you look into this. Site 2 GP1

GPs and pharmacists in larger geographical areas reported that the sheer number of GPs and pharmacists that they needed to deal with prevented the formation of strong ties, as it was impossible to maintain such a large number of ties. Being located in a pharmacy attracting patients from many local GP practices, but not actually being geographically close to a particular GP practice, was viewed as a difficult environment to form strong ties:

...to maintain a really good close working relationship with all those doctors it is difficult...obviously it’s easier if you have a surgery attached to your pharmacy. Site 1 CP3

Similarly, GPs whose patients tended to frequent several different pharmacies, because there was no pharmacy immediately nearby, faced similar difficulties:

...part of it is that our patients deal with so many different pharmacies as well, if they all went to Mr [X], probably it would be different...if we did have our own pharmacy then we’d be seeing that person every day and you would develop some kind of relationship with them. So it’s partly geographical. Site 1 GP12b

In these larger urban areas, the co-location of GPs and pharmacists together in primary health care centres could be viewed as an attempt to establish a sense of community and artificially recreate the close-knit environment of a village. As outlined in Chapter 6, section 6.2.4, some geographically distant pharmacists felt that these co-location models were an ideal solution to the isolation that they felt. But for those who were actually co-located, that integration and a sense of community had not always been achieved:

There was perhaps a sort of perception that everyone being in the same building we’d all be a big team...I don’t think it’s really had much impact on people working together and people’s contact with each other. Site 4 GP3d
Co-location pharmacists had also observed a de-personalisation in their contact with both GPs and patients, due to the volume of prescriptions generated from several GP practices in the building and also the design of these buildings:

*I used to be able to know the customer’s name when they walked in and a lot of them I could probably get the scripts ready before they passed it in because you knew what they were getting.* Site 1 CP6b

But as described in Chapter 6, section 6.2.4, these co-located centres did offer greater opportunity for ad-hoc face-to-face contact and ‘bumping into each other’, so in this regard, co-location centres could be viewed as more close-knit environments.

The village environment, despite being less complex in relation to the scale of GPs and pharmacists, may not always be considered advantageous. Ties between GPs and pharmacists in a small village could be viewed as what is described in network terms as a clique – a closed off group with ties mostly contained within this group and not outside. In a GP-pharmacist context, the geographical nature of the area and patient need would dictate the formation of these ties and these cliques, i.e. pharmacists may not need to contact GPs outside of the village and vice versa, as patients living there may be unlikely to use practices or pharmacies further afield. However, in a situation whereby this clique has formed and is stable over many years, the addition of a new pharmacy to the village may disrupt this familiar clique. This situation was perceived to have occurred at one of the villages studied at site 2. The new pharmacy owners felt that they had not been welcomed by local GP practices, possibly as a result of existing loyalty to the two existing pharmacies in the village:

*...because we are a new pharmacy in this area, we’ve maybe ruffled a few feathers...we wanted to give patients a choice...but if that has upset people in the surgeries because they have friends working in the [existing] pharmacies that may be why we have a bit of obstruction, or an obstructive nature when we try to help patients.* Site 3 CP5b

GPs interviewed in this village did not explicitly indicate any such loyalty to the existing pharmacy providers at the expense of this new pharmacy. However, only two out of the seven GPs were interviewed from this area and any such loyalty may have been present between those GPs not interviewed or between practice reception staff and pharmacy
staff. In contrast to the pharmacy owners’ belief that they were providing greater patient choice and a more personalised service than the chain pharmacies, the GPs interviewed did not consider the existing pharmacy services in the village to be deficient. One GP stated that the out-of-hours service offered by the new pharmacy was however helpful. Another GP questioned the necessity for the new pharmacy, reinforcing the perception that pharmacists may place financial gain above patient need:

_I don’t know why they’ve done it. No idea, presumably they’ll make money._ Site 2 GP2c

Location could be viewed as a barrier to GP-pharmacist relationships that GPs and pharmacists themselves are unable to overcome. However, as discussed in Chapter 6, section 6.3.3, trust and strong ties between GPs and pharmacist can transcend location if important enough:

_It doesn’t matter [about being in the same building]...communication channels are usually the most important thing...and the fact that you get on and you can pick up the phone and call that person...[the pharmacy] downstairs could be inhabited by somebody other than [name of pharmacist] who I don’t want to talk to and I’d rather speak to someone further away._ Site 1 GP1d

When considering how to improve integration and collaboration between GP and pharmacists, the local context is important, and a ‘one size fits all’ approach may not be appropriate. By presenting examples of different geographical areas as case studies, this study demonstrates that in some areas, GP-pharmacist relationships may evolve more naturally, aided by the characteristics of that area. In other areas, more sustained effort may be required to overcome geographical barriers.

### 7.3.4 Conflicts of interest

#### 7.3.4.1 Commercialisation of community pharmacy

The business element of community pharmacy, and in particular the ‘shopkeeper’ image of pharmacists, is often cited as a major cause of tension between GPs and pharmacists and a primary barrier for closer collaboration. Pharmacists often felt that they were viewed by GPs as shopkeepers, rather than health care professionals:
...obviously [GPs] just see us as shopkeepers, which yes we are [laughs] in some respects because unfortunately the way our contract and things go we are forced into being retailers...it all hinges on buying this all in at the right prices...you can make some real mistakes on supplying...so yes it makes you very, well business orientated, I suppose. Site 2 CP5b

Others felt that the shopkeeper image was not only a problem in relation to GP perceptions, but those of the public more generally:

I just think it’s the way people view pharmacy, we’re just shopkeepers. I think it’s a shame because I just don’t think they realise how well educated pharmacists are. I personally would like a programme on television...[which] explains how we get paid, how it all works ...these soaps, every time there’s a pharmacist in a soap, they’re always an idiot, they’re always somebody who is really stupid. Site 1 CP1.

GPs views on this topic were mixed. Three different perceptions emerged: GPs who were concerned by the commercial element, citing it as an omnipresent barrier to closer collaboration; GPs concerned by the commercial element but making a distinction between the financial motivation of large pharmacy companies and individual pharmacists; and GPs who appeared accepting of the financial element and claimed to not be greatly concerned by this.

Essentially GPs who expressed concern about the commercial aspect of pharmacy, questioned whether pharmacists could be trusted to put patient interests over and above financial interests. There were doubts about pharmacists ‘abusing the system’ for financial gain. This GP describes concerns related to the potential over-ordering of unnecessary medication for patients by pharmacists for financial gain. He also expresses concern over the possibility of this medication, once returned to the pharmacy, being re-dispensed:

We suspect, that there are things that are less obvious where...everything that’s on the list for the patient, regardless of how often they get it [is re-ordered]...and patients saying, ‘stop ordering that for me’, but the pharmacist carrying on ordering it month by month and it being dispensed and the pharmacy getting paid for dispensing it and then the patient taking it back to the pharmacy...Now, in theory, the pharmacist should then dispose of it. We don’t know whether some are actually re-dispensing it...that would be very worrying if they were. It’s a huge amount of waste, a huge excess prescribing cost but the pharmacists are doing nicely out of it financially...pharmacists have a financial interest in over ordering... and because of the nature of the pharmacy contract,
they get paid a fee for every item dispensed, they actually have financial incentive to not resolve the issue, but there are patient safety issues. Site 1 GP4a

When referring to ‘we’, GP4a quoted above was referring to a discussion that had taken place between GPs at a Practice Based Commissioning meeting, which was also attended by the researcher. It was apparent during this meeting that several GPs were concerned about this possible conflict of interest and expressed hostility towards some local pharmacists. GP4a indicates that the current system of remuneration for pharmacy has created this conflict of interest for pharmacists. Interestingly, GPs were not alone in these concerns and several pharmacist interviewees expressed similar sentiments about their profession. A pharmacist at the same site also spoke about this conflict of interest and appeared to confirm some of GP4a’s concerns. Whilst GP4a spoke about individual pharmacists having a financial incentive not to reduce wastage, CP1 describes this in terms of the need to demonstrate high figures of throughput for fear of reprimand from the pharmacy organisation for which she works:

...it would be better if the government changed it so that we got paid in a different way...I actually had a conversation with the PCT pharmacists this week, saying I could cut waste down by telling all the patients who were bringing back loads and loads of stuff that are not opened, but I can’t because that puts my figures down and then that takes money off my business, you know, and I’ve got to answer to the people I work for, you know. Site 1 CP1

The quote above provides an insightful example of the internal conflict faced by the community pharmacist, in terms of the desire to be altruistic being curtailed by the ever present requirement to meet targets and enhance profits. Another powerful example of this was provided by a locum pharmacist working at a supermarket pharmacy at site 3. The increase in supermarket pharmacies has been a relatively recent introduction given the changes made to control of entry regulations in 2005. Arguably, the placement of pharmacies within a highly commercial environment such as supermarkets, whilst convenient for patients, does little to temper the commercial image of pharmacies. This locum pharmacist described her thoughts on the potential clash between ‘the customer is always right’ ethos of a supermarket and the ‘do no harm’ obligation of the pharmacist:

Especially if you work in a supermarket, a lot of the time you’ve got managers who don’t understand pharmacy at all, and so for example, if someone comes in for two
bottles of Kaolin and Morphine which is an abusable substance right, as a pharmacist you are well within your rights to refuse the sale. So you’ll refuse the sale because you don’t want them to go and…get high on it basically, and then you’ll get some little mini manager come toddling up to you and say, ‘You can’t do this.’ Because the customer will go and complain to the customer services desk, and you’ll get a manager coming and saying, ‘Why have you refused this sale? I’m telling you now that you must sell this person…’ and you’re like, ‘No, I don’t…you haven’t got a clue about a pharmacy,’ but then sometimes if you want to keep your job almost, then you just do it…so there’s a big conflict of interest. Site 3 Locum Pharmacy 4

Some GPs, although expressing concern about the increased commercialisation of pharmacy, also stated that they could understand some of these pressures pharmacists faced through their contractual obligations, remuneration system and from pharmacy employers. They did not perceive that individual pharmacists were necessarily to blame for the creation of potential conflicts of interest. This finding could be interpreted in two ways. Firstly, in terms of a perception by GPs that pharmacy is a lower status profession with little autonomy, with pharmacists essentially following orders and ‘doing as they are told’. Alternatively, this could be perceived as an expression of empathy from GPs who have themselves also experienced erosion in professional autonomy more recently:

...we’re experts at ticking boxes really, that’s what, well the last government were keen on getting people ticking boxes...I think, I think telling professional people how to run their professional lives is fraught with problems really. Site 0 GP1a

Despite this empathy towards the individual pharmacist and blame directed towards the structures surrounding them, GPs rarely felt that they knew individual pharmacists, as discussed in chapters 5 and 6. Being somewhat anonymous to GPs, hidden behind their well-known pharmacy company, it could be difficult for the GP to separate the pharmacist from the brand:

...we used to see the chemist, they used to come in and when it was owned by the people who were in it, it was a much closer connection...[now] it’s moved to big organisations, you know, we hardly know some of them. Site 1 GP2c

This raises the question of whether, without individualised and personalised contact, it is inevitable that reservations about trust and potential hostility become universally applied to pharmacists by GPs. In contrast, some GPs expressed little concern about the financial element of pharmacy, with several stating that they had not really considered it before:
I’ve never thought about that...they never pressurise me to only prescribe monthly or three monthly...I think they’re probably quite ethical...I’ve not had any concerns as such really. Site 2 GP5b

Other GPs had considered the financial element of pharmacy, and whilst not greatly concerned by it, stated that it was inherent to pharmacy, an unavoidable fact. They were critical of pharmacies selling over-the-counter medication to patients, which they felt had no proven benefit, but also somewhat resigned to the inevitability of this occurrence in relation to pharmacy’s need to focus on business:

...if a patient comes to me with a sore throat, I will not ask that patient to go down to the pharmacy and buy a useless cough mixture...whereas most pharmacists will want to sell them something, and that’s bound to happen. I don’t think we can get away from that. It would be naïve to be expecting any different. Site 4 GP3a

Another GP at the same site, viewed commonality between general practice and pharmacy, claiming that general practice was also essentially a business, which was also viewed in this sense by other health care professionals:

...it is just two businesses isn’t it?...You’re both trying to be patient-centred, be ethical, do what’s best for the patient but you’ve got to make a living as well. So I think there are a lot of similarities between the two really...I think as a GP you can understand that. A hospital doctor is always moaning at his GP going, ‘All you go on about is money’, but the thing is that’s a massive part of our job. If we don’t manage our money right we don’t go home with a wage...and it’s the same with the pharmacist. They can’t run a viable business if they don’t. Site 4 GP1c

The issue of pharmacy commercialisation and whether or not it is problematic in the relationship essentially boils down to a question of whether individual GP and pharmacist interests are perceived to be aligned and/or compatible. Only through personal interaction can such interests be recognised and their commonality established, with a distinction made between the organisation and the individual.

7.3.4.2 Competition rather than collaboration

For pharmacists, when discussing the possibility of further service provision, there was a tendency to conceptualise services as distinct and separate pharmacy concerns rather than possibilities or opportunities for collaboration with GP practices. As such, pharmacists reported that they felt that GPs would not be welcoming of further service
provision by pharmacists, because these services would be viewed as competition and ‘taking work away’ from GPs. Amongst those with strong ties, some stated that they would actively avoid placing themselves in direct competition with GP practices for services, in order to maintain those relationships:

it would be nice to get in on some services but again there’s politics there with GP surgeries providing anticoagulant…I wouldn’t do it because the GP here gets paid quite a lot of money for that service and I wouldn’t want to steal it from them…because then they [the quality rating of the relationships provided by the respondent on the questionnaire] would certainly reduce in number, wouldn’t they? Site 0 CP1a

Some pharmacists reported that duplication of services did occur in their areas as a result of the strategic priorities of their local PCT:

…the PCTs did start to push the asthma, when we first started doing MURs…but they pushed the asthma in the surgeries at the same time as they did it in the pharmacies. So every time we asked somebody with an inhaler, or could we just…‘oh, I’ve just done that at the surgery with the nurse’…At the minute they’re pushing warfarin services again and you’re getting the same answer…So yes, I think there could be some more communication there. If they want us to do something then let us do it or if they want them to do something we can help, instead of duplicating stuff. Site 4 CP4

This scenario provides an example of how a lack of coordination and communication at PCT level could potentially detrimentally affect individual GP-pharmacist relationships on the ground. It also demonstrates that in terms of a strategic service planning level, little consideration is given to encouraging or promoting collaborative and complementary working between GPs and pharmacists.

