LIFE IN THE BALANCE:
CRITICAL ILLNESS AND BRITISH INTENSIVE CARE, 1948-1986

A thesis submitted to the University of Manchester for the degree of
Doctor of Philosophy
in the Faculty of Life Sciences

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ABBREVIATIONS

BMA  British Medical Association
DGH  District General Hospital
ECG  Electrocardiography / electrocardiogram
EEG  Electroencephalography / electroencephalogram
FFARCS Fellow of the Faculty of Anaesthetists, Royal College of Surgeons
HMC  Hospital Management Committee
ICS  Intensive Care Society
ICU  Intensive Care Unit
IPPV Intermittent Positive Pressure Ventilation
ITU  Intensive Therapy Unit
IV   Intravenous
JBCNS Joint Board of Clinical Nursing Studies
PPC  Progressive Patient Care
MRCP Member of the Royal College of Physicians
NHS  National Health Service
RCN  Royal College of Nursing
RHB  Regional Hospital Board
SAMO Senior Administrative Medical Officer
SEN  State Enrolled Nurse
SNAC Standing Nursing Advisory Committee
SRN  State Registered Nurse
TPR  Temperature, pulse, respiration rate
WHO World Health Organisation
The University of Manchester

Alice Nicholls

Degree title: PhD

ABSTRACT

‘Life in the balance: critical illness and British intensive care, 1948-1986’

A series of life and death decisions, in a high-tech hospital unit, made by a multidisciplinary team of specialists and the patient’s family – intensive care is the epitome of modern medicine. What better encapsulates the ambivalence of medicine in the twentieth century? From the beginnings of intensive care units in the 1950s to the institution of specialist societies, journals and training by the mid-1980s, so many of the tensions of modern medicine have been articulated in this story. The development of British intensive care has involved collaboration and conflict – the benefits of multidisciplinary knowledge and experience, with the competition for status and ‘ownership’ of patients. It has utilised the high-tech – striving to advance therapeutic capabilities balanced against the risks of iatrogenesis and loss of patient identity and autonomy, as well as the low-tech – the importance of clocks and windows with a view of the outside world for temporal orientation and sensory stimulation, for example. At times, the ‘scientific’ pathophysiology of critical illness has been pitched against ‘intuitive’ nursing care. At other times, the nurse has been acknowledged as the primary therapist. Critically ill patients have been the subject of a hospital specialty based on generalism rather than a single organ system or age group. Expanding and contracting notions of reversibility and salvageability have informed decision-making in a resource-intensive field.

Using archives, journals, newspapers, oral history interviews, films and museum objects, this thesis challenges the view that intensive care originated from the 1952 Copenhagen poliomyelitis epidemic or the postoperative recovery room. Instead, it argues that intensive care was not just a response to illness, but that it grew alongside a new category of illness created by practitioners and policymakers – critical illness. Changing notions of critical illness in turn shaped the practice of intensive care. Until the mid-1960s, critical illness was seen as phase of illness, with the highest degree of nursing dependency. As therapy developed, it began to be measured as the highest degree of medical and technological dependency. With research and symposia on pathophysiology, critical illness came to be regarded as a physiological state, imbalanced and in need of correction. Such notions informed questions of who should care for the critically ill, where, and how.

31 March 2011
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Chapter 1: Introduction

1.1 Introduction

Intensive care is the epitome of modern medicine. It is high tech and high cost, where machines are at once awesome and terrifying, life-saving and dehumanising. Its accomplishments are prestigious, but represent years of experimentation by trial and error. It is a dedicated space within the hospital, apart yet still connecting with accident and emergency, operating theatres and wards. An elite group of specialist staff work in the high pressure environment, where traditional doctor and nurse roles become blurred. Together with patients and their families, clinicians must make some of the most difficult decisions about life and death. For these reasons, it is one of the most fascinating fields of modern medicine to explore. What area of clinical care better captures the key issues that patients, practitioners, administrators and planners face in a modern health care system? A multidisciplinary King’s Fund panel, convened in 1988 to prepare a statement on the role of intensive care units in the National Health Service, shared this view. Introducing their report, the group of intensive care doctors, administrators, academics and a nurse stated, ‘Intensive care units (ICU) epitomise the challenge of high technology medicine’. The challenge, they asserted, was to balance the costs and benefits: intensive care units made heavy demands in terms of staff, equipment and other resources, had the potential to save lives, although perhaps at the expense of a patient’s dignity, privacy and autonomy. Stanley J Reiser provides one of the simplest but most persuasive commentaries on the multiple meanings of intensive care, saying it is ‘a symbol, a space, a technology, a clinical concept, an ethical imperative, a last resort. It attracts, it repels. It burdens, it helps. It bankrupts, it enriches’. Intensive care is still extra-ordinary, and remark-able.

In this thesis, I show how intensive care came to occupy this position. Starting at the formation of the National Health Service in 1948, I trace the development of care for the critically ill through to 1986, when the first full-time training posts for doctors wishing to specialise in intensive care were established. My research aims to offer an important and compelling case study for scholars of modern medicine, with appeal not just for historians of medicine, but for social scientists, policymakers, and practitioners of medicine, nursing, and allied professions. The thesis is also of significance for more specific audiences, such as historians of hospitals, health care technology or medical and nursing practice. Individual chapters will be of particular use to different audiences: Chapter 3 for studies of health policy.

and government, Chapter 5 for sociologists and qualitative researchers, Chapters 6 and 7 for those with interests in professionalisation and specialisation, for example.

1.2 Definitions of intensive care
Definitions of intensive care can be used to introduce its basic parameters. During the period under study, such definitions were used by those within the intensive care community to create a shared identity, or as explanations for those outside the specialty. They have changed over time – one has predominated then faded, while another gains currency. Sometimes a hybrid has been in circulation and use, or one has not really operated without a sense of the other. I have used the definitions to inform the scope of my thesis: to consider people (patients, families and practitioners), spaces (units and technology) and practice (medical and nursing).

Definition by patient
Whether labelled as ‘seriously ill’, ‘gravely ill’ or ‘critically ill’, intensive care has been defined as the care given to patients in this condition. Notions of critical illness have not been static. In the 1950s, illness was on a spectrum from well to seriously ill. At some point along the spectrum it would become necessary to be admitted to hospital, sharing a ward with people more or less ill. The most ill would receive constant, one-to-one care. In the 1960s, the critically ill began to emerge as a distinct category of hospital patient, gathered together in one location. By the following decade, pathophysiological imbalances defined the critically ill, best managed in an intensive care unit. With increasing specialisation in the 1980s and 1990s, the critically ill were no longer defined as a surgical or medical case but someone in need of ‘total care’, receiving attention to the complex and interacting aspects of their condition as a whole.

Definition by location
One of the most common definitions of intensive care was by its dedicated space within the hospital. Encompassing the physical space and its resources (including staff), it differentiated intensive care from the special care carried out in side wards, postoperative recovery rooms, and emergency departments. In 2006, intensivist Ken Hillman reflected, ‘we needed the security of the four walls of ICU to nurture our specialty’.³

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Definition by practice
Intensive care has often been defined by its practice. It is ‘intensive’ – constant, vigilant, technical, often invasive; and ‘care’ – of a hospital kind. Nurses have argued that what was intensive was the nursing care. Doctors have argued that intensive nursing care was carried out in general wards, and that what was intensive was therapy – technologically reliant diagnosis, monitoring and treatment. Throughout the period, practitioners debated whether this care itself was restorative, or whether the aim was to support failing organs while others treated the underlying disease or injury.

Definition by technology
Intensive care has also been defined by its technology, most often life support, but also by its diagnostic, monitoring, therapeutic and informatics technology. While none are necessarily unique to intensive care, and attribution of the specialty to particular technologies would be determinist, their collection in one unit and application to the problems of critical illness was regarded as definitive.

Critical care medicine
From the 1980s, the terms ‘critical care’ and ‘intensive care’ have been used interchangeably, as seen in the report for the 1983 National Institutes of Health consensus conference on critical care medicine. But in the late 1960s and early 1970s critical care medicine assumed the more specific definition previously accorded to ‘acute medicine’. It encompassed emergency care (life support at the scene, during transportation and on arrival at hospital), intensive care, and resuscitation. I use this definition to exclude emergency care from my thesis, as discussed more fully in section 1.4.

1.3 Literature review
Surprisingly, there is no book-length history of British intensive care. The existing historiography can be generalised as being from three approaches: medical review article,

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nursing history, or case study. I consider each in turn, and suggest a number of areas where my research can make an original contribution not only to the history of intensive care, but to the wider history of modern medicine. I then outline ways in which a broader literature on hospital and health care technology, life and death decisions, and patient experiences informs my thesis.

**Review articles in medical journals and textbooks**

The largest body of work on the history of intensive care comes from this source. Most have a positivist agenda, seeking to identify and order the ‘firsts’. As nursing historian Janet Wilson James has argued, narratives of historical progress are valuable as the first attempts to lay out the topic, and ‘the product of devoted effort’.\(^7\) This is applicable to histories of intensive care, especially as the key events are generally well agreed upon. Mark Hilberman’s 1975 paper is the most often cited, and for good reason. Written a decade or more after intensive care units opened in Britain, it reads much like a bibliographic essay, describing antecedents with references to the original publications (although references 75 to 95 appear to be missing), as summarised in Figure 1.1.\(^8\)

<table>
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<td>3-bed unit for postoperative neurosurgical patients opened by Walter Edward Dandy at Johns Hopkins Hospital, USA</td>
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<td>Recovery room designed and built at the surgical clinic of Tübingen’s University Hospital, Germany</td>
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<td>1939-45</td>
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**Figure 1.1:** Summary of Hilberman’s timeline for antecedents of intensive care units

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Hilberman’s account emphasises the leading role of postoperative recovery rooms, presenting them as the ‘direct antecedents’ of intensive care units. But other accounts point to the poliomyelitis wards of the 1950s, arguing that the life support skills and knowledge obtained there ‘were essential before modern intensive therapy could begin’. Both recovery rooms and respiratory units are explored in more detail in Chapter 2 of this thesis. Missing from the secondary literature are accounts of surgical side wards, particularly cardiothoracic surgery. Hilberman cites a three-bed unit for neurosurgical patients, but in Britain the special care of patients in small side wards off the 30-bed cardiothoracic wards was another important antecedent of intensive care. This is also addressed further in Chapter 2.

Review articles in medical journals and textbooks then consider at what point these special care principles were applied to all critically ill patients. According to Hilberman, the first truly multidisciplinary intensive care units opened in Baltimore and Uppsala in 1958, but nursing historians Julie Fairman and Joan Lynaugh describe American units opening in 1953-4. What is apparent is the boundary issue – what is an intensive care unit, and what is not? While historical reviews in medical journals and textbooks tend to be preoccupied with determining the first intensive care unit, Fairman reminds that ‘it may be argued that the lines between these classifications (recovery room and intensive care unit) were negotiable in the hospitals of the time’. However, the search for ‘the first’ may be useful for generating a set of factors for characterising intensive care, and intensive care units. Fairman differentiates by function, namely that ‘recovery rooms were extensions of the operating room rather than a reorganization of patients by level of stability’. Berthelsen and Cronqvist assert primacy to the Observation Room at the Municipal Hospital in Copenhagen, on the grounds that it featured ‘many aspects of intensive care even as we know it today: the continuous recording of the function of vital organs; the immediate intervention when changes in the patient’s condition mandated it; monitoring of the effect of the intervention’, and that all kinds of patients were admitted, not just postoperative. This latter point is the most convergent: see for example Tony Gilbertson’s search for the first description of an

9 Ibid, p. 159.
13 Ibid.
intensive care ward in the UK. He concludes that Clive Jolly and J Alfred Lee’s paper on a postoperative ward at Southend General Hospital was ‘a quantum leap forward’ – like Fairman, Berthelsen and Cronqvist, the deciding factor was that (despite its name) it cared for all critically ill patients.\(^{15}\)

Another useful history of intensive care from within the profession is Jean-Louis Vincent’s review of fifty years of intensive care medicine.\(^{16}\) Most valuable is that developments in each field are considered from the ‘optimist’ and ‘pessimist’ viewpoint. Much of the pessimist’s view concerns iatrogenesis, attributed to more invasive monitoring and therapeutics. It is unusual to find this reflexivity in historical reviews for medical audiences, and it challenges the argument that intensive care was simply existing technology, nursing and medical care brought together into one place. Instead, many interventions were trialled there, and subsequently found to be harmful. Vincent’s pessimist posits that ‘much of the apparent progress in intensive care medicine has come about through the identification and correction of our own iatrogenic effects’.\(^{17}\) In a similar article in *Chest*, also published in 2006, Vincent and colleagues adopt a more familiarly positivist tone, writing that ‘many changes have resulted from the scientific identification of the detrimental effects of certain traditional practices once thought to be therapeutic’.\(^{18}\) Iatrogenesis in the intensive care unit is also mentioned in social sciences literature, and nursing historians give a sense of the potential for iatrogenicity in their references to experimentation, testing of new equipment and procedures, and ‘medical adventurism’.\(^{19}\) Since few accounts describe iatrogenesis in detail, I made it a topic for oral history interviews with practitioners, and present findings throughout the thesis.

Finally, historical reviews in medical journals and textbooks are testimony and insight into the professional issues they considered most pertinent, and what, perhaps wittingly, was omitted. Not unexpectedly, histories written by doctors can be technologically determinist. An


\(^{17}\) Ibid, p. 15.


An interesting example is cited by Andrew Leibowitz, from a popular 1990s intensive care textbook, that ‘the pulmonary artery catheter is not just important for the specialty of critical care, it is responsible for the specialty of critical care’. This is interesting because it reflects a distinctly medical viewpoint – how many of the lay public would know what a pulmonary artery catheter is? They would be more likely to have chosen life support, Stanley J Reiser’s ‘technology of rescue – technologies that sustained vital physiologic functions during a time of medical crisis’. Mechanical ventilators (to support breathing) are given a leading role in medical review articles. Not fully explored in this literature is the multidisciplinary nature of intensive care. Collaboration and conflict between medical and nursing roles is referred to, but few examine intraprofessional relationships. Christopher Bryan-Brown makes a short reference to early 1950s physicians who would have ‘found it unthinkable for an anaesthesiologist to take clinical responsibility for their patients, outside the operating room’, but few accounts mention clinicians other than anaesthetists. Most likely this reflects a bias in authorship – these histories of intensive care are largely written by anaesthetists.

Accounts of intensive care societies are one of the rare occasions on which the multidisciplinary nature of intensive care is featured. Max Harry Weil and William Shoemaker’s article on the founding of the Society of Critical Care Medicine explains how three doctors from different medical fields discovered a ‘commonality of concepts and goals’, and valued ‘the appropriateness of the multidisciplinary commitment to patient care’. The Society was inaugurated by ‘cardiologist/physiologist Weil, anesthesiologist/resuscitation-leader Safar, and surgeon/physiologist Shoemaker’ with 100 members in 1971. The British equivalent, the Intensive Care Society, was founded a year earlier, and the Australian and New Zealand Intensive Care Society in 1975, all with multidisciplinary membership. I explore

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25 Nursing societies were also established: the American Association of Critical-Care Nurses started in 1969 (although under a different name), and had 2,800 members by 1971. See J Lynaugh, ‘Moments in nursing history: 1970. Four hundred postcards’, *Nursing Research*, 1990, 39 (4): 254-5. The Australian Critical Care Nurses Association was launched in 1974, and the British Association for Critical Care Nurses in 1985.
multidisciplinary medical knowledge, skills and roles in more detail in Chapters 6 and 7, particularly to see if and how conflicts in patient responsibility were resolved, and how a shared identity was created.

Nursing histories of intensive care

Much of the research on the history of critical care nursing is written by nurses (or former nurses), and is published in nursing journals, or for nursing associations. Julie Fairman and Joan Lynaugh’s *Critical care nursing: a history* is authoritative, informed by Fairman’s PhD thesis and a three year research project funded by the American Association of Critical Care Nurses. Jacqueline Zalumas’s *Caring in crisis: an oral history of critical care nursing*, also from a PhD thesis, includes a chapter on the evolution of critical care nursing. Valda Wiles and Kathy Daffurn’s comprehensive history of Australian critical care nursing was published in 2002 by the Australian College for Critical Care Nurses.

Recent nursing histories challenge medical histories of intensive care in a number of ways. Firstly, where medical histories emphasise the role of postoperative and ventilatory support, nursing histories call attention to the nursing shortages that stimulated a spatial reorganisation of patients. Julie Fairman’s case study of Chestnut Hill Hospital, Pennsylvania, describes such circumstances in detail. There, the Chief of Medical Staff suggested that fewer nurses would be required if they could observe at-risk patients more easily, advocating a six-bed ward for critically ill, postoperative and unconscious patients, which opened in May 1954. Robert Bulander (a doctor), argues a similar point in his article for *Social History of Medicine* in 2010, concluding that, ‘The intensive care unit in the United States developed as a solution to the nursing shortage of the 1950s’. In Britain, the economic imperative for intensive care units came later than in America, and as part of a wider drive towards hospital

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26 In this case ‘critical care’ is synonymous with ‘intensive care’.
29 V Wiles, K Daffurn, *There’s a bird in my hand and a bear by the bed – I must be in ICU: the pivotal years of Australian critical care nursing*, Sydney, Australian College of Critical Care Nurses Limited, 2002.
efficiency in the 1960s. Of particular influence to the development of British intensive care was a hospital organisation model that grouped patients according to the severity of their illness – known as ‘Progressive Patient Care’. The concept postdated many American intensive care units, so whilst a few nursing historians mention it, its impact is not fully explored in their narratives. A literature search suggested there had not been any historical analysis of the concept, but an extensive primary literature has enabled me to consider its implementation in British hospitals in Chapter 3 of this thesis. Secondly, nursing historians contend that medical histories of intensive care have wholly neglected nursing, ‘rendering nurses’ work invisible and unacknowledged’.32 Fundamentally, they claim, ‘nursing is what is intensive about ICUs’, and their revisions have sought to re-establish their role.33 Jacqueline Zalumas writes, ‘Nurses rapidly became the major treatment modality in the critical-care unit because of skill, competence in judgment, and round-the-clock presence’, and Julie Fairman that, ‘Heart monitors and dialysis machines were not necessarily part of the early ICUs...Unlike machines, nurses were not incidental to the ICUs’.34 Some doctors in the 1960s and 1970s concurred: ‘The nurse is indispensable; the chief observer and the chief therapist’, wrote Eric Sherwood Jones, for example.35 But this has been lost in medically-authored histories of intensive care.

Like medical histories, nursing histories of intensive care promote both continuity of practice and acceptance of newly acquired roles and tasks. For example, Fairman proposes that the traditional nursing practice of triage and observation provided the model for the care of the critically ill in intensive care units, which ‘emerged as architecturally discrete areas imitating nurses’ spatial arrangement of unstable patients’.36 At the same time, Vicki Wilson recounts an ‘explosive growth of skills, talent, and knowledge’, and Joan Lynaugh that, ‘Leaders in the field recognized the imperative to reorganize nursing practice and education since the intensive care concept relied entirely on the ability of nurses to assume new and demanding roles [my emphasis]’.37 Although nurses had experience in the care of the critically ill,

32 Fairman, 1992, p. 56.
36 Fairman, 1992, p. 57. This argument is also found in Fairman and Lynaugh, 1998: ‘Two very old ideas [intense observation and triage] were combined and refined to form the new idea of intensive care’, p. 12.
increasingly complex surgery created an unfamiliar kind of patient. For example, Fairman and Lynaugh report that between 1950 and 1960, the surgical case load at the Hospital of the University of Pennsylvania changed from predominantly minor surgery (appendectomies, tonsillectomies) to an equal number of major surgical procedures (coronary valve replacements, cancer resections). These patients had new needs. Such continuities and change in practice have proved fertile ground for academics combining nursing and historical scholarship. Review essays by Janet Wilson James and Patricia D'Antonio have traced the shifts in history of nursing, identifying two major approaches – the progressivist account that works as a professionalising force, and the revisionist social histories led by issues of race, class and gender. Wilson James writes, 'Until recently the profession has had its past to itself and made the same use of it as other professions do, to enhance status and raise morale'. But in the 1980s, social historians became interested in nursing history, bringing perspectives from women's history and labour history, for example. Fairman and Lynaugh's book is cited as a product of a third phase – 'historically trained nursing researchers, producing interesting and stimulating work'. Thus, analysis of the challenges, negotiations and contingencies of the developing specialty is set within enduring nursing values and principles.

Finally, Patricia D'Antonio calls for more systematic attention to 'the processes of doctoring and nursing [her italics]', and there is reason to think that this might offer a helpful perspective. It expands upon the institutional or biographical histories of nursing, illuminating clinical practice, and acknowledges the influence of social factors such as gender, class and the local (hospital) politics and geography. Consequently, the study of practice forms a significant part of my thesis, and was investigated in oral history interviews with questions such as, 'How was work divided between practitioners in the unit?' and 'How were decisions made?'

**Case studies**

A few British case studies were identified in secondary literature searches, notably Helen Sweet's Masters dissertation and Jennifer Beinart/Stanton’s work on intensive care in Oxford, 38 Fairman and Lynaugh, 1998, p. 29.

39 Wilson James, 1984; P D'Antonio, 'Revisiting and rethinking the rewriting of nursing history', *Bulletin of the History of Medicine*, 1999, **73** (2): 268-90. I am grateful to Christine Hallett for drawing my attention to this literature.

40 Wilson James, ibid, p. 571.


and short historical reviews of units at Whiston Hospital, Prescot, and Ham Green Hospital, Bristol. Helen Sweet’s Oxford case study effectively counters the inevitability in progressivist accounts of the history of intensive care. She demonstrates how hospital economics, internal disputes and an initial lack of rationale for intensive care were decisive in the development of Oxford’s units. Economics were ‘highly instrumental in deciding rate and timing of development’, she argues, as the building of new units had to compete with requisitions from other departments. Internal dispute over the relationship between intensive care and the Accident Service (a six-bed unit from 1944/5) and the Respiration Unit (a six-bed ward from 1955), with the difficulty of being able to ‘rationalize the creation and funding of a new version elsewhere’ further protracted negotiations. A purpose-built general adult intensive care unit, planned from 1965, did not open until April 1972.

As seen here, case studies can reveal the influence of individual actors, such as J C Scott, the Accident Service director, who wanted to maintain his autonomous unit. Julie Fairman suggests that recent literature has ‘swung perhaps too far in the direction of sociological context, minimizing the importance of the community of local actors and obscuring their influence...the mesh of local actors within the social context of the times provides, perhaps, a richer story’. Her account of the development of intensive care at Chestnut Hill Hospital, Pennsylvania, draws on the parts played by the Chief of Medical Staff, the Director of Nursing, and the Hospital Administrator. The approach perfectly captures local contingencies, although care should be taken not to ascribe reasoning to an actor’s decision without accompanying evidence. Joel Howell uses hospital case studies for the benefit of local as well as national stories, suggesting that, ‘Looking inside a hospital, one can explore the ways in

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44 Sweet, 1994, p. 65.


47 Fairman, 2000, p. 104.
which specific institutional and organizational innovations were played out’. In British case studies, some of the most interesting material concerns local circumstances, such as the team of builders, fitters and electricians that converted a derelict ward at Whiston Hospital to a new intensive care unit within six weeks. Or that Ham Green Hospital, alleged to have the first intensive care unit in the West Country, achieved the accolade by chance – as the only centre in the area with both respiratory and renal support. It may be difficult to generalise from case studies – they do not provide a ‘big picture’ history. However, identifying exceptions and commonalities between case studies enable it to become more than the specificities of the case, placing it within a broader British context.

Finally, case studies are a source of quantitative data, useful if other sources such as annual reports do not list the required data. While the secondary literature is relatively small, unit reviews published in the Nursing Times are a rich source for local examples and detail.

Jennifer Stanton’s short outline of intensive care in Oxford, published in 2005, is contained within a wider chapter on the subject of measurement and audit in intensive care. The chapter reviews the historical development of intensive care, noting many familiar features: the multiple origins of intensive care, Progressive Patient Care, societies, conferences and journals, intensivists, patients who neither died nor recovered, and the role of local needs and interests. She also proposes three phases of policy development: a period of solid ‘central involvement’ from 1962-70, contrasted with a ‘hands-off phase’ through the 1970s and early 1980s, followed by a greater degree of central concern from the late 1980s to the present. Stanton’s final phase is beyond the scope of my thesis, but her suggestion that government policy played an important role in the period 1962-70 deserves investigation. The extant secondary literature shows that while the Ministry/Department of Health certainly tried to give policy guidance in this period, it was not formally issued until the Hospital Building Note on intensive care units was published in 1970. By this time, as Sweet, Gordon and Sherwood Jones, and Hart have shown, many ad-hoc units had been in operation for nearly a decade, and purpose-built units since the mid-1960s.

50 Hart, 1999, pp. 66, 68.
52 Ibid, p. 252.
**Hospital and health care technology**

Literature on hospital and health care technology offers ideas and approaches of use for my thesis. Firstly, it is important to note that technologies each have histories predating their application in intensive care units. Jennifer Stanton, in a chapter for the edited volume *Medicine in the twentieth century*, describes resuscitation and ‘life-restoring systems’ in the later eighteenth century, and suggests we ask, ‘at what point, and to what extent, there has been anything new or characteristically twentieth-century in this line of supported lives’.53 Secondly, it presents two possible approaches for further enquiry – a study of medical innovation, and social construction of technology. Collections on medical innovation edited by John Pickstone and Jennifer Stanton demonstrate the processes of innovation, diffusion, uptake and resistance.54 Joel Howell employs the method in his book *Technology in the hospital*, by seeking to identify routine use of medical machines, and explanations for how and why technology became ‘part of the familiar fabric of medical care’.55 He does this in a number of ways: quantitatively from medical records, and as identified by factors such as clinically indicated use by full-time salaried specialists and technicians.56 The method is more easily applied to single, well-defined entities, than whole services such as ‘intensive care’.

Social construction of technology approaches also recognise that medical technologies are not autonomous, but are used within social systems. In particular they examine the processes of use and user – another method employed by Howell. For example, he writes, ‘Although they were constrained by the physical artifacts at their disposal, those practitioners made choices; they determined the ways those artifacts would be used and how meaning would be derived from what they found’.57 I have utilised both these approaches, particularly in the object-led prefaces to chapters.

**Life and death decisions**

The issue of life and death decision-making in the intensive care unit has received much attention from social scientists, but little in the historical literature. Nursing historians have written about triage, but the emphasis on continuity of practice prevents assessment of change over time, or modification demanded by new clinical situations. Historicising the


56 See for example his chapter on ‘Clinical use of the x-ray machine’, ibid, pp. 103-32.

process and principles of intensive care decision-making makes an important contribution to understanding the present day picture (and implications for future development of intensive care), and I have used the secondary literature to identify two features that particularly benefit from historical representation: admission criteria, and withdrawal of life support. On admission criteria, the current literature suggests admission was based on the notions of reversibility and salvageability, but that this was subjective and open to negotiation. On the subject of the withdrawal of life support, James Hassett evokes the impact of societal expectations when he says, 'The basic social pressure is to apply the technology indiscriminately and to continue its application regardless of the result or cost...However, we have neither the social mandate to discontinue support nor the resources to continue it without denying its use to subsequent patients'.  

58 Hassett, 1984, p. 102.

Patient experiences
The psychological impacts of intensive care have been similarly overlooked by historical analysis. Chapter 5 draws on primary medical literature of the 1960s and 1970s to demonstrate practitioners’ concern for patient welfare from this period. The use of patient narratives is discussed in section 1.5 on sources and methods.

1.4 Inclusions and exclusions
I have chosen to focus on general, adult intensive care because its history has not received in-depth attention. Consequently, there are two main areas of intensive care that I will not cover – neonatal intensive care and coronary care – and two allied services that I will also exclude – emergency medicine and renal units.

Neonatal and paediatric intensive care

60 In its development as a specialty, it has
had much in common with adult intensive care. It is multidisciplinary, involving obstetricians, paediatricians, nurses, pathologists and physiologists. Like adult intensive care, roles and responsibilities were contested. ‘Time and time again the opportunity was there for advances in the care of the newborn’, remarked paediatrician Ross Mitchell, ‘but either the obstetrician or in other cases the paediatricians, wouldn’t work closely as a team’.61 At issue was the need to care for both mother and baby, and according to paediatrician Harold Gamsu, the ventilator held the key to a change in relations:

‘But in the late 1950s, when we [paediatricians] had the facility to give positive pressure ventilation, initially via a face mask, and were able to convert a previously apnoeic [non-breathing] limp baby into one that was lusty and crying, was the first time we demonstrated our bona fides to our obstetric colleagues and we were no longer persona non grata in the labour ward. That was a really important change and the most recalcitrant obstetricians, whom I certainly won’t name, had to admit that we paediatricians might be of some use, and relinquished their responsibility for the newborn’.62

There were two other notable similarities between neonatal and adult intensive care. The first was the importance of nursing, and vigilant observation of patients. In both specialties, continuous monitoring was seen as a definitive feature of intensive care.63 The other was the study of physiology: of the newborn, and of adult critical illness. But there were also significant differences, and it is for these reasons that I shall not include neonatal and paediatric intensive care in my account. Foremost is the fact that neonatal intensive care had a different set of concerns. As mentioned, the care of mother and baby went hand-in-hand, but even within care of the newborn (and particularly preterm), many pathologies were unique to that age group (respiratory distress syndrome caused by a lack of surfactant, and haemolytic disease of the newborn, for instance). The other fundamental difference was that premature baby units, and later special care infant units (for full-term babies), developed within maternity units, a specialised part of the hospital. General, adult intensive care units catered for the whole spectrum of adult hospital patients – male/female, young/old, medical/surgical.


61 Christie and Tansey, 2001, p. 27.
62 Ibid, p. 28.
63 See for example the definition of neonatal intensive care discussed during the setting up of the witness seminar, ibid, p. 5, footnote 10; and ‘Large format charts and patient monitors, 1962-73’ in this thesis.
Coronary care

Coronary or cardiac care units were contemporaneous with intensive care – the earliest units opened in 1962-3 in Toronto, Kansas City, Philadelphia, Melbourne and Sydney. The secondary literature suggests there was less enthusiasm for them in Britain than in America, Australia and New Zealand where they were more extensively promoted. I have chosen to regard them as beyond the scope of this thesis because of their differences from general, adult intensive care. Firstly, they were established to care for one specific patient group: those admitted to hospital after a heart attack, by one specialist doctor: the cardiologist. In the 1960s, nearly one third of patients admitted to hospital after an acute myocardial infarction died in hospital, most from sudden and unpredictable arrhythmias. The mortality rate was a cause for concern. 'Our surgical colleagues would never accept a mortality of this magnitude and would certainly mobilize personnel and technique to bring such figures down', wrote leading cardiologist Gunnar Biörck in 1960. The problem was that seemingly stable patients were being admitted to private rooms or side wards for quiet bed rest (to reduce cardiac load), and then dying of undetected complications. This could be prevented if patients were located in one place, with nurses for constant surveillance, prompt detection of potentially fatal arrhythmias, and immediate initiation of lifesaving action. This then was the second difference between coronary and general intensive care units – nursing practice in the former had a greater emphasis on monitoring and resuscitation. Nurses needed the knowledge and judgement for instant recognition and treatment of arrhythmias, and in many units, were trained to perform defibrillation. 'It is in these precious moments that the patient’s life may literally be in the hands of the nurse', wrote Clarence Imboden (chief of the US Public Health Service’s coronary section) and Jane Wynn (nursing consultant for the Service). According to most secondary literature on the history of intensive care units, nurses were responsible for recognizing and treating life-threatening arrhythmias.


67 Zalumas, 1995, p. 44. Large scale studies in the early 1960s showed that patients were most at risk within 48 hours of the heart attack, so were admitted for a minimum of two days’ observation. See T Quinn, D Thompson, ‘History and development of coronary care’, Intensive and Critical Care Nursing, 1999, 15 (3): 131-41, p. 133.

coronary care, Lawrence Meltzer and J Roderick Kitchell in Philadelphia pioneered the training of nurses in detecting arrhythmias and performing defibrillation. In a 1965 paper on the planning of their unit, Meltzer anticipated that nurses would assume these roles, but gave a different account in 1972:

‘Informal attempts were made to monitor and treat selected patients (using makeshift equipment) by having a rotating team of house officers remain in constant attendance in the unit. The results were dismal: the resident physicians were hopelessly bored with the inactivity and the seemingly endless vigil, and it became necessary to discontinue the effort abruptly to avoid (what now would be called) a demonstration. By default, a system of specialized care was then conceived wherein nurses rather than physicians assumed the primary responsibility for surveillance as well as for emergency treatment’.69

Whether by intention or default, nurses did take on these roles and responsibilities, and consequently coronary care differed significantly from general intensive care. But not every hospital could afford a separate space. In British district general hospitals it was common to care for coronary patients in the general intensive care unit, preferably in a cubicle or one of the isolation rooms, the rationale being to provide a quiet space for patients who were conscious and likely to be disturbed by the noise and activity in the rest of the unit. The question of whether general intensive care nurses were skilled and experienced enough to use these techniques is discussed in Chapter 4.

Thirdly, as hinted at above, patients tended to be alert rather than comatose or sedated like many patients in general intensive care. They were in need of psychological and physical rest – not to be disturbed by noise or bright lights, nor witnessing people being resuscitated or dying. They had particular social and emotional needs to be met by nurses’ explanation and education. ‘By the time the patient is transferred to another division, he has been helped to accept his condition and has learned the reasons for the therapy used’, wrote Meltzer and Kitchell’s colleague, Rose Pinneo.70

A final difference was that the establishment of units was motivated by research as much as clinical need. The coronary care unit founded by Meltzer, Kitchell and Pinneo at the

Presbyterian Hospital in Philadelphia in 1962 was opened as a cardiac research unit. It was one of many Myocardial Infarction Research Units created in the US at this time, with a programme of research that enabled ‘more precise delineation of the various haemodynamic subsets of patients with myocardial infarction’.\textsuperscript{71}

**Emergency medicine**

A thesis about intensive care might conceivably cover all locations in which care is provided for the critically ill. It could include military as well as civilian institutions, and the places in which care for the critically ill becomes palliative care. It could also include the transport of the critically ill in road or air ambulances, and ‘mobile intensive care’ for patient transfer between hospitals. The scope could be narrowed by limiting it to hospital care, but it would still include the accident and emergency department, and resuscitation on wards, as seen in the definitions of critical care discussed in section 1.2. It could further include the more recent innovation of outreach care to wards — early intervention to prevent escalation to critical illness. In the 1960s, emergency admissions and postoperative recovery rooms were considered ‘other forms of intensive service’, not precluded by provision of intensive care units.\textsuperscript{72} I use this definition to limit my thesis to the development of intensive care in intensive care units.

**Renal units**

The relationship between renal units and intensive care is difficult to generalise. It depended to a large extent on whether the hospital had a renal unit (they tended to be regional referral centres), and where the boundaries were drawn between the work of the renal physicians and the work of the intensive care unit. Acute renal failure was frequently accompanied by respiratory difficulties. Mechanical ventilation in combination with dialysis was found to improve results, particularly if instituted early, before the development of irreversible complications.\textsuperscript{73} Ventilators, and the expertise in managing the machines and ventilated patients, were located in the intensive care unit, and some considered it prudent to move the patient there, rather than the ventilator to the renal unit. Most intensive care units carried out peritoneal dialysis – using the peritoneal membrane to filter the blood rather than an external membrane – managed by nurses.\textsuperscript{74} A few intensive care units had provision for haemodialysis. The unit at St Thomas’ Hospital, London, had a separate dialysis room with

\textsuperscript{71} Julian, 1987, p. 499.


\textsuperscript{74} See for example Hart, 1999, p. 67; Oral history interview, A Gilbertson, pp. 9-10.
bed-weighing scales built into the floor (for fluid balance calculations), used by the renal team working together with unit staff.\textsuperscript{75} Elsewhere, renal physicians worried about losing responsibility for acute renal failure cases, or argued that dialysis was only part of the overall management of the condition, and continued to treat them in specialised renal units alongside patients with chronic renal failure.\textsuperscript{76} In the 1980s, continuous veno-venous haemofiltration was marketed directly to intensive care units. I have chosen not to consider this aspect of intensive care further, particularly as it features in a chapter of John Turney’s forthcoming thesis on the history of dialysis.\textsuperscript{77}

1.5 Sources and methods

Sources – archives, journals and newspapers

I have used a wide range of primary sources in my research – archives, journals, newspapers, films, photographs, oral history, objects and trade literature. Each poses particular methodological challenges, which I engage with in the body of the thesis. My approach has been to use a variety of sources as additive and to explore the changing material culture of intensive care as fully as its social, cognitive and emotional cultures. My main archival sources have been the National Archives at Kew for minutes and papers from the Working Party on Progressive Patient Care and the Standing Nursing Advisory Committee, and the archives of the Intensive Care Society, held at the Association of Anaesthetists of Great Britain and Ireland. Correspondence and papers have also been consulted from the archives and special collections at the Science Museum (London), Leeds University Library, the Royal College of Nursing, and the Health Management Library (Edinburgh). In addition, oral history interviewees Pat Ashworth and Sheena Ross kindly shared material from their private collections. I have also relied heavily on journals as a source of primary material. Articles were identified using PubMed and ISI Web of Knowledge databases, spanning general medical, nursing, anaesthesia and intensive care journals. I chose not to use hospital administration journals as the scope was already broad. Using keyword searches, I surveyed The Guardian and The Observer newspapers through the ProQuest database for the period 1 January 1948-31 December 1969. I chose a single newspaper to sample reporting of matters related to intensive care during the period in which units were first being established, and

\begin{itemize}
\item \textsuperscript{75} G T Spencer, S Smith, 'Intensive therapy unit: Mead Ward, St Thomas’s Hospital', Nursing Times, 1966, 62 (46): 1519-22, p. 1519; Oral history interview, G Spencer, p. 11; Oral history interview, R Tierney, pp. 7-8, 11.
\item \textsuperscript{77} J H Turney, ‘Britain’s first Artificial Kidney Unit: the establishment and development of dialysis at Leeds (working title)’, PhD thesis, University of Manchester, forthcoming.
\end{itemize}
this particular newspaper because of its reporting from Manchester and the North West (with the potential to lead to archival sources in my local area).

Sources – films and photographs
In April 2009, I visited the National Library of Medicine in Bethesda to use their audiovisual collections. My interest was in the instructional films of the 1970s and 1980s, produced to train doctors and nurses in techniques for the care of the critically ill. These films were shown at the World Congresses of Intensive Care, ensuring circulation of practice. Because of limited research time, I was only able to view a fraction of the titles identified in a catalogue search (those viewed are listed in the Bibliography). A search for British films was less productive – a number of titles were identified from the BFI Film and TV Database, but the BFI National Archive did not hold viewing copies. An oral history participant, Sheena Ross, kindly shared her own copy of Practical techniques for nurses in training: intensive care after major heart surgery (1971), in which she appeared. A number of people also shared photographs, many of which are reproduced in this thesis.

Sources – oral history interviews
I chose to conduct qualitative, oral history interviews with practitioners because I felt that representing their experiences in their own words was essential to this project. It offered insight into how they conceived of their contribution to the development of the specialty, at a personal rather than institutional level. Importantly, it also enabled me to investigate genuine practice (or recollections of such) rather than published ideals – for example everyday routines of tasks and responsibilities.78 In pragmatic terms, the oral history of this generation needed to be recorded now, while participants were still available for interview, and had retained personal documentary sources not kept in other archival repositories.

I interviewed fifteen doctors and seven nurses, but chose not to interview patients. Critically ill patients’ narratives are rare – ‘the missing voice of the critically ill’.79 A number of methodological reasons account for this. Firstly, and most importantly, research suggests that critically ill patients commonly have complete or partial amnesia.80 Others have delusional

78 Medical and nursing records could also perform this function, but I did not have time to locate and use them.
memories such as hallucinations or bad dreams.\textsuperscript{81} An explanation is the severity of illness, and the heavy use of sedation and analgesia, particularly in ventilated patients. Brigit Roberts and colleagues conducted a study of factual memories two years after discharge, and reported that over one-third of patients had some degree of factual memory of intensive care. In a thematic analysis, memories of procedures, staff and comfort (security, pain, thirst etc.) were recalled most often.\textsuperscript{82} Much of these memories related to feelings – how they felt then and now. But as the use of diaries in intensive care units demonstrates, patients do not have full awareness of the sequence of events, what might be termed the ‘ICU course’.\textsuperscript{83} David Rier describes how even when awake he was not fully alert, and observations of the surroundings were limited by being ‘tethered to the respirator’.\textsuperscript{84} These patchy recollections are best summed up by Peter J Papadakos, who concludes that ‘the majority of patients seem not to have a structured memory of their ICU stay’.\textsuperscript{85} A second methodological limitation, beyond cognitive ability or quality, is that patients may be remembering what they have been trying to forget. Being in intensive care is very often distressing, and research suggests that remembering can be an ‘undoing of the temporal separations on which recovery is premised,’ disrupting previously ‘sealed-off’ episodes.\textsuperscript{86} Thirdly, there are the drawbacks of oral history more generally: a selective recall for negative events or experiences, and the likelihood of retrospective accounts having been ‘worked through’ over time. A means of verification or corroboration, or further evidence in itself, could come from patients’ families, but they are only partial witnesses. As David Rier testifies, ‘staff often shoo visitors out of the room during key moments’.\textsuperscript{87} For these reasons I chose not to use oral history interviews as a way to capture patients’ experiences of intensive care. Instead, I investigated their perspective indirectly, by asking how patient experiences of intensive care became a concern, and for whom. I had also intended to interview technicians, but found they were difficult to recruit. Few had worked solely for the intensive care unit, and although many doctors and nurses

\textsuperscript{82} Ibid, pp. 1670, 1674.
\textsuperscript{84} Rier, 2000, p. 70.
\textsuperscript{87} Rier, 2000, p. 84.
recalled the technicians they had worked with, they were no longer in contact. As one of the inclusion criteria for interview was to have worked full-time in intensive care, I decided to exclude technicians in this instance.

With approval from the research ethics committees of the Universities of Manchester and Sydney, I conducted twenty-one oral history interviews and one further interview by correspondence. This sample was sufficient to reach saturation of themes. I interviewed ten participants in Australia because I wanted to understand how and why Australian clinicians specialised as ‘intensivists’ in the late 1970s, while British clinicians did not – a specific area of research for Chapter 7 of my thesis, that I felt was not transparent enough in the existing literature. Participants were recruited through word of mouth networks using existing contacts and participants (‘snowballing’). In the period leading up to the interview, I undertook preparatory research such as reading participants’ publications, and familiarising myself as far as possible with the history of the units at which they had worked. This enabled me to develop informed, meaningful questions, tailored to their individual expertise, and to avoid redundancy across interviews. During the interview, it helped me probe topics more deeply, and follow their train of thought, seeking clarification where necessary (especially if conflicting with other sources). The first interviews were considered pilots, in the sense that methods and interview schedule were open to improvement. I found some lines of questioning more fruitful than others, and I wanted to be flexible and responsive to these findings.

Procedures for the interview were as follows. I used a prompt sheet of fifteen to twenty open questions to conduct semi-structured interviews. In planning the questions I found David Silverman’s book on qualitative research particularly informative. For example, it encouraged me to carefully consider the order of questions – so I asked participants to describe their practice before discussing the specialty of intensive care to allow actors’ categories to emerge in the first half, rather than for them to fashion the category from my terms. I was then able to observe which categories they used, and how. A list of the most frequently asked questions is given in Appendix A. All interviews were recorded on a battery operated digital audio recorder, and duration ranged from 59 to 103 minutes.

Interview processing began with all digital recordings being transcribed by a professional with experience in medical history interviews. I used the British Library’s Guidelines for

transcription of oral history interviews as a style guide. All transcripts were checked for accuracy by playing the digital audio file while reading the transcript, and then sent to participants for their review and final sign-off. With their co-operation, any points of correction or clarification were enclosed in [brackets] to separate them from dialogue. To help readers (as opposed to listeners of the digital audio file), small modifications were occasionally made, such as excluding false starts, repetitions, and spoken pauses such as ‘um’. Anything inaudible was marked [inaudible], and any text removed at the request of the participant marked [removed]. Non-verbal communication such as laughter or gestures e.g. pointing to a feature of a photograph was enclosed in (parentheses). Analysis of the transcripts comprised content analysis to look for frequently occurring themes, and for evidence to challenge or corroborate findings from other sources. With written permission from participants, audio data files and transcripts will be placed in a publicly accessible archival repository.

Sources – objects and trade literature
Museum collections and trade literature were a further primary source. I used them to study the technology of intensive care, with particular regard to use and users. Like the instructional films, I wanted to consider how practitioners learned to use the objects (through trade literature and instructions), but also how they were utilised in the intensive care unit, and whether they were modified as a consequence of use (through examination of objects and oral history interviews). I visited a number of collections for research: the Wood Library-Museum of Anesthesiology in Park Ridge, USA; the National Museum of Anaesthesiology in Santiago de Compostela, Spain; the history of anaesthesiology and intensive care medicine collection at The Josephinum, Vienna; the Heritage Centre at the Association of Anaesthetists of Great Britain and Ireland; the Science Museum, London; and the Dr Charles Foster display cabinet in the Department of Anaesthetics, St Thomas’ Hospital, London. Other collections in Germany were identified but not visited (the Horst-Stoeckel-Museum for the History of Anaesthesia, Bonn; Narkose und Schmerztherapie Museum, Berlin). The significant literature on museum and material culture studies and history of technology informed my general methodology, but I found a series of books on American material culture studies published in the 1980s and 1990s to be the most useful and inspiring. E McClung Fleming’s chapter on a methodology for artifact study, and Thomas J Schlereth’s demonstration of the use of objects

89 British Library Sound Archive, ‘Guidelines for transcription of oral history interviews’, in ‘An introduction to oral history’ training day booklet, British Library Sound Archive, November 2009. I am also grateful to April Gage for sharing her methodology with me.

for explanations of singularity, support and superiority were particularly valuable.\textsuperscript{91} My findings are focused in the object-led prefaces to each chapter, but also feature throughout the thesis.

**Approaches**

I take a broad approach with the intention of presenting the key themes and events in the development of British intensive care, 1948-1986. Where possible, I also use particular hospitals and teams as examples, employing both the distinctive and those with commonalities and connections. The thesis centres on Britain, but the international exchange of ideas and practice has been formative in the development of the specialty. My approach is transnational – looking at the points of intersection, tracing communication and association, and seeing what moves or is exchanged. I first became aware of this methodology through Jim Secord’s keynote address on ‘knowledge in transit’, and after further reading found Stephen Casper’s paper on Anglo-American connections in neurology and the notion of a specialty’s ‘supranational’ identity to be instructive.\textsuperscript{92} Connections in intensive care are most evident in Chapter 6, with international journals, conferences, and the exchange of staff, objects and techniques. But they also play a significant part in Chapters 3 and 7, where models for the organisation and administration of intensive care are seen to move, and not move.

Finally, a note on gender. Much of the primary literature uses a convention of ‘he’ to refer to doctors and patients, and ‘she’ for nurses. For simplicity I use the same convention when referring to or discussing such literature. To some extent the generalisation is accurate for the time, although the percentage of male and female patients in general intensive care units (as opposed to coronary care units) was broadly equal. At various points in the thesis a deeper analysis of gender roles and relationships would advance understanding of the development of British intensive care. This would require more time than was available, especially since it would need a close reading of sources for inferences and implications. Some examples have been more noticeable, and dealt with by other scholars – for example blurring of doctor-nurse roles in a specialist unit, and the juxtaposition of technology and care (considered further in Chapter 4). Other matters have only been hinted at in one or two


sources or ‘off the record’ conversations – such as harassment of staff in units that were geographically and professionally isolated from the rest of the hospital, and the notion that the pioneering of the specialty demanded doctors who could dedicate their evenings and weekends to work. I have taken such factors into account as far as sources and time would allow.

**Chapter structure outline**

The thesis is broadly chronological, beginning in Chapter 2 with an examination of how care of the critically ill was organised and delivered during the 1950s. Continuities and change become evident with Chapter 3, which describes the pilot intensive care units of the early 1960s and the role of government policy in their establishment. The shift from intensive nursing care to intensive therapy c.1967 is analysed in Chapter 4, with attention to the impact on specialist nursing. Objectification of the critically ill as potential organ donors, a debate running from the first heart transplant operation in 1968 through to the 1970s, is countered in Chapter 5 by evidence of concern for patient welfare, and measures to address adverse effects. Attention turns from patients to practitioners in Chapter 6, where it is argued that the creation of a professional community during the 1970s was particularly important for a small, multidisciplinary branch of medicine. Its status as a specialty was not granted until 1999, so Chapter 7 considers the development of the first specialist training posts for doctors in 1986, and the ways it was informed by support and resistance to the notion of the intensivist. Themes are reviewed in the final chapter, before ending with suggestions for further work. Chapters 2-7 are preceded by short pieces inspired by objects. Starting from an object discovered during research, they introduce and exemplify themes from the chapters they preface. The objects are high tech and low tech, large and small, personal and institutional, and very often contentious.
Chapter 2: Care of the critically ill in the 1950s

The Engström universal respirator, 1954

Figure 2.1: Engström universal respirator, available from 1951
‘The Rolls-Royce of their kind’, claimed Miss Barbara Johnson, nursing officer for the intensive therapy unit at Portsmouth’s Royal Hospital (Johnson, 1974, p. 64).
With the threat of epidemic poliomyelitis, 186 Beaver ventilators were built in nine weeks (Beaver, 1961, p. 22). It was proudly showcased to the Duke of Edinburgh during a visit to the National Hospital, London, in 1960.

Figure 2.2: Beaver ventilator, available from 1953

A humidifier with a kettle element for water heating (on the lower shelf) was to reproduce conditions as if breathing through the nose – 36°C and 100% humidity (Marshall and Spalding, 1953, p. 1022).

Figure 2.3: East Radcliffe ventilator, available from 1956
**Figure 2.4:** Barnet ventilator, available from 1958

Patients were often sedated for ease of mechanical ventilation, but the Barnet could be triggered by any natural breathing movement, making it suitable for weaning.

