A **Heavy** Burden

The occurrence and impact of musculoskeletal conditions in the United Kingdom today

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The Arthritis Research UK Epidemiology Unit acts as a source of information on the burden of musculoskeletal disease to academics, the medical profession, patients and the general public. In recent years we have received increasing numbers of requests for data on the incidence, prevalence and costs of musculoskeletal conditions in the UK. The epidemiological data required are widely scattered in published studies, surveys and Government reports. The present report arose from the desire to collate all the available epidemiological data and to provide a template that could be used to estimate the number of sufferers amongst any section of the population, such as a GP patient list, with known age and gender breakdown. The first two editions of this report, the last of which was published in 2002, have proved very popular. This edition aims to build on the previous two, by including economic and mortality information, in addition to providing an update based on the most recently available data.

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ABSTRACT

Musculoskeletal complaints are widespread in the community and a frequent cause of consultation with general practitioners (GPs). The majority of musculoskeletal conditions are not life threatening and do not require hospital admission. Therefore only a small proportion of the burden is reflected in routine data sources. Musculoskeletal conditions also have a significant economic impact, through both the direct cost of treatment and the wider indirect costs to the economy. This report reviews data on the burden of musculoskeletal conditions, in order to build up a template for estimating morbidity and mortality due to these disorders.

LIST OF ABBREVIATIONS AND ACRONYMS

ACR	American College of Rheumatology
ARA	American Rheumatism Association
AS	Ankylosing spondylitis
BMD	Bone Mineral Density
BNF	British National Formulary
BSR	British Society for Rheumatology
CASPAR	Classification of Psoriatic Arthritis
DEXA	Dual energy X-ray absorptiometry
DWP	Department of Work and Pensions
ERAS	Early Rheumatoid Arthritis Study
ESSG	European Spondyloarthropathy Study Group
EVOS	European Vertebral Osteoporosis Study
FCE	Finished Consultant Episode
GHS	General Household Survey
GP	General Practitioner
GPRD	General Practice Research Database
HARIS	Highland Automated Rheumatology Information System
HES	Hospital Episode Statistics
HLA	Human Leukocyte Antigen
HRT	Hormone Replacement Therapy
HRG	Healthcare Resource Group
ICD	International Classification of Diseases
ILAR	International League Against Rheumatism
IMS	Intercontinental Marketing Services
JCA	Juvenile chronic arthritis
JIA	Juvenile idiopathic arthritis
JRA	Juvenile rheumatoid arthritis
LFS	Labour Force Survey
mHAQ	Modified Health Assessment Questionnaire
NAO	National Audit Office
NHS	National Health Service
NICE	National Institute for Health and Clinical Excellence
NOAR	Norfolk Arthritis Register
OA	Osteoarthritis
ONS	Office for National Statistics
OPCS	Office for Population Censuses and Surveys
PCG/T	Primary Care Group/Trust
PMR	Polymyalgia rheumatica
PsA	Psoriatic arthritis
RA	Rheumatoid arthritis
RCGP	Royal College of General Practitioners
RCGP RSC	Royal College of General Practitioners Research and Surveillance Centre
RCGP WRS	Royal College of General Practitioners Weekly Returns Service
SLE	Systemic lupus erythematosus
SMR	Standardised Mortality Ratio
SpA	Spondyloarthropathy
TNF	Tumour Necrosis Factor
SWI	Self-reported Work-related Illness
UK	United Kingdom
WHO	World Health Organisation
WPLS	Work and Pensions Longitudinal Survey

CONTENTS

1. INTRODUCTION

1.1 MEASURING THE BURDEN OF MUSCULO-SKELETAL CONDITIONS

Disease 'burden' can be defined not only by the number of people affected, i.e. incidence and prevalence, but also by its social, economic and personal impact. In an ideal world assessing the burden of disease would involve conducting a detailed interview with each individual. A reasonable substitute is to perform a survey using a stratified sample of the population. However, even when this is done, it is not feasible to explore every aspect of health in a single survey. A profile of the community's health has to be built up piecemeal using all available sources of data. It is important to allow for modifiers such as socio-economic group, ethnicity and cultural factors that may affect the applicability of external data.[1;2] Epidemiological investigations cannot provide all the answers with regard to healthcare requirements since they usually do not take into account disease severity and do not consider who would or would not benefit from intervention. Co-morbidity, for example, may preclude some elderly people who would otherwise benefit from a hip replacement from undergoing surgery. This report aims to provide a picture of the burden of musculoskeletal conditions in the UK. It will also help those commissioning healthcare to estimate the incidence and prevalence of musculoskeletal conditions in their area.

1.2 MUSCULOSKELETAL CONDITIONS – THE SCOPE OF THE PROBLEM

The term "musculoskeletal conditions" encompasses well over 200 disorders affecting joints, bones, muscles and soft tissues. The present report covers only 13 of these conditions (Table 1) – chosen because they are either the most common or the most characteristic of their group. No age group is spared, but the prevalence of musculoskeletal conditions generally rises with age. In recent years, as the number of elderly people in the community has increased, the number of people with musculoskeletal conditions has also risen. With the UK population aged over 50 projected to rise by 32% between 2008 and 2030, this trend is expected to continue.[3]

TABLE 1
The musculoskeletal conditions included in this report

GROUPING	CONDITION
Inflammatory joint disease	Rheumatoid arthritis Juvenile idiopathic arthritis Ankylosing spondylitis Psoriatic arthritis Gout
Joint failure	Osteoarthritis
Connective tissue disease/ Vasculitis	Systemic lupus erythematosus Scleroderma Polymyalgia rheumatica
Non-articular conditions	Back pain Other regional pain syndromes Chronic widespread pain
Bone diseases	Osteoporosis

Although some rheumatic diseases may affect other organ systems and be immediately life threatening, the main burden of musculoskeletal conditions is reflected not in mortality data, nor even in hospital inpatient statistics, but in morbidity data derived from hospital outpatient clinics, general practice and community surveys. In the 2001 Health Survey for England[4] 18% of adults reported a moderate or severe disability in at least one of five areas studied (locomotion, personal care, seeing, hearing, communication). 40% of all disabilities (42% of 'serious' disabilities) were attributed to musculoskeletal conditions, an increase of 6% since the 1995 survey. Assuming these figures are still true in 2010, this suggests that there are just over 3 million adults in the United Kingdom who are disabled by a musculoskeletal condition. Musculoskeletal conditions also accounted for 7% of all reported disability among children aged 10–15 years. Conditions of the musculoskeletal system were the most common type of self-reported chronic illness in all recent General Household Surveys (GHS) which asked this question.[5–9] In the 2007 GHS, 16.3% of women and 12.2% men (14.3% of all adults) reported a chronic musculoskeletal condition.[9]

Musculoskeletal conditions accounted for 12.1% of all general practitioner (GP) consultations in 2007.[10] In the 1991–92 and 1981–82 GP morbidity surveys around 4–5% of patients who consulted their GP for a musculoskeletal condition were referred to hospital.

There is also a substantial economic burden placed on society by musculoskeletal conditions. The Health and Safety Executive estimate 8.8 million working days in 2007–2008 were lost due to musculoskeletal conditions.[11] Benefit data show that, in the first quarter of 2009, 12% of those on the incapacity claims system were claiming for musculoskeletal conditions. This is equivalent to approximately 400,000 people incapacitated by these disorders.[12] Musculoskeletal disorders were also responsible for 1 million hospital Finished Consultant Episodes (FCEs) (see Section 3.6.2.1), equivalent to almost 2.4 million bed days.[13] NHS reference cost data record FCEs and national average hospital costs per Healthcare Resource Group (HRG) (groups of patient events deemed to use a similar level of resources) (Table 2). The total cost associated with relevant HRGs in the musculoskeletal chapter was over £206 million. There were approximately 29 million prescriptions (single items dispensed) under the BNF (British National Formulary) chapter 10 'Musculoskeletal and Joint Diseases' in 2008 at a total cost of over £186 million to the NHS.[14] Biologics, a relatively new generation of targeted drugs which act by cell depletion or blocking the inflammatory action of cytokines such as Tumour Necrosis Factor (TNF), present a new economic burden, the demand for which is likely to increase.[15] Anti-TNF treatment can cost between £9,000 and £18,000 per patient per year.[16] The National Audit Office (NAO) estimate that the annual cost of biologics for rheumatoid arthritis alone may be as high as £160 million.[17]

TABLE 2
Finished consultant episodes† and Cost to the NHS in 2007 associated with Healthcare Resource Groups (HRGs) in the Musculoskeletal Chapter*

DESCRIPTION (HRG CODES)	FCEs	NATIONAL AVERAGE UNIT COST	TOTAL COST (Admissions x Average Cost)	NO. OF BED DAYS
Soft Tissue Disorders (HD21)	103,261	£9,774	£40,543,189	98,654
Inflammatory Spine, Joint or Connective Tissue Disorders (HD22, HD23)	68,253	£18,274	£48,039,453	98,653
Non-Inflammatory Bone or Joint Disorders (HD24)	54,041	£17,783	£46,606,687	128,243
Infections of Bones or Joints (HD25)	9,115	£21,071	£10,859,009	34,024
Musculoskeletal Signs and Symptoms (HD26)	48,329	£13,096	£26,366,824	73,445
Pathological Fractures or Malignancy of Bone and Connective Tissue (HD36)	29,939	£18,857	£34,317,174	106,203
TOTAL	**312,938**	**£98,855**	**£206,732,336**	**539,222**

*Excludes Sprains, Strains, or Minor Open Wounds (HD31), Major Cranial, Visceral or Blood Vessel Injury (HD32), Other Wounds or Injuries (HD35) and Head Injury (HD37).

†(See Section 3.6.2.1)

2. AIMS

1. To produce a summary of all the available data on the burden of musculoskeletal conditions in the UK.
2. To highlight any trends in incidence or prevalence, which may help in planning for the future.
3. To develop a template of age and sex specific incidence and prevalence rates for use in any population (e.g. Primary Care Trust (PCT), General Practice) with known age and gender structure.

3. SOURCES OF DATA

3.1 GENERAL HOUSEHOLD SURVEY

The General Household Survey (GHS) is an annual national survey, which began in 1971. It covers 6 domains: population, housing, employment, education, health and social services. The sample size is around 14,000 households. The content of the structured interview changes in response to the information needs of Government departments. All diagnoses are self-reported and most musculoskeletal complaints are grouped under "arthritis and rheumatism". Questions about long-standing illness or disability are asked each year, but the type of illness was asked only in 1989, 1994, 1995, 1996, 1998 and annually from 2000 onwards.[5–9;18–25]

3.2 HEALTH SURVEY FOR ENGLAND

The Health Survey for England has been conducted every year since 1991. It was conducted, from 1991–3, by the Office for Population Censuses and Surveys (OPCS), and in the following years by the Joint Survey Unit of the National Centre of Social Research and the Department of Epidemiology and Public Health at University College London.[26] Each survey examines a different demographic and aspect of public health, sometimes including questions on musculoskeletal conditions and disability. Although each survey examines a different aspect of public health, core questions regarding longstanding illness are asked every year. Questions on disability due to arthritis were asked in 1995 and 2001. The study population is based on a systematically selected sample drawn from a Postcode Address File. In 2007 a core sample of 7200 addresses was taken. The sample is stratified to represent the total population in private households. Most participants are examined by a nurse and a blood sample is taken from those aged 11 and over.

3.3 AD HOC EPIDEMIOLOGICAL AND COHORT STUDIES

John Lawrence, the first Director of the Arthritis Research UK Epidemiology Unit, carried out a number of population surveys in the 1950's and 1960's in Leigh, Wensleydale and Watford.[27] These are still widely quoted. A large number of epidemiological surveys have been carried out since by the Epidemiology Unit and others, and are used in this report.

3.3.1 Literature search

A literature search was conducted for the period 1999 – 2010 using Medline (Ovid), Embase (Ovid) and Web of Science databases to identify the most current papers reporting the incidence and prevalence of the conditions in the UK. The search strategies comprised terms relevant to each of the conditions (including synonyms and related terms) together with terms covering incidence and prevalence, as appropriate to each database.

3.4 GP CONSULTATION DATA

Four sources of General Practitioner (GP) consultation data have been used in this report: the GP morbidity surveys; the General Practice Research Database (GPRD); data from the Royal College of Practitioners Research and Surveillance Centre (RCGP RSC), formerly Royal College of Practitioners Weekly Returns service (RCGP WRS); and the Intercontinental Marketing Services (IMS) Disease Analyzer-Mediplus UK. Consultation data are limited in the accuracy with which they measure disease frequency, as patient consultations are only a proxy (and usually an underestimate) of the true level of morbidity within the population. Therefore, for some conditions such as back pain, there may be substantial discrepancy between prevalence measured through patient consultations and that measured through surveys of the general population. It also relies on GP diagnosis of conditions, which may not be consistent between conditions, practices or over time. Trends over time may also reflect changes in patients' consulting behaviour and levels of access to primary care, as well as changes in disease frequency. However, consultation data do accurately reflect levels of demand placed upon primary care.

The primary reason for consultation is recorded as an ICD (International Classification of Diseases) code. The codes for the various rheumatic diseases are shown in Table 3. The changing codes reflect the evolving classification of the rheumatic diseases which has occurred in the last half century. Ankylosing spondylitis (AS) was regarded as a variant of rheumatoid arthritis (RA) until ICD8[28] and systemic lupus erythematosus (SLE) was classified as a disorder of blood vessels in ICD7.[29] More detail is available in ICD10[30] and many musculoskeletal conditions now have more than one code (e.g. M05 = seropositive RA, M06 = other RA).

3.4.1 GP Morbidity Surveys

The four national morbidity surveys of the Royal College of General Practitioners (RCGP)[31–34] were based on reasonably representative samples of all general practices in England & Wales, which recorded the reason for every consultation and whether this was the first time the patient had consulted for the complaint. There is no attempt to standardise diagnoses and so reliability for some of the less common disorders may be low. The surveys span three revisions of the International Classification of Diseases (ICD 7, 8 and 9).[28;29;35] The last morbidity survey was conducted in 1991–1992. Therefore these data have only been used where there are no more recent data available.

3.4.2 General Practice Research Database (GPRD)

The GPRD[36] is a computerised database based on the consultation records of approximately 488 practices. Data are available for 13 million patients in the UK, with data currently being collected on 4.4 million of these patients. The practices are spread across the UK and are broadly representative of all areas. Guidelines are set down to ensure quality of data recording and practices are required to be 'up to standard' before their data are included in the database. Consultations are recorded when the patient is first diagnosed with a condition, when their treatment is changed or if there is a significant event e.g. a referral to hospital. However, as not every consultation is recorded, the GPRD may underestimate the prevalence of some chronic conditions.[10] For this reason, although data from studies that have used the GPRD have been included, the GPRD has not been used as a central source of data in this report.