7.3.4.3 Professional boundaries

As discussed in Chapter 6, section 6.1.1.2, pharmacists spoke about their sense of professional boundaries and the self-negotiations they performed on a daily basis, in order to judge when it might be appropriate to cross these boundaries. Again, even for those with strong ties, there was a perception that some enhanced pharmacy services were a step too far and could place strain on these strong ties:

Even though I’ve got quite a good relationship with them, sometimes I do think there is this, sort of, that’s our job and that’s your job…I think they’re quite happy with the
Rather than presenting opportunities, the possession of strong ties could be, in some ways, professionally constraining for pharmacists. In this respect, pharmacists with strong ties have more to lose by potentially encroaching on the professional boundary or offering a service which GPs may be uncomfortable with, than those pharmacists with weaker GP ties. This could explain why greater capitalisation of these strong ties was not more apparent across the sites. Those with the possession of strong reciprocal ties, who are central in the networks and, on paper at least, appear to possess the most advantageous positions in the networks, may not capitalise on these positions for fear of losing them. Those with strong reciprocal ties stand out in the network as they are essentially the exceptions to the rule, and being surrounded by colleagues with weaker ties only serves to remind them of this advantaged position:

…it might be because [the GPs] know me that I’ve not really wanting to step into their bit. Site 1 CP6b

Professional boundaries between health care professionals are blurring with the extension of professional roles and the introduction of new practitioners in health care (Nancarrow and Borthwick, 2005). The professional boundary between GPs and pharmacists is no longer as easily defined by prescribing and dispensing. Each pharmacist and GP may draw the professional boundary differently depending on factors such as previous interactions and encounters they have had with each other, the influence of their colleagues, and socialisation during education and training. Some pharmacists, as outlined in Chapter 6 section 6.1.1.2, were pressured to accept a GP definition of the professional boundary through recrimination for overstepping the line. Other pharmacists had not encountered such a reproach but appeared to have drawn their professional boundary on the basis of other pharmacists’ encounters with GPs or potentially more implicit signals given by GPs during their interactions. Other pharmacists may have decided that they themselves feel uncomfortable extending their role beyond dispensing, and perceiving that GPs are unwelcoming of this extension may have added a sense of legitimacy to their reluctance.
7.3.5 Power and control

7.3.5.1 Traditional ideas of medical dominance

The way in which GPs and pharmacists view themselves, their profession and each other could be considered a barrier preventing greater integration. The perception of GPs held by pharmacists was evident in the deferential approach they adopted when making contact – as described in chapter 6, Section 6.1.1. The stereotypical GP was portrayed by pharmacists as being self-righteous and dogmatic, with little professional respect for pharmacists. The image of the ‘old school GP’ appeared to be a familiar one for many pharmacists interviewed; sometimes spoken of in a humorous way, a recognisable persona that they felt they had either encountered or heard about from others. The GPs who were perceived not to conform to this image were liked by pharmacists and described as the most approachable:

[They’re] not really like normal doctors, you could say (laughs), they’re very good, yeah, so you do get great bonds with them. Site 1 CP6b

...when you meet Dr [x], you’ll know what I mean, she’s just an ordinary person like us. She’s, she’s just in your face (laughter) you know, you, you don’t think of her as a doctor. Site 1 CP1

The stereotypical image of the traditionalist GP was usually characterised as being from an older generation and male. Pharmacists tended to view younger GPs as more approachable, less autocratic and more open to collaboration:

I think they’d probably fall into two camps. I think you’ll get the younger GPs that probably see it as a symbiotic relationship, it will benefit both people. I think you’ll probably get the older generation of GPs, I’ve met one or two of them, who are quite stuck in their ways. And I guess it would be quite difficult to get them to change their attitude and behaviour really. Site 4 CP1

Some pharmacists were optimistic that relationships between GPs and pharmacists could improve with an influx of younger GPs, more akin to, and familiar with, collaborative styles of working. Some of the younger GPs interviewed, expressed similar sentiments:

I think our generation, to be quite honest, is getting better, and you look at hospital consultants and surgeons, you can see the old school ones who are very much like, ‘I’m
in control’, ‘I do what I want to do’, whereas the ones in our generation, I think, are a bit more mellowed and will listen to other people…Training is obviously very, very different now compared to what the older generation used to do; they used to work 200-odd hours a week and things and somebody would come in and do their breakfast for them and make their bed and do everything for them [laughter]. Site 4 GP3e

The same GP continued on to say that she felt her generation of doctors did not conform to the traditional ideas of medical hierarchy, but in some ways pharmacists still did, through their behaviour when interacting with GPs. Chapter 6 outlined ‘the approach’ which many pharmacists felt was necessary to adopt when interacting with GPs, which involved being deferential and sometimes submissive. Through their continued acceptance of ‘the approach’, pharmacists were said to perpetuate obsolete ideas about medical hierarchy:

*I don’t like these hierarchical things as well, because some pharmacists think...‘I’m a bit worried about talking to the doctor, I don’t want to question them about something’. But I think they should do, because yes, they are part of the team and things. So yes, that annoys me when people say, ‘oh no, you obviously know what you’re doing’. You shouldn’t think that way, because everybody makes mistakes.* Site 4 GP3e

Another GP who had trained in India spoke about a cultural difference she had observed when working in Britain, in relation to the way in which GPs were both perceived and treated by other health care professionals. She felt that, in comparison, the British health care system was less hierarchical:

*R: [The] doctors are a completely separate team to themselves and there was nothing, no contact with the pharmacist whatsoever...Doctors make the decisions, others just followed. It’s a very traditional...and I think it is still the way...there isn’t collaboration, there is much like a hierarchy which is being followed.*

*I: Do you think it's different here?*

*R: It's very different here. I think it is being shared by everybody and I don't think there is any room for giving orders to people.* Site 3 GP1d

### 7.3.5.2 Changes over time

Several of the older pharmacists interviewed spoke about their observations of changes in the GP-pharmacist relationship. They stated that the pharmacist’s role had changed considerably during this time, along with the acceptability of the pharmacist to counsel the patient and contact the GP to raise concerns or make recommendations:
...when I qualified it was purely a technician’s role. As a pharmacist, all they did was count the tablets, wrote the tablets on the label. If the patient wanted to know what was in the tablet, you’d say, “Go and ask the doctors”. Site 1 CP2, 55-64 years

It’s an awful lot better than it used to be. I mean years ago you wouldn’t dare ring the doctor, really, not unless you were going to kill somebody you wouldn’t ring the doctor. Nowadays you can actually ring them up and say well, look, I don’t think this is right and whatever, and they’ll listen to you. They didn’t used to. Site 4 CP4, 55-64 years.

CP4 at site 4 went on to say it was difficult for her to determine whether the acceptance she now felt was as a result of a change in GP attitude towards pharmacists generally, or the way in which she now approached the interaction. Being older, having more experience and greater confidence may all contribute to the way which the pharmacist asserts themselves with the GP, which may in turn affect the way the GP responds to the pharmacist. Confidence is discussed further in section 7.3.5.4.

Some of the older pharmacists, having had experience of the pharmacist’s role when it was exclusively centred on dispensing, could understand how this limited perception might be retained by older GPs. Others stated that it was time for GPs to move on from this perception and realise that it was no longer valid. There was optimism that a younger generation of pharmacists trained in the provision of clinical services, could help to change GP’s attitudes about the importance of working collaboratively with pharmacists:

...young people today who are in pharmacy are very well educated...to a much higher standard than I was...once [GPs] realise that these young people are to such a high grade that they can help each other, I think it could naturally progress...but I think too much they’re still thinking we just add water to medicines and count tablets, you know. Site 1 CP1, 55-64 years.

7.3.5.3 Perceptions of role

As stated above, some pharmacists reported an understanding of how GPs could potentially hold ‘out-of-date’ perceptions of the pharmacist’s current role whilst others were more frustrated by lack of progress. GPs were criticised by pharmacists for having limited awareness about their current role, skill and knowledge. In terms of pharmacy service provision, GPs tended to be most aware about MURs (outlined in section 7.3.1.2) and minor ailments schemes; with the latter receiving most support:
I think the minor ailments scheme is fantastic...I've got no problems with any of that and I've had a really good look through the protocol, and absolutely no problem with that at all. Site 4 GP1c

The publicising of local pharmacy minor ailments schemes was also visually evident at several of the GP practices across the sites. Pharmacists also stated that they were aware that practice receptionists were advising patients to use the scheme.

Apart from the general negativity expressed towards the MUR services (discussed in section 7.3.1.2), there was little opposition expressed by GPs towards other pharmacy services. However, this may have been related to a lack of awareness about other services, as some GPs stated that they did not have enough knowledge of extended pharmacy services to form an opinion about the appropriateness of these. Some opposition was however expressed towards the provision of weight loss services:

...minor ailments I don’t have a problem with...simple things like conjunctivitis, or something like that I’m okay with, but some medications, like for example, I know that they are selling Orlistat, recently, for weight loss. Those things I’m not really comfortable, because, I know that they do go through histories...but sometimes these medications do have significant interactions. Site 2 GP1

The language used by the GP quoted above, indicates that he is only really comfortable with pharmacists dealing with simple matters and that anything more complex is not appropriate. The preceding quote from GP1c at site 4, also offers insight into perceptions about the importance of pharmacy services being contained within certain boundaries through protocols, which are considered to be acceptable and appropriate by the GP. Related to this theme, several GPs stated that they had no concern about the provision of extended services by pharmacists because it was felt that pharmacists were ‘good at’ following protocols and rules. In contrast to the image of the pharmacist actively aiming to expand their skills and potentially encroach on the professional boundary, GPs portrayed the pharmacist as a cautious individual who was only too happy to follow stringent protocols. This portrayal could be interpreted as a confidence amongst GPs that the autonomy they hold, and aim to protect, distinguishes them from other health care professionals:
...they’re quite good at things like following protocols. So I know things like with the morning after pill if you buy it from a pharmacist they have very strict criteria and they’ll go through a list. Site 4 GP3d

I don’t think as a general rule pharmacists are overstepping the mark. In fact, if anything I’ve known them to be a bit too cautious. Site 3 GP3a

This links to ideas about the triviality of the pharmacist’s role and their ‘pernickety’ nature, which were previously discussed in chapter 6, section 6.1.1.4. However, for some pharmacists there was a sense that any shifts in health care roles, or extension of service provision, may be met with some initial resistance until familiarisation occurs over time:

You’ve got nurse practitioners and all these roles are changing...it just takes time. Like the minor ailments scheme I think everyone is totally used to it now and happy with it. Site 4 CP4

GP views about the role and expertise of the community pharmacist were particularly evident when they spoke about their relationships with PCT pharmacists. On the whole GPs were positive about the input they received from PCT pharmacists. They tended to refer to them by their first names, and sometimes described them as part of the practice team. Some GPs also stated that having a PCT pharmacist available for advice often negated the need to contact community pharmacists. The comparisons GPs made between PCT pharmacists and community pharmacists, in relation to areas of expertise and skill, offered insight into the way in which some GPs characterised community pharmacists. The PCT pharmacist was viewed as more clinically adept, with a more academic evidence-based focus. The shopkeeper image of community pharmacy was also reinforced through these distinctions, with GPs finding the non-financial motivation of PCT pharmacists reassuring:

...what we get from our [PCT] pharmacist, the lady who comes in, is actually research and advice and I assume, maybe wrongly, that local pharmacists wouldn’t know about those things...she’s not money orientated, which is quite nice. Site 2 GP2c

...I have a lot of respect for [the PCT pharmacist] because she does read up on the topics that she talks to us about and she seems to know a lot of background...they’re not financially motivated either in the way that probably the community pharmacist would have to be, really...I would imagine the average community pharmacist has to know an awful lot more, you know, how to manage your stocks, how to manage your staff, how to keep his business on the road [but] I’m just guessing here, maybe doesn’t have all the same clinical knowledge. Site 1 GP12b
Both GPs quoted above caveat their statements by saying that they are not completely sure whether these distinctions made are accurate. But nevertheless, such assumptions may remain fixed if GPs are not familiar with local community pharmacists. GPs may feel more hesitant to follow the advice of community pharmacists due to suspicions surrounding financial motivation, lack of clinical skills or thorough research into the area. Again not having strong ties or knowing a particular pharmacist prevents any such suspicions being dispelled and trust being formed.

Three of the pharmacists interviewed for this study were either currently, or had in the past worked for the PCT, advising GP practices on prescribing. All three stated that their experiences of interacting with GPs had been quite different in this role, compared with those as a community pharmacist. They felt that in this alternative role they were more welcomed by GPs and viewed as more of a colleague:

*I think the GP’s probably still view us as their subordinates and their role is more senior... However, when you go in there as a medicines management pharmacist then it sort of takes on a more sort of level playing field and you’re more a peer rather than a subordinate.* Site 2 CP6

*[You are] still the same pharmacist when you’re going in there, but you’ve come from the PCT, they know that you’re coming, they know what you’re about...you get to talk to the GP’s, they’re a lot more...welcoming, I suppose...and you’re collaborative and they work with you and help you...it’s almost that you’ve jumped over from one side of the fence to the other and because you’re on that side everyone’s fine and friendly with you.* Site 2 CP5a

Both the pharmacists quoted above, no longer worked for the PCT and were full-time pharmacy managers/owners and both fairly new to their geographical areas. Both felt that progress in terms of forming relationships with practices and GPs was an ongoing slow process and it did not appear that these previous experiences of interacting with GPs had aided the development of new relationships. These pharmacists may have had potentially more advanced clinical skills and knowledge through their previous PCT experiences than other community pharmacists, although it appeared that there was little recognition of this by local GPs. Without becoming familiar, getting to know each other and forming ties, it seems unlikely that these potential resources would be recognised or capitalised upon. These experiences demonstrate that despite being the same individual,
with the same level of skill, relationships could be prevented from forming due to the overall image of community pharmacy being too financially motivated and an inability to talk to each other face-to-face.