**Figure 2.5:** Bird ventilator, available from 1959

‘The “work-horse” of the unit’, asserted the intensive care unit team at the Royal Perth Hospital, Australia (Robinson et al, 1970, p. 127).
The Engström universal respirator, 1954

Carl-Gunnar Engström launched his ‘Universal Respirator’ in the *British Medical Journal* in 1954.¹ But was it, as the name suggested, truly universal? The answer is no, it was not. Engström’s seven mechanical and physiological requirements for a ventilator’s universal application in the treatment of severe respiratory paralysis did not include factors such as size, cost, duration of use, or complexity of operation, and it was these that largely prescribed use in British hospitals.

The Engström Universal Respirator was first introduced at a session of the Swedish Medical Association on 16 October 1951.² In the following autumn, it was trialled at the Blegdam Hospital in Copenhagen, where a new technique was being developed for the treatment of respiratory paralysis caused by poliomyelitis, and it proved to be the only mechanical ventilator appropriate for treatment of the most severe cases.³ Uniform ventilation of the lungs, without harm to the airways, lung tissue or circulatory system were among Engström’s seven features necessary for universal application, and he noted the successful use of his ventilator in respiratory paralysis caused by polyradiculitis (an inflammatory disease of the nervous system), barbiturate poisoning and head injury.⁴ In Britain it was favoured for ventilatory support in the immediate postoperative period after cardiothoracic surgery.⁵ But a number of factors prohibited its more universal application in British hospitals. Firstly, it was very large and very expensive compared to ventilators such as the Beaver, East-Radcliffe, Barnet, and Bird ventilators. The first three were developed in Britain – London, Oxford and Barnet respectively – while the Bird was popular in America and Australia. Secondly, the smaller ventilator was considered more suitable for prolonged ventilation (required by patients with poliomyelitis or tetanus) because it could be tucked away at the bedside. ‘The

² Ibid, p. 666.
temporary fashion for vast monsters has waned’, wrote the eponymous R A Beaver in 1961.\textsuperscript{6} Lastly, while the sophistication and reliability of the Engström was valued during surgery, such technological complexity was not always clinically necessary in other situations.

Consequently, doctors, nurses and technicians had to learn how to use all the different ventilators employed in their unit. At least four methods of induction were available – learning from each other, from manufacturers’ representatives, from instruction books, and after 1959 from Bill Mushin and colleagues’ unrivalled textbook \textit{Automatic ventilation of the lungs}.\textsuperscript{7} Anaesthetists, with experience of ventilators in the operating theatre, were very often responsible for teaching nursing staff, formally or on-the-spot as needs demanded. In interview, Tony Gilbertson recalled that every time there was a change of nurse (with change of shift), he would have to explain how to manage the ventilator.\textsuperscript{8} Or on night duty, ‘you probably learnt from the nurse who’d learnt from the anaesthetist...handed down’, explained nurse Roisin Tierney.\textsuperscript{9} In time, with their one-to-one experience with ventilated patients, nurses became the teachers for junior doctors on rotation through the unit. Manufacturers’ reps, although primarily sales-oriented, also offered training.\textsuperscript{10} Other accounts describe practitioners’ late-night, solo initiation by means of the instruction book, such as this extract from an interview with Australian intensivist, Geoff Clarke:

\begin{quote}
'I went back, asked the sister to bring me a Bird machine and a manual. She went off and I took over breathing the patient [with manual ventilation]. And she came back with a big cardboard box with bits and pieces in it, and a book. And this was about twenty past eight at night, and by one o’clock in the morning, I considered I knew more about Bird machines and ventilation than anyone else in the universe. And the patient did very well, and from that day on I was asked by all the other residents if anyone needed ventilating to come and set up for them'.\textsuperscript{11}
\end{quote}

\textsuperscript{6} R A Beaver, ’The design and application of positive pressure respirators’, \textit{Postgraduate Medical Journal}, 1961, \textbf{37} (423): 22-5, p. 24. The Blease PulmoFloator (available from 1950) and the Smith Clarke-Cape ventilator (available from 1955) were as large as the Engström.


\textsuperscript{8} Oral history interview, A Gilbertson, p. 3.

\textsuperscript{9} Oral history interview, R Tierney, p. 3.


\textsuperscript{11} Oral history interview, G Clarke, p. 1; for a similar experience with a student nurse see V Wiles, K Daffurn, \textit{There’s a bird in my hand and a bear by the bed – I must be in ICU: the pivotal years of Australian critical care nursing}, Sydney, Australian College of Critical Care Nurses Limited, 2002, p. 90.
At Kingston Hospital, Dr A G Doughty produced a ‘Teach Yourself with the Bird Mark 8 Ventilator’ booklet, and other hospitals carried instructions in nurses’ training manuals, but the essential tome was ‘Mushin’s book’, *Automatic ventilation of the lungs*, with its chapters on each machine.12 Educational films offered demonstrations of the ventilators in practice.13

Experience was gained in the performance and physiological effects of automatic ventilators through trial-and-error. Design failures were quickly identified, and corrected by the manufacturers or local engineers and tradesmen. Early ventilators were not designed on the basis of clinical criteria, but evolved from engineering solutions to the problem of mechanical ventilation. Requirements emerging with clinical experience were met by ‘modifications and add-ons’, and later redesign.14 Iatrogenic infection improved with the use of filters and autoclavable circuits, but operator error was still a risk.15 Determining the appropriate settings for individual patients with particular respiratory conditions was one of the most difficult learning processes for intensive care practitioners. There was little formal training for the prescription of ventilator therapy, so indications for use were shared through journal articles, meetings and informal networks. Debate was intense as the benefits were lifesaving but the risks potentially fatal. Incorrect ventilation could have serious effects on the circulatory and renal systems, leading to cardiac arrest or renal failure. Barotrauma (pressure damage) could also be devastating. Providing sufficient ventilatory capacity to manage crushed chest injuries led to trials with high inflationary pressures: ‘Efforts were only

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13 See for example the *Nursing Times* review of ‘They breathe again’, a 21-minute film about the nursing of patients with poliomyelitis. ‘Teaching films: They breathe again’, *Nursing Times*, 1960, 56 (24): 727. See also J P Baker, John Sutherland Productions, National Medical Audiovisual Center, ‘Intensive respiratory care’ [25 minutes], Bethesda, National Medical Audiovisual Center, c.1968, National Library of Medicine, Bethesda.


15 Operating instructions for the Bennett MA-1 respirator noted that, ‘with the exception of the thermometer, all parts of the unit in the patient circuit are autoclavable’. See Bennett Respiration Products Inc., ‘Operating instructions: Bennett Model MA-1 Respiration Unit’, 1967, 48pp., p. 9, Wood Library-Museum of Anesthesiology, Park Ridge.
discontinued when these pressures burst the lung’, wrote anaesthetists Harry Windsor and Brian Dwyer.\textsuperscript{16}

Production of a universal ventilator was impossible without knowing which variables were important to the management of each condition. The technology was readily available, as the construction of ventilators as an engineering solution testified. But in the rapidly growing discipline of intensive care, it was hard to specify the features that would prove to be of lasting clinical value.\textsuperscript{17} A range of ventilators, while challenging for inexperienced users, offered the versatility required by this nascent medical specialty.


\textsuperscript{17} Hayes, 1982, p. 179.
2.1 Introduction

Seriously ill people have always been a part of the patient population. From the beginning of hospitals, people with acute life-threatening conditions have been a proportion of the total number of inpatients. So what was the provision for their care at the dawn of the National Health Service in 1948, when this thesis begins? Most were situated in the traditional 30-bed Nightingale wards, and if there were enough nurses, they were ‘specialled’ – receiving one-to-one care from an assigned nurse, segregated from other patients. A number of other places for ‘special care’ were also emerging within the hospital – the postoperative recovery room, one or two-bed surgical side wards, and units for patients with respiratory insufficiency or failure. Historians have described these areas as the predecessors of intensive care units, so this chapter examines how care was organised and delivered in these locations during the 1950s, and their continuities and change into the early 1960s. I will explore each in turn, but a simplified overview is given below. Progressive Patient Care (a scheme that drew on the principles of specialling), and the development of general intensive care units, is the subject of Chapter 3.

**Figure 2.6:** Simplified overview of British intensive care in the 1950s

There are issues with the word ‘intensive’ in this chapter. It was not an important actors’ category in the 1950s, when ‘special’ and ‘specialling’ were preferred. Indeed the term
‘intensive care’ only achieved currency and stability from the early 1960s. Hence, my use of the term ‘intensive’ in this chapter is largely descriptive rather than definitive.

2.2 Specialling

In general hospital wards in the 1950s, critically ill patients needing special care were located in close proximity to the nursing station, where the nurses could keep a close watch on their condition, or in a corner or side ward where the noise and drama of a lifesaving intervention would not physically or emotionally disturb other patients. Vigilant observation was accompanied by intensive and time-consuming nursing care, and the use of machines when available, such as ventilators or suction apparatus (for clearing the airways of mucus and other secretions). The number of nurses assigned to specialling varied according to clinical need and hospital budget. Around 180 ‘special’ nurses were used per month at Glasgow Royal Infirmary until a small intensive care unit opened in 1963, and the number fell to fifteen per month.\(^{18}\) This provision of specialling was limited by postwar nursing shortages, and hospitals had difficulty finding enough qualified staff to meet demands. Very often the job was assigned to student nurses, looking after more complex patients as they grew in seniority.\(^{19}\)

Special care of the critically ill was dramatised in the twice-weekly television serial *Emergency – Ward 10*, the ‘UK’s first hospital soap opera’.\(^{20}\) The serial was produced by Associated Television for ITV, and was broadcast live from February 1957 to June 1967, attracting 24 million viewers at its peak.\(^{21}\) Stills from the programme were reproduced in the *Nursing Times* in January 1959, including one depicting a nurse specialling a patient attached to a Beaver ventilator (see Figure 2.7 below).


\(^{19}\) Oral history interview, R Tierney, p. 18. In America, private duty nurses were hired by the patient’s family to provide extra nursing care for critically ill patients. They had the prerogative to refuse certain assignments or unpopular shifts, and unfilled private duty requests stood at 31% in 1955. J Fairman, J E Lynaugh, *Critical care nursing: a history*, Philadelphia, University of Pennsylvania Press, 1998, pp. 61-2.


Two nursing sisters at the Frenchay Hospital, Bristol, interviewed by historian Helen Sweet, recalled the difficulties of specialling, in particular ‘the consequences of having received only minimal instruction on the operation and function of unfamiliar ventilators and monitoring equipment, or insufficient training relating to the patient’s specific nursing needs and medical demands’. For London nurse, Sheena Ross, the first experiences of specialling patients with tracheostomies and ventilators during night duty were terrifying, but with experience it became a rewarding mode of work. Caring for just one person at a time, she explained, ‘You can do everything as perfectly as you like. There’s more time. You can attend to all the little details, and you don’t usually get interrupted in what you’re doing, and it’s just very satisfying’.

Historians have considered wartime specialling to be another important precursor to intensive care, both in its techniques and organisation. At a witness seminar held in June 2010, anaesthetist Keith Sykes described how his profession learned triage, transfusion, teamwork
and monitoring in these wartime situations. The most seriously injured were identified and gathered together in trauma units or ‘shock wards’. Management of the cardiovascular system and treatment of shock (a circulatory crisis rather than psychological shock) was accompanied by close nursing observation and monitoring. Fluid resuscitation with intravenous saline solution was well established by the end of WWI, and blood transfusion made its impact in WWII, as did the use of glucose solutions, serum and plasma. Casualties in the Korean and Vietnam wars were vulnerable to other physiological crises – renal and pulmonary, rather than circulatory. The management of organ failure and shock developed in these combat situations was later applied in civilian intensive care units.

2.3 Recovery rooms and surgical side wards
Accounts of recovery rooms date back to 1801, when a group of five rooms next to the operating theatre at Newcastle Infirmary was set aside for patients recovering from surgery. In each room, one bed was for the patient and the other for the nurse. The few histories of recovery rooms also cite examples from later in the century, such as this extract from Florence Nightingale’s Notes on Hospitals: ‘It is not uncommon, in small country hospitals, to have a recess or small room leading from the operating theatre in which the patients remain until they have recovered, or at least recovered from the immediate effects of the operation’; followed by further examples from the 1920s and 1930s. But ‘modern’ post-anaesthetic recovery rooms are considered to have begun in the 1940s, such as that established at St Mary’s Hospital, Rochester, Minnesota, in 1942 – open 9am to 5pm, staffed by nurses, and

24 L A Reynolds, E M Tansey (eds), The history of British intensive care: the transcript of a witness seminar held by the Wellcome Trust Centre for the History of Medicine at UCL, The Wellcome Trust, on 16 June 2010, London, Wellcome Trust Centre for the History of Medicine at UCL, forthcoming.


equipped with suction, oxygen, and intravenous sets.\textsuperscript{29} In 1949, a paper by Charles Anderson and Edwin Miller from the Presbyterian Hospital, Chicago, was one of the first to outline advantages of the recovery room, and two years later a report on 35,000 cases in two hospitals in the District of Columbia marked the application of the concept on a large scale.\textsuperscript{30} In Britain, anaesthetists Russell Davies and J Truscott Hunter reported on 13,000 patients treated in a recovery room established in February 1946 at the Queen Victoria Hospital, East Grinstead, regarded to be the first of its kind in the UK.\textsuperscript{31}

**Recovery room principles**

Russell Davies became a leading authority on recovery rooms in the 1950s, opening the Royal Society of Medicine's Section of Anaesthetics 'Discussion on organization for immediate post-operative recovery period' in 1958.\textsuperscript{32} In the same year, he expanded upon his 'governing principles' of the recovery ward in an article for the *Postgraduate Medical Journal*.\textsuperscript{33} The nine principles reflected his eleven years' experience, and give a useful insight into the perceived role of the space. Many were also applied to the organisation of intensive care units in the following decade. To explore the principles further, I use Davies' verbatim text as a starting point, and elaborate with material from his publications, and those of his colleagues in America and the UK.

1. **The ward must be staffed for 24 hours a day**\textsuperscript{34}

   Davies was probably the first to advocate a 24-hour service, as most of the preceding American recovery rooms had opened from 9am to 5pm, or thereabouts. There were two problems with limited hours – how to manage patients who were still unstable when the ward closed, and where to place patients recovering from out-of-hours emergency surgery. A 24-hour recovery ward solved these issues and helped to reduce noise and disturbance in the general wards overnight.\textsuperscript{35}

2. **All patients who have had general anaesthesia should pass through the ward**

\begin{itemize}
  \item \textsuperscript{31} Davies and Truscott Hunter, 1952.
  \item \textsuperscript{33} R M Davies, 'Some governing principles of the recovery ward', *Postgraduate Medical Journal*, 1958, \textbf{34} (393): 373-7.
  \item \textsuperscript{34} All titles from Davies, *PMJ*, 1958, pp. 373-6.
  \item \textsuperscript{35} See for example 'Recovery room, Royal Hospital, Chesterfield', *Nursing Times*, 1961, \textbf{57} (45): 1469.
\end{itemize}
It was becoming obvious to anaesthetists and surgeons alike that the close attention to a patient's condition in the operating theatre could be lifesaving were it to be continued uninterrupted after surgery.\textsuperscript{36} Vomiting was one of the risks in the immediate postoperative period, and in 1949 Anderson and Miller had written on the importance of managing the airway until reflexes (paralysed by the anaesthetic) came back, aspiration of blood or vomit being the risk in the interim.\textsuperscript{37} This was more difficult to manage on the wards where nurses were too busy for close surveillance of individual patients. While this period was usually uneventful, Davies argued that an all-encompassing policy would eliminate the need to guess which patients would have postoperative complications, and the consequences of an incorrect guess.\textsuperscript{38} Relatives, pre-operative patients, and members of the public in corridors and lifts would also be spared the distressing sights and sounds of recovery from anaesthesia, and the patient 'returning from the theatre festooned with all the paraphernalia of modern surgery'.\textsuperscript{39}

3. The level of nursing skill should be equal to the best in the hospital
4. The nursing staff should never be moved from the ward as a group

Whether after-care was complicated or simple, 'vigilant nursing will always be required', wrote Davies.\textsuperscript{40} The ward was primarily a nursing unit, staffed by a full-time sister, state-registered nurses and orderlies. It was essential for nurses to be able to recognise the early signs and symptoms of complications – obstructions of the airway, incipient shock, and gross bleeding for example. In few other branches of medicine was it 'necessary to observe a patient from moment to moment and act unerringly, frequently at speed, upon the results of those observations', claimed Davies.\textsuperscript{41} This required a particular aptitude – 'some nurses make better recovery ward nurses than others' – that needed to be sought for in recruitment to these duties.\textsuperscript{42} Accrued experience was valued, as was the continuity of a constant standard of competence on the nursing team.

5. The level of record keeping must be high
6. The recovery ward must be close to the operating theatres
7. Resuscitative equipment must be adequate to meet all calls made upon it

Principles 5-7 reflected economies for nursing staff. One single patient record was advocated, to replace the multiple charts for admission and discharge, clinical observations, prescription

\textsuperscript{37} Anderson and Miller, 1949, p. 351.
\textsuperscript{38} Davies, \textit{PMJ}, 1958, p. 373.
\textsuperscript{39} T B Boulton in Davies, \textit{Proceedings of the RSM}, 1958, p. 155; Anderson and Miller, 1949, p. 352.
\textsuperscript{40} Davies, \textit{Proceedings of the RSM}, 1958, p. 151.
\textsuperscript{41} Davies, \textit{PMJ}, 1958, p. 374.
\textsuperscript{42} Ibid; Davies, \textit{Proceedings of the RSM}, 1958, p. 152.
Proximity to the operating theatres meant that instructions could be
given to the nurse when she went to collect the patient from theatre, and the surgeon and
anaesthetist could visit frequently and with ease, ‘and indeed it soon becomes a habit to do
so’. Nurses learned care of the postoperative patient from more experienced peers, but also
from anaesthetists, and their proximity made informal clinical training more comprehensive.
Economy of equipment was a further advantage of the recovery ward. Inventories varied
between hospitals, but included oxygen (with face masks and oxygen tents), suction
apparatus, equipment for infusions of blood or drugs, and resuscitation trays with
bronchoscope, laryngoscope, tracheostomy and endotracheal tubes. Some recovery wards
also had mechanical ventilators.

8. Medical care must be immediately available in the ward at all times
In most hospitals the anaesthetics department took administrative responsibility for the
recovery ward, occasionally shared with the department of surgery. Anaesthetists, through
their work in theatre, were expert in the care of unconscious patients, resuscitation, and use
of ventilatory support. While Anderson and Miller had reported that ‘the final word in the care
of the patient is subject to the desires of the individual surgeon’, Mr St John Birt, a surgeon
attending the Royal Society of Medicine discussion in 1958, considered it was time for
surgeons to hand over to anaesthetists the ‘treatment of the patient’s general condition in the
immediate post-operative period’. This was not straightforward, as Tom Boulton cautioned:
‘The danger of the recovery room becoming a kind of medical “No Man’s Land” was a real
one, but this had been overcome by careful co-operation between surgeon, anaesthetist, and
physician’. This could be achieved by the duty anaesthetist calling the appropriate doctor for
consultation, or by ‘meeting in the ward at tea-time, a convenient time and place to discuss
and view the day’s problems’.

9. Retention of the patient for as long as the recovery ward facilities will benefit the patient
At an American symposium in the same year as the Royal Society of Medicine meeting, John
Adriani and John B Parmley estimated length of stay in the recovery room according to
operative procedure – most returned to the ward within four hours, ‘abdominal cases’ stayed

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43 Davies, PMJ, 1958, p. 375.
44 Davies, Proceedings of the RSM, 1958, p. 152; Davies, PMJ, 1958, p. 376.
128-30, p. 128.
46 Davies and Truscott Hunter, 1952, p. 865; C Jolly, J A Lee, ‘Post-operative observation
47 Anderson and Miller, 1949, p. 352; St John Birt in Davies, Proceedings of the RSM, 1958, p. 156.
overnight or up to 48 hours, and thoracic surgery cases stayed approximately four days or until the chest drains were removed.\textsuperscript{50} Davies, in his earlier paper with J Truscott Hunter, had simply said ‘until he is fit for transfer’, but in 1958 stated that this ranged from 20 minutes to 13 days.\textsuperscript{51}

Russell Davies confidently concluded that ‘it is quite apparent throughout all these writings that the dominant theme is the life-saving effect of these wards’.\textsuperscript{52} British and American surveys on postoperative mortality suggested the facilities of a recovery room could go a long way to preventing a proportion of deaths.\textsuperscript{53} But there were also reservations about the concept: nurses on surgical wards might feel deprived of their most interesting work, fear of ‘still another specialty being created in an already over-burdened profession’, and the prohibitive cost of establishing and staffing the ward.\textsuperscript{54} For economy, many British units were converted from existing accommodation in close proximity to the operating theatre – such as the recovery room at Southend-on-Sea General Hospital, converted from two side wards attached to the men’s surgical ward.\textsuperscript{55} A recovery room at the Royal Hospital Chesterfield was built but not opened for several years because of a shortage of staff.\textsuperscript{56} Methods to calculate the number of required beds were discussed – two beds per theatre, or equal to the maximum or average daily operating list – and ideal layouts suggested.\textsuperscript{57} But standardization was not seen in practice, and Russell Davies concluded, ‘I think it is fair to say that there is no one ideal plan for a recovery ward, which must be designed to serve the surgical and geographical needs of the hospital’.\textsuperscript{58}

Within a short time of opening, at least two British recovery rooms began admitting a wider constituency of patients. At Southend-on-Sea, Clive Jolly and Alfred Lee reported that:

\textsuperscript{51} Davies and Truscott Hunter, 1952, p. 866; Davies, \textit{PMJ}, 1958, p. 376.
\textsuperscript{52} Davies, \textit{PMJ}, 1958, p. 373.
\textsuperscript{53} Ibid, p. 376; Davies and Truscott Hunter, 1952, p. 865; Barone \textit{et al}, 2003, p. 239.
\textsuperscript{55} Jolly and Lee, 1957, p. 51; for a photograph of the bedside see ‘Southend-on-Sea Hospital, holiday town hospital in Essex’, \textit{Nursing Times}, 1959, \textbf{55} (30): 847.
\textsuperscript{56} ‘Recovery room, Royal Hospital, Chesterfield’, 1961, p. 1469.
\textsuperscript{57} Davies, \textit{Proceedings of the RSM}, 1958, p. 156; Nuffield Provincial Hospitals Trust, \textit{Studies in the functions and design of hospitals: the report of an investigation sponsored by the Nuffield Provincial Hospitals Trust and the University of Bristol}, London, Oxford University Press, 1955, pp. 73-5 for recovery rooms, with plans from three hospitals on pp. 68, 74, 83.
\textsuperscript{58} Davies, \textit{Proceedings of the RSM}, 1958, p. 151.
'Cases that are not truly post-operative have been admitted to this ward. Examples are: severe road accidents, such as crushed chests; comatose head injuries and grave internal haemorrhages...severe examples of carbon monoxide, barbiturate poisoning and tetanus could also be nursed in this ward but never to the exclusion of post-operative cases'.

Barnet General Hospital was another example. At the Royal Society of Medicine meeting in 1958, Eric Gardner argued that, ‘a fully equipped recovery room with its specially trained staff under the anaesthetist’s supervision was the ideal place for the treatment of certain medical emergencies, such as barbiturate poisoning, tetanus and other cases of respiratory failure’. His vision was realised a few years later in Barnet Hospital’s ‘Recovery Ward-cum-Intensive Therapy Unit’.

**Continuity of recovery rooms**

Recovery rooms were not discontinued with the advent of purpose-built intensive care units in the 1960s. Instead they tended to revert to their former role – open during the hours of surgical lists, for patients’ immediate postoperative recovery. Any patient requiring prolonged care would be transferred to the intensive care unit when the recovery room closed for the day. The only exception was the room for the cardiothoracic theatre, which stayed open until the patient was stable enough to be moved. Some hospitals had combined wards – such as Barnet General Hospital seen above – for the convenience of shared resources and expertise. Others argued that recovery rooms should be discrete and organisationally independent, or at least a part of the theatre suite rather than a part of the spectrum of acute care (which is how intensive care was coming to be regarded).

At a symposium on recovery rooms organised by the Association of Anaesthetists in 1966, the scope of discussion was explicitly limited to the period of postoperative recovery, and was not to include ‘aspects of intensive care’. Postoperative care had many of the features of a specialty: a distinct patient population, specially trained nursing staff (a three-month course in recovery ward nursing

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59 Jolly and Lee, 1957, pp. 54-5.
61 Gardner, 1964, p. 128.
62 Oral history interview, R Tierney, p. 6.
was available in 1963), two textbooks and a nursing manual. Surgical departments also had another special care area for the management of seriously ill postoperative patients – the surgical side ward.

**Surgical side wards**

Increasingly complex surgery was being performed in the 1950s. By the end of the decade, surgical procedures included operations in all cavities and organs of the body, deliberate hypotension and hypothermia (to reduce blood flow at the operative site), and extracorporeal circulation and oxygenation (use of a heart-lung machine to bypass these organs). Heart surgery was becoming a distinct field of practice, developed mainly by thoracic surgeons who had performed chest surgery for tuberculosis. Heart valves were repaired and replaced in long, and still novel, operations. On her first day at St Thomas’ Hospital, nurse Roisin Tierney recalled waiting for her patient to come out of theatre. The operation (a heart valve replacement) had started around 8am, and was still going on at 4pm when Tierney had been asked to report to the recovery room. The patient eventually came out at around 6pm. Patients were extremely ill after such long periods in surgery, especially if they had been on heart-lung bypass. ‘Surgery in those days was much more dicey’, said Tierney. If surgeons were going to perform these operations, they needed to ensure the best postoperative care. Close observation, early detection of complications and a prompt response could be vital factors in the patient’s survival. It was difficult to provide that level of care in a 30-bed ward, especially overnight when nurse staffing levels were reduced, so side wards were used as an extension of the recovery room, with nurses specialising the patients. The side ward was one or two small rooms at the entrance to a general surgical or medical ward, traditionally for private patients, those with (or at risk from) infections, and patients in the terminal stages of

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67 Nathoo, 2009, p. 11. Valda Wiles and Kathy Daffurn note that many cardiothoracic recovery rooms in Australia were former tuberculosis isolation wards. V Wiles, K Daffurn, *There’s a bird in my hand and a bear by the bed – I must be in ICU: the pivotal years of Australian critical care nursing*, Sydney, Australian College of Critical Care Nurses Limited, 2002, pp. 102-3.


69 Ibid, p. 6.
illness. Over time, with increasingly ambitious surgery, the surgical side wards became a dedicated space for the special care of seriously ill postoperative patients.

Two examples highlight how the surgical wards functioned in practice. The first is the ward to which Rosin Tierney was assigned – Clayton side ward, a special care area for cardiothoracic patients (heart and chest) at St Thomas’ Hospital, London. Patients were met out of theatre by one of the side ward nurses, who cared for them in the recovery room until they were stable enough to be moved. They were then wheeled along a corridor and in two lifts, before being set up in the side ward, surrounded by equipment. The ward was an L-shaped room, with one bed on the left-hand side, and another around the corner to the right. At the right-hand side of the entrance was a desk for writing notes and storing records. A team of six or seven nurses worked solely in this room, two specialising at a time, on eight-hour shifts. Tierney described the scene around a patient after cardiothoracic surgery – there was ‘a ventilator, usually four chest drains, catheter, nasogastric tube, ECG monitor, and they were big in those days! That was the problem. Every bit of equipment was big! [...] If you had two cardiothoracic patients, [...] you virtually had to crawl under one bed to get to the next’.

Photo: courtesy of Charles Hinds

Figure 2.8: After cardiothoracic surgery, St Bartholomew’s Hospital, 1960s

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70 Ibid p. 1; Oral history interview, S Ross, p. 2; Oral history interview, J Horton, p. 10.
71 Oral history interview, R Tierney, p. 5.
The other example comes from the Western General Hospital in Edinburgh, which opened a new surgical neurology annex in 1960. The 60-bed ward was divided into four to six-bed cubicles, so the most seriously ill post-neurosurgery patients could be gathered together in one area. By this time, there was evidence that artificial ventilation was beneficial in the immediate postoperative period for cardiothoracic and neurosurgery, and head and chest injuries. ‘Some startling survivals have been observed’, wrote Olof Norlander and colleagues in 1961, and in their experience with chest surgery, many patients could not have been operated on without immediate respirator treatment. Four Barnet ventilators were in use at the Western General Hospital’s neurosurgical annex, but they were in demand across the city’s hospitals. Neuroanesthetist Jean Horton recalled consultants phoning to ask if they could borrow one, particularly for the respiratory unit at the Northern General Hospital. ‘I would have to go and collect the ventilator, put it in the back of my car, drive though the night, to the Northern General, [and] set up the ventilator,’ she explained. With time, it proved more effective to group ventilator-dependent patients in Edinburgh Royal Infirmary’s intensive care unit rather than deliver ventilators to patients across the city.

In cardiothoracic surgery, the number of operations performed each week steadily increased. The number of seriously ill postoperative patients began to exceed capacity in side wards, so larger units were opened. Broadgreen Hospital in Liverpool, and Harefield Hospital in Greater London, both regional centres for cardiothoracic surgery, opened intensive care units in 1964. Broadgreen’s 12-bed unit was purpose-built with funding from the Nuffield Provincial Hospitals Trust and Liverpool Regional Hospital Board, after having run two single-bed cardiothoracic side wards since 1960. Harefield’s six-bed unit was converted by the Hospital Management Committee’s department of engineering as an extension to recovery room provision. Baguley Hospital (now Wythenshawe), the regional cardiothoracic centre for

75 Oral history interview, J Horton, p. 5.
77 Oral history interview, P Ashworth, p. 1; Hall, 1966, p. 1392.
Manchester, advertised vacancy notices for nurses with duty including ‘intensive care unit’ in July 1961. The nascent units brought together expertise as well as technology. Broadgreen Hospital nurse, Pat Ashworth, considered an intensive care unit necessary for regular experience with these kinds of patients, and to learn from each other. ‘People can and [do] do all sorts of things individually, but it takes time to build up experience and learn from what you’ve done, and teach other people’, she said. Within the first year of opening, both Broadgreen and Harefield’s cardiothoracic intensive care units were admitting other critically ill patients – at Broadgreen they accounted for 10% of admissions.

2.4 Respiratory units

Poliomyelitis, tetanus and mechanical ventilation

Another special care area in British hospitals was the respiratory unit. The first respiratory units were in infectious disease hospitals in the late 1930s and 1940s, where small wards were dedicated to the care of respirator-dependent poliomyelitis patients during epidemics. Poliomyelitis caused varying degrees of muscle paralysis, with implications for treatment. For some, infection caused only temporary paralysis of limbs. ‘Bulbar poliomyelitis’ affected the muscles of swallowing, so there was a danger of aspirating oropharyngeal secretions (saliva and mucus) or vomit, leading to pneumonia and other pulmonary complications. Postural drainage helped – the patient lay on their side or in a slight head-down position so that secretions drained away from the lungs with gravity. ‘Spinal poliomyelitis’ affected the muscles of breathing, causing respiratory insufficiency and progressively, respiratory failure. This was fatal unless artificial ventilation was available to support breathing until the patient recovered from the infection. Iron lungs (also known as tank or cabinet respirators) were used, particularly after Lord Nuffield produced 695 Both-type tank respirators for hospitals in Great Britain and Ireland in 1938-9, ‘the most practicable and reliable pattern of breathing machine available at the time of the gift’. ‘Bulbo-spinal poliomyelitis’, with paralysis of both

79 Oral history interview, P Ashworth, p. 3.
81 Severe epidemics occurred in Britain in 1938-9 and 1947. The wards were often temporary, for the duration of the epidemic. See G L Snider, ‘Historical perspective on mechanical ventilation: from simple life support system to ethical dilemma’, American Review of Respiratory Disease, 1989, 140 (2): S2-7, p. S5.
82 Medical Research Council, "Breathing machines” and their use in treatment: report of the Respirators (Poliomyelitis) Committee, Special Report Series No. 237, London, HMSO, 1940, p. 52. Professor Robert Macintosh gave figures for the number of Both machines ‘supplied or promised’ at the end of March 1939 as follows: England (501), Wales (52), Scotland (75), Northern Ireland (15), Republic of Ireland (40), Armed Services (12), pp. 35-7. For details of how the Both type was chosen, Macintosh and the Nuffield Department of Anaesthetics’ involvement in the gift, and distribution of over 1,000 iron lungs to British colonies see A
swallowing and breathing, was the most difficult to manage. The powerful action of the ventilator sucked oropharyngeal secretions into the lungs. 'In such a case, putting the patient into the cabinet respirator may indeed be equivalent to putting the patient into his coffin', said anaesthetist Ronald Woolmer in 1956. Iron lungs redesigned during the mid-1950s could accommodate patients in a lateral (side) or prone (face-down) position, or degrees of head-down tilt, for example the Kelleher respirator (see Figure 2.9).

![Photo: courtesy of Dr Geoffrey Spencer](image)

**Figure 2.9:** Respiratory care in a Kelleher iron lung, South Western Hospital, 1972-3

Access to patients in iron lungs was notoriously difficult. With the machine rotated by 180°, the physiotherapist could perform chest percussion through a hatch, while the doctor (lying underneath) held a cup for the patient to spit into.


In America, Albert Bower and colleagues reduced mortality in bulbar cases from around 90% to 20% by using a tank ventilator in conjunction with tracheostomy. Tracheostomy alone had been used since the late 1940s for cases where it was impossible to maintain an open airway and normal ventilation. Ear, nose and throat (ENT) surgeons performed the operation, and while it could be done under local anaesthesia, general was preferred because patients with respiratory insufficiency or failure were 'in no condition to submit quietly and co-operatively to another ordeal'. Insertion of a cuffed tracheostomy tube sealed the trachea from the mouth, pharynx and oesophagus – the cuff being an inflatable rubber balloon that ensured a snug fit in the trachea – and prevented aspiration of saliva and mucus into the lungs. The technique of tracheostomy and tank ventilation was not more widely used because the neck seal of the ventilator was too close to the tracheostomy. During the poliomyelitis epidemics of 1950-3 in Scandinavia, a new method was trialled that changed the management of respiratory failure and allegedly founded 'modern intensive care'.

At Copenhagen’s Blegdam Hospital, the city’s infectious diseases hospital, a 12-year old girl called Vivi was dying of poliomyelitis. She was ‘gasping for air and drowning in her own secretions’. In the previous three weeks, 31 patients with bulbar poliomyelitis had been treated in an Emerson iron lung or with a chest cuirass, but 27 had died. On August 26th 1952, the hospital’s chief physician, Henry Lassen, called in anaesthetist Bjørn Ibsen, who suggested a radical new treatment. Vivi’s respiratory paralysis was no different to the curare-induced paralysis of surgical anaesthesia – why not use the same ventilation technique as in the operating room? Manual ventilation was given by the intermittent squeezing of a rubber bag connected to a cuffed endotracheal tube, passed through a tracheostomy, and Vivi’s condition improved. Lassen was so impressed that he recruited around 1500 medical students to work in shifts giving this manual ventilatory support until the epidemic subsided. At times they had 70 patients requiring support, and some were ventilated in this way for more than three months. Mortality rates for patients with bulbar poliomyelitis fell from 87% to less than 15%. Hospitals across the city adopted the method, and then applied it to patients with

86 Woolmer, 1956, p. 10.
other respiratory failures, manually and with mechanical ventilators, in dedicated respiratory units. Ibsen moved to the Kommune Hospital where in August 1953 he converted a surgical recovery ward into a unit for all types of patients to receive intensive care, which according to some historians, was the world’s first intensive care unit.89

That doctors all over the world consider this episode to be a key part of intensive care’s heritage demonstrates the incredible power and influence of global connections in twentieth century medicine. The technique – intermittent positive pressure ventilation via tracheostomy – rapidly moved from one locale, Copenhagen, to worldwide, with publications by Ibsen and Lassen in international medical journals. Overseas anaesthetists on training courses in Copenhagen gained first-hand experience and took it back to their own hospitals.90 A senior physician from Ham Green Hospital, Bristol, visited Copenhagen and ‘returned full of enthusiasm to start a “respiratory unit” at Ham Green. In fact it turned out to be, if not the first specialist unit of that nature in the country, at least among the first three’.91 Another of those was probably in Oxford, where Alex Crampton-Smith reported on their first four patients treated by the method in 1954.92 The Oxford team was later acknowledged to have contributed greatly to the use of intermittent positive pressure ventilation ‘by designing ventilators, humidifiers and other equipment, defining the basic principles of treatment and elucidating much of the fundamental physiology of this highly successful form of treatment’.93


One of the Ministry of Health's concerns after the Copenhagen epidemic was the adequate provision of mechanical ventilators, because a few different patterns were being trialled in small numbers. 'We ought now to make up our minds which machine is the best, and to start producing it at once, so that sufficient numbers will be available to cope with a large epidemic this summer', concluded a 1954 editorial in the *British Journal of Anaesthesia*.

In 1954, Henry Lassen and colleagues suggested a bold new approach to the management of another infectious disease – tetanus. The disease was characterised by stiffness and rigidity of muscles, progressing to spasms that could be induced by minimal stimuli – noise or light. Accounts of caring for tetanus patients emphasised the need for absolute quiet and darkened surroundings. Muscle relaxants could control the spasms, but would also induce respiratory paralysis – equivalent to the paralysis of poliomyelitis. Intermittent positive pressure ventilation, as seen in Copenhagen, could support breathing until the infection receded. Early resort to paralysis and artificial ventilation via a tracheostomy was considered safer and more comfortable for patients with tetanus than a conservative sedation-only regime. It also improved outcome – a paper in the *Medical Journal of Australia* reported that prior to the application of Lassen's principles of therapy, 'all really severe cases of tetanus were fatal'.

Management of tetanus required teamwork between physicians and anaesthetists. It was most evident in the use of relaxant drugs – the physician chose which relaxant to use (most often tubocurarine chloride), and the anaesthetist supervised artificial ventilation. The authors of a 1954 paper on the management of tetanus at the Radcliffe Infirmary, Oxford, exemplified the team approach. They comprised a physician (G E Honey), two anaesthetists (Brian Dwyer and Alex Crampton Smith) and a physician/research assistant from the Department of Neurology (J M K Spalding). In the early days of the technique, constant

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medical supervision was employed, as well as one-to-one nursing attention. At Southampton General Hospital, special training was offered to prepare nurses, as ‘considerable skill’ was required to care for tetanus patients and their ventilators.\(^{100}\) Patients who were paralysed but conscious had special nursing requirements. In interview, nurse Sheena Ross emphasised the importance of ‘talking to them when they can’t respond back, and anticipating what might be their problem: ‘Got an itchy nose and I can’t scratch it’. You know, that sort of thing’\(^{101}\). This kind of intensive care could be employed for weeks. In a report of 100 tetanus cases at Leeds General Infirmary between 1961 and 1977 the average stay was 31 days.\(^{102}\) For economy, staff and resources were centralised in regional tetanus units such as Leeds’, which opened in 1955, serving much of the North-West of England. Gradually it became a respiratory unit, comprised of two four-bed rooms in the amenity ward, and by 1964 was replaced by a 12-bed intensive care ward.\(^{103}\) At Southampton General Hospital, Dr Patrick Shackleton described managing a tetanus patient on a general ward in 1954 as ‘a nightmare – a nightmare of improvisation and make-do’.\(^{104}\) He then recalled that a special care unit for tetanus had been established shortly afterwards, and as experience in the purpose-built unit grew, mortality declined. By 1958, the hospital had a respiratory unit, expanding from three beds to five in 1960.\(^{105}\) Like so many others, Shackleton declared he would ‘on no account want to return to treating patients in need of intensive therapy, particularly those needing ventilator support, scattered about the hospital’.\(^{106}\)

Meanwhile, poliomyelitis wards were emptying, particularly after the introduction of the Salk and Sabin vaccines, but stayed in operation as general respiratory units.\(^{107}\) The ways in which

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\(^{100}\) P Shackleton, ‘Nursing tetanus patients’, *Nursing Times*, 1960, **56** (3): 65.

\(^{101}\) Oral history interview, S Ross, p. 15.

\(^{102}\) Edmondson and Flowers, 1979, p. 1401.

\(^{103}\) ‘Intensive care ward: the General Infirmary at Leeds’, *Nursing Times*, 1964, **60** (50): 1624-6, pp. 1624-5.


care was organised and delivered in respiratory units had implications for British intensive care, and I will consider four features here: centralisation of technology, objectives of admission, the role of anaesthetists, and the role of nurses.

**Organisation of respiratory units**

Like the recovery room above, the respiratory unit offered centralisation of technology. At a European symposium in 1962, Dr G Neuhaus listed required technology – diagnostic, therapeutic and emergency. Monitors and equipment for blood gas analysis and pulmonary function tests were expected to be present, as were ventilators of various types, suitable for all forms of respiratory insufficiency. A defibrillator and resuscitation equipment were also considered necessary.\(^{108}\) Their immediate availability was a benefit of the centralised unit. Southampton anaesthetist D J Pearce wrote of the difficulties in mobilising equipment to the wards, and that the unit enabled a concentration of equipment that could ‘never be achieved elsewhere and which could be kept in a constant state of preparedness’.\(^{109}\) Some hospitals did have systems for summoning resuscitation equipment, in forerunners of the ‘crash trolley’. From Cardiff Royal Infirmary, ward sister Marjorie Prosser reported on a large wooden ‘Emergency Respiratory Box’. In the event of an emergency, a porter delivered the box from the operating theatre to the ward. ‘On his arrival he [the duty anaesthetist] will find all the equipment that he is likely to require, ready in the respiratory box at the patient’s bed’, wrote Prosser.\(^{110}\) Emergency artificial ventilation was carried out with the Cardiff bellows, a handheld apparatus similar to the widely-used Kreiselman resuscitator or the Ambu bag (see Figures 2.10 and 2.11 below). But as Pearce’s frustration suggests, distribution of equipment to wards was not always as ideal as published. An organisationally independent respiratory unit ensured the appropriate technology was available at all times.

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\(^{108}\) Neuhaus in W W Mushin, G J van Weerden, ‘The assisted respiration unit [1964]’, *International Anesthesiology Clinics*, 1999, **37** (1): 15-53, p. 30. Defibrillators were introduced c.1962, and were very large and heavy. See David Morrison’s recollection of the Cardiac Recorders ‘Red Devil’ in D Morrison, ‘It’s a long, long story, but this is how I became an intensivist’, *Care of the Critically Ill*, 1985, **1** (5): 16-17.


Figure 2.10: Diagram from Kreiselman resuscitator instructions, 1960s

Figure 2.11: Emergency resuscitation, Cardiff Royal Infirmary, c.1960

While the ward sister stands ready with the Beaver ventilator and the emergency respiratory box on the trolley, the anaesthetist gives artificial ventilation with an Ambu bag. Intubation and resuscitation were notoriously difficult if the bed head could not be removed.
Admission to respiratory units was not just for those in whom respiratory insufficiency or failure was evident, but also for those in whom it was expected or feared. Pre-emptive admission ensured that mechanical ventilatory support was immediately available, and this criterion was applied in intensive care units in the following decade. The range and number of cases benefiting from artificial ventilation was expanding, as reported in the medical literature. In 1954, the recently established Respiration Unit at the Radcliffe Infirmary, Oxford, reported the use of intermittent positive pressure ventilation for poliomyelitis, tetanus, polyneuritis, and drug intoxication. A Parisian unit observed a sharp rise in the number of acute poisonings in the period 1956-62. This included carbon monoxide poisoning, but was most often drug overdoses, particularly with the increasing availability of barbiturates and tricyclic antidepressants. Regardless of cause, the principles of treatment were essentially the same. ‘As long as a patient cannot breathe sufficiently, it does not matter much why, since the immediate therapeutic challenge is overwhelming and the same in all cases’, wrote Bjørn Ibsen. The priority was life support: ‘If the functions of the heart and lungs can be artificially sustained, time may be allowed for treatment, and perhaps cure, of the underlying disorder. This is the primary objective in a respiratory unit’, wrote Victor Hercus, director of the highly regarded unit at the Prince Henry Hospital, Sydney.

The extent to which respiratory units provided support or therapy was not clear-cut. The objectives of admission were dual – provision of mechanical support for a failing vital organ, and treatment of the precipitating cause. This required the skills and specialist knowledge of ventilator experts and physicians with expertise in respiratory diseases and neurology.

Since the introduction of intermittent positive pressure ventilation in Copenhagen, treatment of respiratory insufficiency had shifted from the hands of infectious disease specialists to anaesthetists, and physicians were beginning to recognise the expertise of their colleagues. Their contribution was clearly stated at the Second World Congress of Anesthesiologists in

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112 Crampton Smith *et al*, 1954, p. 939. See also table of admissions for 1953-63 in Beinart, 1987, p. 116. With funding from the Nuffield Provincial Hospitals Trust, the unit moved to the Churchill Hospital in 1955, see Beinart, 1987, p. 115.
114 In 1969, *The Observer* reported that ‘acute poisoning from taking an overdose of drugs has now reached epidemic proportions’ in developed countries. ‘Drug overdoses “an epidemic”’, *The Observer*, 13 April 1969, p. 3.
1960, when one afternoon was devoted to the management of acute respiratory disease and intensive medical and nursing care. Four papers subsequently published in *Anaesthesia*, and the accompanying editorial, together showcased the role of anaesthetists outside the operating theatre.¹¹⁸ Not only did they have technical skills with ventilators and emergency resuscitation, but also ‘a considerable knowledge of respiratory and circulatory physiology’, that could be applied to acute respiratory failure.¹¹⁹ ‘Every anaesthetist sees more cases of respiratory insufficiency and coma in one month than the average doctor outside anaesthesia may see in his whole lifetime’, claimed Bill Mushin at the European symposium two years later.¹²⁰ The role was consolidated by the fact that respiratory units were most often part of the anaesthetics department, so that although the types of cases admitted might vary from one centre to another, the extent of anaesthetic participation was constant.

Teamwork was essential though, as had been seen in the management of tetanus. In many hospitals, a team of anaesthetist, physician (respiratory or neurologist), and surgeon (ear, nose and throat surgeon for tracheostomy) ran the respiratory unit. Alex Crampton Smith suggested these three professionals probably represented ‘the apex of a pyramid, which spreads outwards to include highly skilled nurses, biochemists, bacteriologists, dieticians, physiotherapists and radiologists’.¹²¹ H B C Sandiford, consultant anaesthetist at Portsmouth’s regional Respiratory Poliomyelitis Unit, reminded colleagues, ‘you are drawing on every branch of medicine sooner or later for the treatment of your cases. There is no branch of medicine that is not involved in treating these cases’.¹²² This teamwork was also practised in respiratory units internationally, and was considered successful and superior to sole responsibility by one specialty.¹²³ Communication was therefore important for decision-making – Alex Crampton Smith described holding a meeting in the respiratory unit each evening to agree patients’ treatment plans.¹²⁴ Boundaries between on-the-spot decisions and longer-term treatment planning, and who was responsible for them, were not fixed however

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¹¹⁹ Shackleton, 1961, p. 265.

¹²⁰ Mushin and van Weerden, 1999, p. 15.


¹²² Sandiford in Mushin and van Weerden, 1999, p. 22.

¹²³ See for example Fairley, 1961, p. 267.

(and were also an area of negotiation in intensive care units). Advice from Hercus’s Sydney unit on the need for a duty doctor was also heeded:

‘All patients admitted to the respiratory unit automatically come under his control, whichever part of the hospital they have come from. This singleness of control is regarded as fundamental in the organisation of the unit. These patients may be very ill. Decisions have to be made rapidly, and there should be no doubt in the mind of the resident about the chain of command’. 125

Not every doctor was willing to hand over their patients to the respiratory unit team. ‘You have to convince them that they can justifiably give up to a large extent the control of their cases to somebody else’, explained anaesthetist Bill Mushin. 126 Justification for referral was gained on the grounds of better patient care. This in turn required the respiratory unit team to have demonstrably equal (if not superior) expertise. ‘One needs special training and experience on these units before one’s opinion is of value’, argued H B C Sandiford. 127 Constant presence on the unit was seen as the way to acquire and maintain the necessary clinical acumen. ‘This type of work is not something which can be done on a spare-time basis by odd people in the hospital’, stated Mushin. 128

Unit directors agreed that experienced nurses were also essential, if not the most important members of the team. 129 ‘The units must be liberally, even lavishly, staffed with highly trained nurses’, declared one editorial. 130 Nurses were valued for their familiarity with the specialised equipment, and their ability to recognise an emergency and begin resuscitation. But they were also valued for their skilled routine care of patients with serious respiratory conditions. Procedures to keep patients’ chests clear and free from infection were carried out periodically (one, two or four-hourly), round-the-clock. Turning, changes of posture, and chest percussion performed by physiotherapists loosened secretions that were then removed by aspiration – a sterile catheter attached to a suction machine or piped suction from a wall unit was passed into the trachea and bronchi through the endotracheal tube or tracheostomy (depending on which was in use for connection with the ventilator). Aspiration was an unpleasant procedure for patients, and had to be performed quickly (as the patient was

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126 Mushin and van Weerden, 1999, p. 29.
127 Sandiford in Mushin and van Weerden, 1999, p. 32.
130 Shackleton, 1961, p. 266.
detached from the ventilator and could go into respiratory arrest), and aseptically to prevent introduction of pathogens. These patient care routines were similar regardless of diagnosis, and were continued in intensive care units in the 1960s.\textsuperscript{131}

**Continuity of respiratory units**

As with other special care areas, there was continuity between respiratory units and intensive care units of the 1960s. In some instances, respiratory units continued alongside early intensive care units, often located adjacent for the sharing of resources. The much-cited symposium on ‘The Assisted Respiration Unit’ at the First European Congress of Anesthesiology in 1962 came at a turning point. It was necessary to begin discussion with justification for units. ‘Ten years ago there might have been no question’, said chairman Bill Mushin, but ‘polio is now becoming a rare disease and many people wonder whether we are perhaps making a bit too much fuss about such centers’.\textsuperscript{132} Delegates responded with examples of the benefits, such as those discussed above, and even produced a figure for the recommended number of beds per million population – 10 beds, in one unit.\textsuperscript{133} Regional centres were proposed as it was not feasible to have the required resources in a small hospital. This was the policy put forward in 1953 by the Royal College of Physicians’ Committee on Poliomyelitis (whose Secretary was Oxford’s Ritchie Russell) and a Ministry of Health circular to Regional Hospital Boards.\textsuperscript{134} In other instances, respiratory units admitted patients with other critical illnesses, thereby becoming general intensive care units, so that separate wards for the care of patients in respiratory failure ceased to exist.\textsuperscript{135} In America, once the emergency impetus of epidemic poliomyelitis disappeared, hospitals hesitated to make economic investment in permanent facilities.\textsuperscript{136} Ontologically, some argued, there was no sharp distinction between the two – one admitted seriously ill patients with respiratory insufficiency, the other admitted seriously ill patients who might develop respiratory


\textsuperscript{132} Mushin and van Weerden, 1999, p. 16.