TABLE 3
ICD codes for the musculoskeletal diseases

CONDITION	ICD7	ICD8	ICD9	ICD10
	1955	1965	1975	1992
Rheumatoid arthritis	722.0♦	712.1, 712.3	714.0–714.2	M05, M06
JIA	722.0♦	712.0	714.3	M08, M09
Ankylosing spondylitis	722.1	712.4	720.2–720.9	M45
Gout	288	274	712.0, 274.0	M10
Polymyalgia rheumatica	726.3	446.3	725	M35.3
Osteoarthritis	723.0	713.0	715	M15–M19
SLE	456♦	734.1	710.0	M32
Scleroderma	710.0♦	734.0	710.1	M34
Psoriatic arthritis	706.0	696.0	696.0	M07.0–M07.3
Osteoporosis	733♦	723.0	733.0	M80, M81
Fracture of neck of femur	N820	N820	820	S72.0
Fractured vertebra	733♦	723.9♦	733.1	S32.0

♦ = includes other conditions

3.4.3 RCGP Research and Surveillance Centre (RCGP RSC)

The RCGP RSC[37] (formerly RCGP WRS) routinely collects data from 100 practices in England and Wales. Consultation data were requested from the RCGP RSC for a number of ICD codes relating to musculoskeletal conditions. The RCGP RSC data presented in this report are from 2001 and are based on 38 practices contributing data. The reason for every consultation by a patient is recorded and coded as one of 'first', 'new' or 'ongoing' by their doctor. These consultations are grouped into 'episodes', which are defined as a single consultation or group of consultations due to a particular disorder. Throughout this report, when consultation data from the RCGP RSC are reported, they refer to consulting episodes. These episodes are also classed as 'first', 'new' or 'ongoing'. This is the same as the episode classification used in the RCGP Morbidity Surveys. However, the figures from the Morbidity Surveys are not comparable to those provided by the RCGP RSC as they are based on a different sample of GP practices.

'First' episodes are defined as the first ever episode for a particular reason e.g. rheumatoid arthritis. An episode is classed as 'new' if the patient has previously consulted for the same reason. If an episode is a follow-up to a 'first' or 'new' consultation it is classed as 'ongoing'. Incidence has been calculated using only first episodes as they are a better reflection of the incidence than 'first' and 'new' episodes combined, which were used as a measure of incidence in the RCGP morbidity surveys. Prevalence has been calculated based on whether a patient had had a first or new or ongoing episode for that particular reason – at least one such episode in one year is counted as the numerator for the calculation of the annual period prevalence based on consultation. These data have been chosen rather than more recent data available online as we were able to obtain information for four digit ICD codes, allowing a more accurate definition of each condition. Additionally, the online incidence information is not based on only 'first' ever episodes but rather 'first' and 'new' episodes combined, which may include those who have consulted previously for the same condition.

It should be noted that consultation data are based on the GP's opinion of the patient's diagnosis. When recording the reason for consultation, if the GP cannot make a diagnosis with 'reasonable probability' they must enter a symptom code.

3.4.4 Intercontinental Marketing Services Disease Analyzer-Mediplus UK

Intercontinental Marketing Services (IMS) collects international data on drug sales and prescriptions. The company also owns a UK-based database, IMS Disease Analyzer-Mediplus UK, of anonymised consulting data which monitors 211 practices or approximately 1,700,000 patients. This has been used in some of the studies included in this report. Every consultation by a patient is recorded in the database, with longstanding conditions being given a 'problem' code. If a procedure or treatment is undertaken for the 'problem', the 'problem' code is repeated and a 'note' code with information about the procedure or treatment added.[38]

3.5 MORTALITY STATISTICS

Mortality statistics[39] are published every year by the Office for National Statistics (ONS) and are based on the information provided on death certificates. This information originates from a doctor, an informant or a coroner. A range of information is collected including cause of death, age, occupation, gender and marital status. The underlying cause of death is classified by ICD code. Mortality data are useful to some extent for examining the number of deaths due to different musculoskeletal disorders. However, as musculoskeletal conditions are often not recorded on the death certificate, many people will die with co-morbid musculoskeletal conditions which are not recorded and whose contribution to death is not known.

3.6 ECONOMIC DATA

The economic impact of musculoskeletal conditions is recorded in a number of routine data sources (Table 4). Where possible the total cost of the condition to the UK has been provided. However this is not always available.

TABLE 4 Sources of economic data

TYPE OF DATA	SOURCE	PUBLISHED BY	WEBSITE
Prescription numbers and cost	Prescription Cost Analysis	The NHS Information Centre	http://www.ic.nhs.uk/statistics-and-data-collections/primary-care/prescriptions
Admissions (FCEs) data	Hospital Episode Statistics	The NHS Information Centre	http://www.hesonline.nhs.uk
Cost per HRG	NHS Reference Costs	The Department of Health	http://www.dh.gov.uk/en/Managingyourorganisation/NHScostingmanual/index.htm
Working days lost	Health and Safety Executive	Health and Safety Executive	http://www.hse.gov.uk/statistics/dayslost.htm
Benefit data	Data Tabulation Tool	Department of Work and Pensions	http://statistics.dwp.gov.uk/asd/index.php?page=tabtool
General information on economic impact	Ad-hoc reports and studies	e.g. National Institute for Health and Clinical Excellence (NICE), National Audit Office (NAO)	http://www.nice.org.uk/ http://www.nao.org.uk/

3.6.1 Prescription costs

The costs of prescriptions in England are available in an annual report called the "Prescription Cost Analysis" published by the NHS Information Centre, based on information sent to the Prescription Pricing Division of the NHS Business Services. It includes information on the number and net ingredient cost of prescriptions, by chemical and by British National Formulary (BNF) chapters but not by diagnosis. Information from this source has been included for some conditions, where one particular drug is usually used only for that condition.

3.6.2 Hospital statistics

3.6.2.1 Admissions data (FCEs)

Most people with musculoskeletal disorders who are referred to hospital attend only as outpatients. Unfortunately, although there are data on the number of outpatient attendances, it is not mandatory for a diagnosis to be recorded. Therefore outpatient data have limited coverage. Inpatient data have been included here in an attempt to quantify the extent of use of hospital resources, and therefore a very small proportion of the economic impact, of each condition. The data presented are based on primary diagnosis tables provided by Hospital Episode Statistics (HES), which only covers hospitals in England.[13] The data are provided online as the number of 'Finished Consultant Episodes' (FCEs), which are defined as episodes of admitted patient care with one consultant that ended during the last HES year, which ran from the 1st April 2007 to the 31 March 2008. Therefore there may be some replication if a patient has seen more than one consultant during a single inpatient stay. The figures given do not include admissions during which a major surgical procedure has taken place.

Some information on admission trends has also been included (Figure 4) in this report. However, the HES publications state that it is important to be aware that many factors can influence the number of FCEs between years, for instance organisational or coding scheme changes.

3.6.2.2 NHS reference costs

NHS reference costs is an annual report on NHS expenditure, according to groupings known as Healthcare Resource Groups (HRGs). These are defined as groupings of patient admissions and day-cases within the same body system (e.g. musculoskeletal) that consume a similar level of resources. Information on FCEs, unit cost, and length of stay per HRG is available. The reference cost information given in this report (Table 2) is for NHS Hospital and PCTs combined for the financial year 2007–2008.

3.6.3 Working days lost

The Health and Safety Executive publishes annual data taken from the Labour Force Survey (LFS), which focuses on injuries in the workplace, and Self-reported Work-related Illness (SWI) surveys. The information provided includes estimated number of working days lost per year due to self-reported musculoskeletal disorders, by location affected (mainly affecting the upper limbs or neck, mainly affecting the lower limbs, or mainly affecting the back).

3.6.4 Benefit data

Quarterly benefit information can be accessed via a tabulation tool on the Department of Work and Pensions website. It is based on data from the Work and Pensions Longitudinal Study (WPLS). Information about the number of claimants of Incapacity Benefits, by ICD chapter, and Disabled Living Allowance, by main disabling condition, is available.

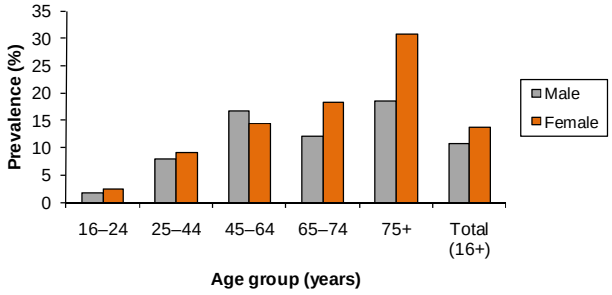
4. PREVALENCE OF MUSCULOSKELETAL SYMPTOMS AND DISABLEMENT IN THE COMMUNITY

One approach, when trying to assess the burden of musculoskeletal disease in the community, is to disregard the underlying diagnosis – which may, in any case, be inaccurate – and concentrate on symptoms and functional impairment. Many epidemiological surveys ask about the presence of musculoskeletal pain at any site or about physical disability.

The GHS includes questions on the health of respondents. The prevalence of self-reported long-standing illness due to all musculoskeletal conditions rose among women between 1998 and 2006 (Table 5). Among men, prevalence rose between 1998 and 2002 and fell between 2002 and 2006. People in social classes L10–L13 (routine and manual occupations) have higher rates of self-reported musculoskeletal conditions than people in non-manual occupations (Table 6).

The Health Survey for England in 2001[4] estimated that there were approximately 3 million adults in the UK with moderate to severe disability due to a musculoskeletal disorder. The Tameside Musculoskeletal Project[40] used the modified Health Assessment Questionnaire (mHAQ)[41] to estimate the prevalence of self-reported disability in the community. The mHAQ comprises eight questions about activities of daily living. The score ranges from 0 (no disability) to 3 (unable to do all 8 tasks). The overall prevalence of self-reported musculoskeletal pain plus mHAQ score of greater than 0.5 was 13% (11% in men and 14% in women), and the age and sex specific prevalence ranged from 6% in men aged 16–44 years, to 24% in women aged over 75 years (Figure 1).

FIGURE 1
Prevalence of disablement due to musculoskeletal condition (mHAQ score >0.5 plus self-reported musculoskeletal pain) (Tameside, Gr. Manchester 1997)



(Urwin et al, 1998)[40]

TABLE 5
Self-reported prevalence (%) of all longstanding conditions of the musculoskeletal system in the population: GHS data 1998, 2002, 2006[8;22;25]

PREVALENCE (%) BY AGE AND SEX	SEX	16–44	45–64	65–74	75+	ALL ADULTS (16+)
1998	M	9.4	19.7	22.6	26	15.4
	F	6.4	21.3	34.0	38.3	17.3
	P	7.8	20.5	28.6	33.5	16.4
2002	M	8.2	20.8	28.5	27.4	15.6
	F	7.0	21.8	32.9	41.9	17.9
	P	7.6	21.3	30.9	36.3	16.8
2006	M	6.0	16.4	25.1	26.1	12.6
	F	6.6	22.6	36.1	42.8	18.3
	P	6.3	19.5	30.9	36.1	15.6
ALL AGES PREVALENCE (%)*	**MALES**	**FEMALES**	**PERSONS**			
1998	15.4	17.3	16.4			
2002	15.6	17.9	16.8			
2006	12.6	18.3	15.6			

* 2006 and 2002 rates directly standardised to the 1998 GHS study population age structure. Prevalence rates were determined by the following question "Do you have any longstanding illness, disability or infirmity? By longstanding, I mean anything that has troubled you over a long period of time or that is likely to affect you over a period of time." (If "yes": "What is the matter with you?"). M= males, F = females and P= persons.

TABLE 6
Social gradients for the prevalence (%) of self-reported longstanding conditions of the musculoskeletal system: GHS data 2001, 2003, 2006[5;8;24]

SOCIO-ECONOMIC GROUP	2001 RATE	RR*	2003 RATE	RR*	2006 RATE	RR*
Managerial and Professional (L1–L6)	11.1	–	10.9	–	11.7	–
Intermediate (L7)	16.5	1.5	15.4	1.4	17.7	1.5
Small employers and Own Account (L8, L9)	13.2	1.2	15.3	1.4	15.2	1.3
Lower Supervisory and Technical (L10, L11)	16.2	1.5	17.1	1.6	17.7	1.5
Semi-routine and Routine (L12, L13)	19.5	1.8	18.3	1.7	21.5	1.8
Managerial and Professional (L1–L6)	11.1	–	10.9	–	11.7	–
Intermediate (L7–L9)	14.7	1.3	15.3	1.4	16.3	1.4
Routine and Manual (L10–L13)	18.4	1.7	18.0	1.7	20.3	1.7

*RR = prevalence rate ratio, calculated using "Managerial and Professional" as references.
Categories are based on National Statistics Socio-Economic Classification (NS-SEC)[39]

5. EPIDEMIOLOGY OF SPECIFIC DISEASES

In 1896 Gilbert Bannatyne wrote "Probably in no other department of medicine is there more hopeless confusion of nomenclature than in the so-called 'rheumatic diseases".[42] There has been difficulty in knowing whether everyone was speaking about the same disease even when the terms for individual rheumatic disorders were agreed upon. Unfortunately, the great majority of rheumatic diseases do not have a unique identifying feature. Instead they consist of a cluster of symptoms, signs and laboratory features. In order to facilitate comparisons between groups of patients and as an aid to epidemiological surveys various sets of classification criteria have been proposed. The American Rheumatism Association (ARA), now the American College of Rheumatology (ACR), has led the way in developing such criteria sets. Even when such criteria exist there can be difficulties in applying them in the population setting since they often require either blood tests or radiology which may not be available.

5.1 RHEUMATOID ARTHRITIS (RA)

5.1.1 Background

Rheumatoid arthritis (RA) is a symmetrical inflammatory polyarthritis. It usually begins in the small joints of the hands and feet. The inflamed synovium erodes the articular cartilage and underlying bone, and eventually causes joint deformity and progressive disability. RA is more common in women than men and rarely occurs before puberty. Extra-articular features include nodules, pericarditis, pulmonary fibrosis, vasculitis and peripheral neuropathy. There is no evidence that the incidence of RA is influenced by social class or social deprivation.[43]

5.1.2 Disease definition

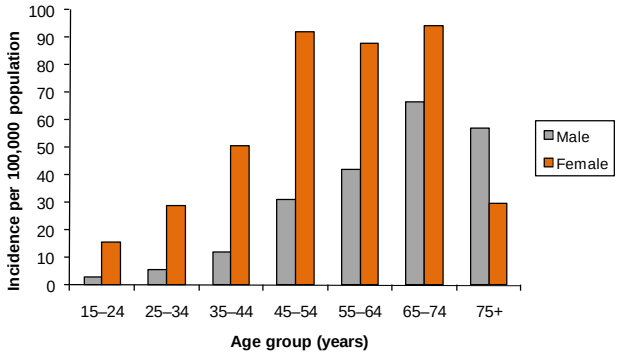
Early studies of RA included patients with systemic lupus erythematosus (SLE) and ankylosing spondylitis (AS). Classification criteria for RA were first proposed by the ARA in 1958[44] and were revised in 1987[45] and again in 2010.[46] All the RA incidence and prevalence rates in this section relate to the adult population unless otherwise stated.

5.1.3 Incidence

A rigorous assessment of RA incidence comes from the Norfolk Arthritis Register, which was established in the former Norwich Health Authority in 1990. Based on presentation to primary care, it estimated an annual incidence in 1990 of 56 per 100,000 for women and 27 per 100,000 for men[47] (Figure 2). The incidence was higher in women than men in all age bands. For both genders, RA incidence was highest in the 65–74 year age group (94 per 100,000 in women and 67 per 100,000 in men). These estimates are substantially higher than those published in the 1st edition of this report,[48] but are likely to be more accurate as they were calculated by allowing patients up to 5 years from symptom onset in which to present to medical care, and also applying the 1987 ACR criteria cumulatively for 5 years following symptom onset.