Two pharmacists at site 2 (one being the former PCT pharmacist), spoke about an intervention which they felt could help to widen GP understanding of both their own individual skills and the current role of pharmacists, as well as providing an opportunity to meet face-to-face and familiarise themselves with each other. Both pharmacists had allowed GP registrars from their local practices to spend time observing their practice in the pharmacy:

...It’s the first place I’ve ever worked where that’s happened. But ever since I’ve been here they’ve always, sort of, sent them over. Which is quite good, because at least they can see, from our side, what happens when the prescription leaves there and comes to us and I think, again, it helps because then if they have got a question they know who they’re asking and they’re not, perhaps, ‘oh, I can’t ring and ask that!’ Whereas, once they’ve been it’s, like, oh yeah, you know, they always just pick up the phone. Site 2 CP1

We had a registrar in every morning, about two weeks ago...he found it quite interesting to see what, what we actually do in a modern pharmacy...I think I opened his eyes a little bit to what we can do and some of the interventions that we can make on the MURs, so I showed him some of those. Site 2 CP6

Unfortunately both GP practices involved in these visits refused to participate in the research and it was therefore not possible to further explore the stimulus for this and the registrars’ own experiences. Pharmacists at other sites did not state that they had been involved in anything similar and it may be that this type of initiative is more suited to smaller locations. Both pharmacists were based in small villages, with only one GP practice and one pharmacy. Having only one local pharmacy nearby perhaps removes any concerns GPs may about being seen to favour certain pharmacies. Arguably, in order for this type of arrangement to occur, it is probably built upon an existing relationship, either between the GPs and the pharmacist individually, or the practice and pharmacy more generally, through managers or other staff.
7.3.5.4 **Confidence**

Pharmacists’ perceptions of power and hierarchy in the GP-pharmacist relationship, whether appropriate or not, may affect the way in which they behave when interacting with GPs and their ability to collaborate with GPs. Deferential behaviour towards GPs during the GP-pharmacist encounter was presented in Chapter 6, section 6.1.1, with some pharmacists stating that there was still a need for the pharmacist to be confident during these encounters. However, some pharmacists felt unsure about whether or not their attempts to establish stronger ties and working relationships would be welcomed and thus felt unconfident about attempting to do so:

*I genuinely don’t know [whether more contact would be welcomed by GPs]. I don’t know and that’s the thing. You don’t want to push in and fail and force your way in if you’re not needed or it’s not wanted.* Site 2 CP3

GPs sometimes portrayed pharmacists as lacking in confidence, which was related to a perceived over cautiousness and strict adherence to protocols for reassurance (section 7.3.5.3). Some older pharmacist felt that confidence dealing with GPs came with age and could only be learnt through experience on the job (section 7.3.5.2):

*I get the feeling...the very young pharmacists...are not frightened, but a bit wary of, first of all talking to the customers, and secondly then talking to the doctors, and they find it very difficult to go out and talk to people...which I can understand, because I was exactly the same...it’s not something that you can get taught, you have to learn it, and you have to learn it on the job unfortunately.* Site 4 CP4

Pharmacy undergraduate education in the UK, rarely involves real-life contact with patients and other health care professionals, which could help to develop confidence. Even though GP trainee visits to community pharmacy for observations may be limited (see section 7.3.5.3), it may be that some of these arrangements could be capitalised on to provide reciprocal observation visits for pharmacy pre-registration students in GP practices.

7.3.5.5 **Control**

A seminal paper by Denzin and Metlin (1968) argued that pharmacy had failed to become a complete profession as it lacked control over the social object of its practice – the drug.
Medicine, it was argued, had reached agreement amongst its members about the social object of practice – illness and disease - and the services organised around these – to prevent and cure. Members of the pharmacy profession were claimed to have failed to reach common agreement about ‘the drug’ – often considered a product to be sold rather than a social object of practice. As a consequence, pharmacists become viewed as the agency through which the product is sold rather than an individual making a service contribution. In relation to medical professionals, Denzin and Metlin state:

“Pharmacy meets serious difficulty in attempting to explain to the medical profession that they are really "experts on drugs" when physicians, who control institutions and prescribe to and provide medical consultation for the patient, believe that they are the most qualified source of information on drugs” (Denzin and Metlin, 1968:378)

Although over 40 years old, the ideas presented by Denzin and Metlin resonate with the findings of this study, particularly in relation to the conflicting image of the pharmacist as both shopkeeper and altruistic health care professional, the competition between the two groups and a struggle for power. Some pharmacists may argue that with the introduction of more patient-centred extended services, there is greater consensus within the profession that the pharmacist is there to make a service contribution, although this shift in direction may not be recognised by the GP. Amongst some GPs there were statements suggesting that pharmacists did possess some level of control as ‘experts of medicines’, with several indicating that they felt pharmacists knew more than they did about certain medications. There were some indications from GPs, however, that they would like more control over the pharmacists’ social object – the drug. By not having this control, GPs were, in a sense, prevented from fully achieving the goals they had set around their own social objects.

Section 7.2.2, indicated a potential topic area for further communication - drug supply and stock issues. GPs may therefore instigate contact with pharmacists regarding supply issues and alternative drugs because they recognise a lack of control in this area and a need to co-operate. Frustrations were expressed, particularly by GPs from site 1, regarding cost-saving drug switches and pharmacists acting as a barrier to these changes. Not only does this affect their ability to perform their service of preventing and curing, this somewhat ironically may have financial implications for their own practice:
...At the moment the NHS and the PCT is under pressure to cut drug budgets...but the
chemist, they need to run their business so what they dispense might be good for the
bottom line but it may not be good for the local PCT’s drugs budget...there could be
conflicting interests there but that’s something for the PCT to take up. Site 1 GP8b

However, pharmacists argue that they are at the mercy of drug suppliers and their
companies and they themselves do not always possess full control over their stock and
supplies. GP8b at site 1 quoted above states that this problem is a matter for PCTs to
resolve, however with the impending re-structuring of the NHS involving dissolution of PCTs
in 2013 and the advent of clinical commissioning groups, it remains to be seen who would
be responsible for tackling such issues and whether GPs will come to the fore to claim
control of this situation. The next section considers this in more detail.

7.3.5.6  NHS reform – resurgence of medical dominance?

During the data collection period, a change in government occurred and reform to the NHS
was announced. Where possible, respondents were asked about their thoughts on the
dissolution of PCTs and introduction of GP-led commissioning groups in relation to the
potential impact on GP-pharmacist relationships. At the time, details of these changes
were sketchy and many respondents responded that it was too hard to say at this point.
Since data collection, further amendments have been made, with a shift away from ‘GP-
commissioning groups’ to more inclusive ‘clinical commissioning groups’. It is likely
however that GPs will still be at the core of these groups (see chapter 2, section 2.1.2).
When responding to questions about the future, those involved in current Practice Based
Commissioning (PBC) consortia, tended to draw on these experiences.

As discussed in the previous section, some GPs indicated a desire to gain more control
over pharmacies, particularly related to supply issues, for example:

As a consortium we would like to be able to control what community pharmacists
actually stock, but we don’t and that all determines what we are spending on drugs. So
although we’re writing prescriptions, what actually gets dispensed out there, is not
under our control because we don’t control the pharmacy. Site 1 GP1d
At the same site, there was a sense that if changes to commissioning did become more GP led, resolving these stock and supply issues would come to a fore and there would be greater need to engage with pharmacy and its representatives:

...I think there probably needs to be, if you like, representative contact, better contact between your local medical committee and local pharmaceutical committee, perhaps, depending how things develop in the NHS, better contact between consortia and individual pharmacies because there are going to be issues around prescribing, supply, etc, that are going to be big, big issues.  Site 1 GP4a

Rather than seeking to control the stock and supply of pharmacies, another GP stated that she felt it would be necessary to work alongside community pharmacists in commissioning groups and to recognise their specialist knowledge of medications:

...as a professional, I have great regard for pharmacists...they are professional.  They have done a few years.  They know a lot about medication.  They know how to get them.  They know how to process these things and I would definitely use their expertise which I would say I don’t have, in sort of commissioning.  As far as I’m concerned they would be mobbed, providing there was a role indicated.  Site 2 GP5b

Conversely, other GPs felt that the shopkeeper image of community pharmacy would mean reluctance to involve community pharmacists:

I think we will need pharmacy input, but I would have thought that they’d get it from the pharmacists through the PCT rather than private pharmacists and I think that’s because of the money...I’d be very uncomfortable taking advice from someone who can get money from the advice they’re giving.  Site 2 GP2c

Other GPs considered the possibility of controlling pharmacy services such as MURs. As stated previously in section 7.3.1.2, GPs were not overly positive about the service. GPs were unsure of their potential responsibilities in relation to the future commissioning of pharmacy services, but indicated that if they were to have responsibility, this service may not have a future:

...I don’t know where that idea came from...it might have been worth a trial, and maybe if a trial had shown all sorts of interesting things were coming up it might have been worth carrying on, but in my opinion the trial is now well and truly done to death and it needs abandoning, that’s my view.  Site 4 GP2e
Pharmacists were also unsure at the time of the interviews how any such reorganisation may affect their services or income. Some hinted that competition could increase between GPs and pharmacists, with both vying to win funding for the same services:

So I suppose the smoking cessation I think part of it is we get paid as well for doing the smoking cessation, so there could be a bit of a sort of, ‘Who’s going to get the money for this?’ Do you know what I mean? We get it as a locally-enhanced service. So that’s another aspect there. You might be getting a bit of financial competition there which is interesting. Site 4 CP4

If services and income were at stake, some pharmacists believed that this would be catalyst for pharmacists to start to interact with GPs and other health care professionals at a more strategic level, to ensure that their interests were not overlooked:

There’s no burning issues [to discuss with GPs] at the moment really...but I think that is going to change, once [GP commissioning] starts....we need to be in there, influencing what they are going to be providing and making sure that we don’t lose business as a result of the changes they may make, particularly to the Minor Ailments Scheme...So we want to make sure that we protect that. But I think that’s for the future really. Site 4 CP1

This reactive approach – engaging with GPs only when income is threatened – could again be perceived by GPs as conformity to the traditional pharmacy model, centred on financial gain.

It remains to be seen whether changes in commissioning responsibility may lead to greater control of pharmacies by GPs, greater competition between GPs and community pharmacists, greater collaboration between the two professions or little change at all.

7.3.6 Summary
This section identified a number of factors which could be considered problems or barriers to the greater integration of these networks and respondents’ thoughts on some potential solutions to these barriers. These included limited motivation by both GPs and pharmacists to build collaborative relationships because the benefits and rewards of the relationship were not apparent or significant enough. GPs saw little value in meeting with pharmacists and questioned what they would talk about with pharmacists, indicating a
perception that the two professions had little in common. There were concerns about the current state of pharmacy services, and in particular the MUR service, with both GPs and pharmacists questioning the value of the service, and concerns that the service was doing little to help improve GPs’ image of the value of pharmacy generally. Some GPs were sympathetic, however, about the potential pressures pharmacists could face from employers in relation to MURs.

The current system of indirect, non-reciprocal and de-personalised contact between GPs and pharmacists can be considered a major barrier to more integrated networks. The brokerage role of practice receptionists and the lack of direct contact with the GP was a frustration for many pharmacists. Some pharmacists questioned receptionists’ abilities to appropriately deal with queries indicating a potential power struggle in the pharmacist-receptionist interaction. As their experiences of direct contact and promptness of reciprocated contact varied between practices, pharmacists indicated that certain practices needed to examine and reorganise their current systems for dealing with messages. Suggestions included GP’s ensuring that practice receptionists were more understanding towards pharmacists and their queries and the possibility of receptionists visiting pharmacies to observe certain processes to gain an appreciation of why particular queries may arise. The lack of face-to-face contact was also considered to be a barrier, although there did not appear to be a strong desire for more regular face-to-face contact. GPs were most opposed to the idea, citing their heavy workload and a sense that there would be little benefit to the meetings. The notion that if it was really needed ‘we would already be doing it’ was a prevailing theme. Pharmacists cited their workload and legal and organisational responsibilities such as being ‘tied to the bench’ without second cover as barriers. The responsible pharmacist legislation was not considered feasible or appropriate in this instance. For GPs who were positive about meeting pharmacists, they stated that, due to time constraints, this would have to be done within existing meetings; possibly indicating that it was not a large enough priority to warrant a separate meeting. The best solution they felt was to incorporate pharmacists into existing GP events or training updates, although pharmacists often felt unable to attend these due to work constraints. It could be concluded that the inflexibility of the current organisational structure of community pharmacy is often contrary to more integrated styles of working.
Perhaps one of the major barriers to greater interaction, both more directly or face-to-face, was the satisfaction that many respondents expressed with the current system of indirect contact. If this system is recognised as satisfactory, there may be little will or desire to change this. Overall, GPs did not appear to be aware of the some of the frustrations that the pharmacists spoke of, but the behaviour of pharmacists was also reported by GPs to sometimes perpetuate this system of de-personalised, indirect contact. Respondents were asked about their thoughts on the use of financial incentives to encourage GPs and pharmacists to meet with each other as a possible solution to this barrier. Some GPs were negative or stated that they would participate but with reluctance. Pharmacists were slightly more positive, suggesting that it might encourage GPs to interact with them and overcome any potential hostility present in the relationship. Others were slightly defensive and suspicious that pharmacists would in some ways lose out to the GP financially.