\textsuperscript{133} Ibid, pp. 22, 28. This unit of measurement – beds per [number] population – has become the means of quantifying (and comparing) intensive care provision, but in the 1960s it was calculated as a percentage of hospital beds, as will be seen in Chapter 3.

\textsuperscript{134} Cited in Crampton Smith \textit{et al}, 1954, p. 943.


\textsuperscript{136} Fairman and Lynaugh, 1998, p. 11. Berthelsen and Cronqvist note that (with the exception of Ibsen’s unit at the Kommune Hospital), respiratory units in Copenhagen were not extended to all critically ill patients. Berthelsen and Cronqvist, 2003, p. 1193.
complications.\textsuperscript{137} Purpose-built intensive care units gave an opportunity for the two functions to be fully combined, such as Aberdeen Royal Infirmary: 'I participate in running our Respiratory Care Unit here which will almost certainly merge with the larger Intensive Care Unit when our new accommodation is ready in 1975', wrote anaesthetist David Drummond Hart.\textsuperscript{138}

2.5 Special care areas: assets and challenges

The advantages of units for intensive care of the critically ill were becoming evident during the 1950s, with benefits for patients, doctors and nurses. The first was better patient care – intensive observation and immediate treatment was 'achieved only by segregation of selected acutely ill patients'.\textsuperscript{139} Segregation also eliminated peaks of emergency activity in general wards, so steadier and better care was achievable for all inpatients. This was less stressful for nurses, who had time to talk with convalescing patients without interruption.\textsuperscript{140} For doctors such as Iain Ledingham, the opening of a dedicated intensive care unit was 'a huge relief' – special care carried out in side wards in addition to his 'day job' could now be organised more formally so that there was always medical cover for the most seriously ill.\textsuperscript{141} There was a mixed response from doctors admitting patients to the units. Some recognised the benefits for patient care, but other consultants wanted their patients to remain on their ward, for continuity of responsibility. 'Indeed, improvement of the ward service might save as many lives as the building of an I.T.U.', they argued.\textsuperscript{142} Negotiations over patient responsibility are examined further in Chapter 7.

Concerns about admitting both male and female patients to the same unit were not as much of a problem as anticipated. American doctor Robert Cadmus reported in 1954 that, ‘separation of patients by sex usually has not been necessary because of their critical condition’ – they were too ill to notice or mind.\textsuperscript{143} Miss J M Loveridge, Matron of St Bartholomew's Hospital, London, 'had heard of no objection from patients to mixing of sexes

\begin{itemize}
  \item \textsuperscript{137} Fairley, 1961, p. 273; Holmdahl, 1962, p. 559.
  \item \textsuperscript{138} Letter Drummond Hart – Dr Gilston, 21 October 1972, Box 29 [DR/ICS Correspondence Box 3], Intensive Care Society Archives, London.
  \item \textsuperscript{141} Oral history interview, I Ledingham, p. 7.
  \item \textsuperscript{142} 'Intensive care', \textit{Lancet}, 1967, 290 (7529): 1294.
  \item \textsuperscript{143} R R Cadmus, 'Special care for the critical case', \textit{Hospitals}, 1954, 28 (9): 65-6, p. 66.
\end{itemize}
in four years’ experience’ of a four-bed unit (1958-1962). Privacy could be provided if necessary by drawing the curtains around the bed. Elsewhere, and if space allowed, some intensive care units opening in the 1960s did make provision for male and female wards (see for example Whiston Hospital, Prescot, in Figure 5.6).

The more serious problem when bringing critically ill patients together into one unit was the risk of cross-infection, which if severe could result in closure of the unit. Patients with serious infectious diseases were nursed in isolation rooms where possible, but the risk of hospital-acquired infections such as staphylococcus had to be managed by environmental controls, bacteriological surveillance and sterile care. Filtered air conditioning with no recirculation was a recommended (but expensive) environmental control. Regular swab testing of patients and staff was essential for the detection of carriers, and their prompt treatment with antibiotics. The other major source of cross-infection was equipment – stethoscopes, ventilators, humidifiers and suction apparatus in particular. Most units endeavoured to have one stethoscope and one sphygmomanometer per bed, and larger shared apparatus was regularly sterilised. Aspiration, tracheostomy and wound care were strictly sterile procedures, with nurses wearing masks, aprons and gloves. The purpose-built intensive care unit at St Thomas’ Hospital, which features in more detail in Chapter 4, employed state-of-the-art infection control when it opened in 1966. The unit was split into ‘clean’ and ‘dirty’ sides, to separate the vulnerable post-surgical patients from the potentially infectious medical patients. Automatic doors with an airlock divided the two sides, nurses were clothed in different colour uniforms, and doctors changed gowns and stepped onto ‘sticky mats’ when moving between sides.

Surgical and medical patients had remained largely separate in the special care areas of the 1950s. In Chapter 3, I explore how Progressive Patient Care stimulated interest in the

145 See for example the temporary closure of an intensive care unit at Magherafelt, near Belfast, to ‘control the presence of an epidemic staphylococcus’. Mid-Ulster Hospital Management Committee, ‘Mid-Ulster Hospital, Progressive Patient Care: report on pilot scheme’, July 1962, 5pp., p. 2, MH 159/48, National Archives, Kew.
development of general intensive care units in Britain in the 1960s. But I begin with a technical innovation seen as essential for the new intensive care units – piped oxygen.
Chapter 3: ‘Pattern for the future’? Creating intensive care units

Piped oxygen at Queen Elizabeth Hospital, Birmingham, 1959

Figure 3.1: Making the ‘News and Comment’ page, 1959

‘Queen Elizabeth Hospital, Birmingham, is the tenth hospital in Britain to install a liquid oxygen supply’, reported the Nursing Times. The illustration contrasted the old with the new – a cylinder was placed next to the cooling unit plugged directly into the wall fitting.
Figure 3.2: Piped oxygen at Addenbrooke’s Hospital, Cambridge, 1964
Four 100ft³ oxygen cylinders were installed in the corridor outside the intensive care unit, converted from a women’s medical ward annex in autumn 1959. A warning system indicated when the first two cylinders were empty so replacements could be fitted in good time (Puddicombe, 1964, p. 1030).

Figure 3.3: Oxygen cylinders at St Bartholomew’s Hospital, London, 1970s
Oxygen cylinders in cradles, seen here in the foreground of this intensive care unit scene, added to congestion around the bedside, particularly in small units.
Figure 3.4: Cover of Oxygenaire oxygen tent leaflet, 1950s

Notable features were the transparent PVC canopy, suspended by coil-spring hooks to prevent fabric tears, horizontal and vertical zipper openings, intravenous drip hooks, and under bed cooling unit.

Photo: T/1988-574, Science Museum Documentation and Records Centre

Figure 3.5: Fire precautions, c.1965

Sparks could quickly ignite flammable materials in high concentrations of oxygen, so these precautions listed prohibited items. The A4-sized card could be hung from one of the drip hooks, but most tents also had a 'No Smoking' label on each side.

Photo: T/1988-574, Science Museum Documentation and Records Centre
Piped oxygen at Queen Elizabeth Hospital, Birmingham, 1959

It is the middle of the night. A seriously ill patient is struggling for breath, and needs supplementary oxygen by nasal catheter or face mask. A nurse has to wheel a large oxygen cylinder through the ward to the patient’s bedside. The cylinder is heavy and unwieldy – the tallest cylinders might reach to shoulder-height – and it clanks against the cradle used to make it portable. The metal wheels whirr against the hard floor, and the noise wakes each patient as the nurse walks past. The regulator and flow meter are fitted to the cylinder at the bedside, clinking and grinding as the connection is secured with a spanner. The nurse reassures the patient, who is by now anxious and restless. She opens the cylinder fully so that with a whoosh the oxygen flows at maximum rate to flush the system. Checking the patient’s chart, she then adjusts the rate to deliver the oxygen concentration as directed by the consultant in charge, and positions the nasal catheter or face mask so it is leak-free. She does not leave the patient until she has observed he is breathing more comfortably, the colour is returning to his skin, and his vital signs are steadier. Every other patient in the ward tries to go back to sleep.

Piped oxygen, available from a larger, behind-the-scenes reservoir via a wall fitting, could avoid these situations. It offered immediate availability, continuity of supply, absence of noise and labour in moving cylinders, cleanliness, and the economic advantages of large cylinders or liquid oxygen. These benefits were stated in government-issued Hospital Building Notes, such as the 1963 Scottish Home and Health Department’s recommendations for ward design.¹ It was considered a minimum requirement in planning for new intensive care units – care of the critically ill demanded this level of service. As seen in Figure 3.1, installation of piped oxygen was also a newsworthy event, since few hospitals were inclined to fit it until purpose-built units were commissioned. Engineering specifications detailed supply lines and wall mounts.

Piped oxygen simplified one aspect of oxygen therapy – the supply – but methods of delivery to the patient still required particular nursing skill. In addition to the nasal catheter or face mask, oxygen tents had been used on wards since the 1920s. They took around 20-30 minutes to assemble, so were less useful in emergencies.² The temperature inside the tent

could get quite warm, so oxygen from the cylinder or wall supply was first passed through a bedside cooling unit filled with blocks of ice, before going through two large valves into the canopy, which was held in place by tucked and folded bed sheets. Oxygenaire’s ‘Iceless Tent’ (seen in Figure 3.1) eliminated ‘noisy refilling with ice cubes’ and the nuisance of the drip tray by using liquid Freon, the same coolant as 1950s domestic refrigerators. The principal nursing task was to regulate the rate of flow to maintain the oxygen concentration at a steady, prescribed percentage of inspired air. This was especially difficult when opening the zippers to provide nursing care to the body caused a rapid drop in oxygen concentration. The head tent, introduced in the mid-1960s (see Figure 4.5), meant the patient was accessible to medical and nursing attention without affecting the oxygen concentration. In the 1950s, zippers on all sides of the canopy gave access to the patient (see Figure 3.4). Oxygenaire produced handbooks for nurses, with space for writing their own notes, a 35-minute instructional film available on free loan (although waiting lists were long), and lectures and demonstrations from their team of technicians.

The success of piped oxygen did not spell the end for the cylinder however. They were still necessary for patients on the move to other departments or hospitals, and in the event of an emergency power failure. During a visit to the intensive care unit at St Thomas’ Hospital in 2009, technician Valerie Arnold pointed out the rows of cylinders, standing ready in a ward cupboard.

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4 ‘Iceless Oxygenaire Tent (Series II)’, n.d., p. 8, ibid; ‘Films for teaching’, *Nursing Times*, 1959, **55** (14): 406.
3.1 Introduction

Everything needed to equip and run an intensive care unit was listed in a 1962 inventory produced by the US Public Health Service. Oxygen, suction, sphygmomanometer and intravenous drip stand were located at every bedside. Small diagnostic instruments, machine accessories, syringes and needles, utensils (such as bedpans) and instrument tray sets were located in cabinets or utility carts, while larger, and less often used equipment (including artificial kidney apparatus, defibrillators and spare ventilators) was located in a storage room within the unit. Large items such as beds and mattresses and the pneumatic tube system to the pharmacy, small items such as clocks, soap dispensers and chart holders, and non-clinical items such as a typewriter for the nurses’ station, vanity table and full-length mirror for the nurses’ lounge – everything was listed, with full specifications (dimensions, design features) and suggested quantities. It covered every space within the unit – ward, offices, utility rooms, family waiting room, even the corridor outside the unit, with its water cooler and electrical sockets.

The inventory was part of a manual on Progressive Patient Care. Summarised as ‘the right patient, in the right bed, with the right services, at the right time’, Progressive Patient Care (hereafter PPC) was a hospital organisation model that grouped patients according to their degree of illness and need for care rather than their age or type of illness. The critically ill were at one end of the scale, requiring constant nursing attention, moving through grades to those who could care for themselves, simply attending for diagnostic tests or daily, specialised treatment such as radiotherapy. The concept was not new. It was familiar to sanatoria, psychiatry, geriatric and military medicine, and was the method of triage employed in Nightingale wards since the late nineteenth-century – with the most seriously ill located nearest the nursing station. The US Public Health Service began to evaluate it from 1957, when growing hospital populations, rising costs, and nursing shortages were putting hospitals

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under pressure. The lack of qualified nurses was a particular problem – an unpublished study by the US Public Health Service reported that patients received only 18 minutes of professional nursing care in every eight hours.\(^8\) What was needed was efficiency, without sacrificing quality of care, and the PPC scheme showed promise.\(^9\)

In this chapter, I will show how PPC was formulated in American policy, how it moved to Britain, and how it informed the creation of general intensive care units in the early 1960s. National Health Service hospitals rarely implemented the whole spectrum of PPC – and I will show why – but the scheme did stimulate specifications for intensive care unit facilities and services. Whilst official policy was ambiguous, pilot units opened, and new district general hospitals were planned with centralised intensive care units. Because this occurred without concomitant implementation of PPC, its role has tended to be neglected in historical accounts. This may also be because medical histories of British intensive care have focused on medical (rather than nursing) imperatives. Yet it was a decisive factor, not just for its part in the creation of units, but also for defining critical illness as a degree of nursing dependency.

### 3.2 Progressive Patient Care in America

A 15-strong team, representing the full range of hospital interests, was assigned by the US Public Health Service to study PPC.\(^10\) Hospital administrators, doctors, nurses, dietician, architects, equipment specialists, social scientists, biostatistician, medical records librarian and cost analyst all participated. Their first task, in July 1957, was to observe and evaluate Manchester Memorial Hospital’s transition to PPC. The 187-bed community hospital in Connecticut had been operating PPC since 1 April 1957 (including a 27-bed Special Care Unit), instituted by the newly-arrived hospital administrator.\(^11\) The team also met monthly for two-day sessions, held conferences, visited 30 other hospitals and surveyed 7,300.\(^12\) In-depth studies were conducted – the three given priority were bed allocation formula, staffing

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\(^12\) *Elements*, 1962, p. xvi; Abdellah and Strachan, 1959, p. 651. Manchester Memorial was one of around 100 American hospitals utilizing ‘some form’ of PPC at the time, see p. 650.
patterns and a methodology for costs. The scope of work was not limited to organisational or administrative methodologies, but also acknowledged the importance of ‘orienting’ staff, patients and visitors. Hospital administrators were just one of a number of stakeholders who could determine the success or failure of the scheme. Results of the government-sponsored research were published in a draft document in February 1959, along with articles in nursing, medical and hospital administration journals. The final document, *Elements of progressive patient care*, was published in September 1962.

As the principal means of communicating the scheme, the contents of *Elements* are worth reviewing here. It was a paperback manual, hole-punched for filing, and divided into three parts. It began with an outline of the concept – the organisation of facilities, services and staff around the needs of the patient – before characterising each of the five levels of care. Intensive care was constant, close observation, with complicated and time-consuming treatments; intermediate care was routine nursing care; self care was for the physically self-sufficient admitted for diagnosis or health education; long term care was prolonged, skilled nursing care (convalescence and rehabilitation); and home care extended hospital services into the home. The second part of the document presented the ten fundamental principles for planning, both as a flow diagram and checklist. Flexibility was emphasised, as this extract from the foreword showed, ‘The elements of progressive patient care cited elsewhere in this report are not to be considered as “frozen” – unamenable to variation. On the contrary, each hospital should consider the concept in light of its own needs’. The elemental design had an important effect on the way PPC was implemented, as will be discussed later. The final part

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14 *Elements*, 1959. There is a huge primary literature on American PPC. In addition to the Public Health Service policy documents, there were numerous contributory studies, and hundreds of journal articles. See these bibliographies: *Elements*, 1962, pp. 62-5; L E Weeks, J R Griffith (eds), *Progressive patient care: an anthology*, Ann Arbor, The University of Michigan, 1964, pp. 369-85 (concerned that publication in hospital and medical journals limited wider access to the research, Lewis Weeks and John Griffith published this anthology with its 16-page bibliography); Ministry of Health Library, ‘Recent references on intensive care units’, c. 1966, MH 159/48, National Archives, Kew. The US Public Health Service also produced this 16mm film reel: C F Wagner, J Strachan, United States Public Health Service Division of Hospital and Medical Facilities, United States Public Health Service Audiovisual Facility, ‘Intensive care’, Washington, The Service, 1964, National Library of Medicine, Bethesda.


16 Ibid, p. iii.
gave detailed information about each of the five levels of care, under the headings: selection of patients, services required, nursing personnel (selection and staffing), operational aspects, and design and equipment. This last section featured floor plans and suggested unit layouts, and was followed by the extensive equipment lists. The inventory-level detail, the way in which the information was presented as specifications, checklists and flow diagrams, and the tone of the writing, all show how it was intended to be used as a practical manual.

Meanwhile, charitable foundations also invested in research and trials. The Kellogg Foundation supported two experiments in the State of Michigan. In the Foundation’s home town of Battle Creek, an intensive care unit was opened at the Community Hospital in October 1959, and four years later, the McPherson Community Health Center, Howell, implemented the whole spectrum of PPC (see Figures 3.6 and 3.7).17

![Photo: from Weeks and Griffith, 1964, p. 135](image)

**Figure 3.6:** Intensive care unit, Battle Creek Community Hospital, c.1959

The Bennett PR-1 ventilator, seen here in the nurse’s hands connected to piped oxygen, was available from 1959. Its successor, the PR-2, was popular worldwide (as seen in Figure 4.5).

William K Kellogg had worked at the Battle Creek Sanatorium for twenty-five years as an assistant to his elder brother (and physician-in-chief) John, before becoming successful with the famous cornflakes. He had launched the Foundation in the 1930s, and put money into ‘pioneering ventures and new initiatives’ in the health services and education, which

continued after his death in 1951. One of the Foundation’s earliest investments was in the Michigan Community Health Project, funding the construction, renovation and equipment of hospitals in the 1930s. After implementation of the Hill-Burton Hospital Survey and Construction Act in 1946 (giving direct financial support for hospital development), Kellogg funded programmes to improve hospital administration, particularly in rural areas. Financing public policy research was typical of philanthropic organisations at the time, using grants to mediate between academic experts and government. Accordingly, the Kellogg Foundation gave a grant towards construction of Battle Creek’s pilot intensive care unit (with funds also from the Hill-Burton Act and the hospital’s own budget). But it also financed evaluation of the project by the University of Michigan’s Bureau of Hospital Administration, and sponsored training for the unit’s nurses and Director of Nursing.

Evaluation of PPC at the 131-bed McPherson Community Health Center, also funded by Kellogg, was significant research – a three-year study before and after implementation (1962-4), and three years later, a reappraisal, each published. ‘It helped us become daring and experimental, and that was very important, because rarely does a hospital have the money to test new programs by itself’, remarked McPherson trustee, June Zimmerman.

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18 In a large literature on American philanthropists, Waldemar Nielsen is one of the few to profile Kellogg: W A Nielsen, The big foundations, New York, London, Columbia University Press, 1972, pp. 107-18, quote on p. 112.

19 Kellogg Foundation, 1979, p. 64.


But, despite the American government and charitable foundations’ investment in research and trials, PPC had little impact on the provision of intensive care in America. As nursing historians Julie Fairman and Joan Lynaugh show, units were opening from 1953–4, well before publication of the US Public Health Service’s research. By contrast, PPC was influential in the development of British intensive care.

### 3.3 Progressive Patient Care comes to Britain

British hospital services were also under review. Concern for the cost of inpatient care had been evident from the early 1950s. With the headline, ‘The right patient in the right bed’ (just like PPC’s subsequent maxim), a *Lancet* correspondent wrote of ‘the need to secure better classification of patients, so that only those who really require the exceptional facilities of expensive diagnostic or therapeutic units are drafted into them’. The argument became more forcible in the later 1950s, with planning for new hospitals. Thomas McKeown, as Professor of Social Medicine at the University of Birmingham, wrote of ‘a balanced hospital community’, in which patients would be grouped according to their needs. Previously distributed in general, chronic-sick and mental hospitals, patients would instead be

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accommodated according to their need for full hospital facilities, limited hospital facilities (simple nursing and/or mental health supervision), or 'hostel' facilities (for those who remained in hospital 'chiefly for social reasons').

Advocating convalescent annexes, Mr J A Stallworthy of the United Oxford Hospitals wrote frankly that, 'The patient who stays in hospital a day longer than necessary uses the hospital as a hotel' [emphasis original]. 'To serve hot dogs at a shilling a time in the Savoy Grill would be uneconomic, and so is the established practice of keeping convalescent patients in acute hospital beds', he challenged.

Changes to hospital design were also being driven by the rising number of inpatients, and shortage of trained nurses. In the ten years to 1959, the number of hospital patients had risen by nearly 30%. Figures from Birmingham Regional Hospital Board in 1957-60 showed fewer nurses available because of reductions in the working week (from 48 to 44 hours), and longer holidays. A new approach, such as PPC with its efficient use of nursing, medical and technological resources, was timely.

Journals brought the concept to British attention. PPC seemed to be advancing 'like a prairie fire' claimed a Lancet editorial in August 1959, citing as evidence the US Public Health Service's research team, the Manchester Memorial Hospital pilot scheme, and the draft Elements with four-page bibliography. It was the first publicity in a major medical journal, having previously been reported in American hospital journals. A Nursing Times editorial followed within a fortnight, and a week later, a report from the Manchester Memorial Hospital appeared in the Nursing Mirror. Reaction to the programme was not wholly positive. The Nursing Times was unconvinced, with the author calling for team nursing – a trained nurse who planned, delegated and supervised care delivered by a team of students, assistant nurses, auxiliaries and orderlies, 'our own progressive plan' – to be proclaimed more loudly as a scheme for coping with stretched resources. The Lancet was uncommitted. 'It would

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28 Ibid, p. 103.
32 See bibliographies as listed in footnote 14. The first publications in major American journals were Abdellah and Strachan, 1959, and Lockward et al, 1960.
34 'Constant care unit?', NT, 1959, p. 835.
clearly be unjustifiable to spend public money here...on a plan not yet shown to be effective’, but hoped that funds might be found for trials. A degree of reflexivity was present in the American literature too. ‘Not a panacea’, concluded Robert DeVries in the reappraisal of the McPherson experiment, ‘for the health economist, the hospital administrator, the physician, the nurse, or, for that matter, the patient’. PPC was not a solution to all hospital problems, nor was it the only solution, as the Nursing Times had argued. Rather, it was pitched as ‘one method which shows great promise for alleviating many shortcomings experienced in the traditional hospital arrangement of services’. Jack C Haldeman, the Elements author, had stated earlier that there were ‘other administrative devices for improving services which should be tested’, but had not specified them.

Such devices were perhaps being sought in concurrent operational and functional research. In America, the Operations Research division at Johns Hopkins Hospital (led by Charles D Flagle) was heavily involved with research for Elements. Similarly, the evaluation of Battle Creek’s intensive care unit by the University of Michigan’s Bureau of Hospital Administration included 1,400 hours spent making over 40,000 separate observations and recordings of nursing activities. The categories into which the activities were classified give an insight into the nursing work of the unit, and the scrutiny it received: ‘Direct patient care, records function, other than patient care [which included ‘travelling and waiting’ and ‘care of equipment and supplies’], information, personal time, medication function’. In Britain, operational research in the 1950s was led by the Nuffield Provincial Hospitals Trust (NPHT), who produced The work of nurses in hospital wards – report of a job analysis in 1953, and Studies in the functions and design of hospitals in 1955, which included tracing nurses’ patterns of movement around ward units, and filming nursing procedures to assess the space required around each bed. The NPHT also sponsored functional analysis conducted by

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37 Elements, 1962, p. iii.
38 Haldeman, 1959, p. 407.
40 This represented a 3-month study in the ‘after’ phase (January-March 1960), for comparison with nursing activity before the unit was opened in October 1959. See Kellogg Foundation, 1964, p. 132.
41 Ibid, p. 134.
42 Nuffield Provincial Hospitals Trust, The work of nurses in hospital wards – report of a job analysis, London, Nuffield Provincial Hospitals Trust, 1953; Nuffield Provincial Hospitals Trust, Studies in the functions and design of hospitals: the report of an investigation sponsored by
regional hospital boards. In 1962, an objective of Oxford RHB’s Operational Research Unit was to construct ‘an index or simple ready reckoner of nursing activities’, to be applied as a daily assessment of the care required by each patient. Like the American research, this was a work study, to investigate the tasks performed, and then advise on the optimal use of nursing skills. It was driven by the search for efficiency: were registered nurses being deployed to the best advantage? Could non-nursing duties be reallocated to auxiliaries or other departments such as a central sterile supply, or pharmacy replenishing stock according to a schedule? But it was also a study of nursing dependency, detecting differences between patients in terms of the nursing they required. ‘Care groups’ emerged, defined according to the level of care needed – a pattern echoing PPC. Mr Alex Barr, Oxford’s Chief Records and Statistical Officer, described three groups – self care, intermediate care and intensive care – and the criteria for classification. What is important for this chapter is that admission to the intensive care group was according to nursing dependency, that the identity of intensive care was centred around practice – what happened in the unit (not what the unit had in it) – and that critical illness was defined by the degree of nursing needed, not simply the severity of illness.

1962 – a turning point

Events in 1962 marked a turning point for British intensive care. A conference on PPC revived interest in the scheme, the government announced its ten-year Hospital Plan, and a Ministry of Health working group issued advice for the planning and running of intensive care units. PPC had not received much publicity since 1959. Of note though was the Ministry of Health’s activity in the intervening period. Chief Nursing Officer, Miss Kathleen Raven, had been awarded a World Health Organisation fellowship for two months’ research in nine American cities, visiting government departments, the Kellogg Foundation, nursing schools, and

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43 See for example Oxford Regional Hospital Board, Operational Research Unit, Report No. 2: Nursing care in a modern hospital, Oxford, Oxford Regional Hospital Board, 1962. From 1959, the Ministry of Health had a permanent Organization and Methods Service, and each regional hospital board was entitled to appoint ‘a properly trained assistant secretary to specialize full-time in organization and methods and work study activities’. See ‘News and comment’, Nursing Times, 1959, 55 (6): 152-3, p. 152.


45 A Barr, ‘Measuring nursing care’, in G McLachlan (ed), Problems and progress in medical care, London, Oxford University Press, 1964, pp. 77-92, on p. 79. Criteria were itemised on a form for each patient, under the headings: ‘mobility, bathing, toilet, feeding, treatment, mental state, single room requirement, extra staff and no. of hours up’, see pp. 91-2.
hospitals to observe PPC, hospital planning, and nurse staffing patterns.\(^4^6\) Her report covered these subjects and asked, ‘Can Progressive Patient Care be carried out in the National Health Service?’ She recommended surveys and experiments, arguing that, ‘We, like the Americans, have a shortage of trained nurses, and with the increasingly early age of marriage we can expect even less newly qualified nurses to remain as full-time staff. Anything which can be done to make the very best use of the skills of trained nurses should be encouraged’.\(^4^7\) Raven also briefed participants at an architects’ conference, reprinted in the *Nursing Mirror* in December 1960.\(^4^8\) From the Northern Ireland Hospitals Authority, Miss Anne White’s review of PPC was published in the *Nursing Times* in March 1961.\(^4^9\)

Then, in June 1962, over 300 British hospital staff gathered to hear about PPC at a two-day conference in Birmingham. It was a considerable audience for the subject, mostly administrative officers, but also doctors and nurses. It enabled dissemination of the idea in a much more direct way than the preceeding handful of journal articles. Invited speakers from America – Dr Edward T Thompson (from the Public Health Service), and Dr Howard J Lockward and Mr Edward J Thoms (from Manchester Memorial Hospital) – shared their experience. Thompson reported that since 1957 over 400 American hospitals had opened intensive care units, and declared that any hospital without PPC by 1970 would be ‘obsolete’.\(^5^0\) Delegates discussed the ways it could be implemented in Britain, its pros and cons. The most important benefit was efficiency. Specialist staff and equipment would be centralised in the intensive care unit rather than duplicated across many medical and surgical wards. The biggest fear was that the patient would be reduced to an object on an assembly line, moving from ward to ward and lacking continuity of care with one medical and nursing team. In review, the *British Medical Journal* speculated on its potential impact: ‘If the


\(^{5^0}\) ‘Progressive patient care’, *BMJ*, 1962, p. 1827.
American experience is accepted in this country it is likely that progressive patient care will be the pattern of the future’\textsuperscript{51}

Assessing the merits of PPC was considered important for the Hospital Plan. An election pledge for the 1959 Macmillan government, capital investment in hospitals was badly needed, to provide – as consultants to the British Medical Association reported – twentieth-century buildings for twentieth-century medicine.\textsuperscript{52} Facilities were outmoded and poorly distributed, and services uneven in quality. The 1962 Hospital Plan proposed 90 new hospitals, the remodelling of 134, and the closure of 709 non-psychiatric hospitals. A network of District General Hospitals was envisaged – 600-800-bed hospitals, with no fewer than two consultants in each specialty, serving populations of 100,000-150,000. The Plan also initially approved funding for 356 schemes each costing over £100,000.\textsuperscript{53} Histories of the episode have focused on whether it constituted ‘properly conceived planning’. John Mohan, for example, argues it was an aggregation of Regional Hospital Board plans (submitted in 1961) rather than a ‘comprehensive and national blueprint’.\textsuperscript{54} Proposals from the fourteen RHBs did vary in scale and ambition, and as observed in a British Medical Journal editorial on PPC, ‘The medical and nursing professions must come to a decision soon if they are to have what they want in the new hospitals to be built as a result of the Hospital Plan’.\textsuperscript{55} One of the proposed new hospitals was for Coventry, a project for Birmingham RHB. The draft Elements, and a research visit to North American hospitals were cited as resources for planning, as was the Nuffield Provincial Hospitals Trust 1955 report on hospital design.\textsuperscript{56} Their intention, acknowledged to be due to the initiative and foresight of regional nursing officer, Miss D L Hall, was to construct intensive and non-intensive care areas in the new hospital, the elements ‘most profitably applied’ in Britain.\textsuperscript{57} This perhaps explains their interest in

\begin{itemize}
  \item \textsuperscript{51} ‘Progressive patient care’, BMJ, 1962, p. 1817.
  \item Abel and Lewin, 1959, p. S111.
  \item National Health Service, A hospital plan for England and Wales, Cmd 1604, London, HMSO, 1962. District General Hospitals were mentioned in the plan, but described in more detail in the 1962 report of the Chief Medical Officer, George Godber. See Ministry of Health, On the state of the public health: the annual report of the Chief Medical Officer of the Ministry of Health for the year 1962, London, HMSO, 1963. Revisions were made to the plan during the 1960s, and proposals scaled down, as it became clear that some projects would take longer than 15 years to complete. Separate plans were published for Scotland (1962) and Northern Ireland (1966).
  \item Porter, 1962, p. 35; Nuffield Provincial Hospitals Trust, 1955.
  \item Porter, ibid.
\end{itemize}
sponsoring the PPC conference, as an opportunity to discuss, share and showcase their experience.

In November 1962 – five months after the conference, and one month after the full publication of *Elements* – the Ministry of Health published an interim report of a departmental working group on PPC, both as a report and a circular. The working group comprised Ministry of Health officers and medical and nursing leaders from the hospital service – see Appendix B. Although mostly junior officers, a number of members were of particular note. Miss Kathleen Raven, the Chief Nursing Officer, was familiar with PPC from her research visit to America in 1960. She had been appointed to the Ministry in 1957, succeeding Dame Elizabeth Cockayne as Chief Nursing Officer in 1959. Misses Constance Biddulph and Mary Le Quesne Mitchell were Hospital Nursing Officers appointed in 1959 and 1960 respectively. Mary Mitchell was the first nursing officer to be assigned to hospital planning. An architectural, engineering and medical design unit had been established in 1954 to produce bulletins and building notes, and Raven considered nurse planners essential for the team – to give architects ‘first hand all the daily operations of the ward’. In interview, Mary Mitchell recalled her contribution to the building notes (including for the intensive care unit), as abridged below:

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60 ‘Ministry appointment’, *Nursing Times*, 1959, 55 (19): 544; ‘Appointments: Ministry of Health’, *Nursing Times*, 1960, 56 (13): 394. A third officer, Miss H M Simpson, was also elected to the working group.

One was just a worker, working flat out to try and get them out, for every hospital, for every department in a hospital. [...] And you know the kind of job I had to try and get in for example, I’d say to them, ‘Where does a nurse change’? You know...they’re no longer living in. [...] And you had to start trying to think ahead of what is going to happen. [...] But...one had to know one’s...a bit about hospitals before we could sit down and do the Building Notes’.62

From the hospital service, both Oxford and Birmingham RHBs were well represented on the working group. The two Boards were highly regarded by the Ministry for their work in hospital planning.63 Miss Irene James, Oxford’s regional nursing officer, had recently been involved with the Board’s report, Nursing care in a modern hospital, and Dr J O F Davies – appointed Chair of the working group – had published on hospital planning, recommending ‘intensive nursing-care units’ as early as 1960.64 Dr K R D Porter and Miss L Pugh Jones from Birmingham RHB had both been involved with the PPC conference earlier that year.

The stated objective of the group was to consider American experience with PPC and ‘attempt to assess the scope and criteria for its adoption in National Health Service hospitals’ in England and Wales.65 But significantly, the interim report focused chiefly on the provision of intensive care units. No explicit reason was given, only that this was where they had confined their attention ‘at this stage’.66 The Scottish Home and Health Department took a different approach. In their 1963 Hospital Planning Note on ward design for general hospitals, they acknowledged the advantages of a single intensive care unit (centralised staff and equipment), but were dissuaded by the drawbacks – a lack of continuity of nursing, ‘unremitting’ duties for staff, and fluctuating occupancy. ‘[W]e have decided to experiment with a rather less radical departure from customary nursing arrangements’, they concluded, advocating a more flexible 12-bed intensive care area for each 60-bed ward.67

62 Oral history interview, M Mitchell, pp. 25-6. By 1972, the Nursing Division’s planning section had ten officers, and Miss Mitchell’s specialist subjects were recorded as intensive therapy and coronary care. K A Raven, ‘Nursing Division’, April 1972, 13pp., p. 4. Papers of Dame Kathleen Raven, Leeds University Library Special Collections MS 1721, Box 7.


66 Ibid.

67 Scottish Home and Health Department, Hospital Planning Notes, 1. Ward Design, Edinburgh, HMSO, 1963, pp. 6-7. Flexibility in staffing and occupancy continued to be listed as the reason for this policy decision well into the second half of the decade. See Scottish Hospital Centre, The functional analysis of ward plans (Centrepiece series), Edinburgh,
and Wales, intensive care was probably seen as being the most innovative element of the programme. Home care was described as ‘a phase which in this country falls primarily to domiciliary services’, and self care was seen as contrary to contemporary policy, where the ‘national trend’ was towards early ambulation and early discharge. Patients qualifying for self-care would probably be treated as outpatients, they stated.68

The content of the report was comparable to the American model expressed in *Elements*. The purposes of the intensive care unit, and types of patient to be admitted were very similar. The primacy of nursing care was evident in both documents. In *Elements*, the section on staffing was titled ‘Nursing personnel’, and the key issue was the ratio of nurses to beds, without any mention of medical staffing.69 Doctors were largely absent, visible in the text only when summoned during an emergency, or by the presence of a doctors’ charting room adjacent to the nurses’. Units were frequently referred to as ‘nursing units’, and ward design recommendations were geared towards their use of the space. An important feature was the elevated, centrally located nursing station, commanding a view of every bed, which enabled maximum vigilance in the observation of patients (see Figures 3.8 and 3.9).70 In the working group’s interim report, PPC was described as ‘the systematic grouping of patients according to the degree of illness and dependence on the nurse’ [my emphasis], and the first inclusion criterion for intensive care was ‘one who needs “special nursing”’. Patients were not to be admitted simply because they were ‘severely ill’.71

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Scottish Hospital Centre, March 1967, p. 4; Scottish Home and Health Department, *The Falkirk ward unit: an experiment in design*, Edinburgh, Scottish Home and Health Department, 1967.

68 Ministry of Health, *Monthly Bulletin*, 1962, pp. 218 and 222-3. A *Lancet* editorial earlier in the year suggested: ‘There was less agreement about the need for subdividing non-intensive units, since it was felt that many of their aims were satisfactorily achieved in fact, if not in name.’ See ‘Progressive patient care’, *Lancet*, 1962, **280** (7245): 42.


70 Ibid, p. 17. *Elements* (1959) noted the ‘extra high’ (42”) desk, complete with high chair, p. 29. For ‘nursing unit’ see p. 39, where the plan is labelled ‘Intensive Care Nursing Unit’.

Figure 3.8: Plan of six-bed intensive care unit, 1962

Nurses had surveillance of all six beds from their desk (numbered 7 in this plan) in the centre of the unit, even the isolation room with its glazed door and partition (numbered 11 and 5).
Sister Joan Guy, standing at the nursing station, had a view of the whole 12-bed unit, adapted from a 32-bed Nightingale ward in c.1964. An article in the *Nursing Times* pictured the other end of the ward, with two glazed isolation rooms ('Intensive care ward', 1964).

In other respects, the interim report acknowledged the particular circumstances of the hospital system in England and Wales, and its diversity of hospital size, expertise, administration and teaching facilities. The report could offer ‘no more than broad principles as to the size of the unit and the equipment needed’ because of the variation between hospitals. For the majority, a single unit with 6-12 beds, providing for about 2% of acute patients, was advised.\(^73\) Unit administration was considered a matter for ‘local decision’, although it was suggested that medical staff determine admission criteria, to be applied by a consultant ‘referee’.\(^74\) No precise recommendation for the number of nursing staff was made – a calculation shown by American PPC research to be subject to variations in unit size and

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\(^72\) With thanks to Freda Ellis and colleagues for annotating the series of photographs.

\(^73\) Ibid, pp. 224 and 220. This differed to *Elements*, which featured floor plans for 17 to 29-bed intensive care units, comprised of one, two, or six-bed rooms, catering for a larger percentage of hospital inpatients. The new Coventry hospital’s proposed ‘intensive-nursing units’ were based on this model, being wards of up to 30 beds, divided into 6-bed bays – calculated to cater for 6-8% of the hospital population. *Elements*, 1962, p. 59; ‘Progressive patient care’, *BMJ*, 1962, p. 1828; Porter, 1962, p. 35.

layout, type of patients, and use of auxiliary staff – but it was essential to have enough trained nurses to cover expected occupancy.75

Whilst aiming to give practical advice for the planning and running of intensive care units, the authors of the report and Ministry of Health circular were keen to point out that it was based on limited research and experience. It is difficult to identify the research because the files of the working group held at the National Archives postdate the report. The Royal Marsden was the only intensive care experiment mentioned by name in the report, cited as a ‘particularly good example’.76 A list of hospitals visited, compiled by working group member Dr W Lees in January 1963, suggested other sources: Barnet, Guy’s, Southend General, Sheffield Royal Infirmary, Birmingham Accident, and Mid-Ulster hospitals.77 The report stressed scope for further experimentation, and solicited notification and description of ongoing and new pilot units. Only then could ‘definitive advice’ be given.78

3.4 Building intensive care units

Classification surveys and pilot units

Over the next few years the departmental working group collected further evidence on units, and the Ministry of Health funded at least one study.79 A paper classification exercise had been recommended in the interim report – a 3-12 month prospective study of patients suitable for admission to an intensive care unit. ‘Criteria for admission to or retention in unit’, ‘specific treatment or care given’ and ‘special apparatus used’ were all to be recorded on a form, as was length of stay, giving an indication of the most important planning factors.80 American experiences of PPC also provided reproducible methodologies for patient classification. An innovative method was developed at Manchester Memorial Hospital by the

75 Ibid, p. 221. Abdellah and colleagues’ study of 71 American intensive care units showed no single nursing pattern – they all varied, see Abdellah et al, 1964, pp. 60-1.


77 Lees minuted the list on 4 January 1963 in response to an enquiry from Brighton and Lewes Hospital Management Committee. Visits must have been prior to this date, presumably in preparation of the report. Minute Lees-Davies, 4 January 1963, MH 159/48, National Archives, Kew. Sheffield Royal Infirmary’s Matron, Miss P Gossop, reported central sterile supply and a trial PPC ward (in its earliest stages) in a 1961 article in the Nursing Mirror, see P Gossop, ‘Solving “the nursing problem”: some ideas (including group assignment in progressive nursing care)’, Nursing Mirror, 1961, 112 (2926): 1403-4. See also M E Kingdom, ‘Acute and routine wards, Barnet General Hospital’, Nursing Times, 1961, 57 (18): 563-6.


79 See MH 159/48, ibid.

80 Specimen form in Ministry of Health, Monthly Bulletin, 1962, p. 226. A 12-month study was recommended to take account of seasonal variations.
US Public Health Service team in 1959-60, and refinements later tested at North Carolina Memorial Hospital, Chapel Hill. Thirteen criteria or needs (described as ‘need factors’) were identified. Eight were for nursing observations and activities – TPR/BP (temperature, pulse, respiration/blood pressure), haemorrhage, consciousness, orientation (confusion), bathing, mobility, dietary, and need for isolation. Five were for therapy – stimulants (Levophed/Aramine), oxygen, suction, infusion/transfusion, and pacemaker/respirator. They were then weighted as indicators for admission – one compelling indicator for intensive care was sufficient for admission, as was four or more moderate indicators. To determine at a glance whether the patient met these criteria, the team produced an overlay for the patient-condition checklist, see Figure 3.10.\(^{81}\)

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\(^{81}\) Haldeman, 1964, p. 53. Between the two experiments, the criteria were simplified from graded answers to binary, four criteria were dropped (vomiting, motor activity, mood and bathroom privileges), and one added (pacemaker/respirator). See *Elements*, 1962, p. 10.
Figure 3.10: Patient coding overlay, 1963

To determine at a glance whether the patient had any compelling or moderate indicators for admission to intensive care, the shaded boxes were cut out, and the sheet layed over the patient’s condition checklist to note any corresponding marks.

Back in England, the centrally funded study was a patient classification survey in three London hospitals in February-June 1963, for which the South West Metropolitan RHB received £2,000. The first survey was conducted at St James’s Hospital, Balham, which had been

82 Hospitals surveyed were St James’s (Balham), St Stephen’s (Fulham), and St Mary Abbots (Kensington), and the Ministry were confident it would yield valuable information. See letter E G Braithwaite-J B Cornish, 26 March 1963, and minutes Cornish-Gedling, 2 April 1963 and 12 June 1963. ‘Operational research money’ was available for the costs of running experiments –
grading patients according to their degree of nursing dependence since 1960. Deputy Matron, Miss Patricia Redman, had reported that ‘traffic light’ seals were being attached to the temperature chart or name card, from red for ‘concentrated nursing care’, to green for those admitted for investigation, or pre-discharge. The system was adopted for efficiency – to save nursing time by eliminating duplication of care and instructions – but could also be utilised by the Regional Hospital Board as a classification survey. The person driving the RHB’s study was the Assistant Senior Administrative Medical Officer, Dr Stephen Mackenzie. The Ministry had asked Senior Administrative Medical Officers to act as ‘catalysts’, to encourage their Hospital Medical Committees to set up experiments and trials, and Mackenzie (with the support of the region’s SAMO, Dr W J Gill) had done just that.

Advisors to the South West Metropolitan study were also carrying out their own classification exercises: Oxford RHB’s 230-day survey ran from 13 November 1961 – 30 June 1962, with results made available in November 1963, and St Thomas’ Hospital began their one-year classification exercise on 1 July 1963. The start date of the United Bristol Hospitals’ survey – December 1962 – suggests it was stimulated by the interim report, although the methodology differed slightly. Theirs was an incidence (rather than prevalence) study, a review of occasions on which the anaesthetic department had assisted with intensive care in general wards (so not including intensive care given by other specialists). It was conducted with a view to choosing which hospital in the group should have the intensive care unit. Of the 143 patients attended to for artificial ventilation, tracheostomy, or endotracheal intubation (December 1962 – March 1965), 127 were inpatients at Bristol Royal Infirmary, leading to proposals for a six-bed unit to open there in autumn 1965. The range of research and planning is evident in these four examples: Oxford’s survey in advance of the interim report,

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84 ‘Notes of meeting of S.A.M.Os, held on 21.5.1963’, p. 2, MH 159/48, ibid. Mackenzie’s interest was also demonstrated by his article in The Hospital, see Mackenzie, 1962.


South West Metropolitan RHB capitalising on operational research funding to expand its study of nursing dependency, Bristol's method for determining unit location, and St Thomas' representing a teaching hospital.

Pilot units built on this planning work. Classification criteria were applied as admission criteria for the pilot intensive care units, and the size of the unit was calculated from the proportion of patients identified by the preliminary surveys. St Thomas' found that their research concurred with the recommendations of the Ministry’s interim report – 2% of acutely ill patients, with a 1-2 day length of stay.87

One of the earliest accounts of a pilot unit came after the interim report was distributed to Northern Ireland's Minister of Health, A P Fitzgerald. He replied to say that PPC was 'receiving considerable attention here [in Northern Ireland]', and enclosed a preliminary report of a pilot scheme being carried out at the Mid-Ulster Hospital, Magherafelt (35 miles from Belfast).88 In summary, the scheme had started in July 1961, with a £1,000 grant to modify and equip a ward as an intensive care unit, together with intermediate care and a self-help unit. Admissions to the eight-bed intensive care unit were mostly surgical, by about 2:1, and the average length of stay was 3.4 days (although the report acknowledged that a lack of space in intermediate care occasionally delayed discharge from the unit). Of the 304 patients admitted during the six-month study period, only twenty died (7%). The unit was staffed by nurses with a great interest in their patients, which 'found expression in eager questioning over the lunch table'.89 The hospital could not afford to assign a full-time junior doctor, and it was not always easy to summon one in an emergency. The pilot scheme found that most of the required equipment was already in the hospital, but that it was used more efficiently and economically now located together. Piped oxygen and suction was recommended for a permanent unit, not least because of the noise of moving oxygen cylinders and suction apparatus (sound insulation, especially flooring, was to be a future planning consideration). Patients’ attitudes were also investigated, and 169 returned a questionnaire. Results

regarding intensive care were not that surprising – ‘the very ill patient and his relatives are very appreciative of the minute care and attention that the patient receives’, or that the move to intermediate care was felt to be progress, ‘a step nearer home’ – but the fact that patients’ attitudes were sought is significant. In particular, there were occasions on which the research challenged previously held beliefs. ‘To our surprise and delight’, they wrote, patients returning to the intensive care unit with further complications were not anxious, but relieved. The Nursing Times concluded that the experiment ‘deserves to be watched closely’.

In the North West of England, a general intensive care unit was opened at Wigan Infirmary as a result of the PPC conference. Manchester Regional Hospital Board’s minutes show that the unit’s origins were from the Birmingham meeting in 1962. They also demonstrate the methods and time scales of RHB planning. Chair of the Nursing Committee, Mrs Lilian A Pratt, was authorised to attend the June 1962 conference (together with a medical officer and the nursing officer), and reported back to the committee later that month. Hoping to initiate experiments in one or more of the region’s hospitals, the committee passed the matter to the Board’s Planning and Development Committee, who acknowledged that PPC might have ‘repercussions’ on the planning of new and expanded hospitals. The Board saw publication of the Ministry’s interim report as a go-ahead, and by February 1963 a number of groups were proposing to carry out preliminary classification exercises. A pilot intensive care unit of 6-10 beds was approved in December, and in March 1964 the Royal Albert Edward Infirmary, Wigan, was selected as the site, where ‘a considerable amount of pioneer investigation’ had already been carried out. The Guardian reported that Wigan was chosen because of its proximity to the M6 motorway.

Over the next two years, specifications changed, and costs crept up. In May 1964, electronic equipment for monitoring blood pressure, pulse rate and temperature was approved, adding

90 Ibid.
92 Manchester Regional Hospital Board, Minutes 1962-1963, Manchester, Manchester Regional Hospital Board, 1963, pp. 121, 155, 223, CHSTM Library.
94 Manchester RHB, ibid, p. 490.
£2,000 to the total. Later that year, observations by the Ministry of Health’s medical and nursing officers resulted in a revised layout, with an estimated cost of £15,307. It was standard practice for the Ministry to check and sign off regional plans at this time, but it was time consuming and caused delays. Documents to tender were sent to local building firm George Moss & Sons, who had just completed construction and maintenance work at Leigh Infirmary. The invitation was sent by Douglas Clayton, Wigan Infirmary’s supervisor for building work, and architect of the proposed unit, who had previously been employed by George Moss & Sons as a joiner and then surveyor. The firm was appointed contractor, and on 30 August 1965, The Guardian reported that work was due to start on the £18,000 unit the next day. In interview with Walter Moss, Outside Supervisor, he recalled that the firm did all the building and electrical work, with plasterers and plumbers the only sub-contractors. Piped oxygen was installed to each bed, and electricity supplied for the monitoring equipment. Holes were cut in the walls to put in sliding doors for the new unit, and the only complication was that Foreman in Charge, Tom Croston, measured the doors incorrectly, so that when fitted they did not meet in the middle – soon rectified with new doors. According to the Board’s minutes, the scheme was completed a year later, four years after first proposed. Its opening was not announced in The Guardian until May 1967 – perhaps prompted by the opening of the RHB’s first coronary care unit (at Hope Hospital, Salford) on 9 May 1967.

An eight-bed intensive care unit at Whiston Hospital in Prescot, Lancashire, was opened more rapidly. A scheme was submitted to the RHB in August 1962, and forwarded to the Ministry as part of the region’s submission for funding under the Hospital Plan. It was approved in September 1963, work started the following January, and the unit opened on 20 March

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95 Manchester Regional Hospital Board, Minutes 1964-1965, Manchester, Manchester Regional Hospital Board, 1965, pp. 100, 454, CHSTM Library.