Primary care databases can also provide information on the consulting incidence of RA. According to the RCGP RSC, the annual consulting incidence of RA in 2001 was 76 per 100,000 among women and 34 per 100,000 among men. Incidence peaked at 168 per 100,000 in the 75+ age group in women and 127 per 100,000 in the 65–74 age group in men. Incidence in women was higher in all age groups.[49] This pattern of peak onset was reversed in a study using GPRD data from 1996–1997, with peak male incidence in the 75–79 age group and peak female incidence in the 65–74 age group. Overall, the annual consulting incidence was much lower in GPRD, at 20 per 100,000 in women and 9 per 100,000 in men. This is likely due to a more stringent case definition– patients in the GPRD must have been referred to a rheumatologist to qualify as a case of RA.[50]

FIGURE 2
Annual Incidence of rheumatoid arthritis* (Norfolk, 1990 onwards)

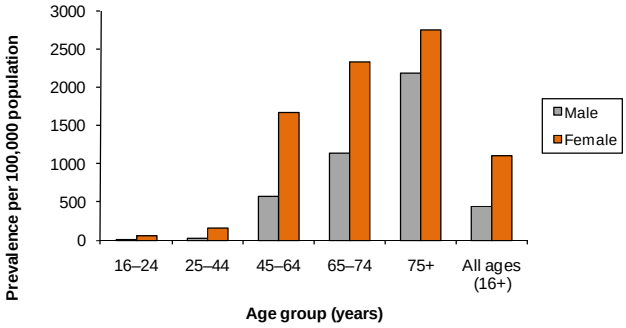


* 1987 ACR criteria for RA applied cumulatively (Wiles et al, 1999)[47]

5.1.4 Prevalence

A prevalence study of RA, carried out in Norfolk from 1999–2000, yielded an adult prevalence estimate (extrapolated to the UK population aged 16 years and above) of 0.8% (0.4% in men and 1.1% in women).[51] Prevalence was higher in women than in men for all age bands. For both genders, prevalence was highest in the 75 years and above age group (2.2% among males and 2.7% among females) (Figure 3).

FIGURE 3
Prevalence of rheumatoid arthritis (Norfolk, 1998–2000)



(Symmons et al, 2002)[51]

Consultation data from the RCGP RSC indicate a one year period prevalence for RA of 0.6% among women and 0.2% among men in 2001. Prevalence was highest in the 75+ age group for women (2.1%) and in the 65–74 age group for men (0.7%).[49] Using GPRD data from the same year, Jordan et al found a lower consulting prevalence of 0.3% in women and 0.1% in men.[10] As previously noted this is likely to be an underestimate as the GPRD only records RA as a reason for a consultation if it is a new diagnosis or the treatment has changed.

There have been two studies focusing on the prevalence of RA in Scotland or Ireland. The Scottish study used cases from the HARIS (Highland Automated Rheumatology Information System) database, which records all those with a diagnosis of RA made by the single rheumatologist who serves the majority of the Highland population. A crude period (1994 – 2004) prevalence of 0.59% among people of all ages was reported.[52] In Ireland, a population based study found a prevalence of 0.5% among adults (18+) in 1995, based on a questionnaire which asked whether the respondent had RA symptoms using the questions 'Have you ever suffered from pains in your joints lasting for six weeks or more, that were not caused by an injury?' and 'Have you ever suffered from swelling in your joints lasting for six weeks or more?' (this was later verified by clinical examination). They were also asked whether they had been told by a doctor that they had arthritis (which was later verified by a review of their medical records). However the questionnaire had a low response rate (49%).[53]

A survey in inner city Manchester found that the lifetime cumulative RA prevalence among Black-Caribbeans (0.3%) was approximately one third that of Whites (0.8%) registered at the same GP practices.[54] RA prevalence was also lower in people of Pakistani origin living in England compared with the ethnic English population, but higher than expected when compared with data from Pakistan.[55]

5.1.5 Trends

RA was only described in England for the first time in 1848. It seems likely that the incidence and prevalence rose sharply during the late nineteenth and early twentieth century so that by the 1950s it affected 1% of the adult population. Since then, there is some evidence suggesting a decline in both incidence and prevalence, particularly among women. RCGP survey data suggest that the annual consulting period prevalence in adults for RA and AS combined fell by 25% between 1981–82 and 1991–92 (15% among men and 29% among women).[33;34] The fall in prevalence occurred in all age groups. As there is no evidence of a secular change in the prevalence of AS, these changes are most likely to be attributable to changes in RA occurrence. The Norfolk analyses[51] indicate an approximate 25% overall increase for men and an approximate 25% overall decrease for women, compared with estimates calculated by Lawrence in 1961[56] using equivalent methodology. However these differences did not reach statistical significance and different versions of classification criteria were applied; the 1958 ARA criteria were used for the Lawrence study whereas the Norfolk study used the updated 1987 ACR criteria. The Mayo Clinic reported an annual incidence of RA between 1975–1984 of 32 per 100,000 for males and 59 per 100,000 for females resident in Olmsted County, Rochester, Minnesota in the USA. By 1985–1994 this had declined to 26 per 100,000 for males and 40 per 100,000 for females.[57] However, recent data from the same area suggest that incidence may once again be rising among females.[58]

As well as a possible decline in incidence and prevalence there is a suggestion that RA may be becoming less severe with successive cohorts of patients (by year of birth) being less likely to be seropositive, erosive or to have nodules.[59] Nevertheless RA remains a common and serious problem. It is still the most common form of inflammatory joint disease and has a high toll in terms of disability and mortality.[60] For instance, a study of the link between cardiovascular morbidity and RA found that women with RA were twice as likely to have a myocardial infarction as those without.[61]

5.1.6 Mortality

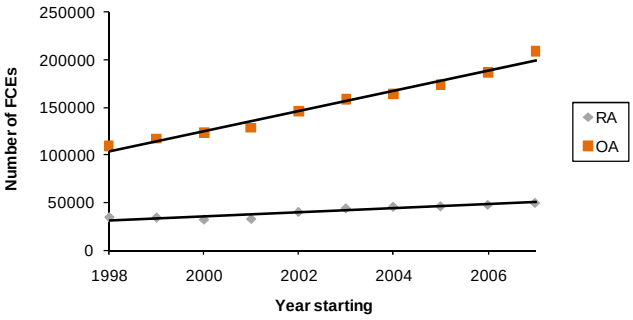
There were 749 deaths (567 female and 182 male) in 2008 in England and Wales attributed to RA in national mortality statistics.[62] However, as co-morbid arthritis may not be recorded, the contribution of RA to mortality is not well represented in mortality statistics. A standardised mortality ratio (SMR) of 1.5 among men and 1.4 among women with seropositive RA was estimated in a cohort of 1236 people from the Norfolk Arthritis Register, followed up for a median duration of 6.9 years. This was mainly due to excess cardiovascular mortality in those with RA.[63] The Early Rheumatoid Arthritis Study (ERAS), which followed a cohort of 1429 people over a period of 18 years, found an overall SMR of 1.27 for seropositive and seronegative patients combined.[64]

5.1.7 Economic impact

In its 2009 report the National Audit Office estimated that RA healthcare costs in England amounted to £560 million per year.[17] This estimate rose to £1.8 billion a year if the cost of sick leave and lost employment was included. In a five year follow-up of 732 early RA patients, approximately a fifth had retired due to their RA, by the end of the follow-up period.[65]

According to a survey by the National Rheumatoid Arthritis Society in 2007, the average cost of loss of productivity when a person stops working due to RA was estimated to be £287,544.[66] In 2007, there were approximately 49,750 inpatient FCEs due to RA, accounting for a total of 76,568 bed days.[13] There has been a slight increase in the number of FCEs for RA between 1998–2007, although this is modest in comparison to the increase in OA FCEs (Figure 4). Some of this may be accounted for by day case FCEs for joint injections or biologic infusions. Caution is needed when examining trends in hospital FCEs (see Section 3.6.2.1).

FIGURE 4
Inpatient FCEs* for RA and OA (HES 1998–2007)



*includes day cases.
(Hospital Episode Statistics 1998–2007)[13]

5.2 CHILDHOOD ARTHRITIS

5.2.1 Background

Juvenile idiopathic arthritis (JIA) was first described by George Frederick Still while he was a medical registrar at Great Ormond Street Hospital in 1897.[67] For many years all forms of JIA bore his name, but the term Still's disease is now confined to the systemic onset form of JIA. The literature can be confusing because in North America all forms of childhood arthritis were called juvenile rheumatoid arthritis (JRA) whereas in Europe that term was reserved for children who were positive for rheumatoid factor. In Europe, juvenile chronic arthritis (JCA) was defined as an inflammatory arthritis lasting more than three months with an onset before the 16th birthday.[68] A third set of recently revised diagnostic criteria proposed by the International League Against Rheumatism (ILAR), along with the term juvenile idiopathic arthritis (JIA), has recently come into use.[69]

5.2.2 Incidence

Using data from two English districts with an established paediatric rheumatology service the annual incidence of JCA was estimated as 11 per 100,000 children in 1989–1991.[70] Data from Olmsted County, Rochester, Minnesota show a falling trend in age-standardised incidence of JRA from 15.0 to 14.1 to 7.8 per 100,000 for the time periods 1960–69, 1970–79 and 1980–93 respectively.[71] The authors suggest that changing diagnostic behaviour may provide an explanation for the observed trend. The new ILAR criteria were applied to calculate the annual incidence of JIA in Norway (14 per 100,000).[72] In 2001 there was an annual consulting incidence for JIA of 4 per 100,000 amongst boys and 15 per 100,000 amongst girls in the RCGP RSC.[49]

5.2.3 Prevalence

The prevalence of JCA in the UK in 1959 was 65 per 100,000.[73] There have been no estimates for the UK population since then. In the RCGP RSC an estimated 30 per 100,000 boys and 40 per 100,000 girls consult for JIA annually.[49] Estimates from the USA vary widely from 1.6 to 86.1 per 100,000.[74] After 15 years follow-up of 243 children with JCA admitted to hospital, 30% had severe functional impairment, 3% were chair- or bed-bound, and 7% had died.[75]

5.2.4 Mortality

In 2008, there were only four deaths attributed to JIA in England and Wales mortality statistics. However, the SMR of JIA (of all subtypes) is high at 3.4 among males and 5.1 among females.[76]

5.2.5 Economic impact

Although the total cost of JIA in the UK has not been examined, the average direct economic cost has been estimated to be £1649 per child in the first year.[77] Consultations with paediatric rheumatologists account for the highest direct cost. However, the average expenditure varies greatly between JIA subtypes and this estimate does not include indirect costs such as private costs and loss of earning by parents. NICE estimated the economic impact of implementing new guidance, recommending the biologic drug etanercept for children aged 4–17 with JIA, to be £3 million per year (£10,000 per child treated).[78] There were approximately 801 inpatient FCEs (including day cases) due to juvenile arthritis in 2007, accounting for 787 bed days.[13]

5.3 ANKYLOSING SPONDYLITIS (AS)

5.3.1 Background

The literature on ankylosing spondylitis (AS) begins with a pathological description by Bernard Connor, an Irishman, in his MD thesis in 1691. AS has enjoyed a wide variety of names since then. In the USA it was believed to be a variant of RA, and was called rheumatoid spondylitis until 1963. However, it is now clear that AS has more in common with the other forms of seronegative arthritis, such as psoriatic arthritis and reactive arthritis, than with RA. This is partly explained by the association of all the seronegative arthritides with HLA-B27.

AS is an inflammatory disorder which begins in the sacro-iliac joints and progresses up the spine. Unlike most other rheumatic diseases, it is more common in men than women. The condition is complicated by ankylosis so that, untreated, the spine may become completely rigid. The peripheral joints may be affected and extra-articular features include iritis, upper lobe pulmonary fibrosis, aortic incompetence, and cardiac conduction defects.

5.3.2 Disease definition

There are several criteria sets for AS. The New York criteria, which are the most widely used, require radiological evidence of sacro-iliitis.[79] The principal symptom of AS is low back pain and, without X-ray evidence of sacro-iliitis, it is difficult to distinguish the minority of low back pain sufferers who have AS from the majority who do not. Some have proposed that the spondylarthropathy group of disorders (SpAs) should be treated as a whole unit. Therefore, criteria that encompass all the spondyloarthropathies, such as those of the European Spondyloarthropathy Study Group (ESSG), are also in use.

5.3.3 Incidence

There have been no studies of the incidence of AS in the UK. A study from Rochester, Minnesota, USA[80]

estimated the annual incidence rate of AS to be 6.6 cases per 100,000 with a male to female ratio of 3:1, and a peak age of onset in both sexes of 25–34. These figures remained constant over five decades (1935–1989). These results were similar to those found in a more recent hospital-based study from Northern Norway, which found an annual incidence rate of approximately 7 per 100,000.[81] However, the population examined is known to have high prevalence of HLA-B27.

RCGP RSC consultation data for AS showed a pattern of increasing incidence up to the 75+ age category. This is possibly due to misclassification of prevalent as incident cases. Therefore these data were not included here.

5.3.4 Prevalence

There have been no studies of the prevalence of AS in the UK. The consulting annual period prevalence for AS in the UK from the 4th RCGP survey (1991–2)[34] was 40 per 100,000 (60 per 100,000 among men and 10 per 100,000 among women). The highest prevalence was among men aged 45 to 64 years (120 per 100,000).

5.3.5 Mortality

In England and Wales in 2008 there were 10 deaths, 8 males and 2 females, attributed to AS.[62]

5.3.6. Economic impact

There are no national data on the economic impact of AS. One local study of the economic impact of AS conducted from 1992 to 1994 used data from over 1400 participants in three different AS studies. The mean total direct and indirect cost per patient per year was £6765, ranging from £2400 in the mildest cases to £38,400 in the most severe (severity was measured using the Bath Ankylosing Spondylitis Disease Activity Index). 23% of the sample retired early because of their disorder.[82] A study from a UK secondary care rheumatology unit of patients attending the clinic between December 2003 and June 2004, estimated the mean direct health care costs of AS to be £1852 per patient per year.[83] The highest cost was physiotherapy (32%), followed by hospitalisation (21%) and medication (20%). However, these costs were derived prior to the introduction of biologic treatments. McLeod and colleagues estimated the economic impact of implementing new BSR guidelines, which recommended the use of adalimumab, etanercept and infliximab in the treatment of AS in England and Wales, to be over £112 million in the initial year, falling to £30 million in subsequent years.[84] In 2007, there were 4065 inpatient FCEs, the equivalent of 6560 bed days, due to AS.[13]

5.4 PSORIATIC ARTHRITIS

5.4.1 Introduction

Psoriatic arthritis (PsA) is a term for frequently seronegative, inflammatory arthritis linked to psoriasis. Clinical features of the disorder include spondylitis, asymmetry and involvement of the distal interphalangeal joints. According to data from Olmsted County, Rochester, Minnesota, over a 30 year time period, approximately 6% of psoriasis sufferers will develop PsA, although psoriasis may not precede other symptoms.[85] A Swedish study reported that up to 30% of patients with psoriasis develop PsA.[86] It has been argued by some that PsA is simply the co-occurrence of psoriasis and inflammatory arthritis.[87] However, in this chapter it will be treated as an independent condition.