Location and proximity were also identified as barriers to greater integration. Smaller village areas such those at site 2 were viewed by respondents to be more ‘close-knit’ communities, with the pharmacy being a central part of the community. Although these close-knit communities could have disadvantages in terms of being too closed and clique like. GPs perceived that smaller town or village areas would have more continuity in terms of pharmacy staff. The co-location of GPs and pharmacists together in primary health care centres could be viewed as an attempt to recreate the close-knit environment of a village and some more geographically isolated pharmacists felt that these co-location models were an ideal solution to the isolation which they felt. In contrast, those who were actually co-located did not always feel that integration had been achieved, although these centres did offer greater opportunity for ad-hoc contact and ‘bumping into each other’. These findings demonstrate that when considering how to improve integration and collaboration between GP and pharmacists, the local context is an important consideration, and a ‘one size fits all’ approach is not always appropriate.

The business element of community pharmacy and in particular the ‘shopkeeper’ image of pharmacists is often cited as a primary barrier for closer collaboration. However, GPs expressed different levels of concern in relation to this. For pharmacists, when discussing the possibility of further service provision, there was a tendency to conceptualise services
as distinct and separate pharmacy concerns rather than possibilities or opportunities for collaboration with GP practices. For those pharmacists with good existing relationships, some stated that they would actively avoid placing themselves in direct competition with GP practices for services, in order to maintain those relationships. Rather than presenting opportunities, the possession of strong ties could be, in some ways, professionally constraining for pharmacists.

For GPs and pharmacists, the way in which they view themselves, their profession and each other could be considered a barrier preventing closer contact. The perception of GPs held by pharmacists was evident in the deferential approach they adopted when making contact. The stereotypical GP was portrayed by pharmacists as being self-righteous and dogmatic, with little professional respect for pharmacists. GPs that did not conform to this image were liked by pharmacists and described as the most approachable. The stereotypical traditionalist GP was usually characterised as older and male, with younger GPs being viewed by pharmacists as less autocratic and more open to collaboration. There was optimism amongst both GPs and pharmacists that, with the influx of younger GPs, traditional ideas of medical hierarchy would dissolve. Pharmacists however were also criticised for maintaining outdated ideas about medical hierarchy through their own behaviour and ‘the approach’ they adopted with GPs.

Older pharmacists tended to be very positive about the changes in the GP-pharmacist relationship that they had witnessed, and a breaking down of old hierarchies; others were more frustrated by the lack of progress. GPs were criticised for a general lack of awareness about the current role of pharmacy and the pharmacist’s skill and knowledge. Although negative about MUR generally, GPs tended to be very supportive of minor ailments service provision by pharmacists. In relation to other enhanced services, GPs often stated that they did not have enough awareness of these to form an opinion about their appropriateness. Others stated that they had no concern about the provision of enhanced services because pharmacists were ‘good at’ following protocols and rules. This idea reinforces the notion of the pharmacist as a cautious individual, who is reassured by the use of protocols. GP views about the role and expertise of the community pharmacist were also particularly evident when they spoke about their relationships with PCT pharmacists. The PCT pharmacist was viewed as more clinically adept, with a more
academic evidence-based focus. The shopkeeper image of community pharmacy was also reinforced through these distinctions, with GPs finding the non-financial motivation of PCT pharmacists reassuring. Experience from pharmacists who had previously worked as PCT pharmacists offered insights into the way in which GPs potentially act out these perceptions in practice. These pharmacists felt that they were treated as part of the team and a colleague - a stark contrast to how they perceived they were treated by GPs as community pharmacists. Some pharmacists had experience of GP registrars visiting their pharmacy to observe practice; this was suggested as a potential way of offering GPs more insight into the pharmacist’s current role, early on in their careers. A reciprocal arrangement, whereby pre-registration pharmacist observe GPs in practice, may also be advantageous in developing new pharmacists’ confidence when approaching GPs as some pharmacists felt unconfident about whether or not to attempt to establish stronger ties.

Even though some GPs stated that ideas of traditional medical dominance were no longer relevant and some pharmacists claimed that relationships were now less hierarchical, the GP-pharmacist relationship still involves elements of a struggle for control. Although GPs made less contact than pharmacists, they did instigate contact concerning supply issues and alternative drugs, possibly because they acknowledged a lack of control in this area and a need to co-operate. Details concerning the impending NHS reform and GPs’ specific power in relation to pharmacists were unclear at the time of data collection; however, some GPs stated that if they did have more control of pharmacies they would like to be able to influence stock and supplies. There was also indication that some GPs, given the power, would dispose of the MUR service. Some GPs however stated that the changes to commissioning would pre-empt greater co-operation with pharmacists and pharmacy input would be required. Pharmacists were unsure how any such reorganisation may affect their services or income, although some hinted that competition could increase between GPs and pharmacists. Others felt that if services and income were at stake, this would be a catalyst for pharmacists to interact more with GPs, to ensure that their interests were not overlooked. This reactive approach by pharmacists could be viewed as reinforcement of the traditional model of pharmacy being centred on financial gain.
7.4 Discussion

This chapter has considered the opportunities and constraints faced by those in different positions in the networks and the barriers faced more generally in relation to transforming these loose connections into more integrated networks. It has addressed the final objective of the study - to explore internal and external opportunities and constraints for these networks. Benefits of the possession of strong ties between GPs and pharmacists could be viewed as fairly limited; those with strong ties did not report extensive benefits to these ties, with a tendency to focus on simple efficiency and convenience gains. What was evident though was the limited capitalisation upon these strong ties by those in possession of them for patient benefit, perhaps for fear of losing them. It seems likely that unless these strong ties are capitalised upon further, and benefits are demonstrated, the possession of strong ties will continue to be deemed unnecessary. There appears to be an extensive number of barriers to greater integration between GPs and pharmacists, some of which appear more difficult to overcome than others. Attitudinal, cultural and geographical barriers are most problematic, but other logistical or organisational barriers could perhaps be more easily addressed, and the final chapter of this thesis presents a number of recommendations to this effect.

The strong ties identified in this study were viewed as a ‘good thing’ to posses; they were desirable to those who did not have them. Particular resources may have been embedded within these ties, which were inaccessible to those without them. These ties were also rare amongst the networks, thus meaning that those in possession of them could be considered privileged in some way. What was also rare however was the capitalisation upon these ties. In terms of social capital, undoubtedly some of those with strong ties did posses this type of capital and made use of it, such as the GP who utilised social capital with the pharmacist to gain access to information on latest diabetes medication (chapter 6, section 6.3.3.1), or the same pharmacist who regularly utilised social capital to get information or resolve problems quickly, to ‘make life easier’. Was social capital being used however to benefit the patient? The answer was yes, indirectly; all of these activities could benefit the patient, but there was a tendency to use this capital for efficiency and convenience gains rather than for collaborative services to improve patient health outcomes.
Foley and Edwards (1999) point out that access to social capital and use of social capital is not the same thing. Just because there is access to social capital, does not necessarily mean that this will be utilised. Those with social capital, felt unable to capitalise more on this due to time and organisational constraints. For some pharmacists there was a sense that they should hold back on greater capitalisation for fear of losing these strong ties – they could go too far and risk destroying them. This adds another dimension to the theme of the lack of perceived benefits of the relationships – why is it necessary to possess these ties if there is limited ability to fully capitalise on them?

Some of the barriers to the formation of ties identified in this study are not new, and have been outlined elsewhere (see chapter 2, section 2.2.5.2). Others, such as the overall system of contact being inherently at odds with integration, have received little attention. The shopkeeper image of pharmacy has long been considered a barrier in the GP-pharmacist relationship and as Hughes and McCann (2003) express, this image often pervades other barriers such as hierarchy in the relationship, threat of boundary encroachment, pharmacists’ difficulties accessing GPs and GPs’ lack of knowledge about pharmacists’ role and skills. This study provides many examples of the presence of the ‘shopkeeper image’, not only in the perceptions of GPs, but also perpetuated through the actions and approach of pharmacists themselves. For pharmacists to assert an alternative professional identity during their interactions with GPs there needs to be a level of agreement about this professional identity amongst the profession. Until recently, the professional identity of pharmacists had received little intellectual enquiry (Elvey, 2011). Throughout this study, examples of a ‘professional identity crisis’ amongst pharmacists have been identified. Pharmacists are not a homogenous group; some of the pharmacists involved in this study wanted to expand their role, develop and use clinical skills. They also had a desire to collaborate with other health care professionals. Their desires were ‘kept in check’ however by their own perceptions of the need to conform to the business model of pharmacy and the constraints placed on them by their employing organisations. Others appeared more content to get on with dispensing and ‘keep their head down’. Interacting and collaborating with GPs was viewed as ‘desirable’ or possibly a socially desirable response to give in an interview situation. Pharmacists were critical of GPs perceptions of their role – but if pharmacists cannot reconcile their professional identity in their own minds, it may be difficult to expect this of GPs.
Furthermore, the design of pharmacy services and the organisation of pharmacy generally appear to be a constant source of identity conflict for pharmacists. MURs provide an example of this - moving to more patient-facing services yet retaining the same focus on profitability and throughput. Some pharmacists did not feel comfortable conducting MURs either because they perceived little benefit, were concerned by the financial gains element, or did not feel at ease moving beyond the dispensing role. MURs can also be viewed as a metaphor for many of the problems and tensions inherent in the GP-pharmacist relationship which have been identified in this study. Firstly, the design of the MUR service is representative of the remuneration of community pharmacy in general - focusing on throughputs rather than quality outcomes - and an increase in commercialisation. This financial motivation serves to reinforce the perception that the interests of GPs and pharmacists are not aligned and that they have little in common.

When conducting MURs, pharmacists state that they receive little feedback from GPs, and tend to decipher whether their recommendations have been acted upon through examination of the patient’s next prescription. This is indicative of the style of communication between GPs and pharmacists, indirect and un-reciprocated. It is also indicative of the power imbalance in the GP-pharmacist relationship, where appreciation is not demonstrated by the GP and the pharmacist’s contribution goes unacknowledged. On the other hand, the pharmacists’ recommendations may be inaccurate or unnecessary and therefore frustrating for the GP. Inaccurate in the sense that, without access to patient medical notes, the pharmacist is unable to adopt a holistic view of the patients’ healthcare, reinforcing the idea that the pharmacist is isolated from the rest of primary care, with GPs retaining their status and power through exclusive access to patients’ notes. Also unnecessary, with respect to the tendencies of some pharmacists to strictly adhere to protocols, without employing professional judgement, reinforcing the notion that pharmacists have an over-focus on the trivial. Finally, GPs and pharmacists alike view the MUR service, in its current form, to have little benefit. This corresponds with the idea that the benefits and gains of closer collaboration are not obvious or great enough to warrant the time and effort required to achieve this.
8 CONCLUSION

This concluding chapter presents a summary of the main findings of the study; discusses the implications of this study for practice and outlines recommendations for the improvement of GP-pharmacist relations; discusses strengths and limitations of the study; and finally presents ideas and possibilities for future research.

8.1 Summary of main findings

This PhD aimed to explore the level, nature and process of interaction between GPs and pharmacists at four case study sites. In relation to the level of contact, although contact ties were quite dense at some sites, the contact within these networks was characterised as infrequent, with little agreement observed between GPs and pharmacists concerning the existence of contact. The nature of this contact was characterised as mostly indirect through brokers, de-personalised and non-reciprocal and seemingly at odds with collaborative behaviour. The lack of reciprocal reporting observed across the sites indicated a lack of agreement between GPs and pharmacists about the presence of contact, meeting face-to-face and the quality of these relationships. This misalignment in responses pointed to asymmetry in the relationship and represented a relationship with little commonality, knowing and understanding of each other. Through social network analysis, individuals and dyads in possession of strong ties were identified. Strong ties were not the norm and were characterised by more personalised forms of reciprocal contact. Qualitative interviews provided insight into the processes of interaction between the two professional groups. An approach to the interaction, which involved pharmacists tactically managing the potential conflict in the interaction through use of deferential and sometimes subservient behaviour, was conceptualised as the ‘pharmacist-GP game’. Those pharmacists with strong ties also, at times, adopted aspects of the approach but also attempted to set themselves apart from other pharmacists in order to develop and maintain their strong ties with GPs. However, possession of strong ties did not always lead to capitalisation, and the benefits of possessing these were often viewed as efficiency and convenience gains rather than anything more wide reaching. Often, more isolated GPs and pharmacists did not view strong ties as a necessity, with the benefits of these not considered rewarding enough for the time and effort required to achieve them. This effort-reward conflict was identified as an important constraint faced by GPs and
pharmacists in relation to transforming these loose connections into more integrated networks. A series of other micro and macro level constraints were also identified related to attitudinal, contextual and organisational barriers and potential solutions to some of these constraints were identified by respondents. The next section considers the implications for practice of these findings and presents a series of recommendations informed by, and emerging from, this study.

8.2 Implications for practice

The findings of this study have implications for practice as it has been demonstrated that the level, nature and process of interaction between GPs and pharmacists at these sites was not conducive to greater collaborative working, and that substantial change will be required if these GPs and community pharmacists are to provide more integrated care in the future. The most recent change in community pharmacy – the introduction of the New Medicines Service (NMS) in October 2011 – reiterates the ongoing requirement for GP-pharmacist interaction (see chapter 2 section 2.1.2 for a description of the service). Although this service is being promoted to GPs as not requiring excessive communication with the pharmacist, it will in many cases undoubtedly require co-operation between the GP and pharmacist to successfully resolve any patient problems identified (Pharmaceutical Services Negotiating Committee, 2011). It could be envisaged that in some parts of these four networks, where there are strong reciprocal dyads, the NMS service may work well and make a contribution to patient care. In other areas, where ties are weak, there may be more work to do to strengthen these relationships before the service can operate as imagined by policy makers. The MUR service has not fared well as an example of collaborative working between GPs and pharmacists, and if relationships and networks are not strengthened, the NMS service may suffer a similar fate. It is important that policy makers, commissioners, and health care professionals understand the complex and nuanced nature of the GP-pharmacist relationship, as demonstrated by this study, and be realistic about what these loosely connected (and sometimes fragile) networks can achieve in their current state. Services may fail without the existence of a solid network of relations, causing frustration for those involved and any potential patient benefit may not be fully realised.
8.2.1 Recommendations for practice

This section presents a series of recommendations for the improvement of relationships and interactions between GPs and pharmacists. Recommendations are presented at two levels. Firstly at a micro level - these are small-scale recommendations that could be incorporated into day-to-day practice, possibly at a local level but with a national steer, on a short-term time scale. Secondly at a macro level - these recommendations are large-scale at organisational and professional level, which will require thorough planning, consultation and legislative reform, and thus will be long-term recommendations at national level.