96 It became an overwhelming task by the late 1960s, and was then delegated to regional officers. See oral history interview, M Mitchell, pp. 5-6.


98 Telephone interview with Mr Walter L Moss, 20 March 2010.


100 ‘Accident unit’, The Guardian, 1967; ‘Salford heart unit opened’, The Guardian, 10 May 1967, p. 16. Unlike Wigan’s general intensive care unit which was funded from the Board’s Capital Emergency Reserve (see Manchester RHB, 1965, p. 454, CHSTM Library), the Salford heart unit was financed with the aid of private donations, including £5,000 from one donor and £500 from the Manchester and Salford Hospital Saturday Fund (see ‘Start on hospital heart unit soon’, The Guardian, 12 August 1966, p. 5).
1964. PPC played a lesser role in its development than at Mid-Ulster or Wigan. Instead it was an expansion of the work of the three-bed Respiratory Unit (two side wards adjoining a children’s ward), which had been in operation since 1961. In its first year, patients were frequently observed to need more than respiratory support – other bodily systems often failed concurrently – and an artificial kidney machine was purchased to treat renal failure. Government funding in 1963 enabled it to move to a permanent, purpose-built intensive care unit. PPC was not entirely absent from deliberations – Ian Gordon and Eric Sherwood Jones recalled an influential lecture on the subject from Miss Anne White (previously mentioned working for the Northern Ireland Hospitals Authority, then Matron, Royal Southern Hospital, Liverpool). But specification of the unit was more informed by the preceding work of the Respiratory Unit than the principles of PPC. ‘It’s the men not the need which have largely determined this layout’, reported Senior Medical Officer Dr W Lees in correspondence with Ministry officials, with ‘gimmicks like artificial kidneys and in future a hyperbaric oxygen tank’ reflecting the interests of the consultants in charge, not the hospital as a whole.

The working group’s final report, and the decline of PPC

Over the next few years the departmental working group collected further evidence on units, and attempts were made to collate the information. A six-page document, ‘Progressive patient care experiments and studies’, was produced for the April 1964 meeting of the Senior Administrative Medical Officers, listing 42 units, mostly intensive care but also some self-care. 25 intensive care units were in operation, 3 were nearing completion and 14 were under study. The list included trauma, respiratory and postoperative recovery units – special care areas seen in Chapter 2 – which complicated calculation of the number of units in operation.


105 Minute Lees-Mitchell/Biddulph/Pronger, 10 April 1964, MH 159/48, National Archives, Kew.

106 ‘Progressive patient care experiments and studies’, April 1964. A similar document was distributed to Hospital Management Committees, Regional Hospital Boards, and Boards of Governors three months later, by which time another five units were in operation, see ‘Progressive patient care experiments and studies’, 1 July 1964. The very first list was compiled in February 1964, a 3-page document, titled ‘Progressive patient care – information on hospital experience and experiments’. All in MH 159/48, ibid.
The blurring persisted in further attempts to create a list in 1966.\textsuperscript{107} Evidently, although some regarded these spaces as functionally different and organisationally separate, there was no single definition: at the hospital level, the term ‘intensive care unit’ applied equally well to special care areas as it did to a unit inspired by PPC.

Meanwhile, preparation of the group’s final report on PPC was underway. Attention had turned to the study of self-care, in order to establish the size of sectors – with intermediate care being what was left after intensive care and self-care were accounted for. Dr Lees and Miss Biddulph, who had conducted the pilot self-care investigation in January-March 1963, were nominated to lead the full investigation, expanded from six to sixteen hospitals.\textsuperscript{108} While data was collected, and numbers crunched by the statistics department, working group meetings fell fallow. In June 1964, Chief Nursing Officer Kathleen Raven noted that group members were anxious for news, not having met since March 1963.\textsuperscript{109} This prompted an interesting comment from Assistant Secretary Mr Pronger (not least because the lower right corner of the page was also cut away), ‘I am by no means enamoured of the particular group we had’, he said, ‘I think we shd. see where they [the statistics] lead + give our own views before we decide what views we want’.\textsuperscript{110} In later correspondence with senior administrators, Lees suggested, ‘We have felt somewhat dissatisfied with the Working Party throughout & I certainly would like to discuss the implications of carrying on with a final report without them. I know Mr Pronger was of a similar outlook’.\textsuperscript{111} No further meetings were held with external members, effectively squeezing them out and reducing the working group to Ministry officers only. To some extent the comments were surprising because the records gave no hint of ill-feeling before then. But the grounds for ‘dissatisfaction’ – the first signs of waning confidence in PPC – became evident on circulation of the full draft report.

The thirteen-page report (plus appendices) was made available in December 1965, and brought together the interim report with the latest research on the other PPC elements. As

\textsuperscript{107} See documents titled ‘Known intensive care/therapy units’ and ‘Hospitals for which intensive care/therapy units are planned’, December 1966, in MH 159/48, ibid. The ‘Remarks’ column shows the confusion regarding the labels applied – as intensive care units or other special care units.


\textsuperscript{109} Minutes Raven-Pronger/Lees, 22 and 26 June 1964, MH 159/45, ibid. The last meeting of the whole group had been on 26 March 1963, see ‘Minutes of seventh meeting’, ibid.

\textsuperscript{110} Minute Pronger-Raven/Lees, 22 June 1964, MH 159/45, ibid.

\textsuperscript{111} Minute Lees-Downer/Rossington, 2 October 1964, MH 159/45, ibid. Downer was the working group’s Secretary, and Mr M H Rossington, an Assistant Secretary in the Ministry.
had been agreed at an office meeting shortly after Lees’ note above, comments were only then sought from the external members, and in writing. Miss Pugh Jones (Matron, Coventry and Warwickshire Hospital) gave the following response:

‘I am somewhat concerned that there has been no meeting held to discuss the findings of the various studies other than on Intensive Care. Whilst I think such a pattern of Patient Care desirable in many aspects, I cannot see any hope of its implementation, and I rather dislike the thought of my name appearing on a publication which I do not believe contains practicable advice’.

Pencil-drawn lines marked this passage of the letter, and in a note following, Lees wrote, ‘It was in anticipation of attitudes like this that we did not resurrect the Working Party on Intensive Care for the remainder of the exercise’. Miss Pugh Jones’ pessimism was based on reasoned opinion – that the number of trained nurses required was prohibitively expensive. As Dr Geoffrey Spencer recalled in interview:

‘It meant that every intermediate care ward had to be staffed with nurses that could do everything that is normally involved throughout the hospital [general and specialist medicine and surgery] [...] It just didn’t make a ward, because you couldn’t supply competent, experienced nurses to cover such a wide range of needs in every part of the hospital where intermediate care was practised’.

Miss Pugh Jones’s letter revealed scepticism that despite the theoretical benefits of the system, it could not be practicably applied. It was scepticism that lingered well into the 1970s, as I will demonstrate towards the end of this section.

The final ‘Survey of Progressive Patient Care’ was circulated to office members on 10 January 1967. How had the notion of intensive care developed since the interim report in 1962? Was the group now able to offer definitive advice? Recommendations for the size of the unit

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114 Minute Lees-Selby, 14 January 1966, MH 159/45, ibid.

115 Oral history interview, G Spencer, pp. 3-4.

were similar to 1962 – a single unit, with six to eight beds (upper limit reduced from 12), accommodating 1-2% of hospital patients (reduced from 2%). Specifications for equipment and services were made – the need for a small laboratory, relatives’ waiting room, cubicles with double the bed space of regular wards, fixed oxygen and suction lines, soft general lighting (and natural daylight) and strong, concentrated illumination for ‘bedside operative work’ (such as insertion of intravenous lines). A steel, wall-mounted rail for equipment, to prevent clutter in the bed space, was a specification borrowed from Scandinavian hospitals.

In October 1964, Misses Barbara Thomas (Ministry architect) and Mary Mitchell (Hospital Nursing Officer and working group member) had visited 17 hospitals in Sweden, Denmark and Germany, reporting their findings and recommendations for planning in the Ministry Bulletin. The article specified the height of the rails from the floor, listed the apparatus that could be clipped on, and provided photographs from units at Nacka Hospital, Stockholm, and Sahlgrenska Hospital, Gothenburg.  

117 Ibid, p. 4.  
118 Ibid, pp. 5-6.  
120 Thomas and Mitchell, 1965, p. 314, photographs opposite pp. 314, 318. The authors credited Professor O Secher at the Rigs Hospital, Copenhagen, as the innovator, citing his paper: J Rosen, O Secher, ’Intensive care unit at University Hospital, Copenhagen’, Anesthesiology, 1963, 24 (6): 855-61, [rails pictured on p. 858].
Sister-in-charge of the intensive therapy unit, Mary Salter, adopted ideas she had seen on visits to six Danish units, such as the space-saving equipment rail (Salter, 1966).

Advice on the management and nurse staffing of the unit were as in 1962, but the term ‘intensive therapy’ was introduced – conveying emphasis on treatment of the critical situation – and doctors were more visible in the text, such as with the necessity for an on-call rota.¹²¹ This shift from ‘intensive care’ to ‘intensive therapy’ will be examined in more detail in the next chapter.

The report was disseminated in a number of ways. Firstly, it was circulated through the usual Ministry machinery – to the Standing Nursing Advisory Committee, and meetings of regional administrators.\(^{122}\) At the latter, it was received as an 'important planning aid'.\(^{123}\) Reaching a potentially wider audience, the report was reproduced as a section of the Chief Medical Officer’s annual report for 1966. Slightly rephrased, and with design specifications omitted, its conclusions were advisory rather than mandatory – that PPC could be ‘regarded as a technique for satisfying the needs of individual patients’, by grouping them according to those needs.\(^{124}\) Finally, publication in professional journals was sought, but Lees was unwilling to shorten the report’s length. Only the *Nursing Times* published it, as an Occasional Paper, split into two parts.\(^{125}\)

What is most significant is that the report was not issued as a circular to all hospital authorities (unlike the interim report), files remained open, and discussions of the scheme laboured on through the late 1960s and early 1970s. The medical division seemed confident about implementation – Dr Lees wrote of his certainty that ‘the provision of Intensive Therapy facilities is accepted Departmental Policy & a building note is at present going into print’.\(^{126}\) The Standing Nursing Advisory Committee believed that every new District General Hospital would have an intensive therapy unit.\(^{127}\) But implementation of PPC more broadly was ambiguous. In 1969, Under Secretary Mrs V J M Poole remarked that ‘the whole handling of the Lees-Biddulph report seems to have been rather peculiar’, and concluded that ‘we have not formally sponsored the concept’.\(^{128}\) Yet it was apparent that it was in use in hospital planning – both at regional and Ministry level. All fourteen Regional Hospital Boards had

\(^{122}\) It was considered too long for the Standing Medical Advisory Committee and Joint Consultants Committee, see Working Party on Progressive Patient Care, ‘Note of meeting of office members on 20th January 1967’, MH 159/45, ibid.

\(^{123}\) See for example Meeting of Secretaries of Provincial Boards of Governors, ‘Minutes of a meeting held at Addenbrooke’s Hospital, Trumpington Street, Cambridge, on Wednesday, 5th April 1967 at 2.00 p.m.’, MH 159/45, ibid.


\(^{126}\) Minute Lees-Raven/Selby, 15 April 1967, MH 159/45, ibid.

\(^{127}\) Central Health Services Council, Standing Nursing Advisory Committee, ‘Minutes of a meeting held on 28th February, 1967 at the Ministry of Health, Alexander Fleming House, London, S.E.1’, p. 2, MH 159/45, ibid. This was first suggested in the Chief Medical Officer’s report for 1966, see Ministry of Health, 1967, p. 221.

\(^{128}\) Minute Poole-Hauff, 18 July 1969, MH 160/832, National Archives, Kew.
‘operational policies which provide for progressive patient care in new wards, and all plan for a central intensive therapy unit in each new, or redeveloped, district general hospital’, confirmed Mr C P Goodale (Assistant Secretary in the planning division) in 1969, and Best-Buy and Harness projects also used the scheme.\(^{129}\) Position papers were periodically produced in 1970-1, but none seemed to satisfy the need for conclusive evidence of Departmental support.\(^{130}\) Points for discussion at an April 1970 meeting indicated reasons for reticence: ‘i. Is it a fact that this concept has received tacit Departmental support? If the Department does in fact support the concept should not more formal guidance be issued? ii. Is the Department ready to support progressive patient care as a national concept in view of the possible short-comings’.\(^{131}\)

Two further attempts were made to assess its merits. The first was a search for best practice in late 1970. It was hoped that investigation and identification of such examples could give an indication of ‘how the system could best be introduced physically’.\(^{132}\) In hindsight, it seems curious that evidence of its use in planning, as provided by Mr C P Goodale, did not convince. Again, the medical division played down any contention – at a meeting in November 1970, Senior Medical Officer Dr Twohig stated that ‘the general tenet of progressive patient care was already widely accepted by hospitals’, and that they should be left to adapt the principles for their local use.\(^{133}\) But senior officers wanted confirmation of its fitness for implementation, and this could only be achieved by seeing success in practice, not planning. The search failed to find a single example of PPC ‘in the pure sense’, as a complete system. For Miss Margaret Fraser, Nursing Officer, it seemed clear that ‘apart from intensive therapy the management of patients according to the degree of dependency on nursing care was not being implemented on any appreciable scale in the hospital service’.\(^{134}\) The explanation was that some form of PPC was in use, often in single wards rather than across the hospital as a whole, and steered

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\(^{131}\) Minute Alderman-Poole, 9 April 1970, MH 160/832, ibid.

\(^{132}\) ‘Progressive Patient Care. Note of a meeting held on 4 November 1970’, p. 1, MH 160/832, ibid. Questionnaires were drafted in readiness of visits, see MH 160/832, ibid.


\(^{134}\) ‘Progressive Patient Care. Note of a meeting held on 17 March 1971’, p. 1, MH 160/832, ibid. A position paper in May 1971 stated that ‘if the idea were as good as it is presented in discussion, some measure of implementation in the field would be expected’. See ‘Progressive patient care in hospitals’, May 1971, p. 3, ibid.
by local needs. The second attempt came in April 1971, when Mr W G Robertson, newly responsible for PPC, also showed concern for the lack of evidence — ‘that it has been demonstrably instrumental in achieving either a better quality of care [for patients in general, handwritten] or a higher throughput’, while Mrs Poole continued to be uneasy that the Department had not given its ‘official blessing’ to the concept. Finally, in October 1971, Mr L H Brandes, Under Secretary of one of the Hospital and Specialist Services divisions, called time. ‘I think it is now generally accepted that PPC as such is not a subject to be pursued...I think “PPC” will disappear from future distributions of business’. The file was occasionally reviewed, and then put aside in 1977.

3.5 Impact of Progressive Patient Care on British intensive care

It was not inevitable that the working group would have a strong, policy outcome. Ministry members of the group and the department’s medical division did champion PPC for the greater part of the 1960s, but it was rarely implemented as a whole hospital scheme. There are a number of reasons why it was not more widely and completely taken up. Firstly, it did not bring the economies of nurse staffing that had stimulated initial interest in the model. Reports from the Mid-Ulster Hospital pilot scheme concluded there had been no net saving of staff nor reduced running costs. At best, staffing levels (and costs) did not change, they were simply redistributed — a high concentration of trained and experienced staff in the intensive care unit, and fewer registered nurses (or solely enrolled nurses) in self-care wards. If these less labour-intensive areas were not created within the hospital, no redistribution of staff could occur. This was commonly the case in Britain, where the creation of hospital units for self-care and long-term care were contrary to prevailing policy. Equally, the balance of costs was dependent upon a corresponding reduction in the number of nurses employed for specialising. Proponents argued that PPC offered efficiency not economy — with a given quota of trained nurses, a better quality of care was achievable. The benefits of PPC and intensive care were often elided: that it was easier and more efficient to segregate critically ill patients


137 Minute Brandes-Poole, 27 October 1971, MH 160/832, ibid. Brandes was supported by the Deputy Chief Medical Officer, Dr Yellowlees, who had earlier written of his ‘strong reservations about the need or wisdom of pursuing it further’, see minute Yellowlees-Brandes, 9 August 1971, ibid.

in one location, and that their move to intensive care units lessened disruption in general wards and enabled nurses to spend more time in preparing intermediate care patients for early discharge – an effective and practical use of resources that enabled better patient care throughout the hospital.139

Secondly, registered nurses had concerns about the impact of the scheme on their professional identity. Allocation to one type of unit meant they did not experience the full range of patient conditions: critical, acute and chronic. This came to the foreground in the later 1960s with discussions about specialist training for intensive care nurses, as will be discussed in the next chapter.

Doctors’ concerns had a more immediate impact. Consultants wanted a ward of 30 beds they could call their own, and they did not welcome the distribution of their patients across different nursing units. Miss L Pugh Jones (Matron of Coventry and Warwickshire Hospital and working group member) had predicted this at the PPC conference in 1962. ‘The factor that could mar the whole plan if not given careful thought was the way in which beds were to be controlled and allocated by medical staff’, she was reported as saying.140 In British hospitals, consultants led a team of doctors and nurses in their own designated wards, a system sometimes called a ‘firm’, and described in 1962 as a ‘somewhat feudal organisation and almost a law unto itself’.141 PPC cut across the allocation of beds and wards to particular consultants. Mr J A Stallworthy, Director of Obstetrics and Gynaecology at the United Oxford Hospitals, argued, ‘Doctors too must give up the idea that they have a divine right to a certain number of beds’. Allocation, he contended, ‘should be decided on grounds of need and common sense rather than privilege or pride’ (although it was easy enough for him to say this when maternity beds were always excluded from PPC programmes, being discrete units that continued to operate as before).142

The result was that PPC at ward level was a compromise – taking the benefits of nursing efficiency without doctors having to relinquish ‘their’ beds. Patients were grouped together according to their nursing dependency, from intermediate care through to (ready-to-be-discharged) self-care. By the mid-1960s, grades of dependency within intermediate care – such as ‘heavy nursing’ – gained currency, as will be considered further in Chapter 4.

139 See for example Elements, 1962, pp. 3-4.
Intensive care was the only level of care for which a separate unit was commonly implemented. A *Lancet* editorial in 1964 described it as the part that had so far ‘made most appeal’, and at the Mid-Ulster Hospital, intensive care ‘seized most of the limelight’. It also helped explain the change between the optimism of the 1962 interim report, and the scepticism (within some parts of the Ministry) of the post-1967 report period – with intensive care units well underway, and less utility in the remaining elements (due to expanding outpatient clinics, day surgery, early ambulation and discharge), there was not as much drive to implement the full scheme of PPC. The flexibility of the elemental design was in effect proved by the success of one element over all others. The new term, replacing ‘progressive patient care’, was ‘pattern(s) of patient care’, used in a 1968 Hospital Building Note to describe the extent to which PPC was implemented in ward units, and ‘the real subject’ to be pursued for Mr L H Brandes when he called time on PPC in 1971.

Given that this was akin to the triage of Nightingale wards, and that areas for the special care of critically ill patients were emerging before PPC, was the endorsement of the scheme by the Ministry of Health inconsequential? This was the conclusion reached by Ministry official, W G Robertson in 1971: ‘It is in my view possible that segregated ITUs would have emerged anyway, even without all the theoretical discussion of PPC, and the fact they have emerged without PPC being introduced in their train confirms me in my view that intensive therapy is, to some extent, a separable subject’. By this time, the shift from the notion of ‘intensive care’ to the notion of ‘intensive therapy’ was well established (as will be explored further in Chapter 4). But between 1959 and c.1966, advocacy of PPC played a part in the creation of general intensive care units. It encouraged the separation of all critically ill patients into one hospital location, and the convergence of former special care areas. It also prompted the beginnings of specifications for unit organisation and facilities.

The role of therapy had been growing during this period, and definitions of critical illness turning to technological and medical dependency. The means by which this happened, and the implications for staff and services is the subject of the next chapter. It begins with a short case study on the tensions between the increasing use of monitors and nursing observation.

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144 Department of Health and Social Security, *Hospital building note number 4 – ward units*, HMSO, revised October 1968, p. 2; Minute Brandes-Poole, 27 October 1971, MH 160/832, National Archives, Kew.

145 Minute Robertson-Poole, 14 May 1971, MH 160/832, ibid.
Chapter 4: The rise of intensive therapy

Large format charts and patient monitors, 1962-73

Figure 4.1: Large format chart, St Bartholomew’s Hospital, c.1980
Dominating this bedside scene from St Bartholomew’s Hospital, London, is the large format 24-hour chart at the foot of the bed. When folded into four, it fitted into the hospital case notes, but daily charts produced masses of records.
Figure 4.2: Advertisement from journal *Anesthesia and Analgesia*, 1962

Pulse rate, temperature, blood pressure and respiration rate – a critically ill patient’s vital signs – were measured by a bedside monitor, and relayed to the central console at the unit’s nursing station. Up to twelve patients could be under surveillance, selected by the dial at the bottom right of the console.
Figure 4.3: Wythenshawe Hospital Patient Data Display System, 1973
An intercom and data entry set was located at each patient’s bedside, with information relayed to 12” display screens in other parts of the cardiothoracic department.
Large format charts and patient monitors, 1962-73

Data on critically ill patients was collected nearly 25 times more often than on ward patients. How was it all recorded on their chart? Simple – make the chart bigger. Oversize, 24-hour charts were iconic of early intensive care units. Up to A2 in size and often made of stout paper, the charts were mounted on boards like architect’s drawings, and placed near the bedside.\(^1\) Aggregate information was available at a glance. Temperature, pulse, respiration rate (TPR) and blood pressure were the basic observations. In the critically ill, this data was collected at 15-minute intervals, totalling 96 observations over a 24-hour period. Colour coded dots, rings, squares and triangles might be used to help differentiate signs on the same part of the chart.\(^2\) For patients on mechanical ventilators, inflation pressure and volume (minute volume) were also recorded. Fluid balance – volume in and volume out – previously recorded on a separate sheet, was brought onto the larger chart. So too the record of drugs prescribed and dose. Lab investigations, carried out in the unit's own laboratory where available, were written on the chart as well as in patient notes. Finally, there was space for observations specific to certain conditions – blood balance (transfusion in/chest drains out) for cardiothoracic surgery patients, and pupil size and reaction for unconscious and head-injured patients.\(^3\)

Nurses were responsible for the collection and recording of data on the charts. At 15-minute intervals, it left little time for other duties, but vigilant observation was perhaps the most important role in intensive care nursing. Identifying any changes in condition, and knowing when to inform a doctor, was key to patient management. Nurses had to learn what range of values were permittable, either through experience or recorded scales of ‘normal’ on the chart or unit manual.\(^4\) Electronic monitors eased the task of collecting data, and noticing changes (particularly if they had audible alarms), but many clinicians expressed concern that machines should not replace skilled nurses. The range of opinion was evident at a

\(^3\) A form in use at King’s College Hospital (KCH, London) was reproduced in J F Cam, A W Grogono, H A Lee, 'Organisation and record-keeping in intensive-care wards', Lancet, 1964, 284 (7370): 1168-9, p. 1168. Forms were very often shared between hospitals – a modified version of the KCH form was in use at the Royal Southern Hospital, Liverpool, and Sefton General Hospital, Liverpool, used the Luton and Dunstable form. See R Finn, B G Haggart, W F White, R H T Jones, 'A general intensive therapy unit', British Medical Journal, 1966, 1 (5478): 39–41, p. 40; oral history interview, A Gilbertson, p. 13.
\(^4\) At King’s College Hospital, an instruction sheet had a column titled ‘Inform Houseman when outside these limits [Upper/Lower]’, with space for the values to be written in by the doctor for each individual patient. See Cam et al, 1964, p. 1169.
multidisciplinary meeting in London in October 1966. Patient monitors needed to be reliable and easy to read, enabling nurses to see the condition of a number of patients at a glance, and decide what action to take. Electronic monitors could collect numerous data automatically and continuously, freeing the nurse from routine jobs that could be accurately and consistently performed by machines. But the cautionary note was, 'The best monitor was the trained nurse who should be assisted but never replaced by electronic means'.

This continued a long tradition of favouring clinical skills over instruments. Advertisers knew their target audience, using phrases such as 'designed to assist the intensive care nurse'. Remote monitoring took nurses further away from the patient. Air-Shields’ Monitor Central, shown in Figure 4.2, enabled nurses to select any one of twelve 'patient stations' for display on the central console. Surveillance of twelve patients by one nurse stationed with the console was efficient but monotonous. In practice, nurses were inclined to check the console each time they passed by.

From the 1980s, social scientists seized upon the dislocation of patient and vital signs, creating concepts such as the 'multiple shifting loci of the self'. Sociologist Albert Robillard’s Foucauldian interpretation was that surveillance from the nursing station:

5 ‘Patient monitoring’, *Hospital Management, Planning & Equipment*, 1966, 29 (365): 656-7. The 120 delegates were doctors, nurses, administrators, physicists and engineers, plus project officers and architects – indicative of the new building projects in progress.

6 Ibid, p. 656. This opinion was widely shared (see for example ‘Design of intensive care units. Conference at The Hospital Centre’, *Nursing Times*, 1965, 61 (33): 1116-7, p. 1117), but was undermined by the shortage of trained nurses, see for example E A Pask, ‘President’s address: Hunt the signal’, *Proceedings of the Royal Society of Medicine*, 1965, 58 (10): 757-66, p. 758.


9 One of the earliest reported trials of bedside electronic monitoring was carried out in 1962 at the Bethany Hospital, Kansas City, using Air-Shields equipment. J H George, ‘Electronic monitoring of vital signs’, *American Journal of Nursing*, 1965, 65 (2): 68-71, p. 71. It was one of the earliest coronary care units, where monitoring was of great consequence. See A Keeling, ‘Blurring the boundaries between medicine and nursing: coronary care nursing, circa the 1960s’, *Nursing History Review*, 2004, 12: 139-64, p. 145. In Britain, the Medical Research Council produced the ‘Monitron’, to monitor ten patients at a time. It was in use at University College Hospital, London, in 1966, and was due to be installed by the Ministry of Health in six other hospitals. ‘The Hospital Centre: ward sisters’ discussion group. Monitoring in intensive care units’, *Nursing Times*, 1966, 62 (37): 1227-8, p. 1228.

‘...may have been a panoptic dream, but it effectively removed critical reading of factors concerning life and death, as well as televised bodily behavior, to a remote, unseen location. Additionally, the actions derived from this information were formulated in an invisible place, a site beyond personal influence.’

But as will be explored more in Chapter 5, others argued that the critically ill were too sick to exert any personal influence.

The expense of installing such systems tended to be prohibitive. Bedside monitoring equipment, connected by underfloor wiring to a console at the nursing station, was anticipated at the intensive care unit at Leeds General Infirmary in 1964, and this was the policy guidance of the Ministry of Health’s 1970 Building Note. ‘At the present time patient monitoring is not widely employed’, it stated. ‘However its more general adoption should be anticipated and facilities by way of trunking and conduit should therefore be provided between the bed areas and the staff base’. Thus, when patient monitoring systems were installed, it was remarked upon. An episode of the television programme Horizon, broadcast on 27 October 1972, began: ‘This £27m building is just nearing completion. It’s the new Charing Cross Hospital, the most up-to-date in Britain. It’ll have a thousand beds, a computer, and a patient monitoring and communication system. It fits the age: clean, utilitarian, efficient’.

The Wythenshawe Hospital Patient Data Display System was the ultimate in remote monitoring and record-keeping. Installed in March 1973, and operational from August 1973, the system extended throughout the district general hospital’s cardiothoracic and cardiology departments. According to anaesthetist (and budget-holder) Clifford Franklin, it cost a couple of million pounds to buy, and running costs were in six or seven figures a year. In an

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13 BBC TV, ‘Hospital, 1922’ [50 minutes], London, BBC TV, 1972, Wellcome Library, London. An historical reconstruction of a day in the life of Charing Cross Hospital in 1922, made on the occasion of the Hospital’s move to a new site at Hammersmith fifty years later.


15 Oral history interview, C Franklin, p. 17. Jack Salem and Freddie Marshall at the Regional Hospital Board purchased the equipment. Franklin believed his visibility as a regional advisor in anaesthetics helped when Marshall was considering where to place the equipment, but was modest about his role – ‘I was not […] the driver of the excitement, I was just a custodian looking after it’ – probably because he was aware that other units were envious of the equipment. Oral history interview, C Franklin, p. 24. Marshall was an advocate of automation
interview in February 2010, he described how he had used it. At the press of a button, Franklin could observe patient data from each of the beds in the intensive care unit, coronary care unit, and operating theatres. If he detected a problem, he could give instructions over an intercom on who should be called to help. It was a product of its time – enabling the duty anaesthetist with theatre sessions to simultaneously manage patients in intensive and coronary care. An article in the first issue of the *European Journal of Intensive Care Medicine* further outlined the system’s specifications. Fifty-nine intercoms (thirty with numeric keypads for data entry, see Figure 4.3) and ten visual display/keyboard terminals were connected to a computer processor. Eleven graphical pictures, with an average of seven trend lines (parameters), and six different tables could be displayed for each patient – data inputted by the nurse or laboratory technician, replacing all manual records but blood balance and prescription sheet, and interpreted by the doctors. \(^\text{16}\) Displays were not self-explanatory though. ‘A surgeon would come in, and he would sit down, and stare at the screen...and, he’d get a lot of information off it, but if I was in the unit, I’d get called over to explain what they were looking at’, recalled Franklin. ‘Clifford could you come over here a minute, tell me what this monitor’s telling me?’, he said. \(^\text{17}\)

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and monitoring devices to save medical and nursing manpower, see ‘Relieving pressure on hospital staff’, *The Guardian*, 29 September 1965, p. 18.

\(^\text{16}\) Ashcroft and Berry, 1975, pp. 50-1.

\(^\text{17}\) Oral history interview, C Franklin, pp. 17, 19.
4.1 Introduction
At the first exhibition at the Scottish Hospital Centre, Edinburgh, in late 1965, the differences between intensive nursing care and intensive therapy were presented in terms of bedside furniture and equipment. The intensive nursing care exhibit showed a relatively low-tech scene (see Figure 4.4 overleaf). An oxygen cylinder, portable suction unit and intravenous drip stand were placed around the bedside, with sphygmomanometer and stethoscope on the trolley to the left. The scene was otherwise dominated by storage furniture, a bin, and bed linen. It was a scene that could have been a reconstruction of the equipment list produced in *Elements of Progressive Patient Care* in 1962, or the five-bed ‘intensive nursing care unit’ at the General Infirmary, Salisbury, whose list of equipment was received by the Ministry of Health in April 1963. The intensive therapy exhibit showed a much more high-tech scene (see Figure 4.5 overleaf), with a full range of technology. The oxygen cylinder was replaced by piped oxygen, supplying the mouthpiece and oxygen tent, and Bennett PR-2 ventilator. A portable suction unit was still displayed in the foreground, as was the stethoscope hanging from the resuscitation trolley, but the scene was now dominated by the numerous, and often large, therapeutic apparatus. No unit had all this equipment at one bedside (and neither scene had enough space for nursing care to be possible), but the inventory was similar to that installed in Mead Ward, St Thomas’ Hospital, London – one of the first purpose-built general intensive therapy units, opened in September 1966, and an example of British practice that will be used throughout this chapter.

Opened on 10 December 1965, the Scottish Hospital Centre aimed to support hospital planning and management through research, conferences, exhibitions and library resources. Temporary displays, such as this, covered topics of current interest and supported conference sessions held at the Centre. Both the *Nursing Times* and *Nursing Mirror* published photographs of the exhibition in May 1966, in the final month of its run.

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Figure 4.4: Intensive nursing care at the Scottish Hospital Centre, 1965-6


Figure 4.5: Intensive therapy at the Scottish Hospital Centre, 1965-6

Dr James (‘JK’) Hunter, Director of the Centre, outlined the organisational differences between the two concepts in tables accompanying the photographs. Intensive nursing care was defined as follows: each 8-12 bed unit was run by nurses, 24 hours a day, with doctors on call. Nurses admitted and discharged patients, and controlled and operated the equipment. A sister was responsible for the whole 72-bed acute ward floor, and nurses could work interchangeably between intensive and intermediate care.22 As seen in Chapter 3, this is what was being implemented at Walsgrave (Coventry) and Greenwich hospitals – an area for intensive nursing care in each acute ward floor, informed by the principles of Progressive Patient Care. The term ‘intensive nursing care’ had been in use from the turn of the 1960s, in Davies and Lewin’s 1960 report ‘Observations on hospital planning’ for example, not constructed post-hoc to contrast with intensive therapy.23 Hunter defined intensive therapy as follows: each 6-10 bed unit was run by a doctor-nurse team, 24 hours a day. It was the single unit for the hospital, with bed numbers calculated as 1-2% of the total number of patients in acute wards. Admission and discharge of patients was on medical decision, and doctors and technicians controlled and operated the equipment. Staff worked solely on the unit, and patients were passed to other nursing teams on discharge.24 Here, the delivery of specialist therapy defined unit organisation, in concert with nursing care rather than led by it. There had been specialist therapy units since the mid-1950s as seen in Chapter 2, but this was intensive therapy applied to all critically ill patients, in ‘general’ units. If the simplified diagram of care for the critically ill presented in Chapter 2 was extended through the 1960s, it would look like this:

In this chapter I will examine how and for whom the definitions and implicit protocols of intensive nursing care, intensive therapy and heavy nursing/high dependency were communicated within medical and nursing communities, with attention to changing notions of critical illness. I will then consider how intensive therapy emerged as a distinct activity within hospitals in the mid-1960s, and came to be a means for doctors to reassert their expertise and leadership through a ‘rational’ use of technology based on the pathophysiology of critical illness. In charting these developments, I will also consider how they interacted with changes in nursing roles and identities.

4.2 Definitions
One of the earliest uses of the term ‘intensive therapy’ was in the report of a Royal Society of Medicine Section of Anaesthetics meeting, held on 7 December 1962, just after the Ministry of Health had published its interim report on intensive care. The title of the article was ‘Intensive therapy wards and the ten-year plan’, and the author noted that he was using the term not in the sense of special nursing care, ‘but to embrace a selective smaller group of cases, who require the maximum of nursing and medical attention’. The medical imperative was reiterated by a Lancet correspondent in 1963, who remarked that with semi-ambulant

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patients in intermediate care, and a separate post-anaesthetic recovery room, what was left of intensive care 'might then more appropriately be named an "intensive-therapy unit"', with criteria for admission 'connected with therapy e.g., resuscitation, treatment in a respirator, treatment of head injuries, cardiovascular collapse, and various toxic states'. But until 1966, 'intensive care' was the more often used term, with little discrimination from intensive therapy.

The displays at the Scottish Hospital Centre, and Hunter's accompanying definitions, were primarily directed to an administrative rather than clinical audience. The Centre's inaugural annual report stated that the displays would be designed to 'illustrate to the service examples of what is available and its cost'. This was of benefit to planning officers because it coincided with installation and fit-out of projects funded by the 1962 Hospital Plan. News of the definitions also reached nurse planners more widely, not just administrative officers of the Regional Hospital Boards or Boards of Governors of Teaching Hospitals (some of whom were nurses). At a meeting of nurse planners at the London Hospital Centre in March 1966, conversation turned to the question of intensive nursing care and intensive therapy. 'It was soon obvious that the indiscriminate use of these terms was giving rise to confusion', reported the Nursing Times, 'and the meeting was interested in the clarification offered by the definitions used in Scotland'. The Edinburgh displays continued to inform discussion, even after closure of the temporary exhibition. Twenty-five nursing sisters from intensive therapy units in ten hospitals met at the Scottish Hospital Centre on 8 July 1966, with the Centre's Director, Dr Hunter, and two other staff members. The Centre's Nursing Officer, Miss E McNaught, began the meeting with comment on the 'considerable confusion in the terminology' of intensive care, and sought to differentiate the different 'types of area', essential for the planning of new units. She described intensive nursing care and intensive therapy exactly as Hunter had done, also differentiating them from the resuscitation area in the accident and emergency department, and the post-anaesthetic recovery area in the operating theatre suite.

29 Scottish Hospital Centre, 'Intensive Care. Notes on a meeting held on Friday, 8th July, 1966', n.d., 5pp., on pp. 1-2, in DT 34/263, National Archives, Kew. The definitions were again reproduced in the Scottish Hospital Centre's The functional analysis of ward plans in 1967, as 'much confused thought' was still apparent. See Scottish Hospital Centre, The functional analysis of ward plans (Centrepiece series), Edinburgh, Scottish Hospital Centre, March 1967, Appendix 1, p. 10.
At the Ministry of Health in London, the division of intermediate care into ‘heavy nursing’ and ‘other intermediate nursing’ also helped shape the definition of intensive therapy. The division was first made in the Lees-Biddulph report, *Survey of Progressive Patient Care*, in 1967. The authors suggested that the ward sister might use her judgement to subdivide the nursing dependency of the largest group of patients – intermediate care – and arrange them in the ward according to their needs.\(^{30}\) A year later, in the 1968 *Hospital Building Note* on ward units, ‘heavy nursing’ was labelled ‘intermediate care group A: heavy nursing (i.e. high dependency group)’ [italics original] and included ‘those patients who are seriously ill and therefore require a considerable amount of basic and technical nursing and may need such treatments as oxygen, suction, intravenous fluids, drainage or traction’.\(^{31}\) ‘Intermediate care group B: other intermediate’ assumed the kind of definition previously applied to the whole group: ‘those patients who still require routine nursing care but who are not seriously ill’.\(^{32}\) Intensive therapy, in turn, was defined as ‘patients requiring constant medical and nursing care who are in a critical stage of illness and who may require much mechanical equipment’ – the key factors being the attendance of doctors and the extensive use of technology.\(^{33}\) These definitions matched the scenes and descriptions that had come out of the Scottish Hospital Centre in 1966 – heavy nursing of the seriously ill being what others called intensive nursing care. But what is interesting is that this level of care, the intensive care of the early 1960s, had been shifted down the hierarchy of dependency. Intensive therapy now took the highest position, relegating intensive nursing care into the category of intermediate care.

A change in classification criteria prompted the shift. Where previously the level of care was determined by nursing dependency, it was now determined by medical and technological dependency. So while patients in intermediate care group A needed skilled nursing care, ‘their medical dependency and their dependency on specialised equipment is not as great as that of patients requiring intensive therapy’, said a Ministry of Health position paper.\(^{34}\) The distinction was publicly evident in the *Hospital Building Note* for intensive therapy units, published in August 1970. Here, the purpose of the unit was stated to be ‘a place where critically ill patients can be brought together and given constant and undivided attention by


\(^{32}\) Ibid, p. 22.

\(^{33}\) Ibid.

\(^{34}\) ‘Progressive patient care: a summary of the current position (draft paper)’, 7 September 1970, 8pp., p. 4, MH 160/832, National Archives, Kew.
medical and nursing staff using highly specialised equipment [emphasis added]. The nursing community also endorsed the notion – the report of a 1969 World Health Organisation conference, to be explored in more detail later, stated that critically ill patients needed 'continuous medical and nursing care with the aid of an extensive range of special equipment [emphasis added].'

The introduction of the phrases 'life support' and 'maintenance of vital functions' into definitions of intensive therapy was further evidence of technological categorisation. Compare for example the Progressive Patient Care Working Group’s definition of intensive care units in 1962, with the definition of intensive therapy units in the Chief Medical Officer’s report for 1966, and a 1971 Ministry of Health position paper:

1962: ‘Better provision can be made for critically ill patients who need the constant and undivided attention of skilled nurses, frequent attention from doctors and the use of special equipment’.

1966: 'The emphasis in these units is on the treatment of the critical situation and the maintenance of vital functions as opposed to the more prolonged and routine care of the seriously ill or dying, and for that reason it is here called the Intensive Therapy Unit.'

1971: ‘A life support system for critically ill patients involving continuous surveillance of vital function [emphasis original], by electro-mechanical means or fully qualified


38 Ministry of Health, On the state of the public health: the annual report of the Chief Medical Officer of the Ministry of Health for the year 1966, London, HMSO, 1967, p. 220. An example in practice was the unit at St Thomas’ Hospital, stated to have been designed to 'provide comprehensive facilities for the care of all patients who need continuous support of a vital function or who are liable to do so at short notice'. Spencer and Smith, 1966, p. 1519.
nursing observation or both; and also entailing immediate access to emergency stabilization devices (e.g. defibrillator, ventilator) and medical staff support".39

Dr Eric Sherwood Jones, consultant physician for the intensive therapy unit at Whiston Hospital, Prescot, took an alternative approach to definition. There was ‘no need for confused thinking’, he said, ‘if we recall the varied functions carried out in intensive care units’.40 By this he meant the place of the unit within the health service, rather than an analysis of functional activities within the unit. Accordingly, he divided units into two categories. Regional (referral/divisional) units were for large population groups, organised around single specialties, such as respiratory, burns, renal, thoracic surgery, or neurosurgery for example. These were the specialised treatment units, or special care units, that had been carrying out intensive therapy long before that particular label was applied. Local (general) units were located in new and redeveloped district general hospitals, established with Progressive Patient Care and the Hospital Plan in the early 1960s. For Jones, both types of accommodation were still necessary.41 Dr W Lees, by now a Senior Medical Officer for the Ministry of Health, offered further clarification. Regional units were established when ‘heavy demands make it worthwhile to set up a separate unit’, and with a higher ratio of staff, these specialised departments could care for their own critically ill cases.42 Commenting at a symposium on intensive therapy in 1968, Dr Geoffrey Spencer reasoned that if 1% of hospital beds were allocated to intensive care, and the optimum size for a unit was six to eight beds, hospitals with 800 to 1,000 beds (such as large teaching hospitals) would tend to need more than one unit.43 Jones’s definitions gave a ready explanation of the pattern of provision in Britain at the end of the 1960s, but he admitted another definition had a more lasting impact


– from an interdisciplinary group brought together by Henry Miller, director of the British Medical Association’s new Planning Unit.

The Planning Unit had been established in March 1967 for the purpose of collecting, scrutinising and presenting evidence to clarify expert opinion on current issues, and making informed predictions of future needs and problems.44 A twelve-member team, comprised of two anaesthetists, four physicians, four surgeons, a nurse, and a Ministry of Health officer, formed the Working Party on Intensive Care, and produced the Planning Unit’s first report in November 1967.45 The authors first identified three types of patient who made ‘extra demands’ on the traditional ward system:

(1) Those requiring heavy nursing.
(2) Those requiring continuous or frequent observation and/or investigation.
(3) Those requiring complicated, often mechanical, treatment’.46

They then acknowledged that the nursing profession and Ministry of Health had adopted the term ‘intensive nursing care’ for patients of type 1, and the term ‘intensive therapy’ for patients of types 2 and 3, as discussed above, and that their remit was therefore limited to the latter. In doing so, it created a consensus definition for all three stakeholders – doctors, nurses and administrators. A further definition was also offered:

(1) A facility [emphasis original] available to all medical staff giving more space, staff and equipment for the care of a patient than can be provided in the ordinary wards.
(2) A service which provides continuous observation of the vital functions and can support these functions more promptly and efficiently than could be done elsewhere in the hospital’.47

45 British Medical Association, Planning report of the working party on intensive care, BMA Publications, 1967. Members of note were Eric Sherwood Jones (as above), Walpole Lewin (who had previously advised the BMA on hospital planning, see Abel and Lewin, 1959), Geoffrey Spencer (from St Thomas’ Hospital as above, who acted as Deputy Chairman and wrote the report), and Miss Gerry Willman (the nursing representative, who was elected Chair of the Intensive Therapy Nursing Group in the following year, see Chapter 6).
46 BMA, ibid, p. 6.
47 Ibid.
This was simply another expression of the dependency criteria – the organisation of facilities, services and staff around the needs of the patient – but gave more weight to medical staff, technology and life support than its original formulation with Progressive Patient Care back in the late 1950s. It was a definition that was widely reproduced in subsequent literature on intensive therapy.\textsuperscript{48} It was adopted by the Royal College of Nursing in 1969, reproduced in full in their report on \textit{The function and staffing of intensive therapy units and the preparation of nurses to work in the units}.\textsuperscript{49} A decade later, Eric Sherwood Jones acknowledged that it was a definition that had ‘stood the test of time’.\textsuperscript{50}

Meanwhile, another notion of critical illness (and intensive therapy) was being formulated. In medical symposia on intensive therapy, ‘critical illness’ was beginning to be discussed not as a medical or technological dependency, but as a pathophysiological state.

### 4.3 Pathophysiology of critical illness

Two meetings in 1966 signalled this turning point. One was a Royal Society of Medicine Section of Anaesthetics meeting on 1 April 1966, the other a symposium on intensive therapy organised by Dr Eric Sherwood Jones and the Clinical Pharmacology Unit of the University of Liverpool/Whiston Hospital later in the year.\textsuperscript{51} Both meetings were explicitly about intensive therapy, set apart from intensive nursing care by reference to their differences. Significantly, they were occasions on which doctors could meet, and share their latest approaches to the management of critical illness. Many different specialists had patients in intensive therapy units, or had an interest in critical illness – anaesthetists, renal physicians, cardiologists and thoracic surgeons for example – but in 1966 there was no ‘intensive care’ journal in which they could collectively publish. Instead they disseminated their research and practice through their primary specialty journals. Anaesthetists with responsibilities for intensive care had met at the World Congress of Anaesthesiologists since 1955. At the second congress in 1960, …

\textsuperscript{48} For example, it was used to orientate discussion to intensive therapy rather than intensive nursing care at the symposium on intensive therapy units at the Fourth World Congress of Anaesthesiologists in September 1968. See Poulsen, 1970, p. 477.

\textsuperscript{49} Royal College of Nursing and National Council of Nurses of the United Kingdom, \textit{The function and staffing of intensive therapy units and the preparation of nurses to work in the units}, Royal College of Nursing, Intensive Therapy Nursing Group, 1969, pp. 5-6. Nurse Gerry Willman was the link between the BMA report and this one prepared by the RCN’s Intensive Therapy Nursing Group (see footnote 28).

\textsuperscript{50} Sherwood Jones, 1978, p. 4.

relevant papers were as much reports of organisation and administration in nascent intensive care units, as providing clinical detail.\(^{52}\) This was perhaps not surprising, reflecting the co-evolution of space and practice. The whole subject was omitted from the Third World Congress of Anaesthesiologists in Sao Paulo in 1964, but by the fourth, in London in September 1968, intensive care was again well represented. A symposium on intensive therapy units was held on the opening day, in addition to numerous papers on patient monitoring, and reports from units in Bucharest, Birmingham, Manila and Rijeka (former Yugoslavia).\(^{53}\) The two British meetings in 1966 were an opportunity for doctors to develop and define their own (medical) concept of intensive therapy, and a common approach to the care of the critically ill. Ideas were shared with the wider medical community through publication of symposium papers, reports, and near verbatim transcripts of discussion, with an awareness of their role in shaping opinion.\(^{54}\)

The new notions of critical illness and intensive therapy being promoted by anaesthetists and other interested specialists from the mid-1960s were both a reassertion of doctors’ clinical expertise and a caution to the uninformed use of technology. At its heart was an allegedly more ‘scientific’ approach to the care of the critically ill – therapy informed by ‘scientific method’ and an understanding of the pathophysiology of disease. The two meetings in 1966 exemplified this position. Professor Tony Dornhorst, chosen to open the Royal Society of Medicine Section of Anaesthetics meeting on 1 April 1966, was a figurehead for the scientific approach to critical illness: he was then chair of medicine at St George’s Hospital Medical School, and an obituarist described him as ‘one of the outstanding academic clinician-scientists of his generation’, whose research ‘bridged normal physiology and disease states’.\(^{55}\) The Liverpool symposium was hosted by the Clinical Pharmacology Unit. Opened in December 1963, the university/hospital Unit was evidence of the increasing role of scientists in the day-to-day management of patients. In his preface to the symposium proceedings, Melville Arnott, chair of medicine at Birmingham University, declared, ‘Nobody who reads this report can doubt that effective therapy is a disciplined technology based on fundamental physics,


\(^{54}\) The introduction to the Liverpool symposium proceedings stated, ‘Discussions on controversial issues are given in full to enable the reader to draw his own conclusions’. E Sherwood Jones, ‘Introduction’, *Postgraduate Medical Journal*, 1967, 43 (498): 194.

chemistry and biology’. Symposium papers covered aspects of respiratory and renal failure, care of cardiac and surgical cases, and maintenance of metabolism, but it was hoped that they would ‘appear to have a common basis which depends on accurate observation, laboratory measurement and logical reasoning’. Later in the symposium proceedings, the intensive therapy team was described as ‘nurse-doctor-scientist’.

Nurses carried out the accurate observation. Patients’ vital signs – temperature, pulse, respiration rate and blood pressure – were observed and recorded at the bedside. Electronic monitoring was beginning to be introduced into units, with its attendant debates on the best monitor – machine or nurse? Further variables were measured in the laboratory. In a survey of seventeen British intensive care units in 1967, eight had their own laboratories for performing blood gas analysis (pH, and carbon dioxide and oxygen in arterial blood) and lung function tests, but none had a 24-hour blood gas service. The measurement of these parameters was also a means of checking the performance of ventilators, a method employed since the 1950s. At the Queen Elizabeth Hospital (QEH), Birmingham, junior doctors were responsible for blood gas analysis, obtaining results within ten minutes in the unit’s laboratory. At other hospitals, a clinical physiologist or biochemist provided the service in a nearby laboratory, and a junior doctor or nurse fetched the results. At Whiston Hospital, the Clinical Research Laboratory was situated adjacent to the unit, had instruments for

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61 ‘Intensive care units’, Proceedings of the RSM, 1966, p. 1294. So too at St Thomas’ Hospital, where it was carried out by senior house officers, Bell et al, 1974, p. 484.
measuring arterial blood gases, and was run by a biochemist (see plan in Figure 5.6). Westminster Hospital’s Department of Clinical Measurement, directed by Dr Percy Cliffe from 1959-82 (a graduate in physics, chemistry and medicine), was responsible for monitors, lung function testing and cardiac investigations.