5.4.2 Disease definition

Although many sets of criteria for PsA have been proposed and utilised in different studies, there are none that have yet been universally accepted. The most recent set of criteria has been put forward by the Classification of Psoriatic Arthritis (CASPAR) group, which are reported to have a high sensitivity and specificity.[88]

5.4.3 Incidence

The most recent estimate of the incidence of PsA from the UK is from the Norfolk Arthritis Register (NOAR). This reported an age and sex adjusted incidence of 3.5 per 100,000 in adult males and 3.4 per 100,000 in adult females in 1990–1993. Cases were defined as co-occurring psoriasis and peripheral inflammatory polyarthritis. Thus cases in which psoriasis was, at that point, in remission, cases with only a monoarthritis, and cases with predominantly spinal involvement, will have been missed.[89] A US study, conducted in Olmsted County, Rochester, Minnesota, used the CASPAR criteria and estimated the age and sex adjusted annual incidence of PsA among adults to be 7.2 per 100,000 (9.1 per 100,000 in men and 5.4 per 100,000 in women). Peak annual incidence was between ages 30–39 in men and 50–59 in women.[90]

5.4.4 Prevalence

In the Minnesota study, the point prevalence of PsA in adults in 2000 was 158 per 100,000 (193 per 100,000 in men and 127 per 100,000 in women). Age-specific estimates were not calculated.[90] Among individuals with psoriasis, a population study in the UK found the prevalence of PsA to be 13.8 per 100 using CASPAR criteria. However, the authors emphasized this was an overestimate.[91]

5.4.5 Trends

There is some evidence that the incidence of PsA may be rising. In Minnesota, the age and sex adjusted incidence rose from 3.6 per 100,000 in 1970–1979 to 9.8 per 100,000 in 1990–2000. It is not known whether this represents a true rise in the incidence of the condition or changes in another factor, for instance increased recognition of the disease.[90]

5.4.6 Mortality

According to government mortality statistics there were no UK deaths due to PsA in 2008.

5.4.7 Economic impact

There have been no recent studies of the economic cost of PsA and hospital data are not available. NICE have recommended the anti-TNF drugs etanercept, infliximab and adalimumab for the treatment of severe PsA at an estimated cost per person per year of £9295, £10,910 and £9295 respectively.[92]

5.5 GOUT

5.5.1 Background

The existence of gout can be traced back to the time of Hippocrates. The condition occurs as a result of the precipitation of monosodium urate crystals from super-saturated solution in synovial fluid. This produces one of the most painful forms of arthritis. A similar process may occur in other tissues leading to the formation of tophi and, in the kidneys, leading to gouty nephropathy. The epidemiology of gout in the UK has changed dramatically in the last 150 years – partly because of altered dietary habits and partly because of the availability of allopurinol, a drug that inhibits the formation of uric acid.

5.5.2 Disease definition

Most patients with gout have raised serum uric acid concentrations but the correlation is far from perfect. Two sets of criteria were proposed by the ARA in 1977: one for the clinical setting and the other for survey work.[93] In practice most epidemiological studies use their own criteria.

5.5.3 Incidence

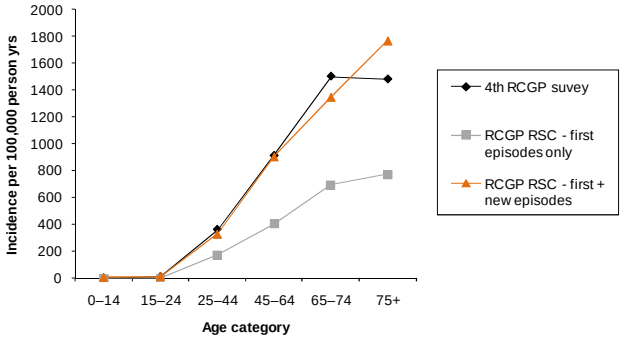
Consultation data from the RCGP RSC and the GPRD have been used to estimate the incidence and prevalence of gout. The consulting annual incidence of gout in adults (14+) using 2001 RCGP RSC data was 302 per 100,000 among men and 70 per 100,000 among women.[49] Incidence was consistently higher in men and increased with age, peaking in the 75+ age group at 770 and 275 per 100,000 in men and women respectively. Using data from the GPRD, Mikuls et al estimated an overall annual incidence of gout for all ages of 193 per 100,000 in males and 72 per 100,000 in females. The peak age of onset was 65–84 in men, at 534 cases per 100,000, and 85+ in women, at 274 cases per 100,000.[94] Again, incidence was consistently higher in men. Figures 5 and 6 show the different estimates of incidence of gout depending on whether only 'first' episodes of gout were included or 'first and new' episodes combined. Throughout this report we have used data for 'first' episodes, defined as the first consultation by a particular patient for a particular diagnosis. However, as people with gout tend to have 'flare ups' periodically, we have also included data in Figures 5 and 6 for 'first' and 'new' episodes of illness combined (see Section 3.4.3). This is the same definition as used in the RCGP morbidity surveys, explaining why the results for the 4th RCGP survey and those from the RCGP RSC, 'first' and 'new' episodes combined, are similar.

5.5.4 Prevalence

The prevalence of gout can be expressed in a number of ways. The numerator may be all those who have ever had an attack of gout; or those who experience an attack within a particular time-frame (period prevalence). The denominator may be the whole population or the population at risk (that is older age groups).

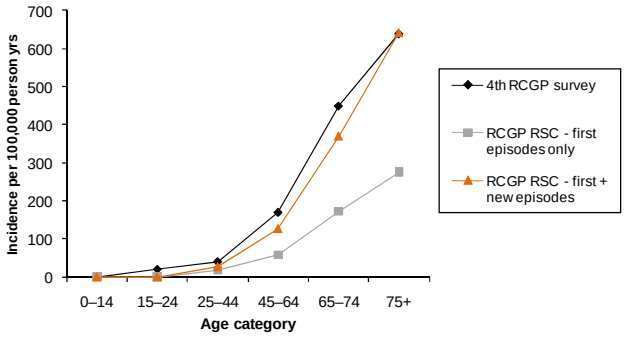
Using all those who consulted their GP for gout in 2001 as the numerator, the annual period consulting prevalence of gout in the RCGP RSC was estimated at 870 per 100,000 in men and 190 per 100,000 in women aged 15 or over. For both genders, prevalence was highest in the 75+ age group, at 2550 per 100,000 in men and 940 per 100,000 in women[49] (Figure 7).

FIGURE 5
Annual male "consulting" incidence of gout (England and Wales, 2001)



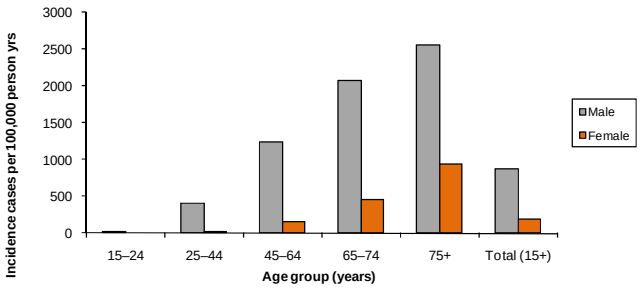
(RCGP RSC, 2001)[49]

FIGURE 6
Annual female "consulting" incidence of gout (England and Wales, 2001)



(RCGP RSC, 2001)[49]

FIGURE 7
Annual "consulting" prevalence of gout (England and Wales, 2001)



(RCGP RSC, 2001)[49]

Using all those with a diagnosis of gout at any time in the GPRD prior to 1999 as the numerator (covering approximately 10 years of records), a prevalence for all ages (i.e. at least one consultation for gout in a 10 year period) of 2240 per 100,000 among men and 600 per 100,000 among women was estimated.[94] This prevalence estimate was comparable to that calculated using the IMS Disease Analyzer database for the 6 years 2000–2005, which reported an overall prevalence

of 1400 per 100,000.[95]

There is little information on the variation in the incidence and prevalence of gout by ethnicity in the UK population. A USA study of Black and White male physicians, found a nearly two-fold higher risk of gout among Black men (RR = 1.7), which was partially explained by a raised prevalence of hypertension among the Black population (adjusted RR = 1.3).[96]

5.5.5 Trends

Using the GPRD, Mikuls et al reported a small rise in gout incidence from 119 per 100,000 in 1991 to 131 per 100,000 in 1999, an increase of 10%.[94] The RCGP surveys show a dramatic rise in the annual period consultation prevalence for gout from 260 per 100,000 in 1971–72[32] to 600 in 1991–92.[34] This represents an increase of 131%, which was greater among women than men (156% vs. 118%). The increase in disease frequency between the three RCGP surveys was independent of changes in the age structure of the population. A possible explanation for the increase in gout prevalence may be a rise in the prevalence of obesity in the population.[97]

Although overall gout prevalence may be rising, the prevalence of chronic tophaceous gout is falling, probably as a result of treatment. Data from the USA showed a progressive rise in serum urate levels between 1961 and 1978.[98] Predictors of increase were weight gain, alcohol consumption and triglyceride level.

5.5.6 Mortality

Gout was given as the underlying cause of 21 deaths in England and Wales in 2008, 10 men and 11 women.[62]

5.5.7 Economic impact

There have been no recent studies of the economic impact of gout in the UK. There were 5490 inpatient FCEs due to gout in 2007, equal to 26,119 bed days.[13] In 2008 there were approximately 3.3 million prescriptions (single items on a prescription form) for allopurinol, at a cost of over £4.2 million.[14]

5.6 SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

5.6.1 Background

SLE is the most common of the connective tissue diseases. Its immunological hallmark is the presence of circulating autoantibodies, which may be directed against a variety of nuclear components. Most of the wide variety of clinical manifestations of SLE can be attributed to the deposition of immune complexes. The most common organs to be involved are the skin, joints, kidneys, lungs and brain. Renal involvement, particularly in the past, was associated with a poor prognosis.

There is a marked difference in the susceptibility to and severity of SLE between ethnic groups. SLE has a high prevalence amongst Black, south Asian and Chinese ethnic groups. Thus, with the migration to Britain of people from Africa, the Caribbean and the Indian sub-continent, SLE has become an increasingly common disease in some parts of Britain.

5.6.2 Disease definition

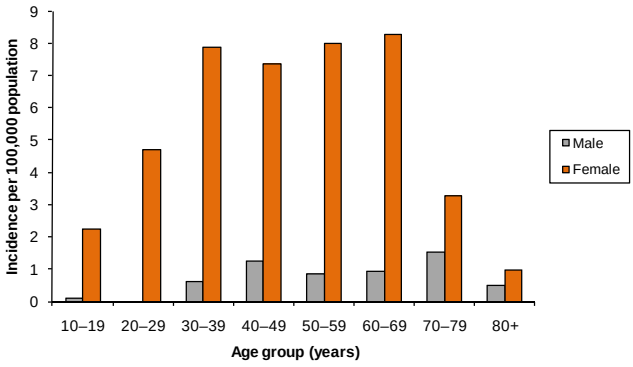
The ACR (formerly ARA) proposed a preliminary set of classification criteria for SLE in 1971,[99] which was revised in 1982.[100] The immunologic disorder criterion was updated in 1997 to include antiphospholipid antibodies. The criteria have gained widespread acceptance.

5.6.3 Incidence

In 1995, a study from the metropolitan districts of Birmingham and Solihull reported an overall annual SLE incidence rate of 3.8 per 100,000 (6.8 per 100,000 among women and 0.5 per 100,000 among men).[101] Variations in female incidence by ethnic group were also explored, but as there were only 33 incident cases (with only 2 male cases) the confidence intervals were extremely wide. Female SLE incidence was 4.3 per 100,000 in Caucasians, 20.7 per 100,000 in Asians and 25.8 per 100,000 in Afro-Caribbeans. The crude incidence rate ratio for Afro-Caribbean compared with Caucasian women was 6.0, and that for Asian compared with Caucasian women was 4.8.

The two most recent UK studies of SLE incidence have used consulting data from the GPRD.[102;103]The age and sex-adjusted overall consulting incidence rates were 4.7 per 100,000 (7.9 per 100,000 among women and 1.5 per 100,000 among men)[103] and 3.0 per 100,000 (5.3 per 100,000 among women and 0.7 per 100,000 among men)[102] (Figure 8). In the first study patients had to be free of consultations for SLE symptoms for the previous year in order to be classed as an incident case of SLE. It has been suggested that the resulting incidence rate was an overestimation because this prior period of monitoring was too short.[104] As SLE patients may go into remission for periods longer than a year,[102] some cases recorded as incident could have been a flare-up or relapse of an existing case. The first study found peak incidence rates within the 60–69 age range among women and 70–79 age range among men.[102] The second found peaks for men and women within the 50–54 and 70–74 age range respectively.[103]

FIGURE 8
Annual "consulting" incidence of SLE (GPRD, 1992–1998)



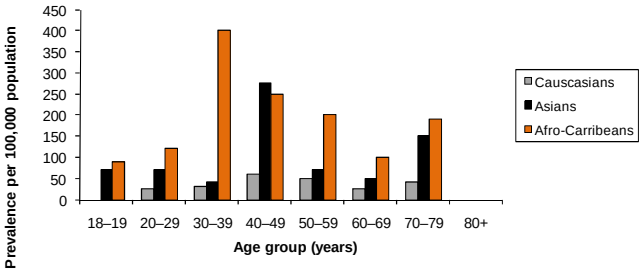
(Nightingale et al, 2006)[102]

5.6.4 Prevalence

There have been six estimates of the prevalence of SLE in the UK since the 1990s. Four studies used case ascertainment from multiple overlapping sources. They were carried out in the Midlands' cities of Leicester,[105] Nottingham,[106] and Birmingham[101] and nationally in Northern Ireland.[107] Prevalence estimates for the Nottingham study were not broken down by ethnic group. The crude prevalence rates for all Caucasian persons were remarkably similar for the other three studies (Leicester study: 20.2 per 100,000; Birmingham study: 20.7 per 100,000; Northern Ireland study: 21.7 per 100,000.) However, these figures did not account for possible missed cases of SLE. In an application of the capture-recapture technique, Gourley et al[107] estimated a point prevalence for adults of 25.1 per 100,000 in their Northern Ireland study.

Comparison of the prevalence by ethnicity across these studies is difficult, due to methodological variation (especially in relation to age standardisation), differences in reporting, and small number of cases. However African-Caribbeans consistently had the highest prevalence (5–10 times higher than the White population) followed by the Asian population (2–3 times higher than the White population). A study of the prevalence of SLE in women of different ethnic groups in South London found a rate of 177 per 100,000 among Afro-Caribbeans and 110 per 100,000 among west Africans, compared to 35 per 100,000 among Europeans.[108] This lower prevalence in west Africans in comparison to Afro-Caribbeans may be explained by the 'healthy migrant effect' as the former were also recorded to have migrated to the UK more recently. SLE is not only more common in Asians than Whites, but also has a worse prognosis.[109] For instance, there is an ethnic gradient relating to renal involvement, which predicts higher mortality, in the disease. The prevalence of lupus nephritis was 5.6 per 100,000 in Caucasian women compared to 110.3 per 100,000, 99.2 per 100,000 and 21.4 per 100,000 in Chinese, Afro-Caribbean and Indo-Asian women respectively.[110] All studies showed a marked female predominance, which was most pronounced within ethnic minority groups. The age-specific female rates from the Birmingham study are presented in Figure 9.