8.2.1.1 Recommendations – micro level

1. Face-to-face meeting in first six months

GPs and community pharmacists should meet face-to-face within the first six months of starting a new post, by way of an introduction.

2. Establish a shared focus

In order to sustain interaction beyond this introductory meeting, GPs and pharmacists should attempt to establish and recognise a shared/joint focus. In this study, GPs and pharmacists often felt they had little in common or nothing to talk about, but the following topics were identified by respondents as needing more discussion:

- Pharmacy services offered
- Patients / medications to target for the above
- Local and national medicine supply issues (possibly a weekly email)
- Each other’s systems and processes, any shared problems and solutions.

3. Existing training and educational events to be more inclusive

Additional meetings between the two professions may be thwarted by both GP and pharmacists’ time constraints, but making existing GP and pharmacist training or educational events open to and inclusive of both professions could enable further interaction, in a common space and help to establish ‘network foci’ (Feld, 1981).
4. **Provision of pharmacist cover by employers to enable meeting attendance**

Pharmacy employers need to enable regular pharmacist attendance of such events and introductory meetings, by providing cover for these times (e.g. for training - one Wednesday afternoon, once a month). A study of European pharmacy arrangements, found that the UK countries had the lowest level of pharmacist per pharmacy ratio. In several other European countries it was the norm for pharmacies to have more than one regular pharmacist working there (Hughes *et al.*, 2010). These factors also need to be considered in the forthcoming consultation about potential changes to supervision arrangements in pharmacy, which is discussed further in section 8.2.1.2 (point 2).

5. **Reciprocal and sustained communication about new pharmacy services**

When new national services or locally commissioning services are being introduced, such as the New Medicines Service introduced in October 2011, GPs and pharmacists need to meet at the start, or preferably beforehand, to discuss how best to communicate regarding these services, and to manage expectations. Interaction about the service should then be maintained at regular intervals, on a quarterly basis for example, to discuss progress and outcomes.

6. **Introduction of problem solving meetings**

If any significant problems are reoccurring in terms of systems and processes affecting either general practice or community pharmacy, then general practice and pharmacy staff should be enabled to meet face-to-face to discuss these problems and find potential solutions together.

7. **GP registrar visits to community pharmacy**

The model of GP registrars visiting community pharmacies to observe and learn practice could be trialled more extensively. Similarly, this model could be extended to include reciprocal arrangements whereby pre-registration pharmacists spend time observing in general practice.

8. **Assessment and re-organisation of GP communication systems**

General practices should assess the organisation of their communication systems and the effectiveness of these. Practices should agree a policy on dealing with communication
from pharmacists, which recognises the potential patient safety input pharmacists can have and deals with contact in a respectful manner. Practice receptionists could also visit community pharmacies to observe systems and processes.

8.2.1.2 Recommendations – macro level
Taking a wider macro level view, many of the barriers to the greater integration of these networks are related or perceived to be related to the structure and organisation of community pharmacy. Particularly for those pharmacists with strong ties, greater capitalisation of these was curtailed by the conflicting demands of the traditional community pharmacy role. This section considers wider reforms which could be made to the system and organisation of community pharmacy which may aid greater integration between GPs and pharmacists.

1. Changes to the remuneration system – individual pharmacist contracts
In 1986, the influential Nuffield report on pharmacy was published which described the state of community pharmacy at the time and recommended changes for improving the profession and its contribution to health care (Committee of Inquiry, 1986). The need for greater co-operation between GPs and community pharmacists was also a feature of this report. One of the main recommendations was the need to address the remuneration system in community pharmacy, which was said to act “counter to the exercise of their professional role” with payments for the dispensing of prescriptions needing to be reduced and “separate payments made for professional activities” (Committee of Inquiry, 1986:132-133). Nearly 20 years on from this report, this change to the remuneration system was finally realised with a new contractual framework in 2005. This slow pace of change appears characteristic of community pharmacy, although this lag was compounded by the necessity to change primary legislation, from the formation of the NHS back in 1948, in order for remuneration change to occur. However, as shown by this study and others (Bradley et al., 2008b; McDonald et al., 2010) it appears that these professional services, initially enabled by the new contractual framework and associated remuneration changes, continued to be interpreted and operationalised through a traditional pharmacy business model – with a focus on reaching targets and maximising throughput, particularly by large multiple pharmacies.
Changes to the current contracting and remuneration model for community pharmacy in the form of individual pharmacist contracts, have been heralded by some as holding the potential to shake off the ubiquitous shopkeeper image. This model is strongly supported by the Pharmacists’ Defence Association and the Chief Pharmaceutical Officer for Scotland (The Pharmacists' Defence Association, 2010). The aim is to contractually separate the supply of medicines from the provision of professional pharmacy services, in order to remove the inherent conflicts of interest and enable further clinical development in community pharmacy. Currently pharmacy contracts are held by the owner of the pharmacy with both the supply of medication and provision of services often carried out by an employee pharmacist. In the individual pharmacist contract proposals, pharmacy owners would still be contracted to provide and be responsible for the essential medication supply role, whilst individual pharmacists would be separately contracted to the NHS to provide professional pharmacy services. These individual pharmacist contractors may still be based in a community pharmacy setting, by hiring consultation rooms and space from pharmacy owners, or could be based elsewhere in health centres or GP practices. Considering the findings of this study about the importance of shared space and propinquity, and the level of respect and collegiality expressed by GPs towards PCT pharmacists (primarily due to an assumed high level of clinical skill and impartiality), the latter scenario may be most favourable for building these strong ties. Whilst community pharmacy has struggled over the last 20 years to earn the respect of GPs and become recognised as the providers of professional services, PCT or primary care pharmacy, a role which only emerged in the 1990s, has achieved significant strides and levels of acceptance with GPs, in a relatively short time frame (Silcock et al., 2004).

2. Changes to supervision arrangements in community pharmacy

In this study, pharmacists often spoke of a feeling of helplessness in relation to improving their ties with GPs, constrained by their requirements to be in the dispensary at all times. The Responsible Pharmacist (RP) regulations introduced in 2006, aimed to allow pharmacists to be absent from the pharmacy for up to two hours a day, however respondents in this study did not utilise the RP regulations for meeting other health care professionals. In reality the RP regulations allow very little to continue in the pharmacy without the physical presence of the pharmacist and thus some respondents stated that it did not make financial sense to be absent from the pharmacy through RP. GPs too felt
their workload constrained their ability to meet with pharmacists, although they suggested meetings with pharmacists could be incorporated into their existing training and educational events. However, as stated in the micro recommendations (point 4 above), pharmacy employers will need to provide cover for pharmacists if they are to realistically attend such events. In the short-term this need for cover should be fully recognised by employers. However, in the long-term, if the current contractual and remuneration system of community pharmacy is to be retained, there is a need to re-examine the requirements for pharmacist supervision in community pharmacy.

A recent review of the literature on workload in community pharmacy concluded that workload had increased since the introduction of the reformed pharmacy contract in 2005, but that the majority of the pharmacist's time was still spent on dispensing associated tasks (Hassell et al., 2011). In the late 1980s, hospital pharmacy witnessed a shift in role, when pharmacists who were previously primarily based in the hospital dispensary, started to have a presence on the ward, leading to greater interaction with other health care professionals and inclusion within the care team (Child et al., 2011). The development of this role and clinical pharmacy in hospitals was said to have been aided not only by the enthusiasm and will of individual pharmacists and doctors but also the use of automation where appropriate, and delegation of dispensing tasks to more junior staff, such as pharmacy technicians (Committee of Inquiry, 1986). In some other European countries, community pharmacy skill mix arrangements have resulted in the dispensing role being delegated to other pharmacy support staff (Hassell et al., 2002; Westerlund and Björk, 2006; van Mil, 2005). For example, in the Netherlands, ‘assistant pharmacists’ can dispense medication under the indirect supervision of the pharmacist, meaning the pharmacist does not have to be physically present on the premises (Hassell et al., 2002). In Sweden, two types of pharmacists exist: 1) the ‘receptarier’ (or prescriptionist), a role which involves three years of University education and 2) the ‘apotekare’ which involves five years of University education. Both have the same rights and obligations in relation to dispensing, but the ‘apotekare’ role may involve more clinical, research and educational work (including collaboration with doctors) away from the pharmacy premises (Hassell et al., 2002; Westerlund and Björk, 2006). A pharmacist not being physically present on the community pharmacy premises, or supervising remotely from elsewhere, is undoubtedly a controversial issue amongst the pharmacy profession (Branford and Phillips, 2010).
However, it is one that requires careful consideration, along with the necessary changes in skill mix and delegation of tasks, as potential strategies to enable pharmacists to work more closely with GPs and to overcome their isolated positions. A Department of Health consultation on supervision arrangements in pharmacy is due in the near future (The Pharmaceutical Journal, 2011).

3. The need to demonstrate and reward quality

This study has shown that the benefits of collaborating with community pharmacy were not always perceived by GPs to be significant enough to warrant the time and effort required to form relationships. Furthermore, the literature presented in chapter 2 demonstrates that trials of collaboration between GPs and community pharmacists do not always indicate significant gains in patient outcomes. As discussed above, community pharmacy outcomes are often interpreted through the business model in relation to profitability and throughputs. In order for community pharmacy to build strong ties with general practice, it will be important that the quality benefits of the relationship can be demonstrated. The need for the measurement of quality in community pharmacy has been recognised for some time, but as yet there is not a national system for measuring and rewarding the provision of high quality services. A Quality and Outcomes Framework (QOF) for pharmacy was developed by Doncaster PCT in 2007, heralding the first of its kind, which gained considerable recognition in the profession as an innovative step (Balza, 2011). The Pharmacy QOF was modelled on the general practice QOF, first introduced in 2004, which is based on the principle of achieving points and thus financial reward, for meeting a series of quality indicators. However, in April 2011, Doncaster PCT decommissioned their pharmacy QOF as result of lack of funding. This was viewed as a backwards step for those in the profession keen to develop community pharmacy’s image as the provider of high quality services (Chapman, 2011).

In the most recent white paper it was stated that “The community pharmacy contract, through payment for performance, will incentivise and support high quality and efficient services” (Department of Health, 2010:26). This could be interpreted as an intention by the Government to eventually develop a similar QOF system for pharmacy in the future. However, it is clear that these are challenging times in terms of funding for such initiatives and immense uncertainty surrounding responsibility and roles in commissioning due to
large-scale NHS reform. Alternatively, this shifting environment could also present opportunities for such quality measurement reforms to occur.

4. **Interprofessional education at undergraduate level**

Inclusive local training and educational events for GPs and pharmacists were recommended as a micro level recommendation (in section 8.2.1.1 above), to enable greater interaction and to establish a shared focus. However, some participants in this study, particularly GPs, questioned what the two professions had in common and what they could talk about during these events and meetings. It may therefore be necessary to enable interaction to occur earlier on in the careers of GPs and pharmacists, to allow commonalities and shared interests to be recognised. GP registrar and pharmacy pre-registration student visits to respective workplaces may be one option at local level, as described above in section 8.2.1.1. At the macro level, however, learning with and from each other during undergraduate university education may help to establish and recognise commonalities early on and to provide a strong foundation upon which to build collaborative relationships later once in practice.

It seems likely that greater emphasis will be placed on interprofessional education in both pharmacy and medical undergraduate curricula in the future. Standards set by the GPhC, which accredits Master of Pharmacy degrees (MPharm) in the UK, indicate this direction of travel. For example, the GPhC standards currently state that:

> “The MPharm degree curriculum must include practical experience of working with patients, carers and other healthcare professionals. Practical experience should increase year on year.” (GPhC, 2011: 19)

However, research evidence supporting the theory that learning together leads to better working together is not currently widespread or particularly conclusive (Hammick *et al.*, 2007). Although, some evidence does suggest that undergraduate interprofessional education may affect the knowledge, attitudes and beliefs students have about professional roles and team working (Cooper *et al.*, 2001). Thus, interaction at this level may help to dispel some of the stereotypical characterisations of both professions which GPs and pharmacists in this study described. Lack of confidence was also identified as a barrier for some pharmacists when interacting with GPs, along with the perpetuation of difference and status through the use of deferential behaviour during interaction.
Interacting as undergraduate students may be a less intimidating experience, which could help to build confidence. In turn greater confidence could enable more productive interaction to take place once in the workplace. However, it should be noted that as the university environment could be considered a ‘safe’ place for interaction, experiences of interacting here may differ from ‘real world’ experiences in the workplace. Thus, interprofessional education also needs to be continued and sustained once in practice.

8.3 Implications for research

This study is the first to apply the technique of social network analysis to the study of GPs and community pharmacists and one of a limited number of studies to examine GP-pharmacist interaction and perceptions at dyad level, including both members of the professional group. This section presents some reflections on the approach used, the strengths and limitations of the study, and concludes with ideas about future research.

8.3.1 Adopting a relational approach

A strength of this study was the relational approach adopted. Previous research concerning GP-pharmacist relationships, outlined in chapter 2, were criticised for a lack of focus at the relational level. The existing literature, although insightful, tends to abstract the views and attitudes of GPs and pharmacists about relationships from their actual relationships. Other studies focusing on the outcomes of the GP-pharmacist relationship similarly separate these outcomes from the relations that were involved in their production. Very few previous studies have focused on GP-pharmacist dyads, gathering information from both parties, although two recent studies from the USA and Australia, published after the start of this PhD, indicate possible recognition of the need to adopt a more relational approach (Snyder et al., 2010; Van et al., 2011).