Normal values were needed, against which to identify and measure changes indicative of impending physiological crisis. Patient charts and ward manuals listed or graphically represented values and ranges. Both the Mead Ward nursing manual and Birmingham’s QEH manual had a page on blood serum, blood gas and cardiovascular measures, titled ‘physiological normals’ at Mead Ward, and ‘blood chemistry – normals’ at QEH. Whether ‘normals’ were universal, and whether anything outside these values was ‘abnormal’ is contentious, as Carsten Timmerman has shown. But clinicians did attempt to produce a physiological norm – and as recognised by John Harley Warner, such physiological knowledge had been a way to a rational system of therapeutics since the 1870s.

While nurses and clinical scientists made the observations and measurements, doctors chose the parameters to be monitored. Professor Edgar Pask, professor of anaesthesia at the University of Newcastle, stressed this in a presidential address to the Royal Society of Medicine Section of Anaesthetics in 1965. ‘Hunt the signal’, he instructed the audience, telling them to define the elements in a physical sign that they considered significant for assessing ‘illness’ or ‘wellness’, and then seek the technicians and physicists to make it measurable. It was not that simple though, with a lack of agreement within the profession about which parameters should be monitored and measured, and how they should be recorded.

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62 Liverpool Regional Hospital Board, St Helens and District Hospital Management Committee, ‘Whiston Hospital, Intensive Care Unit’, n.d., 4pp., [p. 4], MH 159/48, National Archives, Kew.
discussant for the first paper at the Liverpool symposium noted that the presenter, Dr Percy Cliffe, had spoken of monitoring fourteen different physiological parameters, and questioned how practitioners could comprehend and use all the quantitative data.\textsuperscript{69} Computers began to be used to store, process, and visually present the large volume of data as graphs and traces, making trends more obvious.\textsuperscript{70} Some clinicians sought to combine parameters to produce assessments of whole body systems, accounting for the interplay of parameters. At the Liverpool symposium, Heinz S Wolff, from the National Institute for Medical Research, presented a method that would give 'an integrated picture of the state of a particular physiological system at a glance' (see Figure 4.7).\textsuperscript{71}

\begin{figure}
\centering
\includegraphics[width=0.5\textwidth]{Figure4.7.png}
\caption{Heinz Wolff's physiological system at a glance, 1967}
\end{figure}

Each of the axes A to H was a scale for one parameter. Divisions on the scale were arranged so that if points representing normal values were joined it would result in an approximate circle (broken line). The actual results, plotted on the scales, formed the solid line, and thus deviations from normal values were instantly recognisable. According to Wolff, with highly developed shape perception and shape memory, clinicians could work with patterns for many different clinical conditions, or assess progress by superimposing successive days. Yet, by

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\begin{itemize}
\item \textsuperscript{69} Cliffe, 1967, p. 199. See also discussion after Eric Sherwood Jones's paper, that the monitors' ability to elicit quantitative data far outstripped the clinicians' ability to assimilate and understand the information, Sherwood Jones, \textit{PMJ}, 1967, p. 346.
\item \textsuperscript{70} Weil, Shubin and Rand reported the first use of a computer in intensive care in 1966. M H Weil, H Shubin, W Rand, 'Experience with a digital computer for study and improved management of the critically ill', \textit{JAMA}, 1966, \textbf{198} (9): 1011-6.
\item \textsuperscript{71} Sherwood Jones, \textit{PMJ}, 1967, p. 347. Wolff claimed no originality for displays of this type, but its presentation to a multidisciplinary audience would have aided dissemination.
\end{itemize}

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integrating eight parameters, the diagrams simultaneously reduced the complexities of critical illness to a single picture.\textsuperscript{72}

Armed with this data, treatment was to remedy any physiological disturbances. Monitoring and continuous reassessment would identify any need to adjust the treatment, which could be frequent and required in an instant. The objective was to correct, and 'prevent, as far as possible, deviations from normal in tissue metabolism'.\textsuperscript{73} Manipulation of parameters to maintain physiological stability was becoming integral to intensive therapy. It was life support by homeostasis. For example, a \textit{British Medical Journal} leading article in December 1966 cited the claim that, 'The object of intensive management of all gravely ill patients is directed towards maintaining an internal environment which will permit the continuance of cell life until such time as the disease process responsible for the illness resolves'.\textsuperscript{74} Separation of the management of physiological stability and treatment of the underlying disease was significant, but at this time they together constituted intensive therapy.\textsuperscript{75} Life support technologies were concurrently reframed from a mechanical to a biochemical perspective. The use of oxygen therapy and intermittent positive pressure ventilation (IPPV), for example, was not simply to support ventilation during respiratory failure – they prevented or corrected tissue hypoxia.\textsuperscript{76}

As suggested above, this was a new notion of critical illness, changing from a functional entity to a material entity. From 1966, a patient’s status as critically ill was primarily defined by their abnormal physiological parameters, regardless of the precipitating cause. Critical illness was a pathophysiological state, a material entity. Compare this with intensive nursing

\textsuperscript{72} Wolff's technique related to a single patient, compared with 'normal values'. By the early 1970s, microprocessors applied mathematical techniques to recognize trends and probabilities in larger cohorts. A 1971 IBM research report described codifying a large volume of patient data to create a reference group, and statistical analysis to identify patterns of nine physiological parameters that represented departures from the reference norm. J F Brennan, 'Computers and the critically ill', \textit{IBM Research Reports}, 1971, 7 (2): 1-8, in COM/1993/0668, Science Museum Documentation and Records Centre, London. Linking probabilities, patterns and outcomes became known as 'decision support' (see T P Clemmer, 'Computers in the ICU: where we started and where we are now', \textit{Journal of Critical Care}, 2004, 19 (4): 201-7, p. 204), and a further example is given in Chapter 5 with the London Hospital Survival Predictor.


\textsuperscript{74} 'Intensive care', \textit{British Medical Journal}, 1966, 2 (5530): 1609-10, p. 1609.

\textsuperscript{75} Later into the 1970s, the dual roles of intensive therapy played into debates about who was best qualified to care for the critically ill – experts in manipulation of physiological parameters, or experts in primary disease. See Chapter 7 for more.

care of the late 1950s and early 1960s, where patients were admitted during a ‘critical phase’ of illness or injury. Here, a patient’s status was primarily defined by that admitting illness or injury – they were critically ill as a secondary, temporary factor. The event may have been expected, but was not inevitable. Critical illness was a phase of critical need, a functional entity. These changing notions were accompanied by changing rationales of care and expertise – from nursing dependency to a rational use of technology to correct physiological deviations.77

But how far was the idea of critical illness as a pathophysiological state applicable in practice? Was there a gap between the data and the rational use of technology? For some clinical conditions, certainly. Delegates at the Liverpool symposium discussed research on the fundamental physiology of myocardial infarction, and evaluated forms of treatment, but noted that ‘as yet the physiological data and the relationship with the patient’s illness are not sufficiently understood to allow rational treatment in many of the most seriously ill patients’.78

Research was beginning, but evidence was frequently inconclusive. Much came down to the individual clinician’s choice – which parameters to measure, the weight given to them, and the treatment employed to manage them.

4.4 Specialist nursing

‘Even intensive therapy becomes routine to the initiated’, claimed Ministry of Health nursing officer, Miss Mitchell, in 1964.79 The impact of intensive therapy on nurses centred around three features: routine and technical nursing care, pronouncements on the ideal qualities of an intensive care nurse, and role-blurring between doctors and nurses. Together they also stimulated moves to provide supplementary specialist training.

Routine and technical nursing care

In Britain, technological changes altered the nurse’s working environment, as was evident in the Scottish Hospital Centre displays. Achieving a balance between routine and technical nursing care was much debated. According to definitions in section 4.2 above, admission to an intensive therapy unit was predicated on the need for constant observation, and the use of specialist equipment in therapy. ‘Nursing care therefore has to take third place’, said


79 Minute 15 April 1964, MH 159/48, National Archives, Kew.
Sheena Ross, clinical teacher for Mead Ward, in a BBC training film on intensive care after major heart surgery. But routine nursing care was not to be overlooked – it was necessary for care of the highest order. It comprised all the tasks classified in nursing work studies of the early 1960s as ‘direct care’, described by sociologist Margarete Sandelowski as ‘bed and body work’. It was more intensive than in intermediate care wards because patients were more dependent. In the BBC film, it encompassed reassurance that the operation was safely over, hygiene (‘all areas where a tube comes out must be kept clean’ e.g. nose, mouth, urethra, IV infusion sites, chest drain sites), turning, help with physiotherapy, and bacteriological surveillance. It also included the vigilance of continual observation, monitoring and recording – essentially ‘intensive nursing care’ or specialling.

Furthermore, nurses were expected to take on new technical roles and responsibilities. This was strikingly illustrated by the opening sentence of a 1969 Royal College of Nursing report: ‘Certain procedures in intensive therapy units are clearly the nurses’ responsibility – e.g. control of ventilators’. According to the Scottish Hospital Centre’s definitions three years earlier, doctors or technicians controlled and operated ventilators. How had this responsibility passed to nurses? One explanation was the limited availability of doctors and technicians. Very few units had full-time doctors (discussed further in Chapter 7), and not all units had technicians. The latter had been recommended in the Ministry of Health’s interim report on intensive care in 1962, but no standardised approach was taken. Operating theatre technicians, anaesthetic technicians, laboratory technicians and cardiology technicians were all involved, depending on local circumstances. Their responsibilities included maintenance

80 BBC TV, ‘Practical techniques for nurses in training. Intensive care after major heart surgery’ [25 minutes], London, BBC TV, 1971, private collection of Sheena Ross. Made in St Thomas’ Hospital intensive therapy unit, the film was intended for second year nursing students. S Ross, ‘Intensive care after major heart surgery, St Thomas’ Hospital, Notes by Miss Sheena Ross’, n.d., 4pp., p. 4.

81 Ibid.


84 RCN, 1969, p. 4. The RCN’s Intensive Therapy Nursing Group produced the report, acknowledging shared interests with the Ministry of Health’s Standing Nursing Advisory Committee (SNAC) by listing issues raised by them. Nurse staffing in intensive care units had been an agenda item at SNAC meetings for two years from 1966-8, see meeting minutes 29 November 1966 to 28 May 1968 in files DT 34/263 and DT 34/264, National Archives, Kew.


86 See for example public appointments for Baguley and Broadgreen Hospitals: ‘Classified advertisements’, The Guardian, 6 September 1966, p. 15; and ‘Classified advertisements’, The Guardian, 9 November 1966, p. 16 respectively. Courses for intensive therapy unit technicians were reportedly being run in London and Birmingham by 1968 – see The Royal
and cleaning (including sterilisation) of equipment, safety checks, managing contract servicing, and developing and modifying special equipment. In the management of ventilators it was not unusual for technicians to set up the equipment, with settings directed by doctors, to be supervised hour-to-hour by nurses. The index of the Mead Ward manual further illustrated the range of technical procedures performed by nurses, wholly or assisting doctors (see Appendix C). The manual gave instructions for intravenous therapy, the ‘milking’ and removal of chest drains, monitoring patients during peritoneal dialysis and starting resuscitation. Nurses on Mead Ward did not perform intubation (in this unit it was anaesthetists who did), but at a meeting of twenty-one intensive care unit sisters in 1965, the group agreed that the trained nurse in charge should know how to intubate a patient in an emergency, and it was also listed as a required skill in the 1969 report of a seminar convened by the World Health Organisation’s Regional Office for Europe.

The question of who controlled technical procedures fed into debates about whether there was a new category of nurse – the nurse technician. ‘We in no way think of these nurses as technicians’, concluded Miss Frère at the WHO seminar, further advising, ‘It is for the nurses to decide whether this represents a deviation or an evolution which is desirable for their profession’. Evolution was the position taken in an article published in the American Journal of Nursing at this time. ‘Like the modern physician’, the modern nurse had grown into new roles and responsibilities as standards of care had changed. With an ever-changing ‘armamentarium’, the nurse was simply participating in ‘care for today’s patient with today’s

College of Nursing and National Council of Nurses of the United Kingdom, Hospitals Department, Ward and Departmental Section, ‘Rcn Intensive Therapy Nursing Group [minutes of first annual meeting on 21 October 1968]’, 6pp., p. 3, private collection of Pat Ashworth.


Ross, 1968, private collection of Sheena Ross. Prepared by the unit’s Clinical Teacher, Miss Sheena Ross, the Mead Ward manual was kept in a ring binder at each bedside. Oral history interview, S Ross, p. 10.

‘Nurse planners meet: intensive care units’, Nursing Times, 1965, 61 (53): 1804-5, p. 1804; WHO, 1971, p. 13. The WHO seminar expected the nurse to be ‘fully competent’ in all the skills listed above, and an extract from the Mead Ward manual was annexed as an example of best practice – see Annex IV, pp. 55-9.

manpower and equipment’. 91 Intensive care nursing was a combination of routine and technical roles. As Sheena Ross wrote in 1971, ‘Above all, each nurse must learn to adapt herself to a happy balance between basic care of her highly dependent patient and an understanding of the machinery and monitoring apparatus she has to use’. 92 But not every nurse felt confident in both roles. Ross observed that some nurses were too keenly interested in the technical or the care role, which, she argued, showed a fear of the other. 93 In interview, Pat Ashworth recalled nurses’ reactions to the introduction of cardiac monitors in the early 1960s: ‘The sisters generally either said, ‘Take that thing out of the ward: it’s nothing to do with me’; or people got goggle-eyed and fascinated with them; or they said, as I did, ‘What can this do to help me look after the patients?’’. 94

Historians and social scientists have since provided further analysis on the subject of technology and care, particularly with regard to gender. Two assumptions have driven their analysis – the first that nurses were mandated to care, the second that nursing and technology were perceived to be in opposition, even as far as being ‘opposing paradigms of care’. 95 Margerete Sandelowski, using nurses’ testimony, has described how nurses did not identify themselves as having been engaged with technology at all until the 1960s. 96 Then, according to Julie Fairman, technology was very often seen to ‘get in the way of caring’. 97 The patient overlooked amidst a mass of technology was frequently cited as an example – such as the photograph from an American hospital of a sign over the bed reminding, ‘Please note patient is awake!’, or the cartoons in a 1978 issue of Australian hospital magazine R.P.A. depicting technology overwhelming the patient (see Figure 4.8). 98

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94 Oral history interview, P Ashworth, p. 3.
95 Sandelowski, 2000, p. 9.
96 Ibid, p. 120.
Figure 4.8: Satirical depictions of technology in intensive care, 1978
For Sandelowski, the dominance of technical procedures was considered by nurses to be eroding the ‘essence of nursing’, disparaging and devaluing true nursing.\(^{99}\) Julie Fairman and Patricia D’Antonio observe that dichotomies were set up: caring versus curing, for example, with care as intuitive, empathic, subjective, feminine; while cure was reductionist, objective, technical, masculine.\(^{100}\) Writing about intensive care in 1993, Mary Carolyn Cooper argued that nurses’ mandate to care becomes difficult when feminine values of care operate in a masculine system of healthcare, such as the intensive care unit.\(^{101}\) Fairman suggests the dichotomy came from limited ways to represent caring. Her response has been to approach technology and care in a system – with nurses’ choice about how technology is applied (‘use within’), and attention to ‘ownership’, or the primary user.\(^{102}\) This could be applied to the 1969 WHO seminar, when negotiation between user and technology was evident in the opinion that monitors ‘extend the nurse’s capacity to gather precise information, and, together with direct observation data, enables her to arrive at more knowledgeable judgements with regard to action on which the patient’s life may depend’.\(^{103}\)

**Ideal qualities**

Significantly, notions of the ideal qualities of an intensive care nurse encompassed technical and care roles. Interestingly, they emerged with the physical separation of critically ill patients, staff and equipment into intensive care units, a product of the new working environment. Previously, student nurses were most often tasked to specialising patients on general wards, on duty at the bedside to measure and record vital signs at frequent intervals, assisted in basic nursing care by staff nurses or the ward sister.\(^{104}\) A medical student or junior doctor on rotation in anaesthetics might be responsible for watching the ventilator. In the new units, with one-to-one nursing ratios, and in some cases the exclusion of student nurses, registered nurses took on all these functions.\(^{105}\) The ‘ideal type’ quickly followed. It was more

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\(^{99}\) Sandelowski, 2000, p. 2.


\(^{102}\) Fairman, 1998, see especially pp. 138-42.

\(^{103}\) WHO, 1971, see especially pp. 1-4.

\(^{104}\) Johnson, 1974, pp. 63-4.

\(^{105}\) The argument for student nurses working in intensive care units was that because acute cases were now located there, this is where they would gain their experience with intravenous drips, chest drains, fluid balance etc. F R Edwards, J C Richardson, P M Ashworth, ‘Experience with an intensive-care ward’, *Lancet*, 1965, 285 (7390): 855-7, p. 856. The argument against was that their knowledge was inadequate to understand the procedures in use, and that they were not with the unit long enough to be taught, Robinson, 1966, p. 139.
visible in the American Progressive Patient Care literature, where temperament and personality were matched with the duties of each unit. The nurse in the intensive care unit needed to be able to work ‘frequently under pressure and in emergency situations, yet not be rendered insensitive by caring for a continuing succession of seriously ill patients’, whereas in the long-term care unit, where rehabilitation took time (to help patients help themselves), they needed to be ‘individuals who do not become discouraged by the slow progress of their patients’.  

29 Twenty-nine ward sisters, meeting at the London Hospital Centre on 30 November 1966 to discuss staffing and teaching in intensive care units, ‘reiterated their belief that they looked for special qualities in their staff’. In the increasingly technological intensive care units, emotional resilience had to be matched with technical aptitude and capacity for ethical decision-making. This is best illustrated in the following extract from an annex to the WHO meeting in 1969:

‘In addition to what is expected from every nurse, what we expect from one working in an intensive care unit is, perhaps even more than a perfect understanding of computers and great manual dexterity, a balanced personality enabling her to provide individual care in a service where the percentage of deaths is high, where, in addition, the problem of resuscitation arises and where, through artificial survival, the threshold of death becomes a moving one.’

The stressors of intensive therapy were certainly a challenge, for nurses and doctors alike. It was a particular concern for nurses because of their one-to-one and exclusive allocation to critically ill patients. The WHO seminar reviewed the sources of pressure: the degree of responsibility, the constant vigilance, the continual exposure to the ‘precarious balance of life’, that decisions ‘must often be taken quickly and unhesitatingly, without time for discussion or sanction’, and the isolation from the rest of the hospital. Isolation was both physical and professional. The unit was usually spatially separate, and the nurses’ lounge and lockers located within the unit. To ensure the constant care of vulnerable patients, breaks were minimal and taken alone – the Mead Ward manual stated the duration as fifteen minutes, underlined.  

Staff nurses were present in the unit for the entire length of their shift.

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108 Frère, 1971, p. 46.


110 Ross, 1968, p. 1, private collection of Sheena Ross. The RCN report stated the need for breaks at two hourly intervals, and that while taken away from the ward, should still be within the unit. See RCN, 1969, p. 10.
(while auxillary nurses might run errands to the pharmacy or other hospital departments). Their reputation as 'elite' nurses contributed to their professional isolation. In addition to their technical expertise, the RCN report judged it to be a result of the 'life and death aura', and resentment from other ward sisters who felt the unit's generous nursing establishment was at the expense of regular wards.\textsuperscript{111}

Reviewing intensive therapy nursing in 1977, Middlesex Hospital nursing officer Susan Porter added to the list of stressors: the monotony of routine observation and recording, the frustration of one-sided conversations with sedated and unconscious patients, the need for good rapport with relatives, and the strain of working with a number of doctors with conflicting views on treatment and policy.\textsuperscript{112} Measures to prevent burnout and relieve isolation were recognised as necessary. In the pilot intensive care unit at the Mid-Ulster Hospital, Magherafelt, it was initially thought that nurses would only be able to work in two-hour spells.\textsuperscript{113} It proved possible to work normal shifts, but the Ministry of Health's interim report on intensive care in 1962 recommended a system of rotation. This was not only a 'safety valve' (as described in the booklet about the intensive care unit at Battle Creek Community Hospital, Michigan), but also to build a reserve of experienced staff for the unit, and so they did not 'lose touch with the more routine work of the other wards'.\textsuperscript{114} The 1969 RCN report recommended that nurses making a long-term career in intensive therapy should be entitled to a minimum of two months paid study leave every three years.\textsuperscript{115}

**Doctor/nurse role-blurring**

Nurses took on procedures that had once been the province of the doctor. For American critical care nursing, this is excellently described by Fairman and Lynaugh.\textsuperscript{116} Similar role-

\textsuperscript{111} RCN, ibid, p. 11. See also Johnson, 1974, p. 65.


\textsuperscript{115} RCN, 1969, p. 9.

blurring occurred in British intensive care units. Two short examples illuminate practice – resuscitation and peritoneal dialysis. In Mead Ward, it was the nurse’s responsibility to ‘recognize cardiac arrest and to institute the necessary treatment as quickly as possible’. Treatment referred to CPR and readiness of the crash trolley (defibrillator and drugs), but perhaps more significant was the nurse’s ability to ‘recognise’ cardiac arrest. The unit manual listed six signs for ‘diagnosis’ – sudden deterioration in the patient’s condition (‘collapse’), unconscious, not breathing, no pulse, dilating pupils, and ‘asystole or ventricular fibrillation’ evident on the ECG oscilloscope. This last sign was of note because it was a complex skill to acquire. Textbooks for nurses were available, such as Meltzer, Pinneo and Kitchell’s Intensive coronary care: a manual for nurses, first published in 1965. Unit manuals also covered common occurrences: ‘Many of our patients, especially the mitrals and aortics tend to show this pattern [atrial fibrillation],’ for example. But whilst both nurse and doctor used the same technology – the ECG – was the task different? Did nurses perform detection/pattern recognition, rather than true diagnosis, based on a deeper understanding of the underlying (and causal) pathophysiology? Scope for independent action was limited – nurses were to recognise changes from normal and respond – either to notify a doctor, or where previous instructions were in place, to initiate action as ordered. ‘We resorted to drawing various rhythms on a piece of paper which we stuck on the front of the machine, saying to the nurse ‘If it looks like that, call us”, recalled David Morrison, director of the unit at the North Manchester General Hospital. Work remained within doctors’ parameters. This too received attention from sociologist Margarete Sandelowski, who argued there was a hierarchy of tasks in diagnosis (using clinical thermometry as an example) – nurses assuming the mechanical tasks, doctors the interpretive. She cited Andrew Abbott’s The system of professions: an essay on the division of expert labor (1988) to agree that what was ceded to nurses was not ‘full jurisdiction’ but a ‘limited settlement’, which she argued reinforced the subordination of nursing to medicine, a service derivative from the physician’s mental work, advancing medical goals rather than the professional role of the nurse.

118 Ibid.
121 D Morrison, ‘I’t’s a long, long story, but this is how I became an intensivist’, Care of the Critically Ill, 1985, 1 (5): 16-17, p. 17.
Nurses were also responsible for monitoring patients and the proficiency of equipment during peritoneal dialysis in the intensive care unit. Renal physicians had previously been responsible, but with the availability of one-to-one nurses and a growing confidence in the success of the technique, it was passed to nurses. ‘Ownership of a technology system or its parts sometime shifts from physicians to nurses when the technology becomes commonplace or its use no longer draws reimbursement’, argued Julie Fairman. According to Sandelowski, the skill was degraded when it became ‘easy enough’ for the nurse to do.

At the time, the nursing profession accepted the expanded role, but with boundaries. The 1969 RCN report advised:

‘Providing the task is one which the nurse has been taught and is competent to do, that the head of nursing services and the employing authority are aware of the position, and that the nurse understands her personal responsibility in the matter, properly prepared nurses should be encouraged to undertake this advanced clinical role’.

The use of the term ‘advanced clinical role’ is interesting as it denoted expansion rather than the acquisition of someone else’s role (such as the doctor). She was not a ‘clinical specialist, a physician’s assistant, or a supernurse’, just a graduate nurse with intensive therapy training. As Julie Fairman and Patricia D’Antonio contend with reference to nurse practitioners in the USA, doctors and nurses very often structured their relationships on an individual basis. The division of responsibilities was not homogenous, but ‘local, idiosyncratic, experimental and reciprocal’.

**Supplementary training**

Nurses’ response to the increasingly technological and science-founded intensive therapy was to state the need for supplementary training. This was not entirely new to the later 1960s. Point number seven on the ‘summary checklist for setting up an intensive care unit’ in the

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123 See for example Ross, 1968, [preceding p. 32], private collection of Sheena Ross.


125 Sandelowski, 2000, pp. 90-1, 114. It was expressed at the time in the following terms: ‘When an effective method of treatment has been evolved and standardized, then the work load can largely be transferred from the medical to the nursing staff’. Sherwood Jones, *Proceedings of the RSM*, 1967, p. 1204.

126 RCN, 1969, p. 4.

127 Zschoche and Brown, 1969, p. 2371.

1959 draft of Elements of Progressive Patient Care was: ‘Inservice [sic] education provided for nurses for any new competencies required on this unit’.\(^\text{129}\) This might include procedures such as the 24-hour charts specific to the unit, or equipment handling, now that up to 90% of intravenous and oxygen therapy was being carried out there.\(^\text{130}\) In Britain, the Ministry of Health’s interim report on intensive care in 1962 also made brief mention that in-service education for nurses was ‘essential’.\(^\text{131}\) But it continued to be necessary in the later 1960s, evidenced as ward manuals or procedure books for trainee, newly employed or agency nurses. As described above, much of the content was scientific and technical, but the general nursing care routine was also listed, point-by-point, as a reminder of what was expected despite the newer demands of intensive therapy.\(^\text{132}\)

A further means of providing supplementary training was ‘post-basic’ courses – post-registration for State Registered Nurses (SRNs) and post-qualification for State Enrolled Nurses (SENs). Whiston Hospital in Prescot, Lancashire, was one of the first to run a course. In his recollections, unit physician Eric Sherwood Jones dated it to 1964, corroborated by a brochure for the intensive care unit held in the National Archives.\(^\text{133}\) The four-month course for SRNs comprised lectures and demonstrations by staff.\(^\text{134}\) Three teaching hospitals also offered courses in the late 1960s – Leeds General Infirmary, Glasgow Royal Infirmary and Edinburgh Royal Infirmary.\(^\text{135}\) In 1970, the Joint Board of Clinical Nursing Studies (JBCNS) for England and Wales was established to standardise post-basic clinical training.\(^\text{136}\) By this time, 


\(^{130}\) Ibid, p. 7.


\(^{132}\) Ross, 1968, p. 3, private collection of Sheena Ross.


\(^{134}\) Liverpool RHB et al, ibid.


\(^{136}\) A 1966 report on ‘The post-certificate training and education of nurses’ drew attention to the unsatisfactory nature of some courses, and the Board was established in March 1970, representing the medical, nursing and midwifery Royal Colleges and the health service. Its aims were to identify the clinical specialties in which courses for nurses and midwives were required, prepare curricula, and approve and monitor the courses. JBCNS was disbanded in July 1983, becoming the English National Board for Nursing, Midwifery and Health Visiting (ENB). L Orme, ‘Training nurses for critical care’, Care of the Critically Ill, 1985, 1 (7): 6-8;
Manchester Royal Infirmary, the London Hospital and Guy’s Hospital (London) were also running courses. In April 1971, the Joint Board appointed members of a panel for general intensive care, and the group held their first meeting on 23 June. According to the first report of the Joint Board, the panel comprised eight nurses and six doctors from hospitals in England and Wales, plus Dr W Lees from the Department of Health and Social Security (listed in Appendix D). Eric Sherwood Jones was elected Chairman, and after seven meetings the panel had completed aims, objectives and content for a course for SRNs, presenting their interim report to the Joint Board in January 1972. During development of the course, medical and nursing opinion did not always concur, and Pat Ashworth recalled that as nurses arrived for the meetings they had ‘a little sort of pre-committee meeting on the doorstep outside’. The Joint Board approved the *Outline curriculum in general intensive care nursing for State Registered Nurses, Course number 100* in 1972.

The curriculum had five objectives: ‘total nursing care’, observation/measurement with appropriate action, communication with patients, families and colleagues, unit management and research, and lastly, teaching methods, to pass on their skills and knowledge to other staff. Each objective was met by attaining skills (at the bedside or simulation), knowledge

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140 The panel was still awaiting advice on methods of assessment. JBCNS, ‘Interim report’, 1972, p. 1, private collection of Pat Ashworth. Eight members of the panel continued to meet to plan a course for SENs, and four members were elected to panels for coronary and renal care.

141 Oral history interview, P Ashworth, p. 17.


143 JBCNS, *Outline curriculum, Course number 100*, 1972. In interview, Pat Ashworth also described teaching patients and families about critical illness and the intensive care unit. Oral history interview, P Ashworth, pp. 24-5.
(both how and why), and related ‘attitudes’.\textsuperscript{144} The syllabus for St Thomas’ Hospital’s course is reproduced in Appendix E. It included the skills of nursing different types of critically ill patients, resuscitation, and observation and measurement. Knowledge to be attained centred on the anatomy and physiology of body systems, pathology as seen in the unit, and the planning and administration of units. Correct attitudes were more difficult to list. The JBCNS handbook described them as ‘more often “caught” than “taught”’, influenced by discussion of ‘real experiences’ and assessed by ‘well-structured progress reports’ describing behaviour observed.\textsuperscript{145} An example in the Course 100 curriculum was: ‘Behaves maturely in situations of stress and shows awareness of the emotional stress in the intensive care situation and its effects on the patients, their relatives and the staff’.\textsuperscript{146} At St Thomas’, the following paragraph seemed to cover this material, but was dropped between two versions of the syllabus:

‘Also to be included in the lecture programme are discussion sessions on the effects of the I.T.U. on patients, their relatives and nursing staff. Discussions on special problems to include ethical problems such as when to stop artificial ventilation or treatment in patients whose condition would seem irreversible.’\textsuperscript{147}

Whiston Hospital’s ‘learning programmes’ contained an interpretation of ‘attitudes’ that was almost indistinguishable from ‘factual’ knowledge:

‘In her previous experience the nurse may have encountered an incorrect attitude to intravenous nutrition such as ‘my patients do well on saline and dextrose’ since this attitude is scientifically incorrect and harmful to the patient, the nurse is encouraged to develop the contrary attitude’.\textsuperscript{148}

Units were approved for training by inspection, as were providers of state registration. Mead Ward was visited on 21 March 1973, almost two years after its first intake of students.\textsuperscript{149} Miss

Chatfield, a regional Clinical Nursing Studies Officer of the Board, Dr Eric Sherwood Jones, chair of the curricula panel, and Miss E Loach, a nurse member of the panel from Leeds General Infirmary’s intensive therapy unit, assessed it for national accreditation. Criteria were listed in Sherwood Jones’s 1978 textbook: a unit in operation for at least three years, an occupancy level ‘certainly over 300 a year with very varied diseases to give the necessary experience’, the equipment needed to investigate and treat these patients, experienced staff willing to provide teaching, a full-time clinical tutor trained in intensive care and educational techniques, and a classroom and library with teaching aids. Ten centres had been approved to run courses by the time of the First World Congress on Intensive Care in 1974.

The structure of courses was very similar. Six to twelve students, with at least six months’ postgraduate experience, underwent 24-27 weeks of training. The clinical tutor and sister in charge of the unit were largely responsible for recruitment, teaching and examination. They conducted the admission interview, provided lectures and ward demonstrations, and assessed the students’ ongoing progress (via the Nurses Schedule, a booklet for signing off procedures as the nurse became competent). Medical staff were paid to provide lectures – depending on the structure of the course, consultants and registrars gave around one lecture a week – and assisted with examination. At St Thomas’ Hospital, final assessment was by a 15-minute viva, and a written paper with 32 short answer questions. At Whiston, assessment was continuous, with examination papers at 6, 12 and 26 weeks.

The courses trained nurses to become specialists in intensive care. Unlike the traditional Nightingale wards, where nurses had daily contact with all severities of illness, intensive care units accommodated only the most seriously ill. The courses were specific to that patient group – teaching the pathophysiology of critical illness, and the specialist skills required to practise in that hospital location. This had advantages and disadvantages for the professional role of nurses. On the plus side, nurses were qualified to undertake specialist duties, and in post-course evaluation reported that they had more confidence in emergency situations –

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152 Ross, 1973, p. 2 for Nurses Schedule, private collection of Sheena Ross. The nursing department or School of Nursing might also be involved in recruitment and examination.


considered an essential ability for senior nurses in all parts of the hospital.\textsuperscript{155} On the minus side, as mentioned above, it was feared their generalist skills would diminish, making them unsuitable for allocation to duty in other wards. Recruitment to the unit after training was a further aim of the courses, with continuing nursing shortages and the expense of agency nurses. ‘To run an approved course the unit must have a large and experienced team; to maintain this team requires an approved course’, wrote Eric Sherwood Jones.\textsuperscript{156} Many courses offered to ‘blend service with education’, ensuring ward duty (including night duty) and half or full study days.\textsuperscript{157} Multiple intakes per year maximised potential recruitment, but Sheena Ross was disappointed with initial conversion rates at St Thomas’ Hospital. Only one of eight SRNs on the first course joined Mead Ward, but she remained hopeful that they would ‘reap some benefit’ from subsequent cohorts.\textsuperscript{158}

4.5 Portrayals in popular media

This chapter has looked at the rise of intensive therapy from policy, medical and nursing perspectives. How was intensive care portrayed in popular media during the 1960s? While it is beyond the scope of the thesis to research this in depth, I used two sources to discern general features. Taking one newspaper as a sample (the \textit{Guardian} and \textit{Observer}), I applied a keyword search ‘intensive care’ to the period 01/01/1948 to 31/12/1969. My survey revealed that up to the end of 1965 only 16 articles featured the term ‘intensive care’, including nursing vacancy advertisements. The number of articles greatly expanded in the later years of the decade. Secondly, the majority of articles were about admissions to intensive care, closely followed by announcements of the building, conversion and opening of units. Nursing, physiotherapy and technician vacancies noted the hospitals’ unit in descriptions of prospective duties. Britain’s first heart transplant in 1968 generated a great deal of publicity (as will be explored in more detail in Chapter 5), some of which centred on postoperative intensive care of recipients, but also on the identification and life/death status of donors. Lastly, only one admission to intensive care was reported per year 1964–68, then four in 1969 – surprisingly infrequent given the actual number of admissions, which was in

\textsuperscript{155} S Ross, ‘Progress report on the intensive therapy course for nurses’, n.d., \textit{c}.June 1972, 4pp., p. 3.


\textsuperscript{157} See for example S Ross, ‘Requirements for I.T.U. course at St Thomas’ Hospital’, 2 October 1970, 2pp., p. 1, private collection of Sheena Ross. This was as much for the benefit of the unit as the student – it was considered unrealistic to have supernumerary trainees, as was advocated in the RCN report. RCN, 1969, p. 8.

the order of hundreds per unit per year, depending on the size and location of the unit. Of the total of nine reported (predominantly aged 17-30), only one patient’s condition was described as ‘critical’. Two died in the unit, and otherwise their condition was ‘fairly satisfactory’, ‘quite ill’, ‘poorly’, ‘dangerously ill’, ‘seriously ill’ or ‘grave’. While the range of terms to describe condition has hardly changed, it does serve to illustrate that ‘critical illness’ was a medical/nursing term.

Popular fiction was the second source in which I looked for portrayals of intensive care, but these were rare before the late 1970s. Two medical thrillers played upon popular fears of intensive care. Elleston Trevor’s *The theta syndrome* (1977) featured Claudia Terman, trapped in the ‘theta region’ of a coma, trying to communicate a further threat to her life. Using fears about the precision of brain death criteria was not the only dramatic device – so too were the surveillance of remote monitors, disputes between doctors on how best to manage her condition, and the effect on her brother.159 Robin Cook’s *Coma* (1977), made into a film by Michael Crichton in 1978, also played on fears about brain death by depicting a room full of comatose patients kept alive as organ donors in the fictitious Jefferson Institute, Boston.160

In the next chapter I will explore patients’ experiences of intensive care, the transformation of the critically ill to organ donors, and the way in which patient care became not just a family, professional or hospital matter, but also a public concern. I begin by looking at an instrument used in a British hospital during the 1970s for assisting doctors’ life and death decision-making.

Chapter 5: Patients’ experiences

The London Hospital Survival Predictor, 1972


Figure 5.1: The London Hospital Survival Predictor, 1972
An instrument for predicting outcome in coma patients after cardiac arrest, based on patterns of the brain’s electrical activity recorded by electroencephalography (EEG).
Figure 5.2: Cover of Survival Predictor operating instructions, 1972
Wrinkled sellotape covers the homemade label for the rating system and operating instructions, compiled in a series of plastic pockets.
Figure 5.3: Extracts from the Survival Predictor rating system, 1972

Electroencephalograms (EEGs) were visually assessed and scored on a proforma – the variable most useful as a classifier of survival was the intermediate slow (theta) activity of the brain, and for irreversible brain damage it was the response to stimulation. Typical traces for each score were stuck onto the page, and the labels for stimuli overlaid in Letraset-style dry transfer lettering.
The London Hospital Survival Predictor, 1972

The dial on this instrument put life in the balance – to the right the needle points to ‘S’ for survival, to the left ‘IBD’ for irreversible brain damage. It was made at the London Hospital (now the Royal London) in 1972, and is about the size of a large shoebox. It worked on the basis of pattern recognition – scores on thirteen EEG and other clinical variables (such as time since cardiac arrest) were entered into the instrument using the thirteen switches. The result was compared with data of known outcomes before the needle indicated which cluster it fell in – survival or IBD. If it matched neither it was considered ‘not typical’ of previous experience. The hospital’s electroencephalographers used a rating system to produce the scores (see Figure 5.3), and made a statement about outcome in their report for clinicians.

Predicting outcome after cardiac arrest and resuscitation was routine procedure at the London Hospital from the early 1960s. What is unique is that for a time this instrument was used to help clinicians reach their prognosis. Its significance, as former Science Museum curator Ghislaine Lawrence has stated, is that it gave insight into the comatose patient’s brain at a time when criteria for judging brain death were being formulated. In Britain, criteria were based solely on clinical neurological examination, but two of the collaborators in the instrument’s development – Colin Binnie and Pamela Prior – argued strongly for the predictive value of the EEG, and its utility in unconscious, comatose,

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1 Data clusters were generated by software taught to discriminate between values in an early form of artificial neural network. A photograph of the device appeared on the inside cover of computer scientist Bruce Batchelor’s Practical approach to pattern classification, Plenum Press, 1974, and the instrument developers discussed methods with him. See correspondence Maynard-Lawrence, 5 November 1997, T/1997-1918, Science Museum Documentation and Records Centre, London.


sedated and ventilated patients where physical assessment was restricted. But questions about the reliability of scoring and prediction limited the use of the instrument. ‘Consistency in scoring was judged so important that the device was never intended for use outside the London Hospital’, wrote Lawrence. In correspondence, Douglas Maynard, the medical physicist responsible for creating the instrument, explained that he had not sought commercial distribution because of concern about the possible consequences of misuse. ‘Predictor output was never used as a pretext for withdrawing life support’, he said. ‘I suspect that all hell could break loose if people mistakenly thought that it had been’. Indeed, a review of the instrument in *Computer Weekly* in September 1974 generated this reader response: ‘Big Brother, 1984 and euthanasia have arrived in the ultimate form: there is no hope left’.

Stickers added in the right-hand corner of the device show that it belonged to the EEG Department (and should presumably not be removed), and directed users to the ‘scoring book on shelf by PC’. The full rating system was only published in Pamela Prior’s 1973 monograph, but with provisos about inter-rater reliability. Figure 5.3 and this extract from the operating instructions demonstrate the subjectivity of scoring:

‘If the electroencephalographer is uncertain about the appropriate score for a particular variable he may vary it to test the effect on the discriminate score...If a variable about which there is doubt has a major effect on the discriminant score the interpretation should be made with great caution’.

Prediction was based on comparison with data collected in a five-year study (1964-8) of patients after cardiac arrest. But the study was small – only 41 patients and 93 electroencephalograms met the inclusion criteria: known cardiac arrest, no associated


8 J D Swinscoe, ‘When all hope has gone...’, *Computer Weekly*, 1974, October 3, 413: 2.


disorder likely to complicate the EEG assessment, and outcome reliably established as either recovery of consciousness without apparent deficit or death from brain damage (established at necropsy).\textsuperscript{11} Despite the limitations, Binnie and Prior’s review article in 1994 continued to argue that ‘scoring systems based upon EEG features retain a useful place’, and in 1997 Maynard hoped that they might one day reissue the predictor as a software package for PC, ‘with appropriate cautions about its use’.\textsuperscript{12}

Other scoring systems followed. The Glasgow Coma Scale, developed by Graham Teasdale and Brian Jennett in 1974, was not intended to be a predictive tool but was found to have a strong correlation with outcome.\textsuperscript{13} Then in 1985, Bill Knaus and colleagues unveiled APACHE II, a system based on acute derangements in physiology as predictors of survival.\textsuperscript{14} According to Derek Angus in Classic Papers in Critical Care, this was one of the most widely quoted papers ‘in all of medicine, let alone intensive care’, and more than 15 years after publication was still being used to stratify patients in clinical trials.\textsuperscript{15} Angus also sized up the value of prediction:

‘At the heart of optimal clinical medicine is the ability to prognosticate. Understanding a patient’s likely outcome, and how that outcome might change depending on alternative interventions, is essential if care is to be optimized. Perhaps nowhere is this issue both more important and more difficult than in intensive care’.\textsuperscript{16}

\begin{thebibliography}{9}
\bibitem{15} Angus, 2008, p. 449.
\bibitem{16} Ibid.
\end{thebibliography}
But whilst APACHE II scores could be used to compare observed and predicted mortality, its application to the clinical decision making process was contentious. On 25 August 1994, *The Independent*’s medical correspondent, Liz Hunt, reported that ‘death by computer’ had been ruled out by Guy’s and St Thomas’ Hospital Trust after ‘one of its doctors threatened to use a machine to predict which patients would live – and were cost-effective to treat – and which would die’.\(^{17}\) In reply, the Director of Intensive Care, David Bihari, defended use of the Riyadh ICU Program – a modified version of APACHE II with the provocative acronym ‘RIP’.\(^{18}\) René Chang and colleagues had developed the program at the Riyadh Armed Forces Hospital between 1986, when they reported the first use of APACHE II scores for predicting individual outcome as an aid to clinical decision making, and 1988, when they published an adapted model that began to be used in some British hospitals for audit purposes.\(^{19}\)

Speculated to be making political points about the NHS before moving to Australia, David Bihari argued that with the acute shortage of intensive care unit beds, specialists had to make difficult decisions to maximise use. Well-informed decisions required ‘objective information’ from many sources, and it was unethical to ignore information that could help ‘identify those hopelessly ill patients who are inevitably going to die despite the very best intensive care’.\(^{20}\)

A year after the newspaper coverage, a large clinical trial involving more than 9,000 patients showed that the use of APACHE III scores to guide decision making failed to make any impact on the provision of care.\(^{21}\)

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Predictor to the Riyadh ICU Program, the bottom line was that, 'Computers do not make
decisions – doctors and families make decisions about the withdrawal of life support in
the Intensive Care Unit', an assertion made by David Bihari.\textsuperscript{22}

\textsuperscript{22} Bihari, \textit{The Independent}, 1994.
5.1 Introduction

‘How has the patient fared during this time of critical care development?’ asked anaesthetist Christopher Bryan-Brown in 1988.23 In the many short histories of intensive care written by doctors, he is one of the few to directly address patient experiences. In this chapter, patients take the centre stage, in concert with other participants in the clinical encounter – those who have an impact on their experiences of critical illness – doctors, nurses, planners/administrators and families.24

Patients’ own narratives would provide insight, but there are few published accounts. As described in section 1.5 on sources and methods, one of the most likely explanations is that they were simply too ill. Consequently, accounts tend to be written by those who were less seriously ill, and by those who survived. They are almost exclusively written by doctors-turned-patients, as reflections from ‘the other side’. Their tone is advisory, sharing what they have learned from their experience that other clinicians should know. A superb example is a documentary film at the US National Library of Medicine where a haematologist in a white coat, sitting at a desk with his glasses held in his hand, recounts his admission to intensive care in 1972, with phrases such as: ‘Now along the way I learned a lot of very indelible lessons’, ‘Has my illness, my experience, helped me be a better doctor?’ and ‘My final message to you is...’25 One of the few book-length patient narratives focusing almost entirely on the critical phase of illness and admission to intensive care is Pittu Laungani’s *It shouldn’t happen to a patient: a survivor’s guide to fighting life-threatening illness.*26 Laungani, a psychologist, had two episodes in intensive care at the Central Middlesex and St Mary’s Hospitals, London, in 1989, with a muscle wasting disease, polymyositis. His account details his reaction to being admitted:

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24 My approach has been informed by Flurin Condrau’s article, ‘The patient’s view meets the clinical gaze’, *Social History of Medicine*, 2007, 20 (3): 525-40.


‘The term ITU...aroused in me a feeling of dread and foreboding. From the depths of my unconscious rose terrifying images which until then had remained unsurfaced. I visualized – the vision made even more sinister by a diet of television soap-operas on hospitals and doctors and nurses – being strapped to all sorts of frightfully complicated machinery, my nose clogged with nasty, unpleasant tubes, wires attached to my chest, my arms bruised and punctured by drips of saline, albumin and blood, my mouth compressed by oxygen masks and respirators’.  

Over a number of chapters, he then describes the course of his illness, his interactions with doctors, nurses and physiotherapists, and the support of his wife, Ann. Extracts of his experience will be used later in this chapter, but here I want to note his reflections on writing the narrative. On his level of awareness and ability to reconstruct events he writes, ‘Although I have a tidy mind, I cannot recall the next five to seven days in any chronological order’ – a period of delirium punctuated by moments of sanity, ‘lucid, clear-headed and even reasonably alert’. Then, on starting work on the book, he confides:

‘It also seemed rather grand, even heroic to sit down and write a book while one was critically ill. For word to get round the ward that a patient, critically ill, hardly out of the ITU, probably dying, was courageously toiling away at a book seemed just the sort of sustenance which my vanity cherished...[But] vanity had its price. I was not at all sure that I had the strength, the stamina, the temperament, and above all, the will to relive the harrowing experiences which I had gone through’.  

Patient narratives have been seen to give agency to those who might otherwise ‘disappear’ or ‘vanish’ in the high-tech hospital environment. Historians and social scientists have found much to support their critiques of modern medicine in the

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28 Ibid, p. 50.
29 Ibid, pp. 164-5.
intensive care unit. This extract from a 1984 American case study of a 51-year old man with emphysema typifies arguments about the objectification of the critically ill:

‘The ventilator, however, did not so much serve as dominate. It transmogrified Mr. C from an existential hero into a mere appendage of the ventilator. Mr. C, who had triumphantly conquered the hospital ward, transforming this way station to death into a place for carrying on his everyday life, was now merely an object of the action of a machine. The machine moved, and C was inanimate; symbolically, the machine even robbed C of his face, replacing it with blue and white plastic double-barreled tubes’.31

Since the late 1970s, social scientists have sought to capture ‘the missing voice of the critically ill’ through interviews, observation, and diaries.32 There is a significant body of work on the experience of being mechanically ventilated, studies of factual recall including thematic analysis, and diary writing by patients, families and unit staff.33 David Rier offers one of the most fascinating papers, based on his admission to intensive care at the Shaare Zedek Hospital in Jerusalem in 1997. Admitted for nearly three weeks with virulent pneumonia, Rier’s experience as a sociologist-turned-patient enabled him to reflect on being critically ill in a ‘post-Parsonian’ era. His conclusion was that, ‘For, despite my deep commitment to disclosure, negotiation, and patient participation, the reactionary truth is that I was too sick to know certain details of my case, too weak to be a partner in decision-making’.34 His findings were supported by citing sociologists


32 This phrase comes from Rier, 2000.


34 Rier, 2000, p. 75.
with similar evidence – of critically ill patients rejecting full disclosure and abandoning ‘a consumerist stance’, and his explanation that medical sociology’s current take on patient-practitioner relations has been informed by chronic illness, not applicable to acute or critical illness.\textsuperscript{35} He further argues, ‘By gliding over or ignoring the critical phase, we ignore precisely that phase, that context, in which physicians’ traditional paternalism makes the most sense.’\textsuperscript{36}

While the critically ill were rarely autonomous, it does not necessarily follow that they were objectified to the extent that the current literature might suggest. At times intensive care units did function as a high tech space for the mechanistic treatment and monitoring of critical conditions, as seen in Chapter 4. But there were many times, perhaps always, when clinicians considered their patients as persons. In this chapter, I show how doctors, nurses and hospital planners had concern for patients’ experiences from the very beginnings of intensive care. I begin by illustrating the changing demographic profile of the critically ill, with their changing needs. I then examine research published from 1965 that specifically considered psychological impacts of intensive care. While such research informed changes in the care of the critically ill, the cumulative \textit{ad hoc} measures taken by carers to address adverse effects was also important. I finish with what might be the ultimate objectification (and commodification) of the critically ill – their transformation to potential organ donors – and how public fears about death and ‘transplant vultures’ pushed doctors to be more openly accountable for the care and welfare of patients as persons. By the 1970s, the experiences of critically ill patients had become not just a family, professional or hospital matter, but also a public concern. In a sense then, this is also a chapter on the ethics of intensive care. It is not a theoretical examination, rather a study of ethics as practised and situated in the intensive care units of the 1960s and early 1970s. It examines changing views of wellbeing and humanity as well as the boundaries of life, death and the ‘living dead’, and the immediate and embodied needs of individual patients as well as the existential.