FIGURE 9
Point prevalence of SLE in females, by ethnic group (Birmingham and Solihull districts, 1992)



(Johnson et al 2002)[101]

5.6.5 Trends

Using crude figures from the GPRD the overall prevalence of SLE for all ages has increased from 25.0 per 100,000 in 1992 to 40.7 per 100,000 in 1998. The most dramatic increase in prevalence was in women in the age range 50–79 years. The authors state that the apparent rise in prevalence may be an artefact. They argue that the longer an SLE patient is followed up, the more likely she is at some point to attend a GP with symptoms related to lupus. Therefore, prevalence was higher at the end of the study because there were more patients who had been followed up for a longer period.[111]

In 1965, the peak age of onset of SLE for White females in the USA was 15–44;[112] in 1977 it was 45–54.[113] A decade later, the peak age of onset for the UK city of Nottingham was 50–59 years for females. The two most recent estimates for the UK found a peak age at onset for women of 60–69 years[111] and 50–54 years.[103] There is thus potentially a temporal trend amongst women for an increasing age at onset, which may have reached a plateau in recent decades. The prevalence of SLE is likely to be rising as a result of improved survival, the higher frequency of the disease in the Black, Asian and Chinese communities, and improved diagnosis which detects less severe forms of the condition.[114]

5.6.6 Mortality

According to data from the USA in the 1950s,[115] the survival rate among patients with SLE was only 50% after 4 years. A weighted average of ten studies published since the 1990s shows that survival has improved to 91% at 5 years, 85% at 10 years and 75% at 15 years.[116–125] In England and Wales in 2008 there were 52 deaths (43 female and 9 male) attributed to SLE.[62]

5.6.7 Economic impact

There have been no studies of the national cost of SLE in the UK. However, the economic impact of SLE at the individual level was assessed in a questionnaire completed by 105 patients attending a specialised SLE clinic between June and September 1995.[126] The average estimated direct and indirect cost of SLE was £7913 per patient per year. 22% of those studied said their SLE caused them to be disabled or retire from work. In England in 2007, there were 3988 recorded inpatient attendances and 10,572 bed days due to SLE.[13]

5.7 SCLERODERMA

5.7.1 Background

Scleroderma is the least common disorder included in this report, but has the highest mortality. It is a multi-system disease characterised by obliterative microvascular lesions leading to atrophy and fibrosis of many organs. Apart from the skin the organs most frequently involved are the lung, kidney, bowel and heart.

5.7.2 Disease definition

The ARA proposed criteria for the classification of scleroderma in 1980.[127] These have not found universal acceptance.

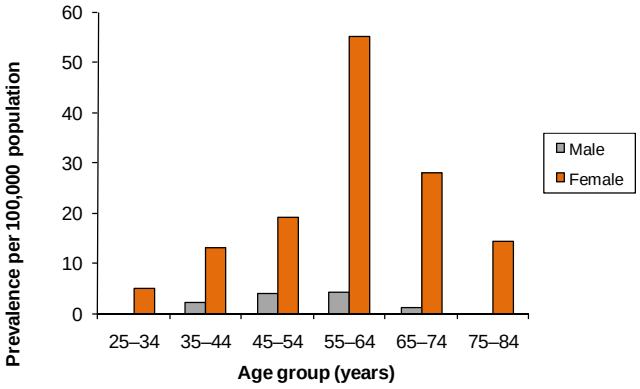
5.7.3 Incidence and prevalence

A study of the incidence and prevalence of scleroderma was conducted in the West Midlands region in the 1980s.[128]

Multiple overlapping sources including consultants, GPs, patient self-help groups and inpatient statistics were used to identify all cases of scleroderma resident in the region. The overall annual incidence of scleroderma was estimated as 1.1 per million for males, and 6.2 per million for females. The peak age of onset was 45–54 for both sexes. The prevalence estimate was 31 per million. The female excess in prevalence is more marked before the menopause.[128] The incidence of scleroderma has also been studied in children using information provided by specialist medical associations. An incidence of 0.27 per million was found in children 16 or under.[129]

Another English study, from the north east of England, also examined the prevalence of scleroderma.[130] A similar technique of using multiple overlapping sources, as well as a combination of ARA and other criteria, was employed to ascertain cases. The resulting prevalence estimate was higher than that found in the West Midlands study at 3 per 100,000 in men and 14 per 100,000 in women (Figure 10). This was perhaps due to increased ascertainment of minor cases or a rise in prevalence in the 14 years since the West Midlands study.

FIGURE 10
Point prevalence of scleroderma (North east England, 2000)



(Allcock, 2004).[130]

There is little evidence on the variation in the incidence and prevalence of scleroderma by ethnicity in the UK. Results from two US studies, both published in 1997, suggest that scleroderma incidence is almost twice as high in Black as in White women.[131;132] One study also showed that Black women with scleroderma were significantly more likely than White women to develop diffuse disease, be diagnosed at a younger age, have a higher incidence of inflammatory features, and have a lower age-adjusted survival rate.[131]

5.7.4 Mortality

In a retrospective cohort study of patients attending a specialist centre in south east England, a four-fold increase in mortality among patients with scleroderma was demonstrated, compared with background population rates.[133] There were 163 (133 female and 30 male) deaths attributed to scleroderma in England and Wales in 2008.[62] There was an average increase in mortality from scleroderma in the UK of around 3% per year between 1968 and 1985.[134] Since the prognosis of the disease is, if anything, improving then this increased mortality probably reflects an increase in incidence, as has been reported from the USA.[132]

5.7.5 Economic impact

Despite being a rare disorder, scleroderma was responsible for 3310 inpatient FCEs, equivalent to a total of 7682 bed days in 2007.[13] There have been no assessments of the economic impact of scleroderma in the UK.

5.8 POLYMYALGIA RHEUMATICA

5.8.1 Background

The name polymyalgia rheumatica (PMR) was coined in 1957 by Barber.[135] The aetiology of the disease is not known but it is characterised by inflammation, stiffness and proximal pain, particularly on waking. Onset can be very rapid, becoming apparent over the course of only one to two weeks. A quarter of people with PMR also have giant cell arteritis,[136] also called temporal arteritis, a condition in which the lining of the arteries become inflamed, most often those in the temples. This can lead to headaches in association with scalp tenderness, blindness or stroke.

5.8.2 Disease definition

Various criteria have been proposed for defining PMR, although none has gained widespread acceptance. The Bird criteria[137] are argued to be the most useful by some as they are readily applicable to clinical practice.[138]

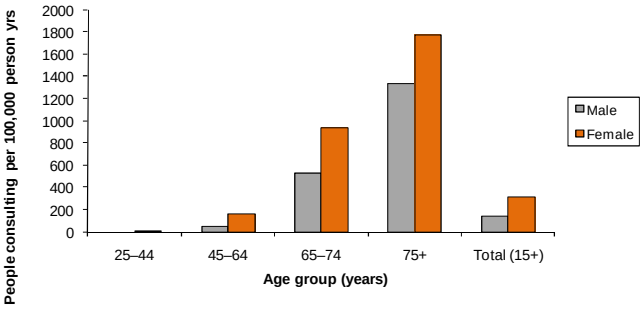
5.8.3 Incidence

Estimates from Olmsted County, Minnesota, from the period 1970 to 1999, give an age and sex adjusted incidence of 58.7 per 100,000 in people aged over 50 (69.8 per 100,000 in females and 44.8 per 100,000 in males).[139] More recently, using UK GPRD data, Smeeth et al estimated an age-adjusted incidence of 84 per 100,000 person-years in the period 1990–2001, with a female to male ratio of 2:1. The peak age of onset was in the 70–79 age group.[140] A similar peak age at onset (75+) is found in RCGP RSC consulting data, in which an adult (15+) incidence of 37 per 100,000 among males and 91 per 100,000 among females is reported.[49]

5.8.4 Prevalence

Defining a prevalent case of PMR is complex, as steroid treatment may completely suppress the disease, with symptoms sometimes recurring as the dose is slowly decreased. In 1992, in Olmsted County, Rochester, Minnesota, prevalence in those over 50 years old was 600 per 100,000.[141] A community based study in the UK recorded a higher point prevalence of 1090 per 100,000 in a population aged 50+, with a female to male ratio of 2.4:1.[142] Consulting data from the RCGP RSC yield adult estimates of annual period prevalence of 140 per 100,000 among men and 311 per 100,000 among women. Consulting prevalence was very low among younger age groups, but increased rapidly after the age band 45–64.[49]

FIGURE 11
Annual "consulting" prevalence of polymyalgia rheumatica (England and Wales, 2001)



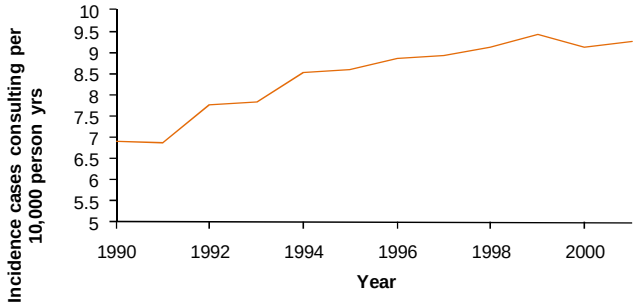
(RCGP WRS, 2001).[49]

5.8.5 Trends

The incidence of the disease in Olmsted County, Rochester, Minnesota increased with age by over a factor of ten in the age groups studied. In the 50–59 age group it was 10.8 per 100,000, increasing to 110.2 per 100,000 in the 80+ age group, with a peak in those aged 70–79 of 137.1 per 100,000.[139]

There is some evidence that the incidence of PMR could be increasing. In estimates derived from GPRD data the incidence increased from 69 per 100,000 patient-years in 1990 to 93 per 100,000 patient-years in 2001[140] (Figure 12). However the study from the Olmsted County, Minnesota reported a stable incidence over the thirty year period studied.[139]

FIGURE 12
Trends in the incidence* of polymyalgia rheumatica (England and Wales, 1990–2001)



(Smeeth et al 2006)[140] *age adjusted to 1990 population.

5.8.6 Mortality

PMR was listed as the underlying cause for 15 deaths, 13 among women and 2 among men, in England and Wales in 2008.[62]

5.8.7 Economic impact

There have been no studies of the total cost of PMR in the UK. In 2007, 1401 people were admitted to hospital because of PMR, equivalent to 6390 bed days. 2099 people were admitted due to giant cell arteritis, accounting for 6307 bed days.[13]

5.9 JOINT FAILURE – OSTEOARTHRITIS (OA)

5.9.1 Background

Joint failure is the most common form of joint disorder in Britain. It is the final common pathway of many musculoskeletal conditions. In addition, certain people have a genetic predisposition to develop joint failure, manifested as primary generalised OA. The predominant symptoms of primary and secondary OA are: pain, particularly on use; gelling after inactivity; and disability. The X-ray manifestations of OA are new bone formation (osteophytes) and joint space narrowing. OA may affect any joint and, wherever it occurs, the pathological and radiological changes are similar. However, the epidemiology of OA differs considerably between joints. This is particularly so for OA of the hip and knee.

5.9.2 Disease definition

Because the radiological changes of OA are more specific than the symptoms, early definitions were based on X-ray findings.[143] However, symptomatic and radiological OA do not always coincide. As a cause of morbidity, it is symptomatic OA that is of relevance. The ACR has developed sets of clinical criteria for OA of the hip[144] and knee[145] but these have been criticised because they are based on distinguishing OA from RA, rather than OA from normality.

5.9.3 Incidence

The onset of joint pain and the appearance of diagnostic radiological features are both insidious. It is, therefore, very difficult to estimate the incidence of OA. The RCGP RSC records those consulting for the first time with GP diagnosed OA. In the year 2001, an incidence of 12 per 1000 was recorded in women and 7 per 1000 in men. After age 25, the incidence of OA in women was consistently higher than that in men. Incidence increased with age, peaking in the 75+ age group for both genders (36 per 1000 among women and 29 per 1000 in men).[49] A retrospective study using data from the GPRD found the annual incidence of OA to be 18.6 per 1000 among women and 12.9 per 1000 in men aged 40 or over.[146]

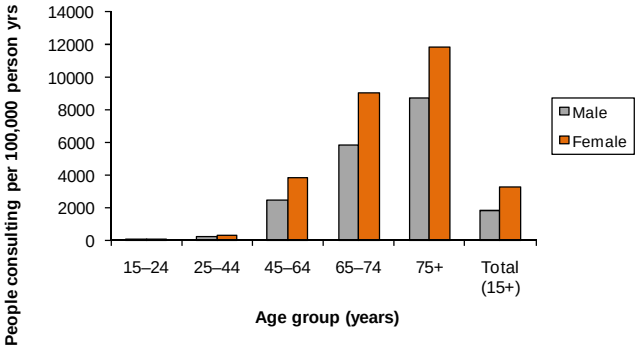
5.9.4 Prevalence

Most community surveys of the prevalence of OA use the radiological definition of Kellgren and Lawrence.[143] Surveys conducted in Leigh and Wensleydale in the 1950s and 1960s found that the prevalence of moderate or severe OA (grade 3 or 4) in one or more joints rose progressively with age.[147;148] 60% of those aged over 65 had moderate or severe OA in at least one joint. Other studies show that the prevalence continues to rise up to age 90. OA is slightly more common in younger men than younger women (before the age of 45), but more common in older women than older men (coinciding with the age of the menopause). According to the RCGP RSC, in 2001, the annual period consulting prevalence of OA was 3.2 per 100 among females and 1.8 per 100 among males (Figure 13).[49] For both genders prevalence was highest in those aged 75 years and over (11.7 per 100 among women and 8.6 per 100 among men). Using GPRD data, Jordan et al calculated an age-standardised prevalence of 2% in women and 1.2% in men.[10]

These figures are much lower than those found in population surveys and suggest that many people with OA do not consult their GPs. The marked difference between the GPRD and RCGP RSC data is probably due to the fact that only the first ever consultation for OA is recorded on the GPRD and that may have occurred out of the window inspected by the study, whereas every consultation for OA will be recorded in the RCGP RSC.

Not everyone is equally susceptible to OA. Risk factors include obesity for OA knee, especially in women, but not for OA hip. OA hip is more common in farmers[149] and OA knee in occupations which involve lifting and knee bending.[150] There is a minor link between physical trauma and OA, as the dominant hand tends to show slightly more radiological damage.[151]

FIGURE 13
Annual "consulting" prevalence of osteoarthritis (England and Wales, 2001)



(RCGP RSC, 2001)[49]

5.9.5 Trends

Data from the RCGP morbidity surveys show that the annual adult consulting incidence and annual period prevalence of OA rose between 1981–2 and 1991–2. Incidence increased from 18 per 1000 to 26 per 1000 and prevalence rose from 37 per 1000 to 47 per 1000.[33;34] In both cases there was a sharper rise in men than women. Between 1989–1990 and 2000–2001 referrals for elective hand surgery for OA were reported to have trebled, increasing from 12.7 to 34 per 100,000.[152]

5.9.6 Mortality

There were 273 deaths, 210 female and 63 male, attributed to OA in England and Wales in 2008. [62]

5.9.7 Economic impact

The total economic cost of OA in the UK has not been studied. However, of all the musculoskeletal conditions included in this report, OA is responsible for the most inpatient FCEs, with 209,382 FCEs in 2007. This is equivalent to 956,957 bed days.[13] Most FCEs are related to orthopaedic surgery. The average costs of a major hip and knee procedure are £7800 and £4471 respectively.[153]

5.10 BACK PAIN

5.10.1 Background

Back pain is a symptom not a disease. It may be triggered by a great variety of factors (Table 7). Despite this long list, it is impossible to establish the cause of back pain in most acute episodes[154] and up to 50% of chronic cases.[155] In population based studies it is, therefore, best to regard back pain as a single symptom complex rather than to attempt to group the sufferers by cause.