The findings from this PhD study concur with those of Snyder et al. (2010) in relation to the importance of trustworthiness, face-to-face contact and proving outcomes, and Van et al. (2011) with respect to the nature of interaction and the need for open and bilateral communication. One limitation of these studies however, which is acknowledged by Snyder et al., is the focus on collaborative dyads only. Snyder et al’s study included five highly collaborative pairs identified by pharmacy ‘experts’ and Van et al.’s study involved a
purposive sample of pharmacists who then nominated GPs to be included in the study; 23 pairs were included. By adopting a network approach, bounded by a geographical area, this PhD study enabled the identification of dyads possessing different strengths of ties and individuals situated in central and more isolated positions. The strength of ties and the centrality of actors are always relative to those around them and it was important to situate these relationships within the wider network to gain an understanding of the level of interaction that could be considered the norm in these areas. We know little about Snyder et al’s five collaborative dyads in terms of how similar they were to their peers, although they were selected on the basis of not being ‘typical cases’ of physician-pharmacist relationships. This PhD study could be criticised for not purposively studying more highly collaborative dyads. Whilst the study did identify strong dyads and how they felt these positions had been achieved, it could be argued that they were not ‘shining’ examples of collaboration and there could be more to learn from such exemplars. However, this can be considered an important finding in itself and one which highlights a large gap between policy expectations and what is perceived to be happening ‘on the ground’. Furthermore, if only highly collaborative dyads were studied, respondents may be more likely to espouse the importance of the possession of these relationships. By providing a range of perspectives from those situated in different positions in the networks, this study has provided an important insight into the way in which GPs and pharmacists often manage their interaction to ensure that it is ‘just good enough’. Again these findings indicate a large gap between policy makers’ efforts to frame collaboration as a fundamental part of the NHS, and the perceptions of GPs and pharmacists.

Studying four networks in different geographical areas can be viewed as an important strength of the study. Whilst not inferential to the wider population, the comparison of different area types helped to draw out differences and similarities between these areas. Whilst many of the problems related to relationship building were shared by respondents across the different sites, adoption of this geographical approach served to reinforce the importance of context and demonstrate that a blanket approach may not always be appropriate. Finally, one of the main advantages of using this network approach was the ability to measure levels of reciprocation. Although previous studies indicate difference in perception about the relationship (Sutters and Nathan, 1993), and disagreement about the nature of professional roles (Bryant et al., 2009), this study has demonstrated the extent
to which perceptions are misaligned and relationships are asymmetrical; such findings have not been fully demonstrated or explored previously.

Social network analysis offered a framework and the tools to analyse and present data at this relational level. As stated above, network analysis has not previously been applied to this context, but the novelty of this application posed several challenges. These challenges included, working with data at two-mode level, when many of the established network measures are designed for one-mode networks and the complexity introduced when dealing with both multi-site networks of different sizes and varying professional group sizes with different denominators. The latter posed issues related to the standardisation of measures for comparison across sites and across groups. There is currently limited literature dealing with the analysis of non-affiliation two-mode data and multi-network comparisons and such measurement techniques would benefit from further sophistication if they are to be applied in future studies. Another issue, which was recognised and discussed in both chapters 3 and 4, was response rate. This was low for GPs at some sites, which limited the analysis at these sites to some degree, although the high response rate received from pharmacists can be considered a major strength of the study. The combination of quantitative and qualitative methods can also be considered a strength. As described previously in chapter 3, these two methods were adopted to provide a complementary approach and to address different aims of the study. This approach could be strengthened further by interviewing all the questionnaire respondents so that full quantitative and qualitative datasets are available for analysis. Although not feasible for this particular study, this design may be possible with fewer case study sites or a larger research team.

8.3.2 Future research

In relation to the use of social network analysis for further study in this area, the technique could be employed longitudinally to examine changes in relationships over time and network evolution. Longitudinal SNA could be used as an evaluation tool to assess the impact an intervention may have on GP-pharmacist relationships, such as the introduction of joint training and educational events; a new pharmacy service (such as NMS); forthcoming NHS changes to commissioning; or more wide-reaching contractual reform.
SNA could also be used to study interactions within the professional group, i.e. do pharmacists contact other pharmacists and how frequently do GPs talk to other GPs? Their contacts with other health care professionals could also be studied to help contextualise GP-pharmacist interactions and to examine whether this contact is typical of their usual patterns of communication. For example, is GP contact with other health care professionals similarly infrequent and indirect? The analytical techniques and research instruments developed for this study could also be applied to the study of interactions between other health care professionals in other care settings.

This study has raised a number of issues which would benefit from further exploration and research. The role of the practice receptionist as an important broker in the relationship was a key finding of this study. Thus, further research could include practice receptionists and also pharmacy support staff to examine the level of their interaction with GPs, pharmacists and each other. A recent study in the UK has demonstrated the sometimes hidden role that practice receptionists play in prescribing safety (Swinglehurst et al., 2011); similarly it appears that receptionists along with pharmacy staff also play a hidden role in facilitating or impeding information flow between general practice and community pharmacy, which warrants further exploration.

This study focused on perceived interaction as reported by respondents. Whilst this was beneficial in terms of highlighting differences in perceptions between GPs and pharmacists, it could be argued that this is not an ‘objective’ measure of actual contact. If using SNA or other techniques longitudinally to assess changes in interaction it could be argued that a more ‘objective’ measure may be required, to determine before and after effects. Thus, researcher observation and recording of contact could be employed or GPs and pharmacists could self-record their interaction after the incidence has taken place. As discussed in chapter 3, these techniques were discounted for this study due to time constraints and the excessive burden and disruption this may have caused respondents.

Researcher observation of episodes of interaction could not only be used to record the level and nature of contact but also to enable examination of the type of language used in these interactions. This study has characterised the interaction between GPs and pharmacists as the ‘GP-pharmacist game’, which was based on reports by respondents.
about the way in which they approached each other. It would be interesting to examine how and whether this approach is played out in practice, examining the choice of language and phrases; the use of gestures and body language; how formal/informal the encounter is; and the level of anonymity of the encounter (e.g. does the pharmacist introduce themselves by name). It would also be interesting to observe interactions between GPs and pharmacists in different settings, to examine potential effects of context and role. For example, does the approach and language used when speaking on the telephone, based in their familiar workplaces, differ to that used during a face-to-face meeting or in a more neutral environment such as a joint training event.

Finally, further research could focus on the patient’s experience of GP-pharmacist contact. This agenda could examine patient awareness of contact between GPs and pharmacists, expectations of the occurrence or level of contact, or experiences of communication breakdown and the potential impact this may have on the patient.
REFERENCES


Chapman, C. (2011). Doncaster PCT axes award-winning pharmacy QOF. *Chemist and Druggist, 22.03.11*.


APPENDICES
APPENDIX A – METHODS FOR LITERATURE REVIEW

Aim
The aims of this literature review were to identify and describe existing literature concerning collaboration and working relationships between community pharmacists and GPs (or primary care physicians), to identify themes in the current literature and areas which are under addressed.

Approach
A systematic approach was taken to searching and identifying the literature, however, due to the heterogeneity of the literature in the area, this approach also needed to be iterative and flexible. The approach taken draws on some of the principles of ‘realist review’ (Pawson et al., 2005) which include:

• Being flexible and iterative in approach and strategy, with refinement throughout the process
• The use of snowballing to identify further literature – pursuing references of references – as well as conventional database searches with keywords
• Appraising the quality of the studies, but with recognition that this cannot be standardised due to the disparate nature of the literature. Instead each study is assessed for ‘fitness for purpose’, relevance and rigour (Barbour and Barbour, 2003)
• Data extraction takes the form of information assimilation through note-taking rather than the use of a standardised data extraction form

Search strategies
A list of keywords was produced based on prior knowledge of and reading in the subject area. The thesaurus function in OVID was also utilised across the various databases to identify any further keyword terms. The following keywords were used: collaborat$ OR cooperat$ OR interprofessional OR teamwork$ OR integrat$ OR partnership$ or network$. These were combined with the following terms related to the two professional groups: pharmacist$ AND GP$ OR general practitioner$ OR physician$ OR doctor$. All keywords
were searched in the abstract, title, keyword and subject heading search fields. The following databases were searched: EMBASE, MEDLINE, International Pharmaceutical Abstracts, British Nursing Index and PsycINFO and Health Management Information Consortium (HMIC). The search was limited to the English language only and to the years 1970 – 2009 and duplicates were removed. This search strategy produced 1834 hits.

Following the ‘realist review’ approach, which enables flexibility in approach and strategy, the researcher drew on existing knowledge and experience of the literature area, in order to verify the search strategy and the results produced. Having studied the subject area for several years prior to the start of the PhD, the researcher was aware of a number of research papers of relevance to the subject of study (referred to as ‘key papers’). The search results produced were cross-checked against these known ‘key papers’. The majority of these key papers were included within the search results, which indicated the appropriateness of the search strategy. However, it was felt that a further search should be conducted to ensure that any literature on the perceptions and attitudes of the professionals towards collaboration were captured. The following keywords were used: perception$ OR attitude$ AND relationship$ and combined with the pharmacist and doctor terms as above. Again, the search was limited to the English language only, to the years 1970 – 2009 and duplicates were removed. This search produced 123 hits.

Furthermore, the subject heading listings in OVID for some of the known ‘key papers’ were examined and used in a further search. These included: ‘interpersonal interaction’ OR ‘health professions (communication)’ OR ‘integration’ OR interprofessional relations’ OR ‘interpersonal communication’ OR ‘pharmacists (professional relations) which were again combined with the pharmacist and doctor terms, limited to the English language, the years 1970-2009 and duplicates were removed. This search produced 246 hits.

The three searches were combined (total number = 2203 hits) and any duplicates removed from these, giving a final total of 2092 hits.

Further searches were also conducted using the keywords / subject terms / descriptors – ‘pharmacists’ AND ‘general practitioners’ OR ‘physicians’ in Applied Social Sciences Index and Abstracts (8 hits), Social Science Index (25 hits), Sociological Abstracts (17 hits), and
the Cumulative Index to Nursing and Allied Health Literature (23 hits, search narrowed down using ‘interprofessional relations’ search term). Many of the results were duplicates of those already found in the previous searches, but the search produced 3 hits unique to the search that were potentially relevant to the review.

Inclusion and exclusion criteria

All abstracts of the 2095 hits, where available, were reviewed against the inclusion/exclusion criteria. Any news articles, letters, commentaries (not referenced or empirically based) and conference abstracts were excluded from the results, due to the limited detail provided. Papers which did not focus on primary or ambulatory care settings and specifically general practitioner/physician and community/primary care pharmacist collaboration or relationships were also excluded from the review. Preliminary reading of the abstracts revealed a number of themes common to the literature, with a large proportion of studies focused on doctors’ views of the extended role of pharmacists and the barriers to collaboration. These themes formed part of the inclusion criteria. To provide balance to these themes, the literature was examined for pharmacist views towards collaboration and facilitators and strategies for collaboration. In line with the aims of the PhD project, the literature was also examined for the nature and type of collaboration and also any measures of the extent of collaboration. Finally, although the PhD did not aim to measure clinical outcomes of collaboration, it was felt that the literature in the area should also be included to provide background and a more complete picture of the overall collaboration process.

The following inclusion criteria were applied and thus papers not covering at least one of these areas were excluded from the review:

- Pharmacist or doctor views on collaboration or working relations
- The nature or type of collaboration or interaction between the two professions
- The extent or measure of collaboration or interaction between the two professions
- The process of pharmacist-doctor collaboration (including barriers, facilitators and strategies)
- The outcomes of pharmacist-doctor collaboration
Included studies
Deciding on inclusion was an iterative process of several stages. Selection and review of the included studies was undertaken solely by the researcher without independent verification. From the original 2095 hits, 92 were set aside for potential inclusion after reviewing abstracts and 2003 were excluded as they did not meet the inclusion criteria. For the majority of the excluded hits, doctor-pharmacist relationships or collaboration was not the main focus of the paper. Full-text versions of all 92 papers were sourced for further review. Abstracts were not available for some papers, so it was necessary to source the full-texts of these papers to check for inclusion. From the remaining 92, 55 were retained for inclusion in the review. The main reasons for exclusion were the papers being very short with insufficient detail or commentary, descriptive or overview pieces with no empirical references. A further eight relevant papers were identified through checking references of the other papers and one other unpublished paper known to the reviewer was included, giving a total of 64 included papers.

Review of studies
None of the studies were excluded on the basis of methodological quality, although as mentioned above, some studies were excluded on the basis of reporting quality or format (i.e. little detail presented or no empirical reference). Assessment of methodological quality was however made including rigour (inferences made have sufficient weight), relevance to the area, and contribution to knowledge, commentary of which is presented in the review. A standardised data extraction form was not employed, due to heterogeneity of the studies. Data extraction was conducted inductively and took the form of information assimilation through note-taking.

Results
The majority of the work in this area originated from the UK or USA. There were relatively few qualitative studies, particularly from the USA, which were almost exclusively quantitative. The studies can be broadly grouped into five themes, based on the inclusion criteria, which are presented in the figure below; some studies cover more than one theme. Self-completion questionnaires were the most commonly used research design and a large proportion of these studies fall under the category ‘perceptions of or attitudes towards collaboration’. This demonstrates that there may be limitations to this area;
whilst this is one of the most heavily researched areas of GP-pharmacist collaboration, it is questionable as to how much insight or depth a self-completion questionnaire can give into perceptions of collaboration. Randomised Controlled Trials (RCTs), pre-post tests and some of the other interventions are contained within the ‘outcome of collaboration’ category’, as might be expected. Analysis of self-recorded interactions and content analysis of written messages all fall within the ‘nature or type of collaboration’ section. Some of the more qualitative work, including interviews, focus groups or mixed method research designs can be seen in the ‘process of collaboration section’. ‘The extent or measure of collaboration’ appears to be a somewhat neglected area as are some parts of the ‘process of collaboration’, namely relationships development or formation.