5.2 Who were they?
First, it is necessary to review who was being admitted to intensive care units in the 1960s, and how this changed over the decade and into the 1970s, as too often they have been regarded as a homogenous group. A changing demographic profile is not

\textsuperscript{35} Ibid.
\textsuperscript{36} Ibid, p. 88. He did note that as he recovered he returned to his ‘customary identity as a patient of the post-Parsonian era’, preferring full disclosure, see p. 82.
unexpected, having been observed in other hospital settings. For example, Julie Anderson, Francis Neary and John Pickstone write of a shift in the types of patients undergoing total hip replacement – from ‘little blue-haired old ladies’ in the 1960s and early 1970s, to a younger age group by the late 1980s.\(^{37}\) What is interesting and important for intensive care, as with hip replacement surgery, is that the changes were attributable to more than individual units’ admission policies. Other factors operated in the changing profile of intensive care unit patients – not just medical, but also administrative and social. Anderson, Neary and Pickstone situate the changing demographic of hip patients within changing cultures of medicine, particularly regarding conceptions of old age, and this idea is just as applicable in intensive care. Writing about the Chestnut Hill Hospital, Pennsylvania, during the 1950s and 1960s, Julie Fairman concludes, ‘The population of those who were permitted to benefit from intensive care also changed according to economics, the possibilities of medical therapeutics, and socially constructed expectations of medical care’.\(^{38}\) With use of the word ‘permitted’, Fairman reminds us that admission criteria were not simply medical, but that selection was also based on notions of worth. By virtue of their inclusion and exclusion principles, admission criteria also give insight into contemporary definitions of critical illness. Looking in more detail at the changing demographic profile will illustrate these points.

**1960s**

In the early 1960s, according to hospital planning policies, anyone who required intensive care could be admitted, as discussed in Chapter 3. Planning documents give some of the first distinct and published criteria. *Elements of Progressive Patient Care*, influential for Ministry of Health guidelines, listed the types of patients likely to require intensive care:

‘Major surgical cases following release from the recovery room, multiple injury or burn cases, major or threatened gastrointestinal hemorrhage, acute coronary occlusion, pneumonia, acute thrombophlebitis with danger of pulmonary embolus, and critically ill traumatic patients’.\(^{39}\)


It is perhaps surprising in hindsight that respiratory failure was not mentioned, but the range of conditions shows expansion from the predominantly postoperative, poliomyelitis and tetanus patients of the 1950s. As discussed in Chapter 3, criteria for admission were based on nursing needs not clinical diagnosis. But in practice, units had a limited number of beds, and many patients required special nursing care, so further criteria were often employed. Admission became a triage decision, as had been practised in medicine for many years, based on the likelihood of recovery. The influence of social constructions of value was evident in the enforcement of age limits. For example, for a short time after opening in 1958, the side ward for general intensive care at St Bartholomew’s Hospital, London, had an age limit of 65. Reflecting on the change over time, aware of current opinions and needing to choose his words carefully in an oral history interview, Charles Hinds (who was then senior registrar for the ward) said, ‘Probably in terms of age, we were much...much more...ready to say, ‘Well this patient is elderly and it’s not appropriate’. [pause] Whereas now, age...although something you take into account, is certainly not...not...a criterion as such...for admission’.40

By the later 1960s, research into the pathophysiology of critical illness enabled doctors to make a degree of distinction between terminal and potentially reversible illness, and this was used as a criterion for admission and more explicit rationing. Reversibility was a key concept, and has remained in definitions of critical illness and intensive care ever since.41 The notion of ‘salvageability’ became evident in reflections on practice from the later 1960s. For example, in an article for the Birmingham Medical School journal in 1969, surgeon George Watts reflected, ‘...with this new progress it is now possible to salvage physical wrecks and to keep alive many who would otherwise have died’.42 At the opposite end of the scale were the terminally ill and moribund. Most units excluded the terminally ill, but the boundary was always blurred (and decisions made on a case-by-case basis) for patients with terminal illnesses who were admitted for treatment of

40 Oral history interview, C Hinds, p. 13.


acute events such as serious infections. There was also a risk that patients with potentially salvageable conditions would not respond to treatment, and would deteriorate whilst in the unit. They became a class of ‘hopeless’ patients, and doctors and families faced the agonising decision of whether and when life support should be withdrawn or withheld.43 Rationing became overt. The British Medical Association’s policy document of 1967 expressed concern that resources of intensive care units should not be ‘wasted’ on patients unlikely to benefit from them.44 The opposite reasoning was also employed, focusing on benefit for the salvageable rather than squander for the hopeless, rhetoric that pervades contemporary discussions of rationing.

1970s
Into the 1970s, increasingly complex surgery and the availability of life support for respiratory, renal, cardiovascular and metabolic systems led to the admission of older and sicker patients. The reciprocity of the relationship between surgery and intensive care was significant. Increasingly complex surgery, particularly cardiac and transplantation surgery and the use of extracorporeal circulation, created more unstable postoperative patients, who needed the supervision and minute-by-minute management of intensive care. But complex surgery would not have been carried out without the availability of the intensive care unit. Indeed during periods of high demand for beds, major elective surgery was very often postponed.45

Therapeutic optimism expanded the range of ‘salvageability’. Christopher Bryan-Brown argues that because of early successes, patients with poorer chances of recovery were admitted to units, ‘repositories in which patients with a hopeless prognosis were put for a “last chance”’.46 The notion of a ‘last chance’ reflected confidence in how intensive


45 Oral history interview, C Hinds, pp. 10-11.

care medicine had progressed over a decade. One class of patients were witnessed for the first time – patients with multiple organ system failure. Before life support, the failure of one organ system often proved fatal. Artificial ventilation kept alive patients with respiratory failure, but then their renal system failed. Dialysis for acute renal failure supported that system, until another failed. Prognosis plummeted with each successive organ system failure, as Figure 5.4 demonstrates.
<table>
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<th>2nd</th>
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<td>96%</td>
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* ‘Survival unprecedented with maximal statistical probability of survival of 10%’

**Figure 5.4:** Mortality according to number and duration of organ system failure, 1979-82

Knaus and colleagues studied hospital mortality in 2719 organ system failure (OSF) admissions to 13 hospitals, with data collected between 1979 and 1982.

Adapted from Knaus *et al*, 1985.47

I would argue that multiple organ system failure was a new clinical condition created by intensive care. The term was introduced by Arthur Baue in an editorial for *Archives of Surgery* in 1975, although he acknowledged use of the term ‘sequential systems failure’ in a 1973 paper by surgeon Tilney and colleagues.48 Baue described it as a sequence of events often beginning with shock or circulatory failure, followed by failure of respiratory, renal, hepatic, gastrointestinal and metabolic systems. The history of the condition, as laid out by Baue, was that as care had evolved and improved, various organ systems had in turn been ‘the limiting factor’ in recovery. By the 1970s, with effective support for circulatory, renal and respiratory failure, it was possible to survive with multiple organ system failure, although Baue did note that it stretched their knowledge and capabilities since the dynamics of progressive failure was little understood, and few survived.49 Baue himself hinted at the role of intensive care and

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49 Baue, ibid, p. 780.
effective life support in generating the condition by subheading it as ‘a syndrome of the 1970s’.  

A final explanation for the type of patients in units throughout the 1960s and 1970s was administrative – admissions to maintain high occupancy levels and retention when no ward beds were available for discharge. Admission criteria were ‘somewhat capricious’, wrote Geoffrey Spencer, consultant in charge of the intensive therapy unit at St Thomas’ Hospital, in 1972, and in his opinion attempts to develop medical criteria were rarely successful. Two other factors operated instead. The first was that high occupancy levels were considered important. It was not for financial reasons, as around 80% of unit costs were salaries, which remained broadly constant whether the unit was full or empty. It was more to do with demonstrating the utility of the intensive care unit, particularly in the early decades when they were competing with other departments for a substantial share of resources. The other was that once the benefits of intensive care became known, clinicians wanted their unstable patients admitted there rather than the wards, where nursing complement dropped overnight. This was particularly the case in America, where clinicians wanted the very best care for their paying patients.

5.3 Psychological impacts of intensive care

Having established the changing profile(s) of critically ill patients during the 1960s-early 1970s, I now want to return to the question of how they fared, and in particular when and how their welfare became a concern.

The psychological impacts of severe illness and the intensive care unit environment began to be researched and published from the late 1960s. In many papers authors argued that such work was the logical sequel to the establishment of the physical space. Writing in 1969, one author remarked that psychiatric problems associated with intensive care had been ‘foremost in the thoughts of clinicians’ for many years, while another felt it was a timely concern given that units had ‘demonstrated their value in the treatment of the critically ill’ and that a ‘reasonable level of mastery’ of technology had

50 Ibid, p. 779.


52 Ibid.

53 Fairman, 2000, p. 100.

54 Brief mentions were made in earlier publications – for example, the 1967 report of the British Medical Association’s working party on intensive care had a few lines on ‘psychological aspects’. See BMA, 1967, pp. 10-11.
now been achieved.\textsuperscript{55} These teleological explanations did not take account of other stimuli to research. One of these was the observation of a high incidence of psychosis in patients recovering from open-heart surgery – indeed many early studies were conducted in coronary and cardiac care units.\textsuperscript{56} But, research on this group of patients was not necessarily generalisable to all intensive care unit patients. Those in coronary and cardiac units were most often conscious, less sedated, and more alert than other critically ill patients. Many of the impacts observed in this population did not apply to the heavily sedated or comatose.

In 1971, anaesthetist H Glynne Schroeder published an influential research paper. It described the ‘psycho-reactive disturbances’ presented by a Sheffield unit (most likely the Royal Hospital) during the course of one year, and was an important article for the British intensive care community because although other authors covered similar theoretical ground, Schroeder’s was based on empirical research conducted within the British health system.\textsuperscript{57} It was recommended reading for subscribers to the Intensive Care Society’s newsletter, tagged as ‘the ill-effects of round-the-clock medical and nursing attention which are often ignored or missed’.\textsuperscript{58} Three major psychological impacts were observed – anxiety, sleep and sensory deprivation, and problems of communication. I will consider each in turn, drawing on a variety of contemporary sources, along with relevant extracts from later patient narratives.

Causes of anxiety were numerous. One short paragraph in American psychiatrist Donald S Kornfeld’s paper in 1969 dealt with anxiety considered to be inherent to the serious illness. The implications of this symptom were that a confused, agitated patient could pull out infusion sets, catheters and gastrointestinal drains, and anxiety put stress on


\textsuperscript{57} H G Schroeder, ‘Psycho-reactive problems of intensive therapy’, \textit{Anaesthesia}, 1971, 26 (1): 28-35. Schroeder was consultant in charge of the 5-bed medical intensive care unit at the Royal Hospital, Sheffield.

\textsuperscript{58} Intensive Care Society, ‘Newsletter No. 3’, June 1971, p. 3, Box 34 [DR/ICS Box 1], Intensive Care Society Archives, London.
the cardiovascular system.\textsuperscript{59} These conditions were reversible with treatment of the underlying cause or admitting illness. Other stressors related to fear and apprehension. Many patients expressed a fear of dying, more acute than in other wards because it was ever present. The haematologist in the American documentary described it as ‘an absolutely all pervading and relentless issue’, and Pittu Laungani recounted:

‘There were seven of us – seven critically ill patients. Each a stranger to the other. Yet each united by the spectre of death which hung over us all. Who would survive, who would die, one could not say. For the first time the idea of my own death began to torment me’.\textsuperscript{60}

Monitors that were meant to reassure with their constant vigilance became watched by patients, fearful of the implications of changes in the bleeps. So too with life support technology – on the one hand life-saving, but on the other a reminder of their mortality and fragile hold on life, what Rita Jablonski terms the ‘proximity of death’.\textsuperscript{61} It was particularly distressing to witness the resuscitation of a fellow patient. Kornfeld described the drama, and its effect on fellow patients:

‘The cardiac arrest page could bring a stampede of house officers, nurses, and medical students. They quickly become oblivious to the other patients in the area as they concentrate on their resuscitation efforts...The sights and sound can be truly horrifying to a layman looking on, and even more so if that layman himself has a serious cardiac problem’.\textsuperscript{62}

Weaning from ventilators was another cause of acute anxiety for patients. It was no easy task for the carer (usually nurses, but also doctors and physiotherapists), being a gradual process of slowly reducing the work of the ventilator, and hoping for patients to begin breathing spontaneously. It could be terrifying for patients, uncertain of whether they would be able to breathe unaided. It was tricky to accomplish too – to co-ordinate spontaneous breaths with assisted breaths – and if patients experienced difficulties, anxiety persisted into the next weaning session.\textsuperscript{63}

\textsuperscript{59} Kornfeld, 1969, p. 108.
\textsuperscript{60} Viner, c.1988, National Library of Medicine, Bethesda; Laungani, 1992, p. 107.
\textsuperscript{61} Jablonski, 1994, p. 191.
Sleep and sensory deprivation, leading to exhaustion, disorientation and confusion, was the second psychological impact observed in the Sheffield unit. Patients in intensive care experienced a threatening array of noise and activity. Telephones rang, trolleys and equipment were wheeled around, swing doors swung, anxious relatives cried, talked, or paced about restlessly, and staff tended to their duties, talking loudly to be heard above the noise. Each machine made its own unique sound:

'Some buzzed, some bleeped, some whizzed, some pinged. Quite often, for no reason at all, the monitors would start to piiiiinggg, brzzzzrrr, whizzzzzzzz, grrrruuukkkk, grrrruuuuukk, and a nurse would come scampering to the bed from whence the sounds came to investigate and set them right'.

The regular hum was spiked by occasional crisis – the rush to resuscitate a rapidly deteriorating patient. Rest and sleep were also interrupted by nursing observations of temperature, pulse and blood pressure – every 15 minutes for the most critically ill. Schroeder found that sensory deprivation resulted from the constant bright lighting in rooms without windows, and continuous bombardment with largely monotonous sounds.

In 1969, Donald Kornfeld noted that the intensive care unit environment resembled conditions created for experiments into sleep and sensory deprivation, which produced similar 'abnormal mental states'. Provocatively, consultant surgeon George Watts amplified the point in an article for the Birmingham Medical School journal: 'It approximates to that used in a police state to ensure complete moral and physical collapse of the resistant at their inquisitions...It is sad to think we can degrade the art of healing so that its domain resembles the ante-chambers of the Gestapo!

His comments were soon reproduced in The Guardian under the headline 'Intensive care units 'like the Gestapo”', where he admitted 'his language was highly coloured but he wanted, he said, to make his readers think'. Symptoms of anxiety, sleep and sensory deprivation were also grouped and labelled as an 'intensive care syndrome' or 'intensive

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65 Laungani, 1992, p. 73.
69 'Intensive care units 'like the Gestapo”', The Guardian, 30 May 1969, p. 4.
care delirium'. Its causes were the numerous stressors described above, and for this reason, its originators regarded it as the new madness/disease 'of medical progress'. It was defined as 'an acute brain syndrome characterized by impairment of orientation, memory, intellectual function, and judgment with lability of affect.' According to the few descriptions of the syndrome, these symptoms were temporary, and receded when the patient was transferred out of the unit, confirming its specificity to intensive care and critical illness. Labelling as a syndrome was perhaps intended to warrant as much attention as other pathologies of critical illness, but the term was seldom used.

The final psychological impact observed in the Sheffield unit was problems of communication. It was impossible to speak with an endotracheal tube or tracheostomy, and this caused immense frustration for patients who needed to convey information or ask questions. One of the earliest textbooks for student doctors and nurses, published in 1965, described the difficulties:

'Many patients on I.P.P.V. are fully conscious but because of the tracheostomy cannot make their wants known to the nurse or doctor in the usual way. Often they become acutely depressed and despite continuing physical improvement lose their will to fight. The presence of understanding and cheerful staff can go a long way towards mitigating what is, for most, a strange and terrifying experience. Some may be able to write their requests and should always have a pad of paper and pencil at hand, but for others it is necessary to provide a large alphabet on which the patient can spell out a message with a finger. Great patience is required at this stage and one must be prepared to spend a lot of time in keeping up the patient's morale.'

Communication was not always successful. Intensive care unit patient and professor of Dentistry, David Shovelton, recounted this in his 1979 article: 'I listened to several

70 One of the earliest uses of the term was in F P McKegeaney, 'The intensive care syndrome: the definition, treatment and prevention of a new "disease of medical progress"', Connecticut Medicine, 1966, 30 (9): 633-6.
71 L H Nahum, 'Madness in the recovery room from open-heart surgery or "They kept waking me up"', Connecticut Medicine, 1965, 29 (11): 771-2; McKegeaney, ibid.
72 L M Wilson, 'Intensive care delirium: the effect of outside deprivation in a windowless unit', Archives of Internal Medicine, 1972, 130 (2): 225-6, p. 225. This article was also recommended reading in the April 1973 edition of the ICS newsletter, see Intensive Care Society, 'Newsletter No. 10', April 1973, p. 5, Box 34 [DR/ICS Box 1], Intensive Care Society Archives, London.
attempts at conversation between nurses and other patients...which often ended without the objective being discovered, after a final query "Is it important?" and then, "Well if not, try to forget it and relax". 

5.4 Measures to address adverse effects

Research and discourse on the psychological impacts of severe illness and the intensive care unit environment contributed to changes in the care of the critically ill. Sedation (which was already in use to enable better tolerance of mechanical ventilation) was considered by many doctors to be valuable for allaying anxiety. H Glynne Schroeder reported that 'acute anxiety panic reactions' could quickly be brought under control by injection of anxiolytic drugs (such as chlordiazepoxide or diazepam), but that a regular maintenance regime was preferable to the occasional dose when required. In 1979, Dr Honor Merriman, an anaesthetist awarded a one-year Travelling Fellowship by the Intensive Care Society and Janssen Pharmaceuticals, conducted a survey of 34 British units to observe methods and interview staff. She noted that a successful sedation regime should include 'relief of anxiety, analgesia, reduction of patients’ respiratory drive [to ease mechanical ventilation], safety and simplicity'.

By this time, eight years after Schroeder's paper, Merriman found that all units used a muscle relaxant, and that further sedation was frequently accomplished with drugs such as diazepam. Protocols were rare – only two units had a written protocol for methods of sedation, sixteen had no protocol and the remaining sixteen had protocols 'by mutual consent'. Despite this, Merriman observed there was some degree of similarity in the use of opiates, sedatives and muscle relaxants. Opiates were often chosen for their multiple effects – for example, phenoperidine was used for its properties as an effective depressant of respiratory drive, analgesia, sedation and predictable duration of action.

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75 Schroeder, 1971, p. 29.


78 Ibid, p. 218.

The sedation regime was considered an important part of the care of the critically ill, but it was also informed by contingency. Merriman noted that a shortage of nurses altered the regime: ‘Many units commented that when there were fewer nurses the patients tended to receive more drugs (in particular muscle relaxants) as there was less time for the nurse to talk to the patient. The problem was known in most busy units at night’.\footnote{Merriman, 1981, p. 222.}

Sedation was not intended to replace the relief of anxiety by reassurance and explanation, but pressures on staff contributed to Merriman’s observed patterns of sedative use as much as clinical criteria.

Measures to address sleep and sensory deprivation were also largely prompted by the new discourse on psychological impacts of the intensive care unit environment.\footnote{Oral history interview, C Hinds, p. 10. Hinds dates the work on patients’ experiences to the late 1970s-early 1980s, although it began earlier as shown.}

Observance of day awake/night asleep routines was considered most important. Windows and clocks gave orientation to the time of day, and a glimpse of the outside world provided sensory stimulation, a break from the monotony of the unit. Nurses needed to modify their operational procedures to accommodate these routines – only essential recording of vital signs during the night to allow the patient uninterrupted sleep, and heavier night sedation to establish a diurnal rhythm. During the day, monitoring and treatments were to be arranged to enable the maximum ‘disturbance free rest’, with ‘meaningful sensory stimuli’ such as newspapers, radio and television (for those who were conscious).\footnote{Schroeder, 1971, p. 31. At the Whiston Hospital unit, the Women’s Voluntary Service provided a television set with remote control. See Liverpool Regional Hospital Board, St Helens and District Hospital Management Committee, ‘Whiston Hospital, Intensive Care Unit’, n.d., 4pp., [p. 1], MH 159/48, National Archives, Kew.}

But there is evidence that concern for the welfare of patients predated the discourse of the late 1960s-early 1970s. Measures to address patient needs had been in place since the opening of units in the early 1960s. Emotional support in the form of explanation and reassurance, particularly with regard to unfamiliar and invasive procedures and fearsome technology, was a continuation of nursing tradition. ‘Breathing machines’ needed much explanation, and at a 1969 World Health Organisation seminar on nursing in intensive care, it was stated to be a nurse’s responsibility to help patients adapt to being on a ventilator.\footnote{World Health Organisation, Regional Office for Europe, Nursing in intensive care. Report on a seminar convened by the Regional Office for Europe of the World Health...} Patients needed to know that the equipment was reliable and...
would not fail – electric generators would be used in a power cut, and nurses’ observations or alarms would alert attention to any problems. They needed teaching how to work with the machine, not to fight it, and to let it do the breathing for them. They also needed reassuring that their inability to speak was only temporary, while they were intubated or had a tracheostomy. As seen in section 5.3, patience with the use of communication aids could mitigate some of the frustrations, fears and isolation of their inability to communicate. Chest physiotherapy and tracheal suction were other particularly unpleasant procedures, as described by Pittu Laungani in 1992:

'I have suffered, oh I have suffered at their hands. They are tyrants...The quality of mercy in their case is definitely strained. They turn you from side to side, and thump and thump and thump – until your chest aches, your back hurts, you are out of breath, tears gouge your eyes, your throat aches because you cannot suction out the green stuff anymore, and you wish you were somewhere else...rather than have to submit to what I can only describe as their cruel, sadistic tortures'.

Working together, nurses and physiotherapists could alleviate suffering through preparation, explanation and reassurance. In some cases, especially after cardiothoracic surgery, analgesia would be given in advance of physiotherapy (imagine thumping a chest full of stitches), and the nurse needed to get the timing right. A *Lancet* editorial in 1962 summed it up, saying, 'In a place where apparatus and techniques loom so very large, it is hard to preserve tranquility and courage and kindness; but unless the patient is quite oblivious to his surroundings, the need of them is nowhere greater'.

The role (and needs) of relatives was also known from the beginnings of intensive care units, being considered an adjunct to patient care. 'The severely ill patient is not always inanimate and his relatives never', advised the Ministry of Health in 1962. As nurse Pat Ashworth recalled of her experience at Broadgreen Hospital during the 1960s, 'They [relatives] needed to know what they could do with the patient and what not to do; how

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84 Laungani, 1992, p. 74.


they could help, and how they couldn't help. 88 Where space permitted, a relatives' room was often part of the intensive care unit. Those opening at Kettering General Hospital (December 1962), Broadgreen Hospital (February 1964, see Figure 5.5 below), Whiston Hospital (March 1964) and St Thomas' Hospital, London (September 1966), for example, all had a room for visitors. 89 At Whiston Hospital, its close proximity to the ward can be seen in the plan in Figure 5.6. 90

Figure 5.5: ‘The visitors’ room’, Broadgreen Hospital, 1964

The caption to the photograph in the Nursing Times read, ‘There is a foot-stool to each chair. The flowers are done by contract’.

88 Oral history interview, P Ashworth, p. 25.
90 Liverpool RHB, ibid.
Visiting hours were usually unlimited, but restricted to five minutes at a time, with concern that they should not gather for long periods in the already crowded space around the bed. ‘Constant presence at the bedside was discouraged by the simple expedient of removing all furniture from the patient’s room’, wrote the authors of a report on the pilot unit at Manchester Memorial Hospital, USA.91

Care for the patient’s wellbeing by explanation and reassurance, and facilitation of close contact with family members were both recognition of the needs of the patient as a person. Concern about the psychological effects of the unit environment also predated evidence of sleep and sensory deprivation – although their identification in the late 1960s-early 1970s suggests the measures taken in the early part of the decade were not fully remedial. Ward design sought to minimise disruption and discomfort for patients (and staff). In some hospitals, individual rooms were considered, for privacy, quiet and to shield patients from the continual reminders of their lives in the balance. It was particularly recommended for coronary care units, where cardiac arrests were most common. But privacy had to be balanced against the need for nursing surveillance, as discussed in Chapter 3, so the upper section of the partitions was often glazed to enable staff to look in – to check on patients but also to locate each other. Where individual rooms or partitions were too expensive, curtains drawn around the bed offered visual but not auditory privacy.

Attention was given to noise reduction and adjustable lighting intensity. In February 1964, the new intensive care unit at Aintree Hospital (Liverpool RHB), following recommendations from the Ministry of Health’s interim report, was stated to have floor

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lighting that ‘eliminated nuisance to patients of overhead or wall night-lighting’.\textsuperscript{92} Full overhead illumination, 24 hours a day, was a particular problem for critically ill patients completely immobilised by their attachments to the ventilator, chest drains and monitors. At Whiston Hospital, ‘a unique form of over-bed strip lighting was designed which could be converted from direct to diffuse by rotating the tube housing to the ceiling’.\textsuperscript{93} By the time the Department of Health issued its \textit{Hospital building note} for intensive therapy units in 1970, lighting intensity in patient areas had been given a precise specification – 300 lux, with facility for dimming.\textsuperscript{94}

### 5.5 Scrutiny of decision making

Measures to meet the needs of patients had been in place, but pretty much unseen by the wider public, since the opening of intensive care units in the early 1960s. Then, with the introduction of brain death criteria and heart transplantation in 1968, public scrutiny of decision making and fears about the life or death status of organ donors marked a turning point for the experiences of the critically ill, making practitioners more openly accountable for the care and welfare of patients as persons.

At this point, it is important to note the work of a number of scholars who are essential reading on the subject of brain death and organ transplantation. Gita Giacomini studied the archive files of the committee responsible for the definition of brain death, including memos, drafts and work in progress, and argues that organ transplantation was central to the purpose of the committee, creating urgency and tailoring criteria, despite the rhetoric that redefinition was required because of obsolete criteria.\textsuperscript{95} Tina Stevens concurs, arguing that the ability to prolong life by mechanical ventilation was not new, and that ‘without the interest in organ procurement, \textit{redefining} death appears gratuitous.

\begin{itemize}
  \item \textsuperscript{92} ‘Progressive patient care – information on hospital experience and experiments’, February 1964, 3pp., p. 2, MH 159/48, National Archives, Kew.
  \item \textsuperscript{94} Department of Health and Social Security/Welsh Office, \textit{Hospital building note number 27 – intensive therapy unit}, HMSO, August 1970, p. 10. For note on use of cushioned flooring and acoustic ceiling tiles at Broadgreen Hospital see L A Reynolds, E M Tansey (eds), \textit{The history of British intensive care: the transcript of a witness seminar held by the Wellcome Trust Centre for the History of Medicine at UCL, The Wellcome Trust, on 16 June 2010}, London, Wellcome Trust Centre for the History of Medicine at UCL, forthcoming.
\end{itemize}
Instead, she argues, the medical profession submitted to public oversight – ‘the first glimmer of a demand for bioethics’ – to preserve their political authority.

Gary Belkin offers a revision based on his opinion that existing accounts have been ‘skewed’ by a bioethical agenda. He deploys the previous work and interests of two committee members to argue that brain death criteria were a response to the challenges of caring for patients in severe coma. Henry Beecher, anesthesiologist and influential critic of ‘unethical’ medical research with human subjects, was keen to halt medical treatment of no value – wasteful of resources and intrusive to personal dignity, a view that Belkin attributes in part to Beecher’s experience in ‘weighing the futility and effectiveness in interventions’ in a respiratory unit from the late 1950s. Neurologist Robert Schwab meanwhile, had been working on the determination of death correlated with pathology, and the end of consciousness, before joining the committee. Belkin’s account seems to be in the genre of explaining the redefinition of death as an imperative of technical progress – an alternative to the transplantation imperative employed at the time and since.

Ayesha Nathoo examines what made heart transplants possible, and why they were halted for more than a decade. On brain death, she takes Giacomini’s line, that ‘the transplantation enterprise gave this issue fresh significance’, and the high-profile heart

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100 Belkin, 2003, p. 345.
101 Those with interests in organ procurement were rarely explicit about their agenda, instead using the more socially accepted/able technological imperative. See for example the documentary film by the South Eastern Organ Procurement Foundation (USA), with a narrator who states that medical technology has ‘forced us to extend the definition in criteria of death’, and that with life support ‘there are certain circumstances...where life and death do not fit the previously noted traditional definition of death. It is for these reasons that the definition of brain death was developed’. R Bollinger, South Eastern Organ Procurement Foundation, ‘The diagnosis of brain death’ [30 minutes], Richmond, Virginia, South Eastern Organ Procurement Foundation, c.1982, National Library of Medicine, Bethesda.
102 Nathoo, 2009.
transplants ‘hurried along a redefinition of death’. Through interviews with doctors and nurses, Margaret Lock also comments on brain death and organ transplantation in social and historical context. She argues that the focus in Europe and North America has been on ‘the heroics of organ transplants and the gift of life, while deleting, it seems, almost all anxiety about the source of organs’.

In this section, I will show that while transplant surgeons and recipients may have received a majority share of the commentary and debate at the time and subsequently, the death of the donor was by no means ‘rendered invisible’. Scholars have neglected the impact of organ transplantation on intensive care practitioners and their critically ill (potentially organ donor) patients, but I provide a new interpretation of the literature pivoting around these actors, beginning with the controversies over the boundaries between life and death.

**A new definition of death?**

By the late 1960s, life support technology could keep patients alive almost indefinitely – resuscitation could ‘restore life’, and supportive measures ‘maintain life’. Artificial ventilation for respiratory failure could prolong life for months, even years. ‘The consequences of eliminating these common modes of death are profound and are only beginning to be appreciated’, wrote Geoffrey Spencer in 1972. ‘Top-quality respiratory care may prevent this merciful release’, he continued, creating a ‘semi-vegetable existence’. Some patients on life support recovered full function; others deteriorated, with multiple systems failing one after the other, until they died. But intensive care could now create a middle group – medically stable but permanently or long-term dependent upon respiratory support. At the extreme were those with irreversible brain damage, unconscious, and breathing only with a ventilator – what Margaret Lock calls ‘betwixt and between, both alive and dead…the living dead’.

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105 As is argued by Lock, ibid, p. 238.


107 Spencer, 1972, p. 78.

the stark realities of practice, writing that in five years his unit had ‘produced 37 permanent imbeciles...unfortunate victims of sophisticated medicine’.\(^9\)

In 1968, a new definition of death offered the hope of more clarity in deciding when life support was futile. Traditional criteria for declaring death were the cessation of heartbeat and breathing, but as described above, boundaries were blurred by resuscitation and artificial ventilation. On 5 August 1968, an Ad Hoc Committee of the Harvard Medical School proposed ‘irreversible coma’ as a new criterion, a term used synonymously with ‘brain death’ to mean a permanently non-functioning brain. Dr Henry K Beecher headed the committee, and the twelve other members were doctors, a lawyer, a theologian and an historian (Everett Mendelsohn).\(^10\) The characteristics of the permanently non-functioning brain were defined as unreceptivity and unresponsivity to external stimuli, no movements or spontaneous breathing during a period of one hour (including three minutes off the respirator where applicable), and no reflexes. The tests were to be repeated 24 hours later with no change. With these criteria it was hoped to be able to differentiate coma caused by irreversible brain death and that caused by temporary, and potentially reversible conditions.

The notion of reversibility had currency here, just as it had with admission criteria. The only reference cited in the committee’s paper was an address on ‘The prolongation of life’ by Pope Pius XII in 1958, very often cited in articles on the ethics of end-of-life care. The committee paraphrased his view that, ‘It is not obligatory, however, to continue to use extraordinary means indefinitely in hopeless cases’.\(^11\) The notion was also evident in the original title of the Harvard committee – an ‘Ad Hoc Committee to Study the Problems of the Hopelessly Unconscious Patient’, and this extract from a

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\(^9\) Spencer, 1972, p. 79. Spencer was not alone in reviling these circumstances. In 1974, neuroanaesthetist James Harp wrote that prolonged life support was ‘making possible the creation of a macabre situation in which the body lives while the brain is dead’. J R Harp, ‘Criteria for the determination of death’, *Anesthesiology*, 1974, 40 (4): 391-7, p. 391. French neurophysiologists Mollaret and Goulon’s *comade passé*, a term coined in 1959, suggested that coma was the *rançon* (meaning ransom or excessive price paid) of life support technology. See Agamben, 1998, p. 160.

\(^10\) The full composition is listed in the original paper, and Giacomini gives further detail on the division of work. ‘A definition of irreversible coma: report of the Ad Hoc Committee of the Harvard Medical School to examine the definition of brain death’, *JAMA*, 1968, 205 (6): 337-40; Giacomini, 1997, p. 1474.

manuscript draft of 3 June 1968, published by Giacomini: ‘With increased experience and knowledge and development in the field of transplantation, there is great need for the tissues and organs of the hopelessly comatose in order to restore to health those who are still salvageable’. Not everyone agreed with the conflation of irreversibility and utility. Medical School Dean, Robert Ebert, objected to the statement above, and it was edited out of the published report. The committee’s title was also changed, to the ‘Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death’. The notion of utility re-emerged however in a press conference for the World Congress of Anesthesiologists in London on 9 September 1968. The Times reported the next day that Beecher had said: ‘[…] we were making dreadful mistakes in throwing away tissues and organs from hopeless and irreversible comatose cases, which could be used in transplants. We were consigning many people to the grave by not making this decision’. The critically ill patient with irreversible brain death had become a commodity, and the intensive care practitioner’s decision about the withdrawal of life support complicated by factors outside the wellbeing of their patient.

Decisions were made more complex by a lack of consensus on the characteristics of brain death or the permanently non-functioning brain. Over 30 different criteria were proposed in the first decade after 1968, but Harvard’s had the ‘most widespread acceptance’. The committee felt the criteria were robust, but on review in 1984 as a ‘Landmark Perspective’ article in JAMA (publishers of the original report), neurologist Robert Joynt noted, ‘The first two conditions have remained as fundamental for the diagnosis. The third, no reflexes, has been modified as more and more of these patients have been examined’. He also noted that the confirmatory flat EEG had been, and still was, a controversial issue. In Britain and America the clinical neurological examination took precedence in the determination of death, but as discussed earlier, electroencephalographers continued to argue for the predictive value of the EEG. In 1969, the American EEG Society published research claiming the effectiveness of isoelectric (flat) tracings in predicting failure of survival in a study of 2,642 patients, but

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113 Ibid.
it was still contentious, as flat EEG and survival was observed in other studies of patients with drug overdose, hydrocephalus and brain damage.117

**Critically ill or organ donor?**

Ambiguities amongst the medical profession over the determination of death played a part in shaping public opinions about life support, the end of life, and organ donation. The life or death status of potential donors became hotly debated, and conflict between making the right decision for the critically ill comatose patient and ‘creating’ donors for organ transplantation was played out in newspapers and television. Ayesha Nathoo gives an excellent example of the public controversy, reproducing the front page of the *Daily Express* on 31 May 1969, with its headline, ‘The life they could have switched off’. Pictured below was a smiling 17-year old girl, Jenny Wood, ‘full of the zest of life’. In a letter published next to the lead article, her mother described how Jenny had recovered from what doctors had called a hopeless state only because the family had insisted that she be kept on the ventilator. Her mother feared that had transplants been carried out in Cornwall, where they lived, ‘the fight might have been even harder to save her life’.118

There is a wealth of other examples in Nathoo’s book, but many, as in the two discussed below, miss the implications for intensive care unit staff.

The first is publicity surrounding coroners’ inquests into the deaths of donors. On 6 May 1968, three days after Britain’s first heart transplant operation, an article in the *Daily Express* queried the donor’s death. ‘When did Patrick Ryan die? By what yardstick was he judged to be dead? And by whom?’ asked the correspondent.119 The article showed that these questions were considered to be in the public interest. Similar reporting followed the inquest into the third donor’s death a year later, with an opinion piece in the *Daily Express* reporting public doubts about declaration of death: ‘If the medical profession believes that such doubts do not exist, it is deluding itself...They exist because the individuals who comprise the public realise they or their relatives may be the next to turn up at some hospital as highly desirable donors.’120 Nathoo also offers key insight into justification for the heavy press interest in donors, which ran counter to the medical profession’s ethos of patient confidentiality. She cites a 1969 Press Council ruling that the ‘nature of death’ and ‘use and value of the resources involved’ were not just medical matters, but also of public interest for moral, social and legal reasons. It

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119 Ibid, p. 120. The first human-to-human heart transplant had been conducted in Cape Town by Christiaan Barnard on 3 December 1967.
120 Ibid, p. 172.
was 'not practicable to arouse interest over anonymous cases...The time may come when public opinion on these points becomes settled and when demands for privacy can be given greater weight'. Public opinion did not settle however. Even in 2004, a review article in *Intensive Care Medicine* concluded that brain death was 'much more a moral than a scientific concept', that it was necessary to separate death from the condition in which 'life support should be legitimately forgone' (irreversible coma), and that the 'vital status' of irreversible coma patients was 'more a task for society at large than a medical one'.

Publicity of the conflict between a duty to comatose patients and the need for organ donors is also evident in Nathoo’s book. In characteristically direct terms, Dr Geoffrey Spencer sparked a series of articles in the national press after speaking at a press conference for the World Congress of Anesthesiologists. Front page news in both *The Guardian* and *The Times* on 11 September 1968, one headline ran “Doctor condemns the overeagerness of transplant ‘vultures’”. In the other he was reported as saying, ‘As soon as one has a patient with useful organs one has a gang of vultures trying to snatch out these organs’. This was parodied in a *Daily Express* cartoon depicting doctor and nurse vultures ready to ‘body-snatch’ an outpatient with a sprained finger, also reproduced in Nathoo’s book. *The Guardian* told of Spencer’s concern that ‘telephone requests for donors can distract a doctor from his proper duty, which he sees as looking after the patient until he is quite sure nothing more can be done’. His comments came across in the public domain as controversial. As he said in interview in 2010, ‘I’d spoken out in public, far too freely than was permitted, in those days’. However, it seemed he had articulated the thoughts of other intensive care practitioners, recalling that, ‘within quite a short time, it became obvious that with one

121 Ibid, p. 152.
123 ‘Doctor condemns the overeagerness of transplant ‘vultures’*, *The Guardian*, 11 September 1968, p. 1. The press conference on resuscitation was held on 10 September, while Beecher had made headlines from the press conference on the 9 September.
127 Oral history interview, G Spencer, p. 16.
or two exceptions, the huge majority of my colleagues were rather pleased with what I’d said’. 128

**Care of the critically ill – public accountability**

Public reaction to the above concerns was measured by a drop in the number of organ donors. 129 This threatened the more established, successful (and lower profile) kidney transplantation programme, prompting the British Transplantation Society to form an investigative committee. Their report, published in 1975, examined reasons for public scepticism, and interestingly also the role of intensive care practitioners in decisions over donations. 130 Neurosurgeon Bryan Jennett testified that, ‘Many doctors felt they would rather not get involved in the time-consuming, troublesome, and perhaps worrying procedure of cadaveric organ removal’, described by the British Transplantation Society as ‘apathy’, despite their acknowledgment of the fear among intensive care doctors ‘that they may be accused of hastening the death of a potential donor’. 131 The report recommended that ‘to obtain public support and to increase the supply of donor organs, surgeons involved in organ transplantation should follow a code of practice containing desirable safeguards’, which although motivated and led by transplantation interests, also protected the intensive care doctors. The proposed code was that death should be certified by two doctors, one qualified for at least five years, neither of whom from the transplantation team, that brain death be established using agreed criteria, and that the issue be discussed with relatives to obtain informed consent. 132

Publication of a proposed code of practice in the *British Medical Journal* marked a formalisation of procedure – from individual to collective. Until that point, application of criteria for the definition of death and the withdrawal of life support (for organ donation or not) were matters of local hospital/unit/doctor/bedside practice and policy. Standardisation was not simply achieved however. Debate continued on the subject of brain death – its redefinition as the functional death of the brainstem, its diagnosis, and

128 Ibid.
131 Ibid, p. 252.
132 Ibid, p. 255. The Harvard Ad Hoc Committee had suggested that declaration of death and withdrawal of life support should not be made by doctors involved with the subsequent transplantation of the deceased person’s organs, but it was not mandatory. ‘A definition of irreversible coma’, 1968, p. 339.
whether it constituted the stage at which a patient became ‘truly dead’ if death was a process not an event.\textsuperscript{133}

Such publications did signal a move towards regulation of practice, a means of making intensive care doctors more openly accountable for their care of the critically ill. Public fears of ‘possible arbitrary (capricious) or mischievous practices which may be motivated by the increase of organ transplantation or the rising costs of caring for the terminally ill’ had stimulated scrutiny of decision making.\textsuperscript{134} In part, this reflected a broader agenda of medical accountability developing in the later 1960s and early 1970s. As discussed by Nathoo, this coincided with a period of growing activism in which ‘medicine began to be viewed as an activity, like any other, that should be open to public discussion’.\textsuperscript{135}

In the next chapter, I look at how societies, journals and international meetings helped build communities of practitioners, and fostered exchange of research and practice. I begin with a British-designed device used for assessing consciousness, made available to over 2,000 international conference delegates.


\textsuperscript{135} Nathoo, 2009, p. 49.
Chapter 6: Creating ‘intensive care medicine’

Pocket pupil gauge, 1974

Figure 6.1: Pocket pupil gauge, 1974

A perforated millimetre scale, held over the eye to determine pupil size, is inscribed as a souvenir of the ‘1st World Congress on Intensive Care – London, 1974’. It is now in the collections of the Science Museum, London.
Photo: reproduced with the kind permission of the Association of Anaesthetists of Great Britain and Ireland (Inv. No. LDBOC:2000.54)

**Figure 6.2:** Gilston’s pocket pupil gauge, 1974

Worn in places, particularly on the left-hand side where it was held upright between thumb and fingers, and marked with his name and telephone number, Alan Gilston’s pocket pupil gauge is now in the collections of the Association of Anaesthetists of Great Britain and Ireland. Gilston developed the measuring device at the National Heart Hospital, where he was an anaesthetist.

Photo: reprinted from Gilston and Resnekov, 1971, p. 34, courtesy of Elsevier

**Figure 6.3:** Early pupil gauge in Gilston’s book, 1971

The largest diameter on the scale was 11mm (later 12mm, as seen above). This was bigger than average corneal diameter, so when the gauge was launched commercially in 1980, a nurse wrote to query whether pupils of this size had yet been seen (Pascoe, 1980).
Figure 6.4: Gilston T-piece trade literature, 1978

Tracheostomy equipment, such as Gilston’s T-piece, were circulated in informal networks for evaluation and recommendation.
Pocket pupil gauge, 1974

Tensions in the emerging specialty of intensive care can been seen in the fate of a simple instrument for measuring pupil diameter given to delegates at the First World Congress on Intensive Care in 1974. On first sight it would appear to be an incidental item, one of those ephemeral things that make their way into conference delegates’ packs, particularly given its resemblance to a 15cm ruler. There is no reference to it in the minutes of the Congress Local Organising Committee, nor the Congress report published in the European Journal of Intensive Care Medicine. But one is now held in the collections of the Science Museum in London. Is it curious that it should be preserved there?

It is historic beyond its value as a souvenir of the First World Congress on Intensive Care. It was donated to the Science Museum by Dr Alan Gilston, founder of the Intensive Care Society, and anaesthetist for the first UK heart transplant. It is highly likely that he was responsible for its distribution at the Congress. Firstly, he was the initiator and secretary-general for the Congress, so had the status and access to accomplish such a task. Secondly, the pupil gauge was one of his own particular interests – ‘a simple device for measuring pupil size’ featured in his 1971 textbook, Cardio-respiratory Resuscitation. It was more rudimentary in design, and had only a brief text reference. The Congress model was named after the hospital where Gilston worked – the National Heart Hospital in London. By 1980 it was becoming commercially available, with Gilston reporting in the journal Anaesthesia that MIE (Medical & Industrial Equipment Ltd), the makers of the Congress pocket gauge, would supply the instrument on request.

What is surprising is that the millimetre measurement of pupil diameter was by no means standard clinical practice. Descriptive terms such as ‘small’, ‘moderately constricted’ or


Richmond, ibid.


‘dilated’ were commonly used, and nurses were instructed to sketch the actual pupil size in patient notes. Gilston was frustrated by this lack of accuracy, and sought to emulate his neurological colleagues, who were recording pupil size in millimetres on assessment charts. Teasdale and Jennett’s practical scale for assessing the depth and duration of impaired consciousness and coma, the Glasgow Coma Scale, was published in the *Lancet* a fortnight after the World Congress. The measure of pupil size was not part of the score, but neurological assessment forms had a range of black millimetre circles printed along the margin, which were increasingly used after the introduction of the Glasgow Coma Scale. Innovation followed, with practitioners fixing the pupil scale to disposable tongue depressors to enable it to be held to the patient’s eye for direct comparison.

The pocket pupil gauge, and its context as described, can be used to demonstrate the tensions in British intensive care in the early 1970s. Firstly, as a tool for assessing clinical status it is indicative of the profession’s need for objective measures with which to make difficult life and death decisions. Technologically assessed criteria were seen as more reliable. Secondly, the use of specialised instruments in standardised procedures was also important for establishing the status of intensive care medicine. If neurologists, anaesthetists, surgeons and nurses were all involved with the care of patients in intensive care units, how was their clinical assessment to be trusted as accurate? Such tools represented a shared, scientific approach to the pathophysiology and care of the critically ill.

Finally, the pocket pupil gauge also signifies the exchange of knowledge (and goods) within the international intensive care community. Gilston’s promotion of the instrument to the Congress’s 2430 delegates from sixty-eight countries was his most ambitious, but by no means his only, occasion of exchange. In August 1970, Gilston sent New Zealand intensivist Matthew Spence a chart he had written on the ‘Management of Cardiac Arrest’, produced by

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11 Pascoe, ibid; see also Lord-Feroli and Maguire-McGinty, 1985, p. 311.
In June 1972, Steven Couremenos, an anaesthetist at the Hellenic Red Cross Hospital in Athens, wrote to Gilston saying, ‘I just received by post your very useful present and I wish to congratulate you for the device and to thank you as well’. It is possible he was referring to the pocket pupil gauge, or his eponymous tracheostomy T-piece, a lightweight, plastic tube for delivering humidified gases through a patient’s tracheostomy tube. At around the same time, Gilston was also trialling a Bivona tracheostomy tube left with him by Chicagoan anaesthetist John Homi, who hoped for his comments. The movement of small pieces of equipment from one location to another may seem quirky or insignificant, but manifestly demonstrates the value of informal and practical networks within a growing community.

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12 Letter Alan Gilston – Dr M Spence, 14 August 1970, Box 29 [DR/ICS Correspondence Box 3], Intensive Care Society Archives, London.
13 Letter Steven Couremenos – Dr Alan Gilston, 2 June 1972, Box 29 [DR/ICS Correspondence Box 3], ibid.
15 Letter John Homi – Dr Alan Gilston, 23 August 1972, Box 29 [DR/ICS Correspondence Box 3], Intensive Care Society Archives, London.
6.1 Introduction

The early to mid-1970s was an optimistic period for British intensive care practitioners. During the years 1970-1977, professional societies were established, specialist journals launched, and two international congresses brought together thousands of intensive care practitioners from all over the world. The aim of this chapter is to demonstrate how these activities were integral to the creation of ‘intensive care medicine’ – a shared vision, and a community of practitioners. Societies, journals and congresses brought together the practice of disparate units under one specialist heading. From there, the nascent specialty could be recognised by hospital colleagues, government and other stakeholders. This push towards a more collective identity was not universally welcomed – some felt it was premature, or undesirable – and their voices were as important as the pioneers’.

Before describing the societies, journals and congresses, it is important to review the shape of British intensive care at this time. By 1971, the Ministry of Health estimated that around two hundred intensive care units had been set up in England and Wales. The form of provision was shifting towards purpose-built, general intensive care units. From the late 1960s (and through the 1970s), newly designed and built units were replacing the ad hoc adapted units of the previous decade. Large hospitals with two or three small, specialist therapy units (common in teaching hospitals) were integrating them into a single, general or multidisciplinary unit. If not integrated, the units were at least adjacent, to facilitate the sharing of resources (including staff) and skills. New hospitals had purpose-built general units, and the number of units in district general hospitals was expanding. Yet there was still no standard pattern for intensive care units, even after publication of the Hospital

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19 C K Davies, ‘University hospital IT adaptation’, *British Hospital Journal and Social Service Review*, 1971, **81** (4248): 1908-9; D G Price, ‘Problems of the medical staffing of intensive care units in British district general hospitals’, *Annals of the Royal College of Surgeons of England*, 1983, **65** (4): 254-5, p. 254. Review articles such as Price’s noted the role of the British Medical Association’s *Planning report of the working party on intensive care* (1967) in prompting expansion of intensive care units in DGHs. But they were not always successful – units in some of the smaller district hospitals had low occupancy levels. With so few patients, it was difficult to maintain necessary skills. Centralising intensive care in one larger district general hospital, or nominating certain hospitals as regional centres for particular services (renal, cardiothoracic or neurosurgery for example) guaranteed a level of occupancy in addition to the ‘emergency’ admissions.
Building Note in 1970. The number of beds, technological complement, and staffing structures were still informed by local circumstances.

A useful document for gaining an overview of practice at the time is the Intensive Care Unit Directory, collated and distributed by the Intensive Care Society in 1971. It was compiled quickly, between its first suggestion in October 1970, and its distribution with the Society newsletter in June 1971. It featured 58 units across the country, and listed information under a number of headings. Physical data included the number of beds in the unit, the total number of beds served by the unit, and the make and model of ventilators, blood gas analyzers, cardiac monitors, EEGs, and haemodialysis equipment, where available. It stated the specialties of the consultants 'closely involved in the work of the Unit', and occasionally gave named contacts. Admission criteria were most often vague. Under the heading 'WORK: type of case accepted for Unit' many said simply 'anything'. Some respondents consolidated this assessment of work and 'work load' with reference to unit annual reports. Where applicable, university hospital or postgraduate medical centre was noted, as were details of training for nurses.