TABLE 7
The causes of back pain

1. Mechanical Causes
- Ligament & tendon strains
- Vertebral fractures
- Prolapsed intervertebral disc
- Spondylolysis & spondylolisthesis
- Congenital abnormalities

2. Degenerative conditions
- Degenerative disc disease
- Lumbar spondylosis

3. Inflammatory conditions
HLA-B27 related spondarthropathies:
- Ankylosing spondylitis
- Reiter's disease
- Psoriatic arthritis
- Inflammatory bowel associated arthritis

4. Infective causes
- Osteomyelitis
- Discitis
- Paravertebral abscess
- Brucellosis

5. Neoplastic causes
- Primary benign tumours
- Primary malignant tumours
- Metastatic disease

6. Metabolic bone disease
- Osteoporosis
- Osteomalacia
- Paget's disease

7. Referred pain
From:
- Duodenal ulcer
- Pancreas
- Renal tract
- Gynaecological disorders
- Lower bowel

8. Psychological distress

5.10.2 Disease definition

Confusion regarding the definition of back pain is found in official statistics and in ad hoc surveys. However, there have been recent moves to set a standard definition for use in back pain prevalence studies. After discussion by experts, a consensus was reached for a case of back pain to be defined as having had back pain "in the past 4 weeks".[156] We requested data from the ONS from the 3rd and 4th RCGP surveys for the codes 720.1–720.9 (inflammatory spondylopathies) and 724.1 (pain in the thoracic spine), and 722.1, .2, .5, .6, .7, and .8 (disc disorders). Therefore, the back pain data that we report from the RCGP survey are different from those in the published reports. In ad-hoc surveys, definitions used have included "back pain at the time of interview" and "back pain on most days for at least 2 weeks".[157]

5.10.3 Incidence

Back pain tends to be episodic and the majority of episodes settle within 6 weeks.[158] However, back pain is also recurrent and back pain in the past is one of the strongest predictors for back pain in the future.[159] Thus "incidence of back pain" can mean either "first ever attacks of back pain" or "new attacks of back pain" during the given time-frame. The lifetime incidence of back-pain ranges between 58% and 84%.[160] A number of studies have suggested that fewer than 20% of back pain episodes are brought to medical attention. The 2nd, 3rd and 4th RCGP surveys[32–34] examined the number of new attacks of back pain during a one year period. The most recent data showed that incident back pain was more common in women at all ages, with an incidence of 4.7 per 100 among adult women of all ages, compared with 3.7 per 100 among adult men. The South Manchester Back Pain Study estimated a one year cumulative incidence for new 'consulting' episodes of 3.1 per 100 for men and 4.7 per 100 for women, and for new 'non-consulting' episodes of 30.7 per 100 for men and 32.1 per 100 for women.[159] Hillman et al reported an overall annual incidence, based on self-report from a questionnaire, of 4.7 per 100 (4.1 per 100 among men and 5.4 per 100 among women).[161]

5.10.4 Prevalence

In a UK postal survey on chronic pain, low back pain accounted for a quarter of pain regarded as troublesome in the last month by those surveyed.[162] This is inevitably higher than the prevalence of low back pain reported to the general practitioner – every year around 7% of the adult UK population present in general practice with low back pain.[34] A number of estimates of the prevalence of back pain are available for the UK population (Table 8). The wide variation in estimates can largely be accounted for by differences in study design and case definition.

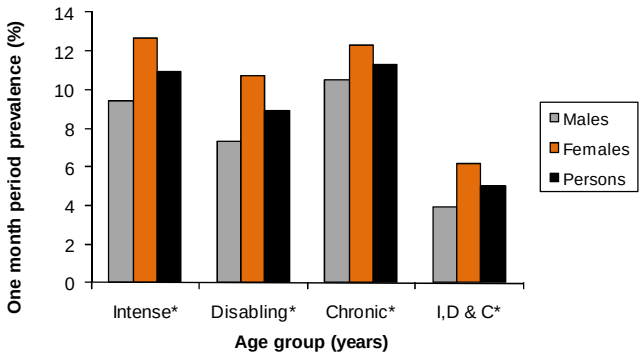
TABLE 8 Estimates of the prevalence of back pain

SOURCE	SEX	PREVALENCE (%) AGE BAND					
Consulting		**16–24**	**25–44**	**45–64**	**65–74**	**75+**	**all: 16+**
RCGP (1991–92)[32]	M	2.2	4.7	6.2	5.3	5.4	5.0
(Pts consulting in 1 year)	F	3.3	5.7	7.4	6.6	6.3	6.0
	P	2.8	5.2	6.8	6.0	6.0	5.0
Self-report in surveys		**20–29**		**30–39**	**40–49**		**50–59**
Walsh (1992)[151]	M	35.4		37.1	38.2		40.5
(1 Year)	F	27.0		33.6	43.7		35.7
(Lifetime)	M	52.0		60.4	64.2		70.5
	F	45.2		53.8	62.8		63.7
		16–44	**45–64**		**65–74**	**75+**	**all: 16+**
Webb (1996)[152]	M	20.0	24.6		20.6	17.0	21.3
(One month)	F	20.1	26.9		32.1	31.0	24.5
		20–29		**30–39**	**40–49**		**50–59**
Palmer (1997–8)[153]	M	46.5		52.4	56.4		56.6
(One year)	F	38.5		41.0	48.0		51.2
		18–24	**25–34**	**35–44**	**45–54**	**55–64**	**all: 18+**
Harkness (2005)[154]	M	7.8	15.7	14.1	22.0	23.0	17.8
(One month)	F	11.6	14.8	12.9	25.0	25.0	18.2
		16–44	**45–64**		**65–74**	**75+**	**all: 16+**
GHS (2007)[9]	M	2.5	5.6		4.5	3.2	3.7
(Longstanding Illness)	F	2.7	4.4		3.9	2.6	3.4

There are a number of population surveys which include questions on back pain. A survey carried out in 1996, using a very broad case definition of self-reported 'back pain lasting more than one day in the past 12 months', found an annual period prevalence rate of 40% for those aged 16 years and above.[163] Half of these people had consulted a healthcare practitioner for their pain. Using a more clinically relevant definition of pain reported as 'lasting for the whole year', adult prevalence was estimated as 15%. In surveys where the definition is restricted further by a measure of seriousness or impact, the prevalence estimate is inevitably lower – for example, in the 2007 GHS 3.7% of men and 3.4% of women reported longstanding illness as a result of back pain.[9]

In a two-phase survey conducted in general practices in Tameside near Manchester[164] 21.3% of men and 24.5% of women reported having back pain for a minimum of one week in the last month. Of these, 9.4% of men had pain classed as being intense (coded on an ordinal scale as moderate or worse), 7.3% as disabling (Oswestry low back pain disability score of ≥ 25), 10.5% as chronic (first occurred more than five years ago) and 3.9% classed as all three (Figure 14). The same results for women were much higher, with percentages for each category of 12.7% 10.7%, 12.3% and 6.2% respectively. Deprivation and South Asian ethnicity (OR: 3.25) were found to be predictors of back pain with disability.

FIGURE 14
One month period prevalence of back pain stratified by severity (Manchester, 1996)



(Webb 2003)[164]

Another survey by Palmer,[165] sampled from general practitioner lists across Britain, recorded back pain that lasted for 24 hours or longer in the past year. A much higher prevalence of 49.1% was reported. This is possibly due to the wider definition of back pain and a low response rate, which may have led to an increased prevalence if those with back pain were more likely to respond.

The RCGP survey data probably provide the best estimate of the burden placed on primary care services. These data suggest that GP consultation rates for back pain by women (5.9%) exceed those by men (4.2%).[37] However, these estimates fail to take account of the unknown level of unmet need. Hillman et al, in a two-phase survey carried out in Bradford, found that about one-fifth of their sample had experienced back pain in the previous year and were still experiencing pain on the day of the study.[161] 43% of this sub-group had not consulted a professional in the previous year, and one-fifth of these non-consulters described 'severe' levels of pain. Therefore consultation data may not provide us with an adequate picture of the community's back pain burden.

5.10.5 Work-related back pain

Musculoskeletal disorders are the most common type of self-reported work-related illness (57% of all self-reported illness), and disorders affecting the back are particularly common.[166] According to the Labour Force Survey, the prevalence of people in employment in 2007 reporting a work-related musculoskeletal disorder mainly affecting the back was 800 per 100,000, equating to 241,000 people. An estimated 240 per 100,000, equating to 74,000 people, first became aware of this disorder in the same year.[11] Back disability is thought to be increasing faster than any other form of disability.[167]

5.10.6 Trends

People have been troubled with back pain and sciatica throughout recorded history. The last 150 years have seen a number of changes in the way that back pain has been perceived. The first was the idea that back pain might be provoked by trauma. This was put forward by Erichsen in 1866 following a spate of accidents during the building of the railways.[168] Public concern led to legislation and the advent of the modern compensation system at the end of the last century. Frymoyer and Cats-Baril proposed that the number of people with back pain is not increasing but the number of individuals who believe they are disabled has exploded.[169] Two recent surveys have investigated the prevalence of back pain over time. Palmer found that, over a period of ten years, the age and sex adjusted one year period prevalence of back pain increased from 36.4% to 49.1%.[165] Using two similar cross-sectional surveys, Harkness found that between 1956–58 and 1994–95 the prevalence of low back pain doubled.[170] However, this trend is not echoed in data from the GHS, which shows a decrease in the prevalence of self-reported back problems in the past decade.[5–9;23–25] (Table 9)

5.10.7 Mortality

As back pain can be due to a range of causes, mortality data are not available.

5.10.8 Economic impact

The economic burden of back pain is great. In 1998, the direct health care costs of back pain were estimated at £1,632 million, rising to as high as £10,668 million if the costs of loss of production and informal care were included.[171] Taking account of inflation, this total will have risen considerably.[172] Musculoskeletal disorders mainly affecting the back were estimated to result in the loss of 4.1 million working days in 2007/08.[11] As back pain is a symptom, rather than a condition itself, hospital data admission data are not available from HES.

TABLE 9
Trends in prevalence of self-reported chronic back pain from the General Household Survey (2000,[24] 2004,[6] 2007[9])

	MALE	FEMALE
2000 *(crude rate)*	4.7	3.8
2004 *(crude rate)*	4.4	3.6
2004 *(age adjusted* to 2000 pop'n)*	4.4	3.8
2007 *(crude rate)*	3.7	3.4
2007 *(age adjusted* to 2000 pop'n)*	3.7	3.5

* 2007 & 2004 rates directly standardised to the age structure of the 2000 study population

5.11 REGIONAL AND WIDESPREAD PAIN SYNDROMES

5.11.1 Background

Soft tissue problems originate in the non-articular part of the musculoskeletal system. There are several soft-tissue junctions at which minor injury and inflammation can occur, causing pain. In addition, disorders may arise within muscle, ligament, tendon or tendon sheath. Disorders of soft tissue can be classified by clinico-pathological process (e.g. tendinitis); by anatomical region (e.g. shoulder pain); or by aetiology (e.g. repetitive strain injury). In practice, it is often difficult to discern the underlying process and so the more pragmatic approach of classifying by region is adopted. The most common sites for non-articular pain are the neck, shoulder, upper arm, elbow, wrist and knee. The same problems are found in defining a "case" of shoulder pain as a "case" of back pain. Perhaps the most significant change in recent years has been the recognition of the condition called fibromyalgia. Fibromyalgia is characterised by widespread soft tissue pain, multiple tender points and sleep disturbance. Its epidemiology has yet to be fully established. It is regarded by many as the rheumatological equivalent of migraine or the irritable bowel syndrome.

5.11.2 Incidence and prevalence of regional pain syndromes (knee, shoulder & neck)

Four population based studies using GP populations as a sampling frame have estimated the prevalence of knee pain (each using a slightly different definition). In older age groups most knee pain is due to OA but the epidemiology of knee pain and radiological knee OA are not the same. Two studies examined the prevalence of episodes of knee pain within one month. The first study (of 40–79 year olds) was based in two practices in Nottingham.[173] and the second (of all adults aged 16 and over) was based in three practices in Tameside, Greater Manchester.[40] The overall estimate from the Nottingham study was 28.7 per 100, with a similar prevalence among men and women, and a rising prevalence with age (reaching 36.9 per 100 among 70–79 year olds). Of those with knee pain, 53.5 per 100 and 31.1 per 100 had co-existing back and hip pain respectively.[173] The Tameside study estimated an overall one month prevalence of 19 per 100 within the adult population (19 per 100 among women, 20 per 100 among men). 11.7 per 100 reported intense knee pain and 3.4 per 100 reported intense knee pain with disability.[174]

There have been two more recent studies of the epidemiology of knee pain. One was based on a postal questionnaire sent to adults aged 18 and over in 16 practices in the south east of England (Table 10).[175] The point prevalence of chronic knee pain was 19 per 100. 88 per 100 of those with knee pain also had pain in another location. However, this study had a low response rate. If people with knee pain were more likely to complete the questionnaire, this estimate may be higher than the true prevalence. The fourth prevalence estimate used information from the Knee Clinical Assessment Study (CAS(K)).[176] This was a postal survey of adults aged 50+ registered with three general practices in North Staffordshire. The prevalence of men, women and persons reporting knee pain within a one year period was 47 per 100, 44 per 100 and 49 per 100 respectively. The impact of knee pain was examined and extrapolated to the general population in the area. 14% of people in the study population aged over 50 were estimated to have severe knee pain, 20% were estimated to have severe difficulty with physical functioning and 12% were estimated to have both.[177]

Population surveys have indicated that the prevalence of shoulder pain in the adult population is high (7–20 per 100).[178] The Tameside and south east England studies found an overall prevalence of 16 per 100 (17 per 100 in women and 14 per 100 in men)[40] and 17 per 100 in adults respectively.[175] A cross-sectional survey of a sample of 18–64 year olds registered with a single GP practice in a suburb of Manchester, found very similar results with an age-standardised prevalence of 17 per 100 in women and 14 per 100 in men.[170]

A study using IMS Disease Analyzer-Mediplus UK, a primary care consultation database,[38] reported a much lower incidence and prevalence of all shoulder conditions: 1.47 per 100 adults aged over 18 (1.45 per 100 among males, 1.49 per 100 among females) and 2.36 per 100 (2.28 per 100 among males, 2.43 per 100 among females) respectively. 17% of these shoulder conditions were coded as 'shoulder joint pain' or 'arthralgia – shoulder', corresponding to a prevalence of 0.24 per 100. There is little information concerning the severity and impact of this pain. The difference between the prevalence results from the IMS Disease Analyzer and from population surveys suggest that many people suffering shoulder pain do not consult their GPs. However, shoulder pain episodes are clearly common in primary care and the problem makes a substantial contribution to the new patient workload at specialist rheumatologist clinics.