Figure A.1: Overview of research design and country of origin for included papers (n=64)

<table>
<thead>
<tr>
<th>Research design</th>
<th>n</th>
<th>Country of origin</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-completion questionnaire</td>
<td>24</td>
<td>UK</td>
<td>26</td>
</tr>
<tr>
<td>Randomised controlled trial (RCT)</td>
<td>7</td>
<td>USA</td>
<td>16</td>
</tr>
<tr>
<td>Clinical/service/IT/educational intervention*</td>
<td>7</td>
<td>Australia</td>
<td>8</td>
</tr>
<tr>
<td>Interviews</td>
<td>7</td>
<td>Canada</td>
<td>7</td>
</tr>
<tr>
<td>Interviews and questionnaire</td>
<td>5</td>
<td>Netherlands</td>
<td>3</td>
</tr>
<tr>
<td>Focus groups</td>
<td>4</td>
<td>Finland</td>
<td>1</td>
</tr>
<tr>
<td>Pre-post test</td>
<td>3</td>
<td>New Zealand</td>
<td>1</td>
</tr>
<tr>
<td>Theoretical model</td>
<td>2</td>
<td>India</td>
<td>1</td>
</tr>
<tr>
<td>Analysis of self-recorded interactions</td>
<td>2</td>
<td>Joint Canada and Netherlands</td>
<td>1</td>
</tr>
<tr>
<td>Commentary</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content analysis of written messages</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants’ qualitative written reports</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Not RCT or pre-post study

References


APPENDIX B – PCT CHARACTERISTICS DATA

<table>
<thead>
<tr>
<th></th>
<th>PCT 1</th>
<th>PCT 2</th>
<th>PCT 3</th>
<th>PCT 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural/urban classification</td>
<td>Other</td>
<td>Significant</td>
<td>Major</td>
<td>Rural</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>Rural</td>
<td>Urban</td>
<td>50</td>
</tr>
<tr>
<td>IMD position</td>
<td>30%</td>
<td>40%</td>
<td>5%</td>
<td>20%</td>
</tr>
<tr>
<td>People with long-term illness (%)</td>
<td>22</td>
<td>19</td>
<td>22</td>
<td>17</td>
</tr>
<tr>
<td>Number of community pharmacies</td>
<td>75</td>
<td>97</td>
<td>121</td>
<td>92</td>
</tr>
<tr>
<td>Number of pharmacies per 100k population</td>
<td>25</td>
<td>21</td>
<td>26</td>
<td>20</td>
</tr>
<tr>
<td>% 100 hour pharmacies</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>% of pharmacies that are independent</td>
<td>41</td>
<td>25</td>
<td>38</td>
<td>19</td>
</tr>
<tr>
<td>Number of pharmacy enhanced services provided</td>
<td>250</td>
<td>361</td>
<td>184</td>
<td>242</td>
</tr>
<tr>
<td>Average enhanced service per pharmacy</td>
<td>3.3</td>
<td>3.7</td>
<td>1.5</td>
<td>2.6</td>
</tr>
<tr>
<td>Percentage of pharmacies providing MURs</td>
<td>76</td>
<td>94</td>
<td>79</td>
<td>84</td>
</tr>
<tr>
<td>Average MURs per pharmacy providing MUR services</td>
<td>172</td>
<td>154</td>
<td>183</td>
<td>228</td>
</tr>
<tr>
<td>Number of GP Practices</td>
<td>55</td>
<td>86</td>
<td>106</td>
<td>51</td>
</tr>
<tr>
<td>Number of GPs (excluding retainers and registrars)</td>
<td>194</td>
<td>253</td>
<td>353</td>
<td>301</td>
</tr>
<tr>
<td>Number of GPs per 100k population</td>
<td>66</td>
<td>55</td>
<td>73</td>
<td>66</td>
</tr>
</tbody>
</table>

1 DEFRA 2008
2 Indices of Multiple Deprivation 2007, PCT summary
3 ONS Neighbourhood Statistics 2001
4 General Pharmaceutical Services in England 2000-2001 to 2009-10 – The Information Centre and personal correspondence from PCTs
5 NHS Staff 2000-2010 (General Practice) - The information centre
APPENDIX C – NETWORK QUESTIONNAIRE (GP VERSION)

About this project:

This research is conducted by The University of Manchester and funded by the National Institute of Health Research (NIHR). It is one of the first research projects in England exclusively dedicated to the examination of working relationships between general practitioners and community pharmacists.

This questionnaire forms a very important part of the research project by helping us to understand the nature, type and frequency of contact between GPs and community pharmacists. It is being conducted by the School of Pharmacy and Pharmaceutical Sciences in conjunction with the Department of Sociology at The University of Manchester.

Please see the enclosed information sheet for further details and if you have any questions about this questionnaire or about the project, please contact:
Fay Bradley  Tel: 0161 2758354 Email: fay.bradley@manchester.ac.uk
About this questionnaire:

This questionnaire is designed to find out about contact between GPs and community pharmacists in your local area.

Although the questionnaire deals with the names of community pharmacists, and must do so, all responses will be made anonymous and all names removed before being collated, stored and analysed. Nobody will see the original questionnaires except the research team (Ms. Fay Bradley, Dr Darren Ashcroft and Prof. Nick Crossley) and all information will be kept strictly confidential. Please see enclosed information sheet for further information.

Others who have completed the questionnaire have said it takes approximately 10-15 minutes to complete.

Instructions for completing the questionnaire:

It is important that this questionnaire is completed by the GP to whom it was addressed. If you work at more than one Practice, please answer the questions in relation to the Practice where this questionnaire was sent.

★ Questions 1 – 8 overleaf are designed to collect basic details about you and your Practice. Please follow the instructions given for each question.

★ Questions 9 and 11 ask you to write in the most appropriate number from the following scale for each of the pharmacists listed:

<table>
<thead>
<tr>
<th>4 = very often</th>
<th>3 = fairly often</th>
<th>2 = sometimes</th>
<th>1 = rarely</th>
<th>0 = never</th>
</tr>
</thead>
</table>

An example:

If you have contact with one of the pharmacies listed but do not recognise any of the pharmacist names or do not know the name of the pharmacist with whom you have contact, please answer the questions generally for the pharmacy as a whole, writing your answer on the purple shaded lines instead.

Space is provided under each pharmacy name for you to write in the name of a pharmacist that is not listed, with whom you may have contact.

★ Please answer questions 9 and 10 for all the pharmacists or pharmacies listed, even if you have never had contact with them before.

★ The remaining questions 11 -14 only need to be answered for those with whom you have, or have had, contact with before.

★ Questions 12 -14 are simple tick box questions.

★ Extra space is provided at the end of the list for you to add any pharmacists at pharmacies that have not been listed with whom you have contact.

★ At first glance the grid may look complicated but others who have completed it have found that it is quite simple once you start - you may find it easier to work across the page rather than down.
1. What is your job title? 

- [ ] GP partner
- [ ] Salaried GP
- [ ] PCT GP
- [ ] GP registrar
- [ ] Locum GP

Other (Please state) 

2. Approximately how long have you been working at this Practice? 

[ ] Years 

[ ] Months 

3. Do you work full or part-time at this Practice? 

- [ ] Full-time
- [ ] Part-time

4. Approximately how long have you been qualified as a GP? 

[ ] Years 

[ ] Months 

5. Is there a practice pharmacist who works with or at this practice? 

- [ ] Yes
- [ ] No
- [ ] Not sure

6. What is your gender? 

- [ ] Male
- [ ] Female

7. What is your age? 

- [ ] 25 - 34
- [ ] 35 - 44
- [ ] 45 - 54
- [ ] 55 - 64
- [ ] 65+

8. Which best describes your ethnic group or background? 

- [ ] White
- [ ] White - British
- [ ] White - Irish
- [ ] Other White background
- [ ] Mixed / multiple ethnic group
- [ ] White and Black African
- [ ] White and Black Caribbean
- [ ] White and Asian
- [ ] Other Mixed / multiple ethnic group background
- [ ] Asian / Asian British
- [ ] Indian
- [ ] Pakistani
- [ ] Bangladeshi
- [ ] Chinese
- [ ] Other Asian background
- [ ] Black / African / Caribbean / Black British
- [ ] African
- [ ] Caribbean
- [ ] Other African / Caribbean / Black background

Any other ethnic group (please write in) 

Thank you - Please turn the page
### Description of activities listed in Question 11:

1. Drug therapy - any clinical issues, including those related to drug interactions, dose, or potential contraindications
2. Prescriptions processing - technical queries such as illegibility and legal issues (e.g., missing date/signature or controlled drugs)
3. Equipment/stock/delivery requests - requests for equipment, oxygen or prescription delivery, stock or supplies
4. Local health events or meetings - e.g., conferences, meetings or events run by PCT, LMC or professional bodies etc.
5. Medicines Use Reviews (MURs) - any contact associated with the MUR advanced service
6. Pharmacy services - contact related to enhanced services or similar, e.g., diagnostic testing, EHC, smoking cessation etc.
7. Patient referral – contact related to the referral of a patient, either making a referral or receiving a referral
8. Non-work related social matters - e.g., social visits or calls
If you have any comments you’d like to make concerning contact and collaboration between GPs and community pharmacists, please use the space below...

…but please do not use this space to make any personal comments about individuals or comments about poor practice.

We would also welcome any comments you may have about this questionnaire (e.g. the content or design)
Thank you for taking the time to complete this questionnaire

If you would like to receive a summary of the results of this study please tick this box □

Please return your questionnaire in the FREEPOST envelope provided. No stamp is needed.

Thank you for your help
Return Address: Fay Bradley, School of Pharmacy & Pharmaceutical Sciences, FREEPOST MR 9661, University of Manchester, Oxford Road, Manchester, M13 9PT
APPENDIX D – COVER LETTERS, INFORMATION SHEETS AND CONSENT FORMS

Invitation to Interview letter

[Name]
[Address]

[Date]

Dear [Name]

I am a PhD student at the University of Manchester and I am writing to ask for your help with a new research project examining contact and collaboration between community pharmacy and general practice. The project is funded by the National Institute of Health Research (NIHR) through their PhD fellowship scheme.

A small number of locations in the North West have been chosen as case study sites for the project and I hope that you may be able to help by taking part in a research interview for the [name of site] area. Interviews would be conducted at a time and place convenient for you and would last 30-45 minutes. A token of £40 in high street vouchers is offered to thank interviewees for their time and participation.

Before the interview you will be asked to complete a short 10 minute questionnaire which asked about the type of contact you have with [GPs/community pharmacists] in the local area. This information can then be used to produce a visual representation of your network of contact, which can be discussed with the researcher in the interview if you wish. Participants often find this experience insightful and much more rewarding personally than the completion of a standard research questionnaire.

Enclosed is an information sheet giving more details about the interview and what this would involve. I will be in touch shortly to see if you would like to participate and discuss any questions you may have. Enclosed is a form for you to complete and return in the freepost envelope should you wish to take part.

Your participation and time is very much appreciated. If you have any questions or would like to discuss the project further, please do not hesitate to contact me.

Thank you for your help.

Yours sincerely

Fay Bradley
NIHR Doctoral Research Fellow
The University of Manchester
0161 275 8354
fay.bradley@manchester.ac.uk

enc. Information sheet
Expression of interest form
Freepost return envelope
Dear [Name],

I am a PhD student at the University of Manchester and I am writing to ask for your help with a new research project examining working relationships between general practice and community pharmacy. The project is funded by the National Institute of Health Research (NIHR) through their PhD fellowship scheme.

Please find enclosed a short questionnaire which asks about the type of contact you may have with local [community pharmacists/general practitioners]. Your response will be greatly appreciated and I hope that you can spare 10-15 minutes to complete this questionnaire.

I am aware that you are very busy and probably receive many similar requests. However, unlike other research questionnaires that you may receive, this questionnaire has been specifically designed for your local area. I therefore hope that you will find the questionnaire relevant to your local circumstances and practice. Regardless of whether you have a lot or only a little contact with the [pharmacies/practices] in your area, we very much value your response.

An information sheet providing further details is enclosed along with a freepost envelope for you to return your questionnaire. Please can you return the questionnaire by [insert date].

Your participation and time is very much appreciated. If you have any questions about either this questionnaire or about the project do not hesitate to contact me.

Many thanks for your help

Yours sincerely

Fay Bradley
NIHR Doctoral Research Fellow
The University of Manchester
0161 275 8354
fay.bradley@manchester.ac.uk

enc. Questionnaire
Information sheet
Freepost return envelope
Collaborative Healthcare And Interprofessional Networks (CHAIN)

Interview information

You are being invited to take part in an interview for a research study. Before you decide whether to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Discuss it with others if you wish. If there is anything that is not clear, or if you would like to receive more information, please feel free to contact Fay Bradley using the contact details below.

Take time to decide whether or not you wish to take part.

Thank you for reading this information sheet.

What is the purpose of the study?

Policy and guidance is urging GPs and community pharmacists, along with other health care professionals to work collaboratively and provide integrated care. However, adopting such an approach may not always be possible or straightforward. It is important to gain a greater understanding about the nature of current working relationships between GPs and community pharmacists in order to understand how the two professions might realistically work together in the future. It is also vital that we gain this understanding prior to the introduction of new services and policy initiatives, to ensure that these are appropriate and evidence-based. This research study aims to explore the life-cycle of working relationships and collaborations between GPs and community pharmacists. Examining how collaborations begin, grow and evolve as well as examining how collaborations may not last or may not start at all and the issues and problems associated with this. The research aims to inform policy and practice by providing a greater understanding of GP-pharmacist working relationships.

Why have I been chosen?

The project is focused on a small number of different areas in the North of England. Areas have been chosen to ensure that they are geographically different (e.g. village, town and city locations). You have been selected because you are a GP or pharmacist working in one of these areas.

What will happen to me if I take part?

An interview with a researcher will be arranged at a time and place convenient for you. The interview should take no longer than 1 hour. Prior to the interview you will be asked to complete a short questionnaire which asks about the type of contact you have with local GPs or community pharmacists. The researcher will then analyse this questionnaire using a technique called ‘network analysis’, which will result in the production of a visual diagram of your network. You will get to see this network diagram and to discuss it further during the interview. With your permission, the interview will be sound recorded, transcribed and analysed. On transcription, the information will be anonymised. If you do not wish to be sound recorded, please indicate this to the researcher, you can still participate and the researcher will take notes during the interview.

Each participant will be offered a gesture of £40 to thank them for their time and effort.

Will my taking part in this study be kept confidential?