While it is difficult to draw comprehensive conclusions from the patchy data, a number of points are evident. Firstly, the physical data indicated that most units had six to eight beds, often depending on whether it was purpose-built or modified from existing wards. Ventilators were common, and 40% had a 24-hour blood gas service run by technicians (compare this with none of seventeen units surveyed in 1967 – see Chapter 4). The headings gave an indication of other technology that might have been expected in (or in close proximity to) the unit, but these fields were rarely filled in. Anaesthetists were most often 'closely involved in the work of the Unit', solely or jointly with physicians or surgeons; and two-thirds of the units provided lectures for nurses, half also issuing certificates. A final observation is that respondents frequently noted future plans – new units, new technology, new training – marked in brackets under the relevant headings. The Directory also provided a two-page report, granting an insight into the results that Alan Gilston, the Directory's author, considered noteworthy (with an emphasis on technology and its maintenance, for example). But it also reported more qualitative information and opinions expressed in response to open questions. The paragraph on the problems faced was most useful: 'shortage of suitable nurses' was the most common, followed by lack of space, 'shortage of good junior medical staff', and money. A significant number also reported 'political and or administrative

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20 Department of Health and Social Security/Welsh Office, Hospital building note number 27 – intensive therapy unit, HMSO, August 1970.

problems’, and the ‘poor technical service’, particularly at night. A few units declared a lack of work, attributed to the (internal) political difficulties or a ‘failure to recognize the value of Intensive Care Units’.22

This was the environment in which the societies, journals and congresses would function. In choosing to examine these activities my approach has been informed by the work of Rosemary Stevens, who argues that a number of factors can be seen as evidence of the formation of new medical specialties: professional societies, specialist skills, training, examination and certification, and a full-time staff responsible for a number of beds occupied by a limited and specific section of the patient population.23 The limited patient population – although not static – has been examined in Chapters 4 and 5. Training and examination for nurses has been presented in Chapter 4, and for doctors will form Chapter 7, along with discussion of full-time duty and bed ‘ownership’. I have expanded the category of professional societies to encompass other activities directed towards shared learning and the building of a community of practitioners – the journals and congresses. This is not my sole approach to specialisation however. Throughout the thesis, I have given attention to practice (what happens in the unit), and I will explore this as a basis for specialist identity in Chapter 7. Meanwhile, analysis based on societies, journals and congresses is supported by that fact that the medical profession took the same view. A 1975 editorial in The Medical Journal of Australia claimed, ‘A natural consequence of a new specialty within the profession is the appearance of societies formed by this group, and of journals catering for their specific interests’.24 I also hope to show a two-way relationship – of these activities shaping the specialty, not just consequences of it.25 Finally, I will argue that a shared sense of the knowledge and skills of intensive care medicine, common to all, and identifiable to others outside the specialty, enabled standards to be proposed and acted upon.

6.2 Intensive care societies

The Intensive Care Society

Founded in 1970, the Intensive Care Society was Britain’s sole professional body for doctors working in intensive care. There was no Royal College, Faculty or Association, nor section of larger societies such as the Royal Society of Medicine. It was also the first, with the North

22 Ibid, p. 3.
25 This is actually reflected in the final line of the editorial, concluding that a journal was an ‘important aspect of the effective development of a new specialty’, ibid.
American-led Society for Critical Care Medicine inaugurated in 1971. Membership was affordable at £1 p.a. in the first years, and numbers steadily increased during the 1970s. From 102 in its founding year, it doubled in two years, and had reached 283 members by the time of the First World Congress on Intensive Care in June 1974. Council then restricted new memberships to forty per year. The ‘initiator and moving spirit’ was Dr Alan Gilston, an anaesthetist at the National Heart Hospital, and innovator of the pocket pupil gauge.26 Between 1970 and 1977, while he was Honorary Secretary and editor of the Society’s newsletter, Alan Gilston was arguably the most influential figure in the Intensive Care Society, and it is the activities of this period that I wish elaborate in more detail.

According to its Constitution, the remit of the Intensive Care Society was ‘the advancement of the branches of medical science concerned with intensive care’.27 This suggested a focus on the dissemination and promotion of scientific findings – the same basis from which intensive therapy had been advanced in the late 1960s. It was clearly demonstrated in a number of the Society’s activities, notably the twice-annual scientific meetings, and the predominance of clinical and biomedical research papers listed in the ‘Recommended Reading’ section of the newsletter. Their academic intention was explicitly stated in the March 1974 newsletter, with hope for ‘the internal growth of the Society as a proper scientific body’.28 Alan Gilston’s correspondence recruiting potential members revealed further aspirations. Most telling was an exchange with Professor Alexander Crampton Smith of the Radcliffe Infirmary, Oxford, who wrote of ‘the proliferation of societies’ and the consequential demands of his attendance at meetings. He suggested papers being read to a section of the Medical or Anaesthetic Research Societies. Gilston replied:

‘You have perhaps, to some extent, misunderstood the purpose of the proposed society. It is essentially a multi-disciplinary forum [emphasis original], and research, though obviously important, is merely one of its facets…As you well know, there is at the moment no way that people who are involved in Intensive Care can readily elicit information on any particular aspect of such work in this country. It is, in other

words, a meeting point and I hope that, as such, it will receive your most valued support. 29

The Society as a meeting point and forum for those who might otherwise be professionally isolated was just as important as its academic role. ‘The early meetings of the Society were largely devoted to “How I Do it”’, recalled Council member Joe Stoddart. 30 The opportunity for exchange of administrative and organisational ideas was often remarked upon in members’ letters to the Society. Dr G S Crockett, of Kettering and District General Hospital, wrote, ‘I wish the Society well, and feel we will get the most out of it by meeting in one another’s Units, as it is information about details of equipment which is so valuable, and difficult to bring to the notice of others without on-the-spot examination’. 31 The Spring 1975 scientific meeting at the Queen Elizabeth Hospital, Birmingham, did just that. Ventilators, humidifiers and blood gas analysers were demonstrated by the technical staff of the manufacturers, audience participation was considered essential, and identification of ‘less desirable features’ gave manufacturers ‘informed criticism of their products’. 32 It was widely acknowledged that the choice of equipment was a difficult problem for doctors, and that ‘buyer’s guide’ publications were not readily available in Britain. The Department of Health issued ‘Hospital Equipment Information’ – brochures on new developments, safety precautions, and trials of equipment. 33 But a thread in the Society’s newsletter suggested that hospital administrators rarely informed staff of relevant items. 34 Instead, as Gilston explained, ‘Certainly the only way of getting advice at the moment is to “ask around”, and avoid buying equipment, particularly expensive equipment, until someone who has used it has been consulted’. 35

29 Correspondence between Alan Gilston and Professor Alexander Crampton Smith, 7/13 July 1970, Box 29 [DR/ICS Correspondence Box 3], Intensive Care Society Archives, London.


31 Letter G S Crockett – Dr Alan Gilston, 28 August 1970, Box 29 [DR/ICS Correspondence Box 3], Intensive Care Society Archives, London.

32 [Invitation to] ‘I.C.S. Meeting April 5th, 1975, being organised by Department of Anaesthetics, Birmingham’, p. 1, Box 36 [DR/ICS Box 4], Intensive Care Society Archives, London.


34 Intensive Care Society, ‘Newsletter No. 7’, April 1972, p. 5; ‘Newsletter No. 8’, September 1972, p. 3; ‘Newsletter No. 11’, September 1973, p. 2; ‘Newsletter No. 12’, p. 6, all Box 34 [DR/ICS Box 1], Intensive Care Society Archives, London.

The Society was also intended to be a forum for communication across a multidisciplinary membership, as Gilston had emphasised in his reply to Crampton Smith. Dr C H Brown, a senior medical registrar at Lewisham Hospital, welcomed the opportunity to learn from a range of experts, writing, 'Our intensive care unit has eight beds which are mainly used for coronary care but as we are a fairly busy general hospital we get all sorts of emergencies in them and naturally our experience of any one particular complication is limited'.

Staff at larger teaching hospitals also valued the network:

"'Here at Hammersmith Hospital we have an Intensive Care Unit taking in cases, particularly (but certainly not exclusively) patients who have had heart valve operations and kidney transplants. We are to have a new unit built, and as a consultant bacteriologist concerned in this field I could not agree more with you for the need for a central means of specialist communication'."

But the multidisciplinary membership was also seen as divisive. In April 1970, Margaret Branthwaite, who declined to join the Society, wrote:

"'[My] worry is that Intensive Care means so many different things according to where you work, and is so much a multi-disciplinary thing (which you obviously endorse) that internal strife is likely to result if one tried to make a corporate society...Intensive Care Units seem to me to be political hot potatoes, particularly their staffing structure. I can't help fearing that a self-appointed advisory body can only fan the flames of controversy (sorry about the mixed metaphors)."

Attracting a multidisciplinary membership was absolutely essential to Alan Gilston, so it is worth examining this in detail.

**Intensive Care Society membership**

In the May 9th issue of the *Lancet*, 1970, Gilston invited colleagues interested in ‘supporting the formation of a new multidisciplinary intensive-care society’ to contact him. The notice captured the attention of many responsible for intensive care units, from across the medical profession – anaesthetists, physicians and surgeons, nationally and internationally. But within

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36 Letter C H Brown – Dr Alan Gilston, 2 June 1970, Box 29 [DR/ICS Correspondence Box 3], Intensive Care Society Archives, London.
38 Letter Margaret Branthwaite – Alan Gilston, 14 April 1970, ibid.
a few years, a regularly expressed concern was ‘the continuing domination of the Society by anaesthetists’. They did form the majority of members – the first newsletter noted that more than half were anaesthetists, 23 of the 28 new members in 1976 were anaesthetists, and in January 1979 a summary of the Society’s membership by stated profession showed that anaesthetists comprised almost three-quarters. Gilston’s explanation was that this simply reflected their close involvement with intensive care, more so than any other specialty. Yet he felt very strongly that they should not dominate the Society, and that it would fail unless it had a multidisciplinary membership. It was not just rhetoric – his actions supported his assertion, and three examples stand out, from top-level policy to everyday interactions.

Firstly, how better than to lead by example? The Society’s Constitution stipulated a maximum of four anaesthetists on a Council of seven. On the 1973/74 Council, photographed together at their ninth meeting (see Figure 6.5), the anaesthetists were Clifford Franklin, Joe Stoddart and Alan Gilston. Iain Ledingham was a reader in surgery, Eric Sherwood Jones and Gillian Hanson consultant physicians, and Keith Roberts (missing from the photograph) was a cardiothoracic surgeon.

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Secondly, the Society’s newsletter, under Gilston’s authorship, consistently appealed to members to encourage their non-anaesthetist colleagues to join. Between January 1975 and March 1977, in Gilston’s last years as author/editor, this plea featured in four consecutive issues. It was also made at the four concurrent AGMs.

The third example comes from Gilston’s everyday interactions with correspondents. A few quotes serve to illustrate his continued commitment to a multidisciplinary membership. When Dr James Freeman wrote to recommend a cardiologist and a paediatrician for membership, Gilston replied, ‘I am delighted that you have tried to get non-anaesthetists interested because this is, as you will agree, the whole point of the exercise’. He encouraged Dr John Barker to bring a surgical colleague to the October 1970 scientific meeting, stating, ‘We must avoid at all costs the Society becoming merely another anaesthetic club, as I am sure you will agree’. And to Dr R S Atkinson, Gilston wrote to welcome his co-Unit Director, a consultant

Photo: reproduced with the kind permission of the Association of Anaesthetists of Great Britain and Ireland, Box 34 [DR/ICS Box 1], Intensive Care Society Archives

Figure 6.5: Intensive Care Society Council, National Heart Hospital, London, 24 July 1974
physician, ‘since unfortunately the Society is at the moment and indeed inevitably top heavy with anaesthetists’.\footnote{Letters Alan Gilston – Dr James Freeman, 30 July 1970; to Dr John Barker, 16 September 1970; to Dr R S Atkinson, 8 December 1970, all Box 29 [DR/ICS Correspondence Box 3], Intensive Care Society Archives, London.}

Why did the Society fail to attract members from other disciplines? One problem is that much of the recruitment relied on members encouraging their colleagues in their local environment, as seen above, but anaesthetists, physicians and surgeons had little influence over each others’ professional groups.\footnote{Oral history interview, I Ledingham, p. 13.} This was compounded by the fact that outside the Society, in hospitals, there was growing dispute about who was best qualified to care for the critically ill. This will be examined in more detail in the next chapter, but here it should be noted that the dominance of anaesthetists within the Society made it a less appealing prospect for non-anaesthetists. Gilston was a strong advocate of the multidisciplinary team approach to intensive care, as demonstrated in his \textit{Lancet} announcement for example, that ‘improvement in the exchange of information must surely benefit the patient, since few workers are completely familiar with the management of every grave derangement of even one vital organ’.\footnote{Gilston, 1970, p. 1007.} Others (often anaesthetists) disagreed, upholding their superiority in the management of critical illness. Many wished to avoid any ‘internal strife’.

A further factor was the incentive for identity. Anaesthetists were keen to demonstrate their involvement in the practice of intensive care medicine. They were coming out of the operating theatre, and applying their expertise not just to surgical patients, but to all critically ill. In many units they took or shared lead roles. Membership of the Intensive Care Society signified this, and distanced them from other anaesthetist colleagues. Doctors from other disciplines were more ambivalent about joining a specialist intensive care society. They were already medical or surgical specialists, and for many this is where their identity lay.

\textbf{Community building}

The Society’s twice-annual scientific meetings were open to all, members and guests, and were an occasion on which to encourage collaboration, for the widest medical constituency to engage in discussion and share their experiences. In the early 1970s, around 100 members attended the day-long events in March/April and October, hosted by hospitals across the country. Initially, speakers were invited. At the fourth meeting papers were presented by a surgeon, physiologist, intensive care unit director, professor of medicine, two anaesthetists and a nurse – perhaps a conscious show of the Society’s intentions for inclusion? Yet, Gilston
later remarked on this meeting that ‘it was already clear in Newcastle that some members had forgotten our multidisciplinary nature’.\(^{45}\) By 1974, Council had recognised that inviting speakers was unsustainable, worried that ‘the Society would eventually fail if it relied solely on invited experts who were not members...Whilst this might risk some fall in standards, it was the preferable alternative’.\(^{46}\) The decision was announced to members with the reasoning that the Society could not ‘flourish or attract important workers’ otherwise, and that it had an ‘imperative need’ to ‘live off its own produce’.\(^{47}\)

Two other means of building the intensive care community were through the *Intensive Care Unit Directory* and the Society’s newsletter. The Directory was particularly important because it marked the formalisation of previously word-of-mouth networks. As described earlier, it gave details of the work of units, enabling practitioners to identify, contact and engage with colleagues in similar units. Some entries had named contacts, particularly if they were members of the Intensive Care Society, and another heading invited units to state if ‘visitors welcome’.

Gilston worked hard to make the newsletter useful to members. It conveyed Society and professional business, but three features are particularly noteworthy. The ‘Recommended Reading’ section of the newsletter took a quasi-academic role, and Gilston remarked that this was one of the most popular parts of the newsletter.\(^{48}\) In his seven years of editorship Gilston most often recommended articles on respiratory topics – they appeared in every issue and accounted for just under half his total number of citations. This probably reflected his, and the majority of members’, interests as anaesthetists rather than being an accurate representation of the available literature. Hardly any articles on the practice of intensive care were cited – one article on monitoring, one on intravenous therapy, seven on the organisation and equipment of intensive care more generally – minimal compared to the sixty-two articles on the respiratory system. This could simply reflect the editor’s range of reading, and hence recommendation, but the tensions in representing intensive care as a whole were evident. Surgery-trained Council member, Iain Ledingham, recalled his impression that, ‘if interests in the broad range of subjects affecting critically ill patients was

\(^{45}\) Intensive Care Society, ‘Newsletter No. 7’, April 1972, pp. 9-10, Box 34 [DR/ICS Box 1], Intensive Care Society Archives, London.


\(^{48}\) Intensive Care Society, ‘Newsletter No. 12’, March 1974, pp. 8-9, Box 34 [DR/ICS Box 1], ibid.
going to emerge, it was going to be a bit of a struggle. It was a little unifocal, if I can put it that way, on things relating to the respiratory system'.

Secondly, on one occasion Gilston used humour in the newsletter, and the page is reproduced in Figure 6.6 below. His parody of ‘newspeak’ and ‘fashionable concepts’ was a rare moment of light-heartedness, and a means of uniting members through their common experiences. It also gave an insight into the areas of contention at the time, something the specialist intensive care journals failed to do, as will be seen in section 6.3.

![Figure 6.6: Extract from 'Newsletter No. 2', March 1971](image)

The third feature is Gilston’s keenness for readers to contribute – submit articles, seek advice, give recommendations. His motivation was more than simply to delegate authorship. I think he wanted to mobilise and build an open, collaborative community, where members could profit from the expertise of colleagues without threat to their professional status within the hospital. Hence, Gilston published members’ requests for information and recommendations on blood gas analyzers, automatic infusion units, devices for measuring

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49 Oral history interview, I Ledingham, p. 13.
cardiac output, and the reasons for the Air-Shield 10,000 ventilator’s price hike. What is disappointing is that replies went direct to the enquirer, and were not published in subsequent issues for the benefit of all members. These contributions were also rare. In the third issue, Gilston wrote, ‘This newsletter remains a solo effort, a bad thing, and I would welcome any kind of suitable item, brickbat, letter, request for information and so on. Any ideas for a motto?’ He was still frustrated by the ‘dearth of contributions’ two years later, and crisis point was reached in March 1974, when, with a mixture of pragmatism, threat and probably disappointment, Gilston wrote:

‘The Honorary Secretary would be very willing to cease circulating the Newsletter if most Members favoured this. It has had a fair trial and it is now time to reconsider the matter. Certainly very few items are contributed by Members. As with other aspects of the Society’s activities, corporate effort is now mandatory.’

There is no record of replies, but the newsletter continued under Gilston’s editorship for a further three years. It is likely that somebody convinced him to stay on since there was little evidence of an improvement in participation, a rather plaintive ‘contributions to this Newsletter are most welcome’ still being requested in 1975.

There were exclusions to membership of the Society, which also limited its capacity for becoming a truly multidisciplinary organisation. When Dr C H Brown of Lewisham Hospital expressed an interest in the Society, Gilston replied, ‘I do anticipate, at the moment, that only Consultants would be full members since they are committed to this sort of work for an indefinite period’. Dr Brown was a senior medical registrar, but at Lewisham Hospital he had overall responsibility for the intensive care unit. Until c.1980, doctors in training grades were excluded, despite the seniority of their role in the running of units. Nurses were also excluded, again, even when senior sisters were in charge of units. According to Council meeting minutes, the issue was ‘carefully discussed’ at their fifth meeting, in April 1973.

Concern about academic ability and professional boundaries were both factors in the decision – nurses could not be accepted as members unless they had ‘some outstanding academic

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54 Letter Alan Gilston – C H Brown, 16 June 1970, Box 29 [DR/ICS Correspondence Box 3], Intensive Care Society Archives, London.
qualification’, and given that the Royal College of Nursing had an intensive care group, it was ‘deemed unwise at this stage to give the impression of trespassing into their territory’. Council was forced to reconsider its position after questioning from members at the 1975 and 1976 annual general meetings, but remained firm. In interview, Iain Ledingham offered a further explanation. He recalled:

‘...it would be very easy to see that the nurses would soon outnumber the doctors. And I think there was a feeling that the Intensive Care Society should get its house in order first, and then review the situation. And there was no, there was no antagonism in principle, it was just that it had to be carefully thought through’.  

**Intensive Therapy Nursing Group**

Nurses had formed an Intensive Therapy Nursing Group (ITNG) in 1968, two years ahead of their medical colleagues. In part this was because a number of intensive care nurses had regularly been brought together by the King’s Fund since 1965 – whereas doctors with an interest in intensive care perhaps had fewer occasions on which to meet during the 1960s. Many of the Nursing Group’s members first met at a conference on the design of intensive care units in July 1965. The venue, The Hospital Centre, London, was the new home of the King’s Fund Division of Hospital Facilities, opened in June 1963. Like the Scottish Hospital Centre in Edinburgh, its aim was to support hospital organisation and planning through an information and advisory service, exhibitions, conferences and meetings, and research. The design conference was multidisciplinary, but a group of nurses in charge of intensive care units found they had plenty to talk about. The King’s Fund offered the Centre as a venue for further meetings, and a group of ward and departmental sisters from fifteen to twenty-five hospitals met quarterly between December 1965 and March 1967. Nurses from the staff of the Ministry of Health, *Nursing Times* and Royal College of Nursing Hospitals Department were invited to attend, and Peggy Nuttall, the *NT* editor, wrote an account for publication. ‘She actually was very useful’, recalled nurse Pat Ashworth, ‘not only in reporting the meetings, but actually she was a very good member of the group in that she had a sharp

56 Oral history interview, I Ledingham, p. 15.
57 Oral history interview, P Ashworth, p. 10; ‘Design of intensive care units. Conference at The Hospital Centre’, *Nursing Times*, 1965, 61 (33): 1116-7.
60 List of six *NT* reports in Appendix F, along with list of hospitals represented at the final meeting; Craig, 1968, pp. 260-1.
mind and she was good at asking questions which made us think about what we were actually talking about.\textsuperscript{61} Twenty-one sisters attended the first meeting, mostly unknown to each other at the beginning of the day, but keen to assemble again.\textsuperscript{62} Topics for discussion over the six meetings included the unit and equipment (location, accommodation for relatives, cross-infection, isolation rooms and the sterilisation of equipment, monitoring), admission and discharge criteria, staffing and teaching, and the relationship with Matron.

The series of meetings was informal, with participants invited by the King’s Fund.\textsuperscript{63} On a number of occasions discussion had turned to conditions of work and pay, and the nurses decided they should form an independent group.\textsuperscript{64} Concerned that they would be too small to be influential, they approached the Royal College of Nursing, seeking the ‘strength of a large organisation’, and in 1968 became the first specialist group within the Ward and Departmental Section of the College.\textsuperscript{65} Three officers were elected: Geraldine (Gerry) Willman (Barnet General Hospital) as Chairman, Pat Ashworth (Broadgreen Hospital, Liverpool) as Honorary Secretary, and Ellen Tompsett (Harefield Hospital, Middlesex) as Honorary Treasurer, holding their first annual meeting on 21 October 1968, with forty members.\textsuperscript{66} By the second annual meeting, the Intensive Therapy Nursing Group was considered to be fulfilling three main functions:

‘a) increasing members’ own knowledge, b) providing specialist information for official bodies and an accurate image of intensive therapy units, c) enabling members to get to know each other so that they can exchange ideas, share experience, and so acquire a broader view of intensive therapy’.\textsuperscript{67}

Implementation of the second function was demonstrated by their report on nursing in intensive therapy units published in 1969 (as discussed in Chapter 4), but also by writing on behalf of the group to the \textit{Daily Telegraph} and \textit{Daily Express} to respond to surgeon George

\textsuperscript{61} Oral history interview, P Ashworth, p. 10.
\textsuperscript{63} Oral history interview, P Ashworth, p. 12.
\textsuperscript{64} Ibid, p. 11.
\textsuperscript{65} The Royal College of Nursing and National Council of Nurses of the United Kingdom, Hospitals Department, Ward and Departmental Section, ‘Rcn Intensive Therapy Nursing Group [minutes of first annual meeting on 21 October 1968]’, 6pp., p. 1, private collection of Pat Ashworth.
\textsuperscript{66} Ibid.
\textsuperscript{67} The Royal College of Nursing and National Council of Nurses of the United Kingdom, Hospitals Department, Rcn Ward and Departmental Section, ‘Rcn Intensive Therapy Nursing Group Meeting, November 10th, 1969’, 6pp., p. 2, private collection of Pat Ashworth.
Watts’ likening of intensive care units to ‘ante-chambers of the Gestapo’ (as mentioned in Chapter 5). AGM minutes noted that their letter explained ‘the need for and purpose of intensive care units, and their proven value despite less than ideal conditions. It also emphasized our aim to CARE for patients in the fullest sense of the word [emphasis original]’.68 Twice-yearly meetings in hospitals around the country aimed to accomplish the first and third functions of the group.

By 1971, the group had 529 members, but it did not last the decade.69 As Pat Ashworth recounts, ‘the ITNG thrived and was active in the 1970s, but eventually faded as many of those originally involved in working for the group moved away from clinical jobs and so, according to the group’s rules, were no longer eligible to vote or stand for office’.70 In correspondence, she offered further explanations – the difficulty of attending national meetings (getting time and financial support from hospitals, family responsibilities), and that some may have been members of a union other than the RCN.71 A local group was re-formed in London in 1977 as the Nursing Intensive Care Group, becoming amalgamated with other regional groups from England, Wales and Scotland when they met at the American Association of Critical Care Nurses conference in 1982.72 Three years later, it became the British Association of Critical Care Nurses.

6.3 Specialist journals and research
Three specialist journals were launched in the first half of the 1970s. Their major innovation was to bring together articles on intensive care previously spread across numerous medical, anaesthetic or surgical publications. Authors could now communicate directly with others working in intensive care, and readers could access the latest news and research more easily. *Anaesthesia and Intensive Care*, the journal of the Australian Society of Anaesthetists, published its first issue in August 1972. The American-led Society for Critical Care Medicine introduced its journal, *Critical Care Medicine*, the following year, and the *European Journal of Intensive Care Medicine*, with its first managing editor based in Mannheim, began in 1975. A

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68 Ibid, pp. 1-2. The letter was published in full in the *Daily Telegraph*, but the Group declined extracts only publication in the *Daily Express*.


71 Private correspondence, n.d. [July 2010]

study of the journals in their first year of publication enables a number of comparisons and conclusions. Firstly, the three journals represented the three largest geographical areas of intensive care research – Australia, the US, and Europe. In their first year, the journals were predominantly regional, with a few contributions from other countries, such as Hong Kong and Japan (in the Australian journal), Mexico (in the US journal), and India and South Africa (in the European journal).

In structure, the journals had much in common. They published original peer-reviewed research papers, topic reviews, articles on equipment, and news and announcements. *Anaesthesia and Intensive Care* and *Critical Care Medicine* printed abstracts of relevant papers published in other journals, and all three featured abstracts from scientific meetings. This seemed to reflect their stated purposes, and the mixture of scientific research, equipment evaluation and news was typical of the kind of information practitioners wanted to share and read. The journals all carried advertising too – for drugs, equipment and other journals and publications.

The meat of the journals was the clinical and laboratory research papers. They were longest in the *European Journal of Intensive Care Medicine*, where they were structured as scientific reports with introduction, methods, results and discussion. The content of the papers could be summarised as the pathophysiology, pharmacology and techniques of critical illness and its management. Occasionally an article would report on the organisation of intensive care: ward design or training schemes, for example. Multiple authors were customary in the *European Journal*, and interdepartmental collaboration was notable in *Critical Care Medicine*. Most papers originated from anaesthetic departments, reflecting their significant involvement in intensive care, but co-authors were affiliated to departments such as psychology, nursing and paediatrics, in addition to medical and surgical colleagues. This was an aim stated in Peter Safar’s editorial on ‘The Society of Critical Care Medicine and its journal’, namely that the journal would ‘cross-fertilize ideas between physicians of various disciplines and between physicians and non-physicians interested in CCM (an objective apparently not met by existing journals).’

A feature of the journals was that they carried few editorials or correspondence. In the first volume, *Anaesthesia and Intensive Care* published editorials in each number, but only one addressed intensive care specifically. This is perhaps not unexpected, given the heavy

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emphasis on anaesthesia throughout the journal.\textsuperscript{74} Volume 1 of \textit{Critical Care Medicine} featured editorials in numbers 1-3, but not 4-6, and it was buried in the middle of the journal, after the research papers and short articles on equipment. The \textit{European Journal of Intensive Care Medicine} printed just one editorial in its first volume, a statement of the journal’s aims and purpose. Correspondence was similarly sparse – nothing in the \textit{European Journal}, an occasional letter in \textit{Critical Care Medicine}, and a handful in each issue of \textit{Anaesthesia and Intensive Care}. This is significant because it seriously limited the coverage of contentious issues and opportunities for discussion and debate. The ethics, economics and social impact of intensive care were noticeably absent. In this sense, journals had a centripetal effect on the shaping of intensive care medicine – focusing attention inwards towards a science and practice stripped of its context. Strong editorials could have balanced this, but priority was given to proving the specialty’s academic credibility.

In Britain, much of the research came from teaching hospitals, with university-appointed consultants and research fellows. Academic research was as much for building the reputation of the department as it was for furthering the specialty. Junior staff focused on training for their postgraduate specialty examinations, not considering research until later in their careers. According to a 1981 survey of 74 hospitals, access to intensive care journals was very limited – fewer than half the hospital or department libraries subscribed to even one (\textit{ICM} or \textit{CCM}).\textsuperscript{75} There was also an underlying tension between academic research and clinical skills – certainly not unique to this specialty, but perhaps a little closer to the surface in a field of medicine where on-the-spot problem solving was a much-valued attribute. In part it was a vestige of the 1960s, when change and development in practice was achieved through trial and error. This was at times conveyed in oral history interviews with British doctors and nurses, who spoke of having to think on their own, and ‘get on with it’.\textsuperscript{76} Australasian practitioners articulated it more fully. Addressing the Australian and New Zealand Intensive Care Society (ANZICS) in 1986, past president Matthew Spence stated:

‘Pioneers are always ahead of their time and have to endure confrontation and misunderstandings, while learning by experience and from mistakes. They trained

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\textsuperscript{74} An editorial in \textit{The Medical Journal of Australia} explained the possible reason: ‘The alliance implied in the title is justified in an area where numbers are not great, and such an alliance can cater well for general intensive care, so strongly linked to anaesthesia in this as in many other countries.’ In ‘Intensive care medicine: new specialty, new journal’, 1975, p. 584.
\textsuperscript{76} Oral history interviews: C Franklin, pp. 14, 18; S Ross, p. 25; R Tierney, p. 22; P Ashworth, p. 5.
\end{flushright}
themselves by using initiative and commonsense, to resolve problems with equipment and complications not seen in patients before’.  

During oral history interviews, many spoke of the novelty of intensive care practice. ‘It was a specialty where there weren’t any precedents [...] There was no one in front of us’, said Ken Hillman.  

‘Really we were...dabbling in quite uncharted things’, argued Tom Torda. ‘There was almost no one to tell me what to do in all the 1,001 situations, so you had to work it out by yourself by trial and error’, reasoned Bob Wright. This informed their subsequent approach to work, relying on problem solving and clinical skills, as Bob Wright further explained:

‘We came up through an era when we had to learn by mistakes and that sort of thing – sort of fumbling in the dark – and try to work on basic principles...And so we had to work our way through all the problems using that [basic principles], and using your bloody wits, and spending a lot of time looking at the patients and studying what was going on, and remembering when last you did it. You did something and it didn’t go so well, so you do it a different way’.  

British practitioners occasionally expressed the sense of novelty, and pioneering. ‘It was breaking a new horizon’, Clifford Franklin declared. ‘We didn’t really have anybody to go and ask’, ventured nurse Sheena Ross. Their access to expertise and experience widened with international congresses, as discussed in the next section.

Nursing journals appeared later, Critical Care Nurse in 1980, and Intensive Care Nursing in 1985. The first editorial in Intensive Care Nursing described the role of the journal as ‘to provoke constructively critical thought about practice’ – that growing experience and introduction of new techniques alone would not prevent stagnation. While this may have

77 Cited in V Wiles, K Daffurn, There’s a bird in my hand and a bear by the bed – I must be in ICU: the pivotal years of Australian critical care nursing, Sydney, Australian College of Critical Care Nurses Limited, 2002, p. 168.
79 Oral history interview, T Torda , p. 10.
80 Oral history interview, B Wright, p. 7.
81 Ibid, p. 23.
82 Oral history interview, C Franklin, p. 13.
83 Oral history interview, S Ross, p. 25.

\section*{6.4 International congresses and exchange}

**First World Congress on Intensive Care, 1974**

The First World Congress on Intensive Care was an event where all of these factors would be played out – mobilising an international, multidisciplinary community to participate in and engage with the many facets of intensive care medicine, from the scientific to the practical, and to demonstrate its status and ambitions to the wider medical community. Held in London over four days in June 1974, it attracted 2,430 delegates from 68 countries, and set the standards for future international congress meetings. Brenildo Tavares, director of the International Symposia on Critical Care, held annually in Rio de Janeiro from 1972, wrote of the importance of travel and meetings in the transfer of ideas and techniques:

’After visiting many medical centers for intensive care throughout the world, it became apparent to me how difficult it would be to transfer the immense volume of experience and skills from one place to another. In order to encompass the present state of knowledge and techniques in this burgeoning field of intensive care, it would be necessary for an enormous number of physicians to travel to the numerous advanced medical centers in various parts of the world. However, a more logical solution, in my opinion, was to assemble representative specialists in critical care medicine in one place, such as Rio de Janeiro’.\footnote{B Tavares, ‘Foreword’, in W C Shoemaker, B M Tavares (eds), Current topics in critical care medicine (Proceedings of the Third International Symposium on Critical Care, Rio de Janeiro, November 4-8, 1974), Basel, New York, Karger, 1976, pp. viii-ix, p. viii.}

In contrast with the World Congress however, this symposium had fewer than a hundred contributors in 1974, almost exclusively from the United States, Brazil, and the former
Federal Republic of Germany. Similarly, an International Symposium on Intensive Care in Edinburgh in October 1973 had fifty-two participants almost exclusively from the UK. The World Congress was the first meeting on a truly international scale. Delegates were prepared to travel great distances to attend, and at considerable expense.

The scale of the Congress’s content was also notable. The Scientific Programme delivered large, agenda-setting symposia as headline events delivered by invited speakers, on twenty-one major topics including organ failure, trauma, shock and brain death. Seminars and colloquia followed, which according to Alan Gilston, ‘allowed all the contributors to each event to participate in a final and exhaustive discussion of the subject with a smaller audience’. Informal ‘Meet the Expert’ tutorials were reportedly well-received, and the programme of films, shown on repeat screenings throughout the Congress, enabled practical demonstrations. The programme was designed to appeal to all intensive care practitioners, and successfully attracted almost all medical and surgical disciplines, not just anaesthetists. Group tickets, transferable within a group (for example a hospital) but to one person at a time, encouraged the attendance of junior doctors, nurses, physiotherapists, technicians and hospital administrators.

Like so many of the activities of this period, the Congress was Alan Gilston’s initiative, beginning in April 1972 with his suggestion that the Society should aim towards organising an international symposium in the following two to three years. It was an agenda item for Council’s first meeting in September 1972, where they agreed in principle but decided to ballot members, taking care to note they would not be bound by the result. An appendix to the meeting minutes recorded the aims of the Congress:

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91 Intensive Care Society, ‘Newsletter No. 7’, April 1972, p. 9, Box 34 [DR/ICS Box 1], ibid.

‘To bring together, for the first time on an International scale, workers who are closely engaged in this field, whatever their own speciality, to discuss problems, exchange ideas and learn of the most recent advances...[and] emphasize the practical aspects of Intensive Care.’  

That Council considered it impossible to cover every aspect of intensive care in the time available demonstrates the size of the field in the early 1970s. Without knowing or agreeing on the true nature of intensive care there was still a perception that the field was large – perhaps because it could include everyone and every topic. Members voted strongly in favour of the Congress, 113 votes to 10, and a number of committees were set to work, along with a professional conference organiser, Miss Robin Cridland. The organisation of an international conference inevitably required interaction with a number of other groups and societies, and three are worth examining in detail in order to show how the Society positioned itself, and intensive care, in relation to these others.

The International Scientific Committee

Achieving the ‘highest professional level’ was important to Council and members of the Intensive Care Society. Iain Ledingham, the Society’s President from 1972-1974, and a university appointed reader in surgery and consultant in intensive care at the Western Infirmary, Glasgow, was selected to convene and chair the International Scientific Committee, together responsible for delivering this ‘highest professional level’ through the congress’s Scientific Programme. Council meeting minutes show the intention to invite ‘distinguished experts’ from Scandinavia, France, Germany, Australia, Switzerland and Argentina, probably reflecting Council members’ contacts, but only European and North American representatives joined the committee.

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96 It is specifically mentioned in the aims of the Congress, in ‘First World Congress of Intensive Care, Appendix A’, probably 21 September 1972, in file ‘Council Minutes 1970-1982 (second part of original bundle)’, Box 35 [DR/ICS Council Minutes Box 2]; and in the minutes of the AGM at which the Congress was discussed with members, ibid.
A number were photographed together with members of the Local Arrangements Committee at the Royal Society of Medicine in June 1973, a year before the Congress (see Figure 6.7). The Local Arrangements Committee comprised Council (Gilston, Ledingham, Hanson, Stoddart and Roberts are pictured), plus five other members serving with specific responsibilities: Dr John Raison for finance, Dr Martin McNicol for public relations, Dr Mike Telfer for audiovisual aids (all pictured), Dr Tim Clark for the professional and trade exhibitions, and Dr Jenny Jones for the social programme. The eight people labelled with arrows were representatives of the International Scientific Committee. Both the Congress President, Lord Brock (a former President of the Royal College of Surgeons)," and Vice-President, Max Harry Weil (then President of the Society for Critical Care Medicine), were also present.

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98 Anaesthesia editor, Tom Boulton, approved of the choice of Lord Brock (a ‘doyen of British cardiothoracic surgeons’) as Congress President because cardiothoracic surgeons had been ‘amongst the first to support their associated anaesthetists and physicians in forming Intensive Care Units’ in Britain. T B Boulton, ‘The First World Congress on Intensive Care in retrospect, Anaesthesia, 1974, 29 (5): 644-7, p. 644.
The International Scientific Committee and Local Arrangements Committee were photographed together during the above meeting. It is difficult to confirm who produced the labels, but the handwriting appears to be Gilston’s (pictured second from left).

The International Scientific Committee invited speakers and reviewed over 400 abstracts, submitted predominantly from Britain, France and the US, of which two-thirds were accepted. It was an ambitious programme for a debut, although probably modelled on other international medical congresses (such as the 4th World Congress of Anaesthesiologists, 99 ‘Eleventh Meeting of the Local Arrangements Committee’, 10 April 1974, p. 3, Box 34 [DR/ICS Box 1], Intensive Care Society Archives, London.)
London, 1968, organised by the same Miss Robin Cridland\textsuperscript{100}). Still, it reflected a tremendous confidence in the ability of this new field, intensive care, to attract world-class speakers and delegates on such a scale. Hosting the inaugural Congress was a great coup for Britain, and its specialist Society.

**Interaction with other national societies**

To expand on this point, it is important to consider how the Intensive Care Society collaborated with other national societies to deliver the Congress. Gilston had identified a number of comparable societies worldwide in his efforts to recruit overseas members for the ICS, and this was one route through which speakers, abstracts and delegates were sought. But more formal links were made with one of the largest and most influential organisations – the Society for Critical Care Medicine (SCCM) in the US. For example, the Scientific Programme was acknowledged as being ‘subject to the agreement’ of the SCCM.\textsuperscript{101} In March 1973, SCCM President Harry Weil affirmed the Society’s support, regardless of the programme structure, a collaboration later described as ‘co-sponsorship’ in the first meeting of the Local Arrangements Committee in May 1973.\textsuperscript{102} But then relations deteriorated.

Forecasts of delegate numbers, and the booking of appropriate venues and facilities, depended on the expectation of a large North American contingent. But there was little response to the preliminary announcement, released in May 1973. After a visit to the US, chair of the Scientific Programme, Iain Ledingham, reported that circulation of the announcement had been delayed there, but that ‘an overwhelming response could now be expected’.\textsuperscript{103} By February/March 1974, it still hadn’t come. Estimated attendance figures were revised down, and venues cancelled. Minutes noted, ‘The poor American response continued to be the chief problem of the Congress’.\textsuperscript{104} There were other points of tension too. The SCCM proposed taking up the free places on the charter flight and spending money raised from American firms showing at the Trade Exhibition, while the ICS felt such resources

\textsuperscript{100} Boulton, 1974, p. 645.
\textsuperscript{103} ‘Fifth Meeting of the Local Arrangements Committee’, 14 September 1973, p. 2, Box 34 [DR/ICS Box 1], Intensive Care Society Archives, London.
\textsuperscript{104} ‘Tenth Meeting of the Local Arrangements Committee’, 12 March 1974, p. 2, Box 34 [DR/ICS Box 1], ibid. For details of downsizing see ‘Ninth Meeting of the Local Arrangements Committee’, 6 February 1974, Box 34 [DR/ICS Box 1], ibid.
should be under the direction of the International Scientific Committee.\textsuperscript{105} And the SCCM request for a two-day closed teaching session after the Congress was considered an administrative burden the Committee could not take on.\textsuperscript{106}

In the end, a surge of registrations just before the Congress ensured it was a success, but the damage to relations with the SCCM was longer lasting. Criticism was explicit in the private meeting minutes, and only loosely veiled in more public communications. Gilston’s report on the Congress, published in the \textit{European Journal of Intensive Care Medicine}, described ‘very many gravely anxious periods and unforeseen, indeed unforeseeable, problems. They included major and recurrent industrial difficulties, swiftly rising costs, poorly executed contracts, false promises and power politics’.\textsuperscript{107} Industrial difficulties and associated rising costs related to printing strikes, but the other problems clearly concerned the SCCM. This would not have been obvious if Gilston had not referred to ‘the grave fear that poor attendance would wreck the Congress’, and the ‘wildly inaccurate promise of attendance from the U.S.A.’.\textsuperscript{108} The financial concern was legitimate – the Congress was funded predominantly by registration fees, and deposits had been paid based on promised attendance. But the perceived ‘power politics’ appears to have been equally resented, and would require diplomacy to be resolved.

**RCN Symposium on Intensive Care**

The ICS Council proposed a ‘special section’ of the Congress for nurses and technicians, as well as a more general integration in the programme, reflecting the Society’s commitment to multidisciplinary intensive care.\textsuperscript{109} Initial correspondence and meetings with Miss Margaret Lee from the RCN’s Intensive Therapy Nursing Group (ITNG) was positive – they were interested in having nurses submit papers to the Congress, and suggested a nursing representative could assist in abstract selection.\textsuperscript{110} But by the time Alan Gilston met with Margaret Lee later in 1973, the RCN were planning a more autonomous one-day meeting

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\textsuperscript{105} See ‘Fifth Meeting of the Local Arrangements Committee’, 14 September 1973, p. 2, and ‘Eighth Meeting of the Local Arrangements Committee’, 7 January 1974, p. 4, both Box 34 [DR/ICS Box 1], ibid.

\textsuperscript{106} ‘Sixth Meeting of the Local Arrangements Committee’, 13 October 1973, p. 2, Box 34 [DR/ICS Box 1], ibid.

\textsuperscript{107} Gilston, 1975, p. 93.

\textsuperscript{108} Ibid, p. 94.


during the Congress. Aimed at nurses, particularly British nurses not attending the Congress, the RCN also hoped to attract Congress delegates. Suggested topics were planning for intensive care units, training and ethics.\(^{111}\)

The Symposium went ahead on 25 June 1974, chaired by former ITNG chairman Geraldine Willman. It featured eleven papers from nursing officer and academics, on topics including ethics, computers, technical nursing care, training, care of particular conditions (including a paper from Miss E McAlister from the Royal Victoria Hospital, Belfast, on 'Intensive care of bomb-blast injuries'), and mobile intensive care. The final paper was from Professor A J Harding Rains, professor of surgery at Charing Cross Hospital, London, on 'Intensive care – background to relationships and responsibility'.\(^{112}\) It is difficult to tell whether this Symposium detracted nurses from participating in the wider Congress. The ICS were disappointed that only three nurses’ abstracts were submitted for the Congress, although two nurses did give papers (one from Britain, one from the US).\(^{113}\) Registration figures in April 1974 recorded that 99 nurses and technicians had signed up as full delegates, only 8% of the total at that date.\(^{114}\) By comparison, the RCN Symposium had received 120 applications, including twenty from overseas.\(^{115}\)

The occasion of the Congress drew into focus the tensions between the ICS and nurses. The ICS wanted to host a multidisciplinary meeting, but could not attract a significant number of nurses as full delegates, whether because of conflict with the RCN’s meeting, a lack of relevant material in the Congress, or a more general sense of alienation.

**Congress legacies**

One material legacy was of particular importance to the ICS Council – the Presidential Badge. Its photograph occupied almost half the first page of Gilston’s Congress report in the *European Journal of Intensive Care*, and the sentence that explained its provenance, that ‘The Intensive Care Society commissioned a professional artist to design the Presidential

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\(^{111}\) ‘Sixth Meeting of the Local Arrangements Committee’, 13 October 1973, p. 1, Box 34 [DR/ICS Box 1], Intensive Care Society Archives, London.


\(^{113}\) ‘Eighth Meeting of the Local Arrangements Committee’, 7 January 1974, p. 1; ‘Ninth Meeting of the Local Arrangements Committee’, 6 February 1974, p. 2, both Box 34 [DR/ICS Box 1], Intensive Care Society Archives, London.

\(^{114}\) ‘Eleventh Meeting of the Local Arrangements Committee’, 10 April 1974, p. 2, Box 34 [DR/ICS Box 1], ibid.

\(^{115}\) Ibid, p. 1.
Badge’ understated the time devoted to discussing it at committee meetings. In October 1973, the minutes recorded:

‘b. Dr. Gilston’s suggested motif was firmly rejected.

c. The present motif also was inappropriate.

d. Dr. Stoddart would seek expert advice’.

No progress was made at the next meeting, and further time was committed to its development. The professional artist – the chief medical illustrator at Glasgow’s Western Infirmary, Gabriel Donald – was also stumped, and ‘sought guidance on the theme of intensive care’. Interestingly, the final design played up the concept of care, with hands placed around a globe, and a candle between the thumbs – reminiscent of nursing and the ‘Lady with the Lamp’. It was quite different to the highly stylised Congress logo (printed on headed notepaper etc.), which had the congress title and dates printed on an operating theatre mask, and a globe printed in the eyes above the mask – conveying the importance of clinical observation according to Iain Ledingham. These things could be read as more than incidental. It could be argued that they worked as symbols, communicating the nature of intensive care as understood at that time. The material legacy of the Badge was as important as the design. It was produced in silver gilt, at a cost to the Intensive Care Society of more than £150. The Society newsletter explained its significance in Congress history, as a ‘token of the Society’s role in initiating the First’, so it was hugely disappointing when it was lost during the second congress.

Further congresses were another legacy. A delegates’ meeting during the Congress, with two representatives nominated from each country, unanimously supported the notion of a second Congress. Two locations were put forward: the US and France. A vote selected France, but Council meeting minutes show that the ICS favoured the US, despite difficult relations with

117 ‘Sixth Meeting of the Local Arrangements Committee’, 13 October 1973, p. 4, Box 34 [DR/ICS Box 1], Intensive Care Society Archives, London.
118 ‘Eighth Meeting of the Local Arrangements Committee’, 7 January 1974, p. 3, Box 34 [DR/ICS Box 1], ibid.
119 Oral history interview, I Ledingham, pp. 19-20.
120 ‘Tenth Meeting of the Local Arrangements Committee’, 12 March 1974, p. 3, Box 34 [DR/ICS Box 1], Intensive Care Society Archives, London.
the SCCM, ‘if the Congress was to be a genuinely international event’. The democratic vote was subordinated by the referral of the matter to the International Scientific Committee, who then endorsed the delegates’ decision, recommending Paris for September 1977.

The other legacy voted on at the Representatives’ Meeting was the proposal to form a World Federation of Societies of Intensive and Critical Care Medicine. It was again initiated by Gilston, and may also have been modelled on anaesthetics (who had a World Federation of Societies of Anaesthesiologists). The terms of the vote were described in a briefing memo issued to the Local Arrangements Committee in November 1973. Chaired by the Congress President, Lord Brock, the representatives would consider a second world congress, and ‘the need for a permanent consultative body in Intensive Care’. The functions of the federation were also sketched out:

‘This would, for example, provide advice, information and help with certain problems. It would remain non-political and would not lobby, for fear of losing its professional status and effectiveness. Equally important, it would provide common ground for the exchange of ideas between different countries’.

This would appear to be non-contentious, simply making permanent the benefits of the Congress. But doubts were expressed at the meeting, and Gilston’s Congress report noted that ‘some influential delegates believed it premature’. No further detail was given, but it is likely that delegates were concerned about the immense difficulty of organizing and agreeing upon a constitution for an international, consultative body. The meeting must have been very tense, as Gilston also commented that ‘certain Representatives even introduced current non-medical political problems’.

Gilston was undeterred, and his pertinacity prevailed as he gained approval to send a questionnaire to Congress delegates, soliciting their opinions. He received replies from 33 countries, from critical care societies and small informal groups. An announcement in the (renamed) European Journal of Intensive Care Medicine declared there had been

123 ‘Memo, To Members of the Local Organising Committee of the First World Congress on Intensive Care’, 22 November 1973, p. 2, Box 34 [DR/ICS Box 1], Intensive Care Society Archives, London.
124 Gilston, 1975, p. 96.
125 Ibid.
126 Ibid, p. 97.
overwhelming support for the Federation and its proposed objectives, which were listed in a
table. It also listed the 18 countries that had multidisciplinary intensive care societies.\textsuperscript{127} But,
the ultimate decision was held over until the Second World Congress, where the Federation
was established in September 1977.

The Second World Congress built on the success of the first. It was similar in size – a five-day
conference with 2488 delegates from 67 countries. Nearly 800 abstracts were submitted,
from 38 countries, and the organisers decided to accept only new and unpublished studies.
This reflected the confident aim of the second congress: to demonstrate the contribution of
original research in intensive care medicine, and to ‘testify of the dynamism and energy of
our discipline’.\textsuperscript{128} The first congress pioneered the international forum, the second celebrated
the strengths of the fledgling specialism.