Mechanical neck disorders cover a broad range of conditions with muscle, joint, ligament, disc or degenerative involvement. The Tameside (West Pennine) study reported a one month period prevalence of neck pain (lasting > 1 week) of 13.8 per 100 (16.5 per 100 among women and 10.7 per 100 among men). 7.8 per 100 of those in pain reported it as being intense

(coded on an ordinal scale as moderate or worse), 7.5 per 100 as disabling (Oswestry score, adapted to neck pain, of ≥ 25), 5.9 per 100 as chronic (first occurred more than five years ago) and 2.9 per 100 as all three.[164] In the south east of England study, the prevalence of neck pain was 12 per 100.[175]

In the US, the three month period prevalence of neck pain in adults has been reported as 4.4 per 100 (4.8 per 100 in women, 3.9 per 100 in men).[179] Whites were significantly more likely to report neck pain than people of other ethnicities, with a three month prevalence of 4.8 per 100 compared to 3.1 per 100 and 3.4 per 100 in Blacks and Hispanics respectively.

TABLE 10
Self reported prevalence of chronic musculoskeletal pain. Results of a postal survey in south east England.[175]

LOCATION	PREVALENCE (%)	% OF PAIN THAT IS SINGLE SITE
Neck	12	4
Shoulders/upper arm	17	6
Low back	25	13
Knees	19	12

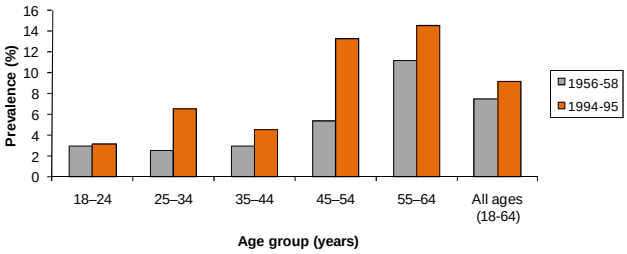
5.11.3 Incidence and prevalence of chronic widespread pain (CWP) and fibromyalgia

CWP is a frequently occurring phenomenon within the population. Using the widely accepted 1990 ACR criteria for CWP,[180] a population-based survey carried out in Cheshire found a crude overall point prevalence of 13 per 100 among a sample of 2,000 adults aged 18 to 85 years (15.6 per 100 among women and 9.4 per 100 among men).[181] The prevalence rose with age, reaching 26.3 per 100 in women and 19.9 per 100 in men aged 75 years and above. When standardised to the England and Wales population structure the estimated overall prevalence was 11.2 per 100. Almost three-quarters of subjects with CWP had consulted their GPs (74 per 100 of women and 69 per 100 of men). A study conducted in South Manchester, using the same criteria, found a prevalence of 10.5 per 100 among women and 7.9 per 100 among men aged 18–64. Crude prevalence increased with age, peaking in the 55–64 age group[170] (Figures 15 and 16). The south east England study found a prevalence of CWP using the ACR criteria of 12 per 100 (14 per 100 in females, 8 per 100 in males). This study also showed that it was rare to have pain in a single site. Only 27 per 100 of people reporting regional musculoskeletal pain had pain at a single site.[175] Of those with multi-site pain, only 67 per 100 fulfilled the ACR criteria for CWP.

A more stringent definition of CWP (the 'Manchester definition'), which identifies people with truly widespread pain, has been devised primarily for the purpose of studying disease aetiology.[182] Use of this definition in a population survey carried out in Greater Manchester, yielded a much lower prevalence estimate of 4.7 per 100 (5.3 per 100 among women and 3.7 per 100 among men).[183]

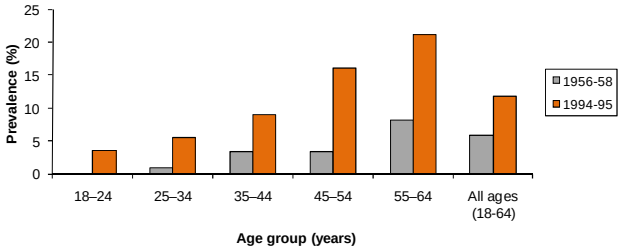
Another Greater Manchester study found that ethnicity affects the likelihood of developing CWP. For instance, Indian and Pakistani women had a crude prevalence of CWP of 44 per 100 and 37 per 100 respectively, compared to a prevalence of 8 per 100 in White women.[184]

FIGURE 15
Male prevalence of self-reported widespread pain* at two different time points



*Widespread pain defined using ACR criteria for fibromyalgia (Harkness 2005)[170]

FIGURE 16
Female prevalence of self-reported widespread pain* at two different time points



*Widespread pain defined using ACR criteria for fibromyalgia (Harkness 2005)[170]

The ACR criteria for fibromyalgia stipulate that a person must have CWP and eleven or more tender points on clinical examination.[180] There is no recent UK study which uses these criteria. The incidence of those diagnosed with fibromyalgia by their doctor, determined by searching for diagnostic codes relating to fatigue syndromes on the database, was calculated using GPRD data. In 1990, the consulting incidence of fibromyalgia was estimated to be 1 per 100,000 people, increasing to 35 per 100,000 people by 2001. More females developed the condition with a mean female to male ratio of 4:1. The authors attributed the increase to greater awareness and changing diagnostic patterns, rather than a true rise in incidence.[185]

There are no estimates of the prevalence of fibromyalgia for the UK population. A study by Croft examined the prevalence of fibromyalgia (11 tender points or more) among 177 participants, 45 of whom reported CWP, 93 of whom reported regional pain and 39 reported no pain. The prevalence of 11 tender points or more was 40%, 19.4% and 5.1% in these groups respectively. However

this does not give an accurate representation of the prevalence of fibromyalgia in the general population.[186] The best estimates available are from two community surveys in North America. The first found an overall prevalence of 2.0 per 100 (3.4 per 100 in women compared with 0.5 per 100 in men) in the adult population of Kansas USA (aged 18 years and over).[187] For both genders the highest rate was in the 70–79 years group (7.4 per 100 among women and 1.2 per 100 among men), and the lowest rate was in the 18–29 years group (0.9 per 100 among women and 0.1 per 100 among men). There was a smooth gradient of increasing prevalence with age in both genders. A more recent study in Ontario, Canada found an overall prevalence in the adult population (aged 18 years and over) of 3.3 per 100 (4.9 per 100 among women and 1.6 per 100 among men).[188] Prevalence peaked at a lower age than in the Kansas study (7.9 per 100 among 55–64 year old women, 2.5 per 100 among 45–54 year old men).

There are no published studies regarding variation in prevalence of fibromyalgia by ethnicity, although White et al[188] and Assumpcao et al[189] found higher rates among people of lower socio-economic status.

5.11.4 Mortality

As with back pain, widespread and regional pain are due to a range of causes. Therefore mortality data are not available.

5.11.5 Economic impact

There are no national data regarding the economic cost of regional and widespread pain syndromes. In a questionnaire of 4611 individuals aged 25+ in Scotland, those with chronic pain were more likely to be unemployed. 66% and 24 % of those with 'significant' and 'severe' chronic pain respectively, were employed, compared to 81 % of those without pain.[190] Information on the number of FCEs due to regional and widespread pain is not available.

5.12 OSTEOPOROSIS

5.12.1 Background

The WHO has defined osteoporosis as a reduction in bone mineral density to more than 2.5 standard deviations below the young adult mean.[191] In most cases osteoporosis is asymptomatic. The public health importance of osteoporosis lies in its association with fractures of the hip, pelvis and distal radius. It is estimated that, at the age of 50, the lifetime risk of hip fracture is 11.4 per 100 in women and 3.1 per 100 in men[192] (Table 11). The risk in other ethnic groups is lower but not inconsiderable. In the US the incidence of osteoporosis and related fractures in African American women is around half that among White women.[193] Hip fracture rates among Asians lie between those for Whites and Blacks.[194] In a study of 15,000 adults in Edinburgh,[195] men aged 15 to 49 years were 2.9 times more likely to sustain a fracture than women of the same age, while women aged 60 years and above were 2.3 times more likely to sustain a fracture than men.

TABLE 11

Estimated lifetime fracture risk (%), in White men and women at age 50 years[192]

FRACTURE SITE	FEMALE	MALE
Femur/hip	11.4	3.1
Vertebra (GP diagnosed)	3.1	1.2
Radius/Ulna	16.6	2.9
Any fracture	53.2	20.7

5.12.2 Incidence and prevalence of osteoporosis

Using data from the RCGP RSC the consulting incidence for osteoporosis in 2001 was estimated to be 221 per 100,000 among women (aged 16 and over) and 47 per 100,000 among men. The annual consulting period prevalence of osteoporosis was 657 per 100,000 in women and 93 per 100,000 in men.[49] Incidence and prevalence both increased with age. However, this may be an underestimate as many individuals with osteoporosis, particularly if it is asymptomatic, may not consult their doctor with the condition.

Using the WHO definition, the prevalence of osteoporosis of the femoral neck has been estimated as 22.5 per 100 in women aged 50 years and above and 5.8 per 100 in men.[191] Prevalence reaches 60.5 per 100 among women aged 85 years and over, and 29.1 per 100 among men of that age. Estimates of the prevalence of fracture at any of three sites (the hip, spine or wrist) from Olmsted County, Minnesota, are 35 per 100 in women and 19 per 100 in men over 50.[196] Roy examined the link between peak bone mass, which is inversely related to the risk of developing osteoporosis, and ethnicity in women.[197] Peak BMD (Bone Mineral Density) was higher in European women than South Asian women (Pakistani Muslims and Gujarati Hindus). However these differences were no longer significant after adjustment for bone size, height and weight.

5.12.3 Incidence of hip fracture

Hip fracture is the most important consequence of osteoporosis, both in terms of morbidity and cost. Each year around 45,000 people in England and Wales fracture their proximal femurs. However, hospital admissions for hip fractures in England are reported to be stabilising.[198] Women are more likely than men to sustain a hip fracture.[199;200] In a study conducted in Edinburgh in 1992–3[195] the incidence of hip fracture rose exponentially with age, especially after age 65. The incidence rate among all people aged 15 years and above was 129 per 100,000 (192 per 100,000 among women and 67 per 100,000 among men). The incidence for those aged 75 and over was 1219 per 100,000 (1509 per 100,000 among women and 602 per 100,000 among men). A more recent study of the incidence of hip fracture in the UK was conducted in Nottingham, by observing the number of fractures in patients admitted to Nottingham hospitals between the years 2000 and 2007. The incidence of hip fracture in the youngest age group, 55 to

to 64, was 46 per 100,000 (50 per 100,000 in women, 42 per 100,000 in men) rising to 3178 per 100,000 in those aged 85+ (3760 per 100,000 in women, 1805 per 100,000 in men). Secondary fractures did not show the same increase in incidence with age.[201] A study using GPRD data from 1988–1998, found a slightly lower incidence of hip fracture in those aged 20 years or over, at 114 per 100,000 (170 per 100,000 among women and 53 per 100,000 among men).[192] This may be because some hospital admissions due to hip fracture were not captured on the GP database.

5.12.4 Incidence and prevalence of vertebral fracture

Vertebral fractures occur at an earlier age than hip fractures. Many vertebral fractures are asymptomatic and so it is only possible to determine the incidence of the condition by conducting two cross-sectional radiographic surveys and estimating the number of new fractures that have occurred. The definition of vertebral fracture is also difficult. A vertebral fracture can be defined either as a partial loss of height of the anterior edge or middle section of a vertebral body (wedge fracture) or as a collapse of the entire vertebral body (compression or crush fracture). Exact radiological definitions of wedge fractures vary and can make a substantial difference to estimates of prevalence.[202]

Prevalence rates for vertebral deformities are now available from the European Vertebral Osteoporosis Study (EVOS).[203] In the UK the prevalence was approximately 12 per 100 in men and 10 per 100 in women aged 50–79 years. Therefore, approximately 900,000 men and 1 million women aged 50–79 years in the UK will have evidence of vertebral deformity. It is estimated that one in three of these will come to medical attention. GPRD data show that the annual incident consultation rate for vertebral fractures is 45 per 100,000 person-years (56 per 100,000 in women, 32 per 100,000 in men).[192] Crush fracture prevalence rates in female outpatient attenders in Leeds rose from 2.5 per 100 at age 60, to 7.5 per 100 at age 80 years.[204] Wedge fractures, however, were present in around 60% of women aged over 75 years.

5.12.5 Incidence of distal radius fracture (Colles fracture)

Distal radius fractures are the most common fractures in women up to the age of 75. Thereafter, hip fractures are more common. As with hip fractures, there is a winter peak in incidence. However, whereas most hip fractures follow a fall indoors, Colles fractures are usually associated with an outdoor fall. In the UK the incidence of distal radius fracture in women rises linearly between the age of 45 and 85, and then plateaus. In men the incidence remains constant between the age of 20 and 80 years.[205;206] Data from patients attending an outpatient clinic in Edinburgh estimated the annual incidence of distal radius fractures to be as high as 195 per 100,000 per year in adults (269 per 100,000 among women, 121 per 100,000 among men), making it the most common fracture of the 27 studied.[207] A similar estimate was found from GPRD consultation data, at 220 per 100,000 person-years (302 per 100,000 among women, 131 per 100,000 among men), for fractures of the radius and ulna combined.[192]

5.12.6 Trends

In the decade between the 3rd (1981–2) and 4th (1991–2) RCGP surveys there was a 200% increase in consulting for osteoporosis amongst women and 50% increase amongst men.[33;34] This increase may reflect increases in detection rates or changes in diagnostic behaviour rather than an increase in disease frequency in the population. Data from Oxford show that, in the three decades up to 1983, the age-specific incidence rates of hip fracture doubled for those aged over 65.[208] Similar secular trends have been observed in other European countries and in the USA.[209] The reason for this change in incidence is not known. Recent paleopathological data suggest that age-specific bone mass has fallen in women in the last two centuries.[210] One possible explanation for this change and for the increased hip fracture rate may be the lower amount of physical activity undertaken by present-day women. Hospital admission data for England and Wales[211] and data from Leicester[212] suggested that the increase in age-specific hip fracture incidence might have levelled off in around 1980. However, analysis from the Wessex Region,[213] indicated an increase in age-sex standardised rates between 1978–81 and 1993–95 (from 190 to 263 per 100,000 per year for men and from 570 to 770 per 100,000 per year for women). There was an increase in the rate for all five year age bands (from 65 years up to and including 85+ years), except for the 65–69 years group (males and females) and the 70–74 years group (females only). This study concluded that hip fracture rates are continuing to rise among the population aged over 70 years. Kanis has argued that, if current UK trends continue, the number of hip fractures occurring each year will more than double during the 20 year period following 1993.[214] In a study of hospital admission rates for fractures of the hip and femur between 1989–1990 to 1997–1998,[198] admission rates were increasing up until the year 1991–1992 and stabilised thereafter. The impact of osteoporotic fractures is also set to rise in the future because of the ageing population. There is the beginning of evidence that widespread screening programmes and osteoporosis prophylaxis may result in a decrease in incidence of osteoporosis. A randomised controlled trial of screening in postmenopausal women found a 25.9% decrease in fracture risk in those screened, due to increased use of HRT and osteoporosis treatments.[125] A population-based study from the USA found, over a period of 6 years, there were 36% fewer incident cases of hip fracture in older adults who had hip DEXA scans compared to those who did not.[215]

5.12.7 Mortality

In 2008, there were more deaths attributed to osteoporosis than any other musculoskeletal disorder. Including cases both with or without fracture, there were 1420 deaths due to osteoporosis, 1099 among women and 321 among men, in England and Wales.[62] In a study of hip fracture from Nottingham, mortality after first hip fracture was found to be 10% at 30 days and 31% at one year.[201]

5.12.8 Economic impact

The UK cost of osteoporotic fractures in women was assessed in 1998 using GPRD data.[216;217] The cost of all fractures among postmenopausal women was estimated as £1030 million. The cost of hip fractures only was estimated to be £872 million among women and £427 million among men. The cost per fracture of hip, wrist and vertebral fractures in women was £12,000, £468 and £479 respectively. Taking account of inflation, these costs would now be substantially higher. In 2007 there were 17,964 inpatient FCEs due to osteoporosis, accounting for 68,883 bed days. 66,782 FCEs and 1,123,061 bed days were attributed to hip fractures in 2007.[13] Prescription costs for treatment and prevention of osteoporosis are substantial. In 2008, there were almost 7 million prescriptions (single items on a prescription form) for osteoporosis drugs (bisphosphonates, teriparatide and strontium ranelate) at a cost of over £89 million.[14]

5.13 OTHER RHEUMATIC CONDITIONS

The main conditions omitted from this review are reactive arthritis, polymyositis and Paget's disease. There are very limited amounts of epidemiological data for these conditions in the UK.