Your interview will be part of a case study centred on a small geographical area, the locations of which will be kept confidential and not reported. Your geographical area will be one of six areas...
featured in the study. The findings from the interviews will be linked to that case study site and to the responses you gave in the network questionnaire. The nature of this type of research means that the participants for your case study area are aware of others in the area who may have also participated. These participants do not know who has been involved in the interviews for this case study area. Whilst the research team will not use your name to report your views, there may be a small chance that another participant from the same case study area, who knows you, could approximate where some of the views have come from.

All information obtained from the interviews and any other contact with you will be kept strictly confidential. To ensure this, data will be anonymised (your name, any other names and any identifying particulars will not be included) and securely stored. Your personal details will not be used in the analysis. We may use quotes from your interview in reports or publications, but these will not be attributed to you. Sound recordings of interviews will be erased as soon as we have finished with them. Information about your participation will only be available to the research team and staff responsible for monitoring the conduct of the study at the University and Trust.

Do I have to take part?

No. It is up to you to decide whether or not to take part. If you decide to take part you are still free to withdraw from the study at any time, and without giving a reason. You may also leave the interview at any point, if you wish to. The information collected can be destroyed after your withdrawal if you prefer.

What if there is a problem?

If you have any concerns about any aspect of this study, you should speak with the researcher who will do their best to answer your questions (see contact details).

If you remain unhappy and wish to complain formally, you can contact the University Research Office on 0161 275 7583. This contact is independent of the researcher and research supervisors.

What will happen to the results of the research study?

The results of the study will be analysed and published in professional journals and at conferences. They will also contribute to the completion of a postgraduate thesis. You will not be identifiable from the data used and published.

Who has funded the study?

The study is funded by the National Institute of Health Research (NIHR) as part of their research fellowship programme.

Who has reviewed the study?

This study has been approved by the NHS North West 1 Research Ethics Committee (ref: 10/H1017/12).

Contact details for further information

If you wish to ask any questions about this study before deciding to take part, please do not hesitate to contact me at:

Fay Bradley  
School of Pharmacy and Pharmaceutical Sciences  
1st Floor, Stopford Building  
University of Manchester  
Oxford Road, Manchester, M13 9PT  
Tel: 0161 275 8354    Email: fay.bradley@manchester.ac.uk
Collaborative Healthcare And Interprofessional Networks (CHAIN)

Questionnaire information

You are being invited to participate in a research study. Before you decide whether to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Discuss it with others if you wish. If there is anything that is not clear, or if you would like to receive more information, please feel free to contact Fay Bradley using the contact details below.

What is the purpose of the study?

Policy and guidance is urging GPs and community pharmacists, along with other health care professionals to work collaboratively and provide integrated care. However, adopting such an approach may not always be possible or straightforward. It is important to gain a greater understanding about the nature of current working relationships between GPs and community pharmacists in order to understand how the two professions might realistically work together in the future. It is also vital that we gain this understanding prior to the introduction of new services and policy initiatives, to ensure that these are appropriate and evidence-based. The CHAIN survey forms an important part of the project by helping us to understand the nature, type and frequency of contact.

Why have I been chosen?

The project is focused on a small number of different areas in the North of England. Areas have been chosen to ensure that they are geographically different (e.g. village, town and city locations). You have been selected because you are a GP or pharmacist working in one of these areas.

What will happen to me if I take part?

You will be asked to complete a short 5-10 minute questionnaire, either online or paper, which asks about the level and nature of contact you have with and from local community pharmacists or GPs. A small number of respondents will be asked if they would be willing to be involved in a follow-up interview. If you complete the questionnaire you are not under any obligation to take part in the follow-up interview.

Will my taking part in this study be kept confidential?

Your participation in the study will be kept confidential. The nature of this type of research means that the questionnaire participants for your case study area are potentially aware of others in the area who may have also participated in the questionnaire. However, you will not be identified in any of the data used or published. All questionnaires and responses will be anonymised (all the names will be removed) before being collated, stored and analysed. The case study areas will also be anonymised and not reported or revealed. Nobody will see the original questionnaires except the research team and all information will be kept strictly confidential.
What if there is a problem?

If you have any concerns about any aspect of this study, you should speak with the researcher who will do their best to answer your questions (please see contact details below).

If you remain unhappy and wish to complain formally, you can contact the University Research Office on 0161 275 7583. This contact is independent of the researcher and research supervisors.

What will happen to the results of the research study?

The results of the study will be analysed and published in professional journals and at conferences. They will also contribute to the completion of a postgraduate thesis. You will not be identified in the data used and published.

Who has funded the study?

The study is funded by the National Institute of Health Research (NIHR) as part of their research fellowship programme.

Who has reviewed the study?

This study has been approved by the NHS North West 1 Research Ethics Committee (ref: 10/H1017/12).

Contact details for further information

If you wish to ask any questions about this study before deciding to take part, please do not hesitate to contact me at:

Fay Bradley
Centre for Innovation in Practice
School of Pharmacy and Pharmaceutical Sciences
1st Floor, Stopford Building
University of Manchester
Oxford Road
Manchester
M13 9PT

Tel: 0161 275 8354
Email: fay.bradley@manchester.ac.uk

Supervisors:
Prof. Darren Ashcroft
Centre for Innovation in Practice
School of Pharmacy and Pharmaceutical Sciences

Prof. Nicholas Crossley
Sociology
School of Social Sciences
Consent Form

Interview - Collaborative Healthcare And Interprofessional Networks (CHAIN) Study

Name of Researcher: Fay Bradley

1. I confirm that I have read and understand the information sheet dated 09/04/2010 (Version 1)

2. I have had an opportunity to ask questions and discuss this study.

3. I have received satisfactory answers to all my questions

4. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

5. I agree to the interview being audio-recorded and give permission for the researcher to have access to this information for analysis.

6. I agree to the use of anonymised quotes from the interview in publications arising from this study.

7. I understand that relevant sections of personal data provided for the purposes of this study may be looked at by individuals from the University of Manchester, from regulatory authorities or from the NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.

8. I agree to take part in the study

Name of participant  Date  Signature

Researcher  Date  Signature
APPENDIX E – SAMPLE INTERVIEW TOPIC GUIDE

How long worked here?
Where previously?
Full-time/part-time?
How long has practice / pharmacy been here?

----------------

Contact

★ Contact is with these pharmacies / practices – discuss frequency
★ Reciprocal contact – equal or not?
★ How often – obviously I’ve given these titles - How many times a week/day?
★ Who instigates this?
★ Do you initiate about certain matters – what sort of matters?
★ Do you feel that you know these pharmacists/GPs – know their names or not?
★ Do they introduce themselves personally?
★ Can you remember the first contact you had with them? Where, what was that?
★ Has contact changed over time?
★ Reason for less contact with some – what is different?

Direct/indirect

★ Why do you think it varies?
★ When is direct contact required?
★ When is it not?
★ And practice receptionist / pharmacy support staff – role in contact?
★ Are you satisfied with this method of contact?
★ Would you prefer more direct contact?
★ Any instances when direct is necessary – how do you accommodate this direct contact?

Face-to-face

★ Met them face-to-face in last 12 months?
★ Ever met them?
★ Where and how did that occur – who instigated, arranged?
★ Is face-to-face contact necessary? Or does the contact you have function well without this?
★ Is communication any different / easier with those you have met face-to-face?

Services

★ Discuss contact about services and frequency
★ Thoughts on MURs?
★ Do you have any discussions with the pharmacists/GPs about the introduction of new services
★ Would you like to see [or offer] any other pharmacy services?
★ Discuss meetings and social contact

Quality – factors influencing this

★ You describe the relationship with the pharmacists/GPs as very good/good/satisfactory/poor
★ What differentiates these levels?
★ What factors to you think have aided this relationship? – is it something about personality, the quality of the work, demonstrated outcomes? Length of time known? Does geographical closeness matter?
★ What are the key factors that have maintained the relationship?
Would you say you trust these pharmacists/GPs? Have you always trusted them – or has this taken a while to develop? How long does it take – what needs to happen to develop this trust?

What do you think are the benefits of having this relationship? For patients, for yourself, for GP/pharmacist?

Do you think anything would be adversely affected without this relationship existing? Would anything change – how valuable is it in the grand scheme?

Expertise role

For GPs

If you needed advice on a pharmaceutical matter – would you approach any of these pharmacists?
Yes – who would you ask and why? Have you ever done this?

No – who else would you approach? Why would you not approach these pharmacists?

Other health care professionals that you have contact with – who would you contact first?
Where would you place pharmacists in the list? Who would you prefer to meet with, who would be most useful?

PCT/ practice pharmacist – would you approach them?

Outside area – no contact

Any other pharmacies/practices outside the area you have contact with?

Any particular reasons why no/less contact occurs with these?

Do you feel you ‘know’ other pharmacists/GPs – by name?

Do you feel it would be beneficial to have relationships with these pharmacies/practices or would it not add any value? Not necessary?

If you wanted to establish links with these pharmacies/practices what would you do? How would you approach them?

Do you tend to wait for pharmacists/GPs to approach you? Do you prefer this?
If they did approach you how would you prefer them to do this – telephone, face-to-face, through someone else?

Which approach works best? Do you think pharmacists find it hard to approach GPs or vice versa?

More general

Do you think collaboration with pharmacists/GPs is a necessity, a bonus, not necessary?

Do you see any benefits of pharmacists and GPs working more closely?

Do you see any disadvantages?

For your day to day work do you think there is a need to improve contact or relationships?

Do you think pharmacists and GPs both want this? Are there interests aligned?

Do you think pharmacists and GPs want the same outcomes? Why / why not – what are their motivations?

Have you had any negative experiences of collaboration or interaction with a pharmacist/GP?

When a pharmacist/GP contacts you – what is the first thing that runs through your mind?

Professional boundaries and roles - have you ever felt that a pharmacist was over stepping the mark professionally/ felt that as a pharmacist you were overstepping the mark?

How would you feel if you were required (contractually obliged) to collaborate with community pharmacists/GPs?

Financial incentives to encourage collaborate – what are your thoughts on this?

What about the PCT? Or other organisations – PBC consortium/LMC/LPC? What role if any do they have in forging links and collaboration? Anything happening locally?

Do you think GP commissioning will lead to more or less contact?

Other developments like ETP?

So overall, from your experience what do you think are the key things pharmacists and GPs need to do if they are to improve relationships? Advice to new GPs/pharmacists about establishing a good relationship and maintaining it?
APPENDIX F – ETHICAL APPROVAL

National Research Ethics Service
North West 1 Research Ethics Committee - Cheshire
Research Ethics Office
Victoria Building
Bishop Goos Complex
Rose Place
Liverpool
L3 3AN
Telephone: 0151 330 2070
Facsimile: 0151 330 2075

19 February 2010

Ms Fay Bradley
Research Associate
University of Manchester
School of Pharmacy
Stopford Building
Oxford Road, Manchester
M13 9PT

Dear Ms Bradley

Study Title: Exploring the integration between community pharmacists and general practitioners: a novel application of social network analysis

REC reference number: 10/H1017/12

The Research Ethics Committee reviewed the above application at the meeting held on 10 February 2010. Thank you for attending to discuss the study.

Ethical opinion

The members of the Committee present gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation, subject to the conditions specified below.

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see “Conditions of the favourable opinion” below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

For NHS research sites only, management permission for research (“R&D approval”) should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk. Where the only involvement of the NHS organisation is as a Participant Identification.

This Research Ethics Committee is an advisory committee to North West Strategic Health Authority.

The National Research Ethics Service (NRES) represents the NRES Directorate within the National Patient Safety Agency and Research Ethics Committees in England.
Centre, management permission for research is not required but the R&D office should be notified of the study. Guidance should be sought from the R&D office where necessary.

Sponsors are not required to notify the Committee of approvals from host organisations.

Approved documents

The documents reviewed and approved at the meeting were:

<table>
<thead>
<tr>
<th>Document</th>
<th>Version</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covering Letter</td>
<td></td>
<td>21 January 2010</td>
</tr>
<tr>
<td>REC application</td>
<td>2.3</td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Protocol</td>
<td>1.0</td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Investigator CV</td>
<td></td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Participant Information Sheet: Info sheet questionnaire</td>
<td>1.0</td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Participant Information Sheet: Info sheet interview</td>
<td>1.0</td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Participant Consent Form: Consent form interview</td>
<td>1.0</td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Participant Consent Form: Verbal consent</td>
<td>1.0</td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Letter of invitation to participant</td>
<td>1.0</td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Evidence of insurance or indemnity</td>
<td>1.0</td>
<td>22 January 2010</td>
</tr>
<tr>
<td>Referees or other scientific critique report</td>
<td></td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Summary/Synopsis</td>
<td></td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Interview Schedules/Topic Guides</td>
<td>1.0</td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Questionnaire: non-validated questionnaire for GPs</td>
<td>1.0</td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Questionnaire: non-validated questionnaire for pharmacists</td>
<td>1.0</td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Letter from funder</td>
<td></td>
<td>17 July 2008</td>
</tr>
<tr>
<td>Summary CV for supervisor</td>
<td></td>
<td>21 January 2010</td>
</tr>
<tr>
<td>Letter of invitation to participant</td>
<td>1.0</td>
<td>21 January 2010</td>
</tr>
</tbody>
</table>

Membership of the Committee

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Now that you have completed the application process please visit the National Research Ethics Service website > After Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views
known please use the feedback form available on the website.

The attached document "After ethical review – guidance for researchers" gives detailed
guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of
changes in reporting requirements or procedures.

We would also like to inform you that we consult regularly with stakeholders to improve our
service. If you would like to join our Reference Group please email
referencegroup@nres.npsa.nhs.uk.

10/H1017/12 Please quote this number on all correspondence

With the Committee’s best wishes for the success of this project

Yours sincerely

Mr Jonathan Deans
Chair

Email: rob.emmett@liverpoolpct.nhs.uk

Enclosures: List of names and professions of members who were present at the
meeting and those who submitted written comments
"After ethical review – guidance for researchers"

Copy to: Mohammed Zubair
[R&D office for NHS care organisation at lead site]