5.14 SUMMARY

We have summarised the epidemiological data on the occurrence of the most common musculoskeletal diseases in Britain, as well as their economic impact. Nearly all these conditions increase in incidence and prevalence with age. In addition, there is evidence that the age-specific incidence rates of OA, gout, osteoporosis and PMR may be rising. Most musculoskeletal disorders are also more common in women than men, and it is women who have enjoyed the greater increase in life expectancy. The prospect for the future, therefore, is for an increasing burden of rheumatic disease in an ageing population.[218] Only RA appears to be on the decline. RA and SLE possibly have an older age of onset now than in the past.

6. INCIDENT & PREVALENT RATES OF MUSCULOSKELETAL CONDITIONS IN THE UK

6.1 TEMPLATE

6.1.1 Use of the life-cycle framework

The format of the template has been based on the life-cycle framework proposed by Pickin and St Leger.[2] This framework is based on the observation that each stage of life is associated with particular risks of ill-health and particular opportunities for health promotion. The nine stages proposed by Pickin and St Leger are: late pregnancy to 1 week after birth; 1 week to 1 year; 1 to 4 years; 5 to 14 years; 15 to 24 years; 25 to 44 years; 45 to 64 years; 65 to 74 years; and 75 years and over. Because there are relatively few data on the epidemiology of rheumatic diseases in childhood the first four stages of the life-cycle have been combined for the present exercise.

6.1.2 Sources of estimates used in template

The sources have been selected, wherever possible, at primary care level. AS, scleroderma and prevalent SLE are the exceptions to this. This is therefore a template of healthcare demands and utilisation rather than healthcare needs. The main conditions for which there is likely to be a discrepancy between need and demand are back and other regional pain syndromes, OA and osteoporosis.

Incidence:

1. Rheumatoid Arthritis: Norfolk Arthritis Register figures (1990).[47] These are based on cases of inflammatory arthritis of more than 4 weeks duration seen by GPs. About one half of those notified satisfy the 1987 ACR criteria for RA.

2. Childhood Arthritis: RCGP RSC (2001).[49] Data for the ICD-9 code 714.3 were obtained.

3. Ankylosing spondylitis: Data from Olmsted County, Minnesota, USA (1935–89).[80]

4. Gout: RCGP RSC (2001).[49] Data for the ICD-9 code 274 were obtained.

5. SLE: Data from the GPRD (1992–1998). Cases in each age category have been estimated. See paper for original categories.[102]

6. Scleroderma: Cases ascertained from multiple sources (predominantly hospital based), West Midlands Region (1984–5).[128]

7. Polymyalgia rheumatica: RCGP RSC (2001).[49] Data for the ICD-9 code 725 were obtained.

8. Osteoarthritis: RCGP RSC (2001).[49] Data for the ICD-9 code 715 were obtained.

9. Back pain: 4th RCGP morbidity survey (1991–2).[34]
Data for the following ICD9 codes were obtained from ONS : 721.3/.4; 722.1/.2/.5/.6/.7/.8; 724.0/.2/.3/.4/.5/.6/.7/.8/.9

10. Hip fracture: Data from Nottingham.[201] † The age band 45–64 is based on ages 55–64. All ages is for 55+.

11. All diseases of the musculoskeletal system (ICD9 chapter X111): Data from the RCGP RSC (2001).[49] This provides the best estimate of the total burden of disease as presented for health care.

Prevalence:

1. Rheumatoid arthritis: Rates are adapted from the Norfolk-based study (1998–2000).[51]

2. Childhood arthritis: RCGP RSC (2001).[49] Data for the ICD-9 code 714.3 were obtained.

3. Ankylosing spondylitis: Data obtained by secondary analysis of 4th RCGP morbidity survey (1991–92).[34]

4. Gout: RCGP RSC (2001).[49] Data for the ICD-9 code 274 were obtained.

5. SLE: Cases ascertained from multiple sources (predominantly hospital-based), Northern Ireland (1993).[107] Estimates have not been adjusted for non-response and misdiagnosis. These figures are for the White population only. Estimates for areas with large ethnic minority populations will need to take account of the substantially higher rates in these groups (see Section 5.6.4).

Age bands differ to those in the template and are as follows: 0–18, 15–24, 25–44, 45–59, 60–74, 75–84. All ages is for 18+.

6. Scleroderma: Cases ascertained from multiple sources (predominantly hospital-based) in north east England (2000).[130]

7. Polymyalgia rheumatica: RCGP RSC (2001).[49] Data for the ICD-9 code 725 were obtained.

8. Osteoarthritis: RCGP RSC (2001).[49] Data for the ICD-9 code 715 were obtained.

9. Back pain: 4th RCGP morbidity survey (1991–92).[34] Data for the following ICD9 codes were obtained from ONS : 721.3/.4; 722.1/.2/.5/.6/.7/.8; 724.0/.2/.3/.4/.5/.6/.7/.8/.9

10. Hip fracture: Data from Sheffield with cases defined using the standard WHO criteria.[191] Data were only available for those aged 50 and over. The template rate for 45–64 is based on the data for 50–64 years olds from the study and the "all ages" rate is for the population aged 50+.

11. Disablement: Data from Tameside, Greater Manchester (1996).[40] Cases were defined as subjects who reported pain lasting for more than one week within the last month, and who had an mHAQ score of > 0.5.

12. All diseases of the musculoskeletal system (ICD9 chapter X111): Data from the RCGP RSC (2001).[49] These provide the best estimate of the total burden of disease.

Where more than one potential source of data was available, that with the most precision has been chosen. Confidence intervals are not presented for the sake of clarity. Readers requiring these should consult the original data source.

7. CONCLUSIONS

There are several caveats that should be considered when applying the incidence and prevalence data presented in this report to local populations. Firstly, the rates presented in the template cannot simply be added together to produce estimates of the overall burden of musculoskeletal conditions, because the individual disease categories are not mutually exclusive. Readers who wish to obtain such an estimate should use rates for all conditions of the musculoskeletal system (which are reported in the General Household Survey (Table 5) – i.e. subject self-reported data or in the RCGP RSC data quoted in the template or available online.[37] Secondly, for those studies based on small samples and where disease frequency is rare, the reported rates may be imprecise, especially when age, sex or ethnic-group specific rates are reported. For the sake of clarity, 95% confidence intervals are not reported, but those rates in the template and tables that lack precision, are highlighted. Thirdly, it should be emphasised again that we have chosen to use mostly health care utilisation data as the basis for the template – this provides the best estimate of likely expressed need and demand related to any one problem, but is more likely to represent the true incidence and prevalence of the problem in the general population for the more severe pathologically defined conditions (such as the inflammatory arthritides) than it is for symptom syndromes such as back or regional pains, for which there is clear evidence that only a minority of people with such problems will consult the health services over a defined period of time.

This report concerns the development of a template for estimating the number of sufferers from rheumatic diseases in the community. There are two further steps to undertake before decisions can be taken about appropriate health service provision. The first is an evaluation of interventions and the second is an assessment of what proportion of sufferers would benefit from these interventions. In brief the assessment of interventions would require a panel of experts to set standards against which the published literature could be judged. They would need to decide on appropriate outcome measures and the amount of improvement required to constitute "success". This type of exercise is never easy but it is particularly difficult in the case of chronic diseases. The National Institute for Health and Clinical Excellence (NICE) has produced sets of evidence-based guidelines for a number of musculoskeletal conditions including OA, RA, and back pain (http://www.nice.org.uk/guidance/index.jsp). The main goals of management of all the musculoskeletal conditions are to minimise pain and stiffness, to maximise physical function and improve quality of life. Even the absence of deterioration constitutes success since the natural history of most of the arthritides is progressive deformity and disability.

8. ACKNOWLEDGEMENTS

We acknowledge the contributions of Roger Webb, Claire Bankhead, Paul Asten and Rosalind McNally to the previous editions of this report. We also gratefully acknowledge Michele Barley at the RCGP RSC for providing data used in this publication and Peter Croft for his constructive comments on the manuscript.

9. LIST OF USEFUL WEBSITES

See Table 4 for sites relating to economic information.

Arthritis Research UK
www.arthritisresearchuk.org/arthritis_information.aspx

NHS Information Centre
www.ic.nhs.uk/statistics-and-data-collections

NICE Guidance
www.nice.org.uk/guidance/index.jsp

NRAS surveys and publications
www.nras.org.uk/help_for_you/publications/default.aspx

Office for National Statistics
www.statistics.gov.uk/default.asp

RCGP RSC
www.rcgp.org.uk/clinical_and_research/rsc.aspx

The Department of Health
www.dh.gov.uk/en/index.htm

The Mayo Clinic
www.mayo.edu

MUSCULOSKELETAL DISEASES TEMPLATE I

INCIDENT CASES PER 100,000 MALES							
CONDITION	AGE 0–14	AGE 15–24	AGE 25–44	AGE 45–64	AGE 65–74	AGE 75+	ALL AGES *
Inflammatory arthritis	= Childhood arthritis	13	25	45	49	64	32
Childhood arthritis	4	–	–	–	–	–	–
Ankylosing spondylitis	1	16	23	8	4	4	12
Gout	0	0	170	402	692	772	302
SLE	0	0	1	1	1	2	1
Scleroderma	–	–	–	–	–	–	0.1
Polymyalgia rheumatica	0	0	4	17	118	301	37
Osteoarthritis	0	11	103	1021	2194	2890	746
Back pain	290	1860	3680	4550	3940	4220	3680
Hip Fracture†	–	–	–	42	140	491	178

* "All ages" rates apply to the adult population (i.e. 15+ years), with the exception of hip fracture (55+ years), inflammatory arthritis (16+ years), AS (16+ years) and back pain (16+)
† Age bands for incident hip fracture are 55–64, 65–74, 75+. All ages is for 55+

MUSCULOSKELETAL DISEASES TEMPLATE II

INCIDENT CASES PER 100,000 FEMALES							
CONDITION	AGE 0–14	AGE 15–24	AGE 25–44	AGE 45–64	AGE 65–74	AGE 75+	ALL AGES *
Inflammatory arthritis	= Childhood arthritis	33	53	93	97	49	71
Childhood arthritis	15	–	–	–	–	–	–
Ankylosing spondylitis	1	4	5	3	1	0	3
Gout	0	0	18	58	173	275	70
SLE	3	3	6	8	6	2	6
Scleroderma	0	–	–	–	–	–	0.6
Polymyalgia rheumatica	0	0	5	75	255	405	91
Osteoarthritis	–	6	122	1562	3226	3572	1197
Back pain	460	2900	4610	5660	5000	4720	4670
Hip Fracture†	–	–	–	50	244	1573	578

* "All ages" rates apply to the adult population (i.e. 15+ years), with the exception of hip fracture (55+ years), inflammatory arthritis (16+ years), AS (16+ years) and back pain (16+)
† Age bands for incident hip fracture are 55–64, 65–74, 75+. All ages is for 55+

MUSCULOSKELETAL DISEASES TEMPLATE III

PREVALENT CASES PER 100,000 MALES							
CONDITION	AGE 0–14	AGE 15–24	AGE 25–44	AGE 45–64	AGE 65–74	AGE 75+	ALL AGES *
Rheumatoid arthritis	= Childhood arthritis	10	20	580	1140	2180	440
Childhood arthritis	30	10	8	5	4	3	–
Ankylosing spondylitis	0	30	70	120	20	25	70
Gout	0	20	400	1240	2080	2550	873
SLE†	0	5	5	7	7	7	6
Scleroderma	–	0	2	8	2	0	4
Polymyalgia rheumatica	0	0	0	50	530	1330	140
Osteoarthritis	0	10	170	2420	5780	8680	1830
Back pain	350	2170	4710	6240	5340	5380	4810
Osteoporosis (of hip only)	–	–	–	3490	5180	15640	5800
Disablement (mHAQ >0.5 + pain)	–	1710	7920	16725	12010	18470	13830
All musculoskeletal conditions	3802	7860	12800	19900	25620	29860	16344

* "All ages" rates apply to the adult population (i.e. 15+ years), with the exception of osteoporosis (50+ years). RA (16+ years), AS (16+ years) and back pain (16+).
† Age bands for prevalent SLE are 0–18, 15–24, 25–44, 45–59, 60–74, 75–84. All ages is for 18+

MUSCULOSKELETAL DISEASES TEMPLATE IV

PREVALENT CASES PER 100,000 FEMALES							
CONDITION	AGE 0–14	AGE 15–24	AGE 25–44	AGE 45–64	AGE 65–74	AGE 75+	ALL AGES *
Rheumatoid arthritis	= Childhood arthritis	63	160	1670	2330	2740	1110
Childhood arthritis	40	13	11	7	5	4	–
Ankylosing spondylitis	0	0	20	20	10	0	14
Gout	0	0	30	160	450	940	192
SLE†	2	30	70	88	71	12	63
Scleroderma	0	0	9	35	28	14	22
Polymyalgia rheumatica	0	0	10	160	930	1770	311
Osteoarthritis	0	20	270	3770	9010	11780	3207
Back pain	510	3300	5670	7360	6580	6260	5890
Osteoporosis (of hip only)	–	–	–	7660	24350	49360	22500
Disablement (mHAQ >0.5 + pain)	–	2420	9140	14380	18340	30740	17800
All musculoskeletal conditions	3731	10150	15820	26920	33130	36170	21843

* "All ages" rates apply to the adult population (i.e. 15+ years) with the exception of osteoporosis (50+ years). RA (16+ years), AS (16+ years) and back pain (16+).
† Age bands for prevalent SLE are 0–18, 15–24, 25–44, 45–59, 60–74, 75–84. All ages is for 18+

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Report design by Nicola Dale