6.5 Setting standards

Congresses, symposia, societies and committees, and especially the working groups they
formed, created opportunities for practitioners to share and develop guidelines and
standards, collectively formalising practice developed in intensive care units over the
preceding decades. While such moves were seen as pushing the specialty forward, there was
also a defensive aspect, as an absence of consensus was considered a threat to autonomy.
‘In such cases the parent body (or worse, its parent body) steps in and imposes a solution
which is seldom as satisfactory’, argued an editorial in \textit{Care of the Critically Ill}.\textsuperscript{129} In Britain,
the Intensive Care Society and the Nursing Intensive Care Group produced \textit{Standards for
intensive care units} in 1984, with sections on design (to supplement the \textit{Hospital Building
Note}), and operational policies including staffing, administration and equipment
management.\textsuperscript{130} By contrast, the North American-led Society for Critical Care Medicine had
published ‘Guidelines for organization of critical care units’ in \textit{JAMA} in 1972.\textsuperscript{131}

Guidelines had a number of advantages: reduced workload, fewer errors of communication,
improved continuity and standardisation \textit{intra} and \textit{inter}-unit. They were preferable to

\begin{itemize}
\item \textsuperscript{128}M Rapin, R Nedey, G Vourc’h, P Huguenard, F Nicolas, G François, ‘Report on the Second
\item \textsuperscript{129}‘Setting standards’, \textit{Care of the Critically Ill}, 1985, 1 (3): 3.
\item \textsuperscript{130}Intensive Care Society, \textit{Standards for intensive care units}, London, Biomedica, 1984; E
\item \textsuperscript{131}Society of Critical Care Medicine, ‘Guidelines for organization of critical care units’, \textit{JAMA},
1972, \textbf{222} (12): 1532-5.
\end{itemize}
protocols or codes of practice, which were resisted or rejected by some on the grounds that they compromised a physician’s autonomy to make clinical decisions, and subordinated personal experience to abstract guidelines.132

At an NIH Consensus Development Conference in 1983, questions were posed about the empirical evidence for reduced mortality and morbidity, staffing and training, minimal technological capabilities, place within the hospital and directions for research.133 Commenting on the report, Iain Ledingham wrote that while the questions represented most of the major issues in critical care medicine independent of national boundaries, approaches to their solution would be expected to vary from country to country.134 However, “the items of equipment required for the delivery of intensive care are remarkably consistent throughout the world and few would argue with the ‘minimal capabilities’ listed in the CDC Summary”, he noted.135

Congress, society and group meetings, journals, newsletters, and the Intensive Care Unit Directory, had aimed to bring together the practice of disparate units under one specialist subject – intensive care medicine. Much of the work was towards creating a community or fellowship of practitioners, with a shared sense of the nature of intensive care medicine. In the next chapter, I will explore the growing tensions about whether intensive care units were best managed by an administrator working with a team of nurses, anaesthetists, physicians and surgeons experienced in intensive care medicine, or ‘intensivists’ – individual experts in the complete care of the critically ill. To begin, I look at a diagnostic tool chosen by doctors as representative of their practice in intensive care medicine.

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Chapter 7: Giants and supermen? Becoming intensivists

Swan-Ganz catheter, 1970

Photo: Reprinted from Lancet, 1964, 284 (7366): 942
With permission from Elsevier

Figure 7.1: Bradley’s apparatus for right heart catheterisation, 1964

a. Needle – inserted into the vein
b. Guide wire – passed through the needle
c. Short nylon sleeve – placed over the wire, then wire withdrawn
d. Cardiac catheter – passed through the sleeve
Figure 7.2: Swan-Ganz catheter in use, 1982

Use of the Swan-Ganz catheter for monitoring haemodynamic variables in the intensive care unit was contentious – it provided much data, but was invasive.
Swan-Ganz catheter, 1970

I asked, ‘If you had to choose one object to represent your work in intensive care, what would it be?’ Two of the eleven British practitioners interviewed chose a Swan-Ganz or pulmonary artery catheter. It is a fine, light nylon tube that is passed into a vein in the elbow, neck or groin, and ‘floated’ in the bloodstream through the right side of the heart, into the pulmonary artery (leading to the lungs). The device directly measures blood pressures, one of a number of haemodynamic variables, which, as seen in Chapter 4, had become a cornerstone of intensive therapy. For this reason, I might have expected practitioners to choose this particular object – during my literature review I had read textbooks with claims such as, ‘The birth of critical care as a specialty is largely the result of two innovations: positive-pressure mechanical ventilation and the pulmonary artery catheter’. But I was surprised the interviewees picked it because it has been at the centre of contention and debate ever since it was first used in the critically ill. The date of its introduction into the intensive care unit was the first matter of dispute. It is usually dated to 1970, with Jeremy Swan and William Ganz’s balloon flotation catheter. But recent memoirs, a witness seminar and volume of *Classic papers in critical care* have attributed a key role to Ronald Bradley’s work – felt by many in the British intensive care community to have been an unjust omission.

From the 1940s, cardiac catheterisation had been carried out under X-ray supervision in the ‘cath lab’ (catheterisation laboratory), for the diagnosis of heart disease. Then in 1964, Bradley, a physician at St Thomas’ Hospital, London, published a paper in the *Lancet*...
describing a method that could be performed at the bedside. Bradley’s miniature catheters (seen in Figure 7.1) were used in the critically ill, who were too unstable to be moved to the cath lab. Four years later, Bradley and Margaret Branthwaite (also at St Thomas’) published a paper on the measurement of cardiac output using their modified catheter. The authors spent hours collecting data for research and clinical use (see Figure 7.2). In memoirs for the Royal Society of Medicine, Branthwaite describes ‘trundling around’ a large trolley of equipment for catheterisation and blood gas analysis. Because mortality in these critically ill patients was still high, they became known as ‘The Death Watch Beetles’. Much of the data collection and manual analysis of the traces from the oscilloscope and recorder was undertaken on the first night after cardiothoracic surgery, ‘and took two people the whole of a night shift to complete’. Bradley even had a bedroom in the intensive therapy unit.

In 1970, Swan and Ganz published a paper on their flow-directed balloon-tipped catheter, which soon afterwards could also calculate cardiac output. ‘Swan’s lyrical description of his epiphany while watching sailboats in the Santa Monica Bay that led him to develop the flow directed catheters is well ingrained in critical care lore’, according to a recent article on the history of intensive care technology. But revisionists point to the work of earlier investigators. Jeremy Swan had seen Bradley’s catheters at St Thomas’, and Branthwaite’s memoirs carefully recall that, ‘His subsequent request for detail was answered in a personal letter – typed manually on an elderly machine with a fading ribbon – which presumably

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8 Branthwaite, ibid, p. 1.

9 Ibid, p. 2. Technician Valerie Arnold joined the team in the early 1970s. As well as attending to the machines during catheterisation, she talked to patients to explain and reassure, performed the accompanying blood gas analysis, and cleaned and sterilised the catheters for reuse. Valerie Arnold, personal communication, December 2009.


arrived but was never acknowledged’. American physiologists Michael Lategola and Hermann Rahn, had described using a catheter with a balloon tip ‘acting like a sail’ in 1953.

The Swan-Ganz catheter was well marketed and quickly became popular, almost a routine monitoring technique. The Edwards Laboratories’ yellow catheter became an eponymous verb – ‘to Swan’. Its use expanded knowledge of the pathophysiology of acute cardio-respiratory disturbances. But as was common in intensive care units at this time, uptake occurred without demonstration of a direct role in improving outcomes. The procedure was invasive, and reports began to challenge the perceived benefits with accounts of serious complications and death. Opinion pieces were published with provocative titles such as, ‘The cult of the Swan-Ganz catheter: overuse and abuse of pulmonary flow catheters’. Proponents countered that poor outcomes could be due to inexperienced users, interpretation of data, or treatments chosen in response to measurements obtained, rather than complications of the catheter itself. By 1989 average monthly use in England and Wales (in

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contrast to America) was in fact minimal – two thirds of units surveyed used no more than two a month.\textsuperscript{20}

It is intriguing, then, that two clinicians chose such a contentious technology to represent their work in the intensive care unit. It is significant that they had both published about it, and that one had done lecture tours with William Ganz.\textsuperscript{21} But the dispute over clinical utility suggests its value lies elsewhere. Perhaps it is held to be an iconic intensive care technology, definitive of the specialty. In a \textit{British Medical Journal} headline article in 1996, Neil Soni described it as ‘a badge of office’, saying, ‘Over the past 20 years the pulmonary artery catheter has become to the intensivist what the stethoscope is to the resident’.\textsuperscript{22} But yet it also ‘belongs’ to interventional cardiology, and with more robust clinical efficacy. Perhaps evidence-based medicine does not ‘define’ the specialty – that ad-hoc problem-solving is a skill valued above research. Or perhaps the monitoring and interpretation of haemodynamic variables is what defines the intensivist, and the ambivalent utility of the tool is irrelevant, or less significant than the practice.

\textsuperscript{20} M Singer, E D Bennett, ‘Invasive hemodynamic monitoring in the United Kingdom: enough or too little?’, \textit{Chest}, 1989, \textbf{95} (3): 623-6. Clinical indications, lack of equipment and lack of expertise were the main reasons given for non- or limited use, p. 625.


7.1 Introduction

Intensive care medicine was granted specialty status in Britain by the Specialist Training Authority in June 1999, almost forty years after dedicated units opened in the early 1960s. How did consultants working in intensive care demonstrate their specialist status until then?

In this chapter, I show that even up to the mid-1980s it was possible to be a specialist without a specialty. As seen in the thesis so far, but particularly in Chapter 6, I am taking two approaches to study the development of a new medical specialty: through the process of specialisation (per Rosemary Stevens), and through specialist practice. In this chapter I consider training, examination and certification for doctors – particularly as this is how the medical profession recognised intensive care as a specialty. As per Stevens, I will also consider full-time duty and bed ‘ownership’ as identifiers of a move towards specialist status.

None of these issues are straightforward. Training doctors in intensive care medicine was complex because i) doctors had trained in anaesthesia, medicine or surgery, and it was difficult to agree on a syllabus to fit all, ii) doctors could undergo a period of higher professional training in intensive care, but there were few consultant posts to progress into, iii) some doctors did not want to work full-time in intensive care – they wanted to ‘keep their hand in’ with their primary specialty, including private practice, and iv) the Royal College of Anaesthetists did not want to ‘lose’ anaesthetists to another specialty. Underlying all this was a multiplicity of notions about what a specialist was – whether it was judged by clinical skills, administrative skills, or full-time presence (and whether this was measured by formally allocated consultant sessions in intensive care, or informally as time spent in the unit).

The complexities of this situation are best revealed in a study of practice, which challenges a narrative of inevitable specialisation. I begin by looking at two ‘ideal types’ of unit organisation that were in operation in Britain in the late 1960s and 1970s, because would-be

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24 See M Worboys, A Homei, ‘The study and treatment of fungal diseases in Britain, 1850-2000: a case of specialist practice’, unpublished paper, 2011. The authors argue against ‘focusing on specialisation as a process that has a beginning and an end’, advocating instead ‘specialist practice’ as a frame that ‘recognises that many scientists and doctors combined roles, identities and types of work’.
specialists came from both environments. Each hospital had its own system for unit administration, shaped by local demands, but for the purposes of explanation, I describe two ideal types, named using actors’ categories that came in to use during the mid-1990s. The first is the ‘open unit’ – admitting consultants retained clinical responsibility for their patients, while a unit director or duty consultant was responsible for day-to-day management of the unit. Most British units operated this type of organisation during the period of this chapter, c.1970-1986. The second is the ‘closed unit’ – one or more full-time consultants took charge of the unit and all the patients located there. A very small number of British intensive care units operated this type of organisation before the early 1980s.

Unit directors and consultants with regular or full-time intensive care duty were beginning to consider themselves specialists in the care of the critically ill, so in section 7.4 I examine the notion of the ‘intensivist’, with reference to how this specialist role was described outside Britain (notably Australia), and how British clinicians responded. Finally, I outline some of the key events in the development of specialist training and certification for doctors, up to the creation of the first full-time training posts in 1986. The route to specialty status between 1986 and 1999 is beyond the scope of the thesis, but I give a very briefly outline at the end of the chapter. Conclusions are provisional, as it is likely that in-depth study of the period 1986-1999 would further inform interpretation of this earlier period. I do not consider specialist training for nurses in this chapter as it has already been examined in Chapter 4. As described there, the Joint Board of Clinical Nursing Studies awarded the first certificates in ‘General Intensive Care Nursing’ in 1973. The syllabus had been negotiated through seven meetings in six months – probably a less protracted process than for doctors because of fewer intra-professional tensions. By July 1985, a total of 5,279 certificates had been granted across thirty-six approved courses.

7.2 ‘Open units’

In this approach, ultimate responsibility for patient management remained with the referring consultant, the clinician with expert knowledge of the primary disease, offering a continuity of

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26 In a survey of 17 British units in 1967, the admitting consultant retained charge in all but two units (where it was shared with an administrative consultant). British Medical Association, Planning report of the working party on intensive care, BMA Publications, 1967, p. 15.

care. In patients developing multiple organ systems failure, a number of different specialties could become involved in the care of a single patient. ‘The representatives of each organ, if they can ever be mustered in the one place at the one time, then stand around, and plead for their own case. The result is a shambles, a therapeutic nightmare, or inertia’, wrote Ken Hillman in 1980.\(^{28}\) Respiratory care and resuscitation was the one area where referring consultants might cede some authority. With expertise in mechanical ventilation, airway management, resuscitation, and care of the unconscious patient, anaesthetists asserted they could make an essential contribution to acute respiratory care in the critically ill, and had demonstrated these skills outside the operating theatre since the respiratory units and side wards of the 1950s. Whilst acknowledging that ‘other aspects’ called for a physician with specialist knowledge of respiratory diseases, they argued that very few physicians had acquired ‘real competence’ in the management of ventilators.\(^{29}\) In many units of the early 1960s, medical staffing had included a duty consultant anaesthetist to supervise ventilation and acute respiratory care, including resuscitation.\(^{30}\) This had hardly changed a decade later, but the integration of multiple units into one, general intensive care unit was a distinct advantage for the anaesthetist trying to cover them all.\(^{31}\)

A designated director was integral to the ‘open unit’ approach – ‘a secure, steady ‘captain of the ship”\(^{32}\). As administrative consultant, duties included being responsible for the medical staffing of the unit, evaluating, purchasing and maintaining equipment, and in some cases being responsible for the resuscitation service throughout the hospital.\(^{33}\) The key role


however was as medical ‘chairman (referee, co-ordinator)’. The term ‘referee’ acknowledged the difficulties of ‘poly-doctoring’ – working with numerous admitting consultants to ensure the recommended treatment was carried out, arranging further consultations if necessary, and arbitrating and resolving disagreements. Doctors recognised that this cooperative scheme was difficult for unit staff (doctors, nurses and allied professionals) to operate. At a large district general hospital there could be thirty or more consultants admitting patients to the general intensive care unit. Anaesthetist David Price noted that with multiple consultants involved, there was ‘plenty of opportunity for misunderstandings, communication difficulties and the build up of animosity’. Ward rounds were an occasion for joint decision-making, but could make the unit an extremely busy place. Nursing routines were difficult to establish with ward rounds for each team with any individual patients in the unit. This was resolved over time by instituting ward rounds at appointed times, run by the unit director, with invitations for admitting consultants to attend. In interview, Sheila Willatts explained, ‘initially the expectation was that they could wander in at any time and you would be there with them discussing their patient. When they got the hang of when the ward rounds were, we set aside appropriate times for them to come, it all worked very much better’. 

The director also worked closely with the unit’s Nursing Officer (a new title for the ‘Sister in charge of the unit’ after a reorganisation of managerial posts was recommended in the Salmon Report). Conflicting or confusing instructions from different consultants was frustrating and stressful for intensive care nurses, and had been a difficulty in the care of the


37 Price, 1983, p. 255. Communication difficulties could result in neglect as well as conflict – where neither the director nor the admitting consultant believed they were in charge. I am grateful to Henry Kilham for drawing my attention to this.


critically ill since multi-specialist side wards, intensive nursing care areas and intensive therapy units. The value of a single doctor with oversight of all clinical input, to instruct the nursing team on behalf of several consultants, became even more important in the 1970s with the increasingly complex and interacting pathologies of critical illness. Unit director and Nursing Officer also preserved the traditional one-to-one consultant–ward sister relationship which had ‘long been recognised as a critical one in the happiness and smooth running of the hospital’.

‘Referee’ also related to the director’s clinical responsibility for admission and discharge, deciding who was salvageable or not, as described in Chapter 5. A further clinical role was teaching, for both nurses and junior doctors. Directors thus had a dual role – administrative and clinical, and it was not uncommon for the role to be split. The head of the department responsible for the unit became ‘nominal director’, taking on the administrative functions, but delegating day-to-day supervision and decision-making to a duty consultant from the same department. The boundaries between a unit director’s clinical responsibilities, the work of a duty consultant, and that of the emerging intensive care specialist – the ‘intensivist’ – were indistinct, as will be discussed further in section 7.4.

Much like there had been an ideal type of intensive care nurse, there was comment from the late 1960s onwards about the ideal type of unit director. Being ‘clinically neutral’ was deemed important. ‘Administrative responsibility should rest in the hands of a doctor who should not have a vested interest in bed allocation’, wrote anaesthetist Andrew Hunter. With a history that pre-dated National Health Service salaried consultants, status was attained according to the number of beds managed – what might be termed ‘empire-building’. This led to suspicion that physicians or surgeons might preferentially admit their own patients, whereas anaesthetists had no bed allocation. Anaesthetists were also favoured for their proven track


record of ‘harmonious’ collaboration with others, especially surgeons. Anaesthetist R Loder was one of many who argued they were ‘used to exercising the tact and skill required in looking after patients of consultants of other disciplines’. There was a sense that physicians and surgeons who were reluctant to accept joint ‘ownership’ of their patients were more willing to work with the less professionally threatening anaesthetist. What is unsurprising is that almost all of these accolades for the anaesthetist-director came from anaesthetists. They did numerically dominate intensive care practice, in large part because the anaesthesia department tended to manage the unit (rather than it being autonomous within the hospital management system), and because of the widespread prevalence of a duty anaesthetist as part of the team. Their dominance in administrative responsibility grew during the 1970s and 1980s. In a survey of seventeen British intensive care units in 1967, accountability was diverse. Anaesthetists and physicians were the consultant in administrative charge in almost equal measure (seven units to five units). A surgeon ran one, and a team of surgeon and anaesthetist managed another. Interestingly, medical responsibility was ‘not decided’ in three units. In a survey by the Association of Anaesthetists twenty years later, in 1988, anaesthetists were in administrative charge of more than 85% of units throughout the country. Why did the proportion of non-anaesthetic directors decline? One possible explanation is that the directors in 1967 reflected the diverse origins of units. Another is that the ‘clinically neutral’ and collaborative anaesthetist increasingly gained charge. A further consideration is that over time, as long as clinical responsibility could be retained (in the ‘open unit’ approach), administrative responsibility was of lesser importance. As seen in membership of the Intensive Care Society, some physicians and surgeons were reluctant to ‘compete’ with the ambitions of anaesthetists.

7.3 ‘Closed units’

Closed units were characterised by complete clinical responsibility being passed to the intensive care unit team until patients could be ‘returned’. Unit doctors did consult with colleagues (especially the referring clinician), just as they would in any other ward setting,

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45 Loder, 1982, p. 691.
47 BMA, 1967, p. 15.
but boundaries were manifest in ‘the name above the bed’, or the clinicians permitted to write orders on a patient’s notes or chart.\textsuperscript{50}

Closed units were rare in Britain but a couple of examples stand out. One of the earliest was at Whiston Hospital. A consultant physician (Eric Sherwood Jones) and a consultant anaesthetist (John Robinson) led the team, which was also staffed by a full-time senior house officer, duty anaesthetic and medical registrars, and an on-call surgeon to perform tracheostomy or access for dialysis. As Robinson reported, the unit team were ‘primarily responsible for the acute situation which when resolved allows transfer of the patient back to the referring consultant’. He reasoned, ‘the suggestion that the referring physicians or surgeons could be trained to use the facilities of the unit is ridiculous; these patients require constant surveillance which cannot be undertaken on a part-time basis’. Referring consultants gave advice ‘on the admitting condition’ at the daily ward round, ‘but the handling of the patients within the unit properly remains with the team’.\textsuperscript{51} Here was a clear demarcation between knowledge of the admitting condition and knowledge of critical illness.

Another example was the Western Infirmary in Glasgow. Their general intensive care unit opened in 1968 with a team of three consultants – a surgeon (Iain Ledingham), a respiratory physician (James Kerr), and an anaesthetist (Jerry Bowen). They shared duty, working 24-hour shifts and one weekend in three, during which time they had no other responsibilities – they were dedicated to the unit. The three heads of departments (Professor Sir Charles Illingworth, Professor Sir Edward Wain and Dr Pinkerton) had decided the hospital should have a multidisciplinary-led unit, and in interview, Iain Ledingham speculated that perhaps the two Regius professors had been anxious to see their departments remain involved in care, and not ‘lose sight’ of their patients to a ‘separate therapeutic area’. Ledingham further explained:

‘In fact we, it sounds as if it was a contrivance, but the patients never really became ‘our patients’. The patient always remained the patient of the referring consultant. The contrivance side of that was, it wasn’t perhaps as daft as it sounds because it meant that once we had decided that we had done all we could, then we would, if you like, turn the tables and simply contact the referring consultant and say, “We’re happy to return Patient X to you”.’\textsuperscript{52}

\textsuperscript{50} Oral history interview, A Gilbertson, p. 4; Oral history interview, N Coroneos, p. 6; Oral history interview, K Hillman, p. 19.


\textsuperscript{52} Oral history interview, I Ledingham, p. 8.
As explained earlier, variations and hybrids such as this occurred perhaps more often than strictly open or closed units, being negotiated locally, personally and on an individual patient basis.

In 1969, two well-regarded anaesthetists, Bill Mushin and John Lunn, in a frequently cited article, recognised the advantages of the closed unit approach. Firstly, they considered the division of administrative and clinical responsibility to be artificial: ‘In our experience an administrative decision usually involves, at the same time, a clinical decision’.\(^{53}\) Their praise for the closed unit was as follows:\(^{54}\)

‘[It] undeniably leads to a smooth-running efficient intensive care unit in which the morale of the nursing staff is high, specialist colleagues given full opportunities for consultation and collaboration, a high bed usage of suitable cases is maintained, and both medical staff and hospital administrators are satisfied’.

A clear line of communication and command for instructions and decision-making – for nurses and doctors – appeared to be the most important benefit, which would in turn benefit patient care. But as seen above, one of the implications of the approach was that the admitting clinicians would have to ‘lose’ responsibility. In referring their patient to the intensive care unit, it was recognised that they had ‘to a greater or lesser degree, “handed over” their patient’.\(^{55}\) For some, this was not an issue. British surgeons were becoming accustomed to anaesthetists caring for their patients in the immediate postoperative period. Physicians and anaesthetists had been working together in the joint care of patients with tetanus, and those with concomitant renal and respiratory failure. But other clinicians preferred to keep their patients on their wards, with their nursing staff, where they would receive ample care as they had always done – a known entity. Whilst reluctant to use the word in writing, what they were really talking about was control. More often it was phrased as ‘clinical responsibility’ – a line drawn by clinical expertise, rather than power. But the use of language was telling, for example that, ‘They relinquish clinical responsibility for the patient on transfer [emphasis added]’.\(^{56}\) It was also informed by perceptions of professional status between the primary

\(^{53}\) Mushin and Lunn, 1969, p. 683.

\(^{54}\) Ibid.


\(^{56}\) Spence, 1973, p. 388. In 1990, Sheila Willatts wrote that, ‘Clinicians in the UK are unable to relinquish their stranglehold on patient management. The concept of ‘my patient’ has hampered the development of this area of medical practice’. S M Willatts, ‘Development of
specialties. ‘There have sometimes been questions as to the advisability of giving “beds” to an anaesthetist. This is difficult to comprehend. Patients alone have beds in this unit’, wrote John Robinson at Whiston Hospital in 1966.57 It was hoped that the ‘territorialism’ and ‘turf wars over ownership of patients’ would be completely dismissed with recognition of the intensive care specialist.58

7.4 Intensivists
The term ‘intensivist’ has been attributed to Peter Safar and colleagues at the Presbyterian University Hospital, Pittsburgh, in 1965, but he acknowledged it was ‘a poor term which we introduced because of a lack of something better’.59 According to Safar, ‘The ‘intensivist’ is a critical care physician who devotes most of his time to ICU work and has special training in this field’.60 Just like the notion of the ‘ideal’ unit director, Safar offered a vision of the ideal intensivist – a first-class doctor with ‘the skills and acute judgement of an anaesthesiologist; the knowledge of an internist or paediatrician; the aggressive decision-making personality of a surgeon; and the adaptability and charm of a diplomat’.61 ‘Guidelines for the definition of an intensivist and the practice of critical care medicine’ were issued by the Society for Critical Care Medicine over twenty-five years later, in 1992.62 The key points were: ‘trained and certified’, ‘devotes >50% of professional time to the practice of critical care medicine’ and ‘willingly participates in a unit-based, hospital-approved coverage system that provides 24-

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hrs/day, 7-days/wk coverage by physicians who possess similar credentials in critical care’. What these definitions had in common was special training, a time commitment, and certain personal and professional qualities. Training and certification will be explored in more detail in section 7.5, but the other factors will be dealt with here.

It is important to note that the term ‘intensivist’ was most often applied to the ‘closed unit’ consultant (described by actors in the 1970s and 1980s as the doctor with both administrative and clinical responsibilities, for the unit and its patients), but could also pertain to the ‘doctor in administrative charge’ or ‘open unit’ director. As seen in section 7.2, unit directors’ clinical work was often indistinguishable from the practice of ‘closed unit’ doctors – they had the expertise to make decisions about salvageability, and became skilled and confident in the specialised techniques of intensive care medicine (including emergency interventions), working with the admitting consultants to manage the patient’s underlying condition.

A unique body of knowledge?
During the 1970s and early 1980s, debate about intensivists, and what constituted their specialist status, was played out in medical journals and meetings. Disagreement was framed in terms of questioning what marked their practice as different to others, or superior to a team of clinicians with expertise in particular aspects of critical illness. The first point of dispute was whether intensivists possessed a unique body of knowledge, skills and experience – considered by opponents to be a foundation of specialist identity. No one person could be an expert in every aspect of intensive care medicine, they argued. ‘No one doctor can be, for example, as good a cardiologist as a cardiologist, as good a biochemist as a biochemist or as good a radiologist as a radiologist’, stated R Loder in 1982. Anaesthetists, already in strong roles as duty consultants and unit directors, ‘certainly cannot claim such omnipotence’, remarked Alan Gilston. The most unequivocal expression was probably his, in the British Journal of Anaesthesia in 1978:

63 Ibid, p. 540.
65 In oral history interviews, unit directors described how certain specialists wanted more or less input – cardiac surgeons remained very much involved with the care of their patients, whereas many general surgeons and general physicians ‘essentially let us get on with it’. In another instance, dental surgeons were ‘only too happy, to leave everything except the care of the teeth, to people who were running the intensive care unit’. Oral history interview, C Hinds, p. 10; oral history interview, G Spencer, p. 6.
'I share your view that no individual can, himself, be a multi-specialist, though some of our Australian colleagues believe otherwise. Such a person would have to be an intellectual and technical giant, a medical Superman. For the patient's sake, it must remain multi-specialist team work'.

In my collection of oral evidence in Britain and Australia, I asked doctors how they had responded to this statement. They made two key points (that were also evident in the primary literature). Firstly, they agreed that intensive care was indeed teamwork. As seen in 'closed units' above, they recognised the skills of colleagues, and consulted them when necessary. In the correspondence pages of *Anaesthesia* in 1983, Dermot Phelan decried the 'perpetuation of the myth' that no one person could be an expert, and that consequently specialisation was impossible. He argued:

>'What is required is a logical and comprehensive approach to patient diagnosis and care, and an ability to effect immediately appropriate therapeutic measures. This needs to be coupled with an awareness of reference sources and a capacity to consult intelligently. I fail to see why intensive care medicine should be peculiarly different from other disciplines in these respects'.

The second point made by proponents was that being an intensive care specialist was not necessarily 'super-human'. They considered themselves specialists in the complex and interacting conditions of critical illness. It was not an encyclopaedic knowledge of medicine, but the 'commonly encountered critical care conditions' of 'acute', 'serious' and 'life-threatening' insult, instability, insufficiency and failure. Furthermore it was to be expert in 'complications which, like bananas, usually come in bunches' – such as multiple organ systems failure. And perhaps most importantly of all, it was to be aware that therapy for one system may be contrary to optimal management of another system, and that the patient's needs should be considered above the jurisdictional boundaries of specialties.

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69 D Phelan, 'Anaesthesia and intensive care. One hat or two?', *Anaesthesia*, 1983, **38** (10): 1003.

70 Categories taken from SCCM, 1992, pp. 540-1.


72 Ibid.
But the body of knowledge was a point on which it seemed impossible to reach agreement. Gilston argued that critically ill patients required 'not merely competent therapy by dedicated clinicians with a good working knowledge of common problems ('general practitioner’ service) but skilled and advanced management by a coordinated team of experts, each a specialist in a different clinical subject'. For Safar and Grenvik, the association between intensive care and general practice was a productive one, for optimum patient care. 'The CCM [critical care medicine] physician must be a generalist [emphasis original], at least in the sense that his training and expertise cut across traditional specialty boundaries', they argued. 'He is oriented to the whole patient'. But this span of knowledge and capabilities was seen by opponents to be contrary to the values of a specialty – it might be broad, but it was not deep, and it was not exclusive. 'Its ideas and practices belong to the whole corpus of medicine, and there is no piece of knowledge or skill which the intensivist can claim to be unique to him that cannot equally well be so claimed by other doctors as well', asserted Mushin and Lunn in 1969. ‘This is not a satisfactory basis for the appellation of specialist’, they continued.

**Full-time duty?**

A time commitment was another principal way to define an intensive care specialist. As seen above, this was quantified by Safar in 1965 as ‘most’ of the time, and by the Society for Critical Care Medicine in 1992 as ‘>50% of professional time’. Australian intensivists, as will be shown below, argued for 100% of time. Few British consultants worked full-time in the intensive care unit, even into the early 1980s. At a witness seminar in June 2010, it proved difficult for participants to identify or agree on the first of their colleagues to do so. Part of the problem was differentiating full-time 24-hour duty, and full-time duty through the week. While many worked 24-hour duty, it was rare for a consultant to work exclusively in the intensive care unit through the week. The reason for this was that consultants were paid on the basis of working a given number of sessions per week in their primary specialty. Without recognition as a session, intensive care work was effectively voluntary and unpaid, taken on

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76 Mushin and Lunn, 1969, p. 684.
77 Two specialists alone were 'recognisable 'intensivists'...appointed as such', in Gilston, 1981, pp. 189-90; see also Gilston, 1983, p. 212.
78 L A Reynolds, E M Tansey (eds), *The history of British intensive care: the transcript of a witness seminar held by the Wellcome Trust Centre for the History of Medicine at UCL*, The Wellcome Trust, on 16 June 2010, London, Wellcome Trust Centre for the History of Medicine at UCL, forthcoming.
in addition to contractual duties.79 Anaesthetists managed the work by doing a ward round before theatre, and another in the evening. Physicians had to fit it around their work in wards or outpatient clinics. In the earliest years, these consultants were very often single-handed – a ‘rare enthusiast’.80 A colleague or two might join them once the unit was more established.

None of these part-time working patterns precluded identity as an intensive care specialist in Britain. Those working simultaneously in their primary specialty and intensive care became known as ‘career specialists’ – recognition of the time dedicated to intensive care, in lieu of specialist qualifications. Australian intensivists were more disparaging. At a 1984 Section of Anaesthetics meeting at the Royal Society of Medicine, titled ‘Whither intensive care’?, Ken Hillman was reported saying that, ‘Most anaesthetists in the UK who practised intensive care did so as a hobby, not a full-time commitment’.81 In correspondence in the journal Anaesthesia a year earlier, Australian-trained Phelan had reproached ‘the present UK intensive care ethos of ‘one-man super units’ or ‘no-man shambolic units’’.82 They, and many of the Australian oral history participants, emphasised the importance of being present in the unit. While not diminishing the significance of training and certification, it was the full-time, 24/7 dedication to intensive care that was essential to their identification of a specialist. Long hours forging a new field of medical practice was both required and revered. James Judson and Malcolm Fisher provide the most clear-cut summary:

‘In Australia and New Zealand, ICUs were usually established by charismatic and hard working pioneers who attracted others and eventually received extra staffing to relieve them of the long hours of work. This led to the establishment of a new type of specialist, the intensivist, and of a new specialty, intensive care medicine.’83

A few examples from the interviews and primary literature further demonstrate this point. In particular, ‘the bedside’ was invoked as the place where the specialist should be – not on call from home, operating theatre or outpatient clinic. ‘The intensivist is a new breed of specialist evolved for dedicated care of multiple physiological disorders at the bedside’, claimed

Matthew Spence in 1972. Malcolm Fisher expressed a similar opinion in interview, "An intensivist is someone who has the appropriate training to look after critical care – critically ill patients – who has presence, who most of the time is in-house, at the bedside. It’s not a job for single organ doctors and it’s not a job for absentee landlords". Bob Wright recalled, "for the first two years I did it all on my own. I was the only one so... [...] I used to sleep like a bloody chook on one leg in the corner of the room".

A full-time presence was seen by Australian intensivists as a way to 'earn their stripes' – expanding their body of knowledge and practice through experience, and demonstrating their ability and commitment to critical care to their hospital colleagues. Why would referring consultants hand over their patient to a part-time specialist? Judson and Fisher again provide an eloquent summary:

'Over time, intensivists in Australia and New Zealand have earned the right to care for the patients of other specialists by being trained, being present, being skilled, and being communicative so that changes in treatment, goals, or important decisions are communicated'.

There was no standard approach to the allocation of sessions in British intensive care units by 1986, when this thesis ends. At the witness seminar in June 2010, Joe Stoddart and Iain Ledingham reported having sessions in intensive care from 1967 and 1968 respectively, while Tony Gilbertson did not have dedicated sessions until 1979. The opening of new units seems to have been an occasion for negotiating these contracts, as evidenced by Ledingham, Gilbertson and the consultants appointed to the new unit at the Western General Hospital, 84

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84 Spence, 1973, p. 387. It is interesting to note that Spence was not always full-time – while running a Respiratory Unit in 1962, he still had four anaesthesia sessions per week. M Spence, 'The emergency treatment of acute respiratory failure', Anesthesiology, 1962, 23 (4): 524-37, pp. 534-5. Also that the 'pioneers' were exceptional – a survey of the first ten years of Final Examinations in Intensive Care (FFARACS), published in 1992, found that 51% had maintained some anaesthetic practice. G A Harrison, P L Byth, 'A survey of Fellows of the Faculty of Anaesthetists of the Royal Australasian College of Surgeons endorsed in intensive care by examination in the first 10 years of final examinations in intensive care', Anaesthesia and Intensive Care, 1992, 20 (2): 203-10, p. 204.

85 Oral history interview, M Fisher, p. 5. American clinicians Safar and Grenvik also used it: 'Writing orders and leaving the bedside is not compatible with sophisticated intensive medical care', Safar and Grenvik, 1971, p. 540; 'He is there [emphasis original], remaining at the patient’s bedside during hours of watching and recording observations, to detect changes in the patient’s status and to intervene before easily managed problems become perhaps irreversible catastrophes', Safar and Grenvik, 1977, p. 88.

86 Oral history interview, B Wright, p. 11.

Edinburgh, in 1988. It is difficult to pinpoint the reasons why British clinicians were not allocated (more) dedicated sessions as intensivists. My conclusions are provisional without further work. Firstly, many anaesthetists were peripatetic, doing sessions in a group of hospitals rather than a single one. Deliberate planning and rostering was required to ensure they spent substantive time in one hospital – and thus be available to its intensive care unit. Secondly, there was a need to renegotiate contractual arrangements, which could take time. A third reason is that the creation of full-time intensive care consultant posts, and its viability as a career, was still heavily under debate (as will be dealt with in the final section), and that many consultants were happy with a part-time role. I also offer a fourth, tentative reason, that relates to personal attributes, and what Malcolm Fisher has described as ‘the culture and ethos’ of intensive care. Conspicuous in the Australian interviews and literature was ‘the pioneer’. The foreword to a history of the Australian and New Zealand Intensive Care Society (ANZICS) introduced the founders as ‘a group of pioneers who operated outside the practice of mainstream medicine’. They were portrayed (and portrayed themselves) as young men, working very long hours, in a field of medicine without precedent. It was challenging, exciting, and – for doctors at least – solo. They were strong-minded and assertive, ‘earning the right’ and ‘transgressing’ borders and ‘frontiers’. Matt Spence’s Auckland unit was ‘a tremendous one man effort; this loner often battling with indomitable tenacity in the face of resentment and opposition...a bold and visionary clinician’. In qualitative research, social scientist Jay Gubrium proposes that descriptions can be 'locally accomplished', with 'stable narrative formats', and belong not only to individuals, but also to an organisational discourse. This is what I heard when I interviewed Australian intensivists.

By contrast, an organisational narrative was almost completely absent in British interviews – their accounts were singular, rarely allied to a larger discourse, and often had the postscript, 

88 All in Reynolds and Tansey, forthcoming.
89 Oral history interview, S Willatts, p. 3.
‘...but that was just my experience’. Either they were modest or the locus of control was more detached – intensive care grew up around them, ‘they woke up one morning, and they found they were intensivists’.

Forming a strong, like-minded group to push for full-time sessions was harder for disconnected individuals. Those who might be considered pioneers were also known for their commitments to research, teaching, and committee work, which they would not want to forego. Private practice, and the number of female anaesthetists who had family commitments were ‘the elephant in the room’ – unspoken reasons for not having pursued full-time duty, either individually or collectively. These silences and off-the-record remarks could almost have constituted the British organisational narrative, if the actors themselves had not sought to focus on their individual stories.

Michael Worboys and Aya Homei’s study of medical mycology in the 1960s suggests their situation was not uncommon. They argue that the practice of medical mycology was ‘typical of many areas of medicine and science, in that it was part-time, and pursued by doctors and scientists who had other professional activities and affiliations’. In 1981, an ANZICS report to members noted there were 70 full-time intensive care specialists in Australasia. This was not the case in Britain, and although debate had allied time commitment and specialist status, it was through training and certification that it was achieved.

7.5 Training and certification

While training for intensive care nurses was becoming established in the mid-late 1960s, and nationally recognised from 1972, training for doctors was slower to develop. Consultants working in intensive care were anaesthetists, physicians or surgeons by training. They had completed their postgraduate specialty examinations (Fellowship of the Faculty of Anaesthetists, Royal College of Surgeons (FFARCS), Membership of the Royal College of Physicians (MRCP), or Fellowship of the Royal College of Surgeons (FRCS) – General or Basic Professional Training), worked for a period in that specialty as a senior registrar (Higher Professional Training), before being eligible for appointment as a consultant. Those with an interest in intensive care sought rotations in general and specialist units (during both training periods), and it was a mandatory component of anaesthetic training. In the absence of formal intensive care training, these primary examinations tended to be used as a measure of competency for work in units – with anaesthetists asserting the FFARCS had the most content

94 Oral history interview, C Franklin, p. 22.
95 Worboys and Homei, 2011.
96 Phillips and Trubuhovich, 2001, p. 16.
on intensive care compared to other postgraduate examinations. Some anaesthetists took the MRCP as a further award, to gain more experience in internal medicine. But one of the first British textbooks, Iain Ledingham’s *Recent advances in intensive therapy* (1977), stated that none of the training programmes ‘wholly meets the requirements for intensive therapy’. And it was from around this time that issue began to be seriously considered.

**An outline syllabus**

A key paper with ‘suggested training schemes for a clinician wishing to take up responsibilities on an intensive therapy unit in a District General Hospital’ was published in 1976. Bill Chew and Gillian Hanson outlined suggested progression for physicians and anaesthetists, with only a lack of knowledge about surgical training preventing their inclusion (Chew was an anaesthetist, Hanson a physician). Specialist training in intensive therapy would start after passing their primary specialty examinations (MRCP and FFARCS), with rotations at senior registrar level as reproduced in Figure 7.3 below.

<table>
<thead>
<tr>
<th></th>
<th>Physician</th>
<th>Anaesthetist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaesthetic unit</td>
<td>4 months</td>
<td>n/a</td>
</tr>
<tr>
<td>Respiratory unit</td>
<td>1 month</td>
<td>4 months</td>
</tr>
<tr>
<td>Renal unit</td>
<td>1 month</td>
<td>4 months metabolic/renal</td>
</tr>
<tr>
<td>Cardiac unit</td>
<td>n/a</td>
<td>4 months</td>
</tr>
<tr>
<td>General intensive therapy unit</td>
<td>18 months</td>
<td>18 months</td>
</tr>
<tr>
<td>Further specialist training, as requested by clinician</td>
<td>1-2 years</td>
<td>6 months</td>
</tr>
<tr>
<td>Total period of training</td>
<td>3-4 years</td>
<td>3 years</td>
</tr>
</tbody>
</table>

**Figure 7.3**: Rotations for specialist training in intensive therapy, 1976

From Chew and Hanson, 1976.

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97 Gilston, 1981, p. 190. An editorial in *Anaesthesia* stated that it was important for anaesthesia that the FFARCS ‘should be, and be seen to be, a qualification in the practice of intensive care’. T B Boulton, ‘Editorial’, *Anaesthesia*, 1980, 35 (4): 331-2, p. 332.


99 Chew and Hanson, 1976, pp. 108-10.
Indicative content for the rotations – like a syllabus – gives an insight into the perceived strengths and weaknesses of the primary specialty as preparation for intensive therapy. Physicians needed experience in intubation, artificial ventilation, postoperative care, and clinical measurement. They were proficient in respiratory and renal medicine but needed to learn about acute and acute-on-chronic renal failure. Anaesthetists needed experience in respiratory medicine and chest x-ray interpretation, metabolic problems and renal failure, and cardiac pathologies and ECG interpretation. Both needed training in unit administration and management. These core rotations would take longer for anaesthetists, but the overall training period was expected to be longer for physicians if they chose further elective training – which could include care of the unconscious patient and resuscitation for example.

**Gaining stakeholder support**

In May 1980, the editor of the Intensive Care Society newsletter, John Farman, invited comment on the subject of training and certification, and received mixed responses, even from members of the specialist society. While some wholeheartedly supported the idea, others were wary of focusing exclusively on full-time duty (neglecting the many ‘interested in intensive therapy’), of acquiring complete clinical responsibilities, and of the extended training period. A number of other interested parties also had to assent to the idea of specialist training, full-time consultant posts, and recognition of the subject with specialty status, namely the Joint Committees for Higher Training in Anaesthesia, Medicine and Surgery, the Conference of Medical Royal Colleges and their Faculties in the UK, and the Committee of Postgraduate Medical Deans. With such a range of stakeholders, and disputes about the required body of knowledge, it is perhaps not surprising that it took decades to reach agreement. At first pass in 1980, there was significant resistance from the anaesthetists. In March that year, the Intensive Care Society received a letter from the Dean of the Faculty of Anaesthetists, John Nunn, explaining that the Joint Committee for Higher Training in Anaesthesia was ‘opposed to the concept of a separate Specialty of Intensive Therapy’, and that those intending to take a major interest in the subject should follow Higher Professional

100 Doctor Doreen Browne later reasoned this experience was particularly important for anaesthetists working in district general hospitals where they might not have access to experts in renal medicine or cardiology. D R G Browne, ‘A way forward for intensive care’, *Anaesthesia*, 1987, 42 (5): 550-1, p. 550.


Training (HPT) in their parent specialty, ‘but seek special training in Intensive Therapy’. The fellow committees (listed above) endorsed the decision. Two years later, at the request of the Conference of Medical Royal Colleges and their Faculties in the UK, an intercollegiate joint working party was formed to consider the issue again. Explaining the delay, John Nunn said:

‘The fact that this branch of medicine is interdisciplinary contributes to its strength, but it also means that intensive therapy units tend to lie outside the competence of any Faculty or College acting on its own to inspect and recognise units for training or, indeed, to formulate criteria for recognition of training’.

Working Party representatives from the Faculty of Anaesthetists, the Royal Colleges of Physicians and Surgeons, and the Intensive Care Society recommended some form of training programme at HPT level with recognised training posts, but the Conference of Royal Colleges and their Faculties rejected it.

Joint board certification had already failed in the United States and Australia. In 1980, the American Board of Medical Specialties had approved a joint application for ‘certification of special competence in critical care medicine’. Candidates from different primary specialties would sit the same examination, with the same cutting score, before receiving certificates from their parent Board. When appointed to implement the examination however, the joint committee, with representatives from the four primary Boards (Anesthesiology, Internal Medicine, Pediatrics and Surgery) and the Society of Critical Care Medicine, was unable to reach consensus. Each Board (plus the Board of Neurological Surgery) subsequently made separate applications for a ‘certificate of special qualifications’ to be awarded after a period of training in an accredited programme and an examination. The applications were approved in


105 Telfer *et al*, ibid.

March 1985, and came into practice the following year.\footnote{A Grenvik, ‘Subspecialty certification in Critical Care Medicine by American specialty boards’, \textit{Critical Care Medicine}, 1985, 13 (12): 1001-3; C W Hanson, C G Durbin, G A Maccioli, C S Deutschman, R N Sladen, P J Provonost, L Gattinoni, ‘The anesthesiologist in critical care medicine: past, present, and future’, \textit{Anesthesiology}, 2001, 95 (3): 781-8, p. 783. In 1987, internists (predominantly in pulmonary medicine) outnumbered candidates from other primary specialties by 5:1. G M Clarke, G A Harrison, ‘The training/examination programme in intensive care, Australian and New Zealand College of Anaesthetists: 1. Training’, \textit{Anaesthesia and Intensive Care}, 1993, 21 (6): 848-53, p. 850.} A single training programme and diploma for all candidates was considered in Australia in the mid-1970s, but ‘ideological differences’ in training schemes and examinations prevented agreement.\footnote{Clarke and Harrison, ibid. The newly established Australian and New Zealand Intensive Care Society lobbied for a single diploma in 1975, see Phillips and Trubuhovich, 2001, pp. 12-13.} Instead, the Faculty of Anaesthetists (of the Royal Australasian College of Surgeons) and the Royal Australasian College of Physicians each began to formalise postgraduate training in 1976. Both required a period of advanced training (four years for anaesthetists, three for physicians), but the anaesthetists also sat a primary and final examination, with the first final examination in October 1979.\footnote{Judson and Fisher, 2006, pp. 414-5; Clarke and Harrison, ibid; A B Baker, ‘Australasian training and examination in intensive care’, \textit{Intensive Care Medicine}, 1982, 8 (4): 161-2. Unlike programmes in other countries, the diploma of Fellowship of the Faculty of Anaesthetists endorsed in intensive care did not require certification in a primary specialty, although many took dual qualification in anaesthesia – a ‘belt and braces approach’, Harrison and Byth, 1992, p. 209; ‘This custom of completing Diplomas endorsed in both Anaesthesia and Intensive Care will probably change as intensivists in Australasia become increasingly confident of their ability to derive adequate income longterm in comfortable working environments’, Clarke and Harrison, ibid.} As Phil Byth observed in 1993, graduates of the two programmes had often trained and then worked side-by-side in the same units.\footnote{P L Byth, ‘From the President, Australian and New Zealand Intensive Care Society’, \textit{Anaesthesia and Intensive Care}, 1993, 21 (1): 11-12, p. 12. A joint diploma with a single five-year training programme (including primary examinations of one of the Royal Colleges) was realised in 2001 through the Joint Faculty of Intensive Care Medicine.} As Phil Byth observed in 1993, graduates of the two programmes had often trained and then worked side-by-side in the same units.\footnote{Gilston, 1981, p. 188. The 101 replies represented consultants from 74 hospitals including 16 teaching hospitals, and 88% were from general units. Gilston wrote that the study was prompted during a meeting, and while it surveyed ICS members, the questionnaire was not issued by the society, pp. 189, 193.}

**Need for longer training posts**

In the UK, it was very difficult to ‘seek special training in Intensive Therapy’ without full-time, recognised training posts. In 1981, results from a questionnaire circulated to all members of the Intensive Care Society in England and Wales showed there was considerable support for the idea of specialist training, but the ‘dearth of full-time training posts, their brevity and their domination by the teaching hospitals’ was reported to be a major problem.\footnote{Gilston, 1981, p. 188. The 101 replies represented consultants from 74 hospitals including 16 teaching hospitals, and 88% were from general units. Gilston wrote that the study was prompted during a meeting, and while it surveyed ICS members, the questionnaire was not issued by the society, pp. 189, 193.} For the purposes of the survey, a full-time training post was defined as one in which the trainee had...
no other duties for at least one month – and there were only 34 such posts, 60% of which were in teaching hospitals. Respondents did not consider these posts satisfactory for expert status, and the majority suggested a minimum of two years full-time training.\textsuperscript{112} Opinions on assessment were also surveyed. Despite approval for a lengthy training period, only a third of respondents supported the idea of a diploma.\textsuperscript{113} The survey had sampled the opinions of consultants, so in 1983 another study targeted the trainees themselves. The questionnaire was sent to senior registrars in general medicine and anaesthesia in the UK, and despite an acknowledged low response rate, results suggested that there was demand for longer duration specialist training posts. The survey made a distinction between consultants ‘with an interest in intensive therapy’ and full-time intensive care consultants. Whilst both were seen to benefit from training in intensive therapy, the suggested duration differed – for the former: one or more years, for the latter: two or more years.\textsuperscript{114} The number favouring a diploma for full-time specialists was broadly similar to the 1981 survey (32% of anaesthetists, 25% physicians), and opinion was evenly divided on whether it should be awarded by examination or training period alone.\textsuperscript{115} But the most interesting finding was that the number of those who hoped to be full-time specialists in intensive therapy was very small – 5% of 113 anaesthetists and 4% of 55 physicians.\textsuperscript{116} Had the perceived trouble of creating intensive care consultant posts been unduly magnified?

\textbf{Inter-specialty tensions}

Tensions between primary specialties were also slowing the establishment of specialty status. While America and Australia had found solutions in single Board certification, Britain lagged behind.\textsuperscript{117} Physicians, and those who favoured the ‘open unit’/multidisciplinary team approach

\textsuperscript{112} Ibid, p. 192.
\textsuperscript{113} Ibid, p. 190.
\textsuperscript{115} Hillman \textit{et al}, ibid, p. 544. The diploma was not considered necessary for consultants with an interest in intensive therapy, and journal correspondence noted that as an added examination it imposed ‘a burden greatly in excess of any other specialty’. R E Bullock, ‘Training in intensive care’, \textit{Anaesthesia}, 1983, \textbf{38} (12): 1222.
\textsuperscript{116} Hillman \textit{et al}, ibid, p. 541.
\textsuperscript{117} As expressed by Willatts, 1990, p. 475. As UK representative to the Council of the European Society of Intensive Care Medicine, she also described the UK as ‘way behind other European countries...in its attitude to intensive therapy’, ibid. Not everyone considered certification by individual Boards to be ideal, arguing it served only to reinforce specialty boundaries, see G M Clarke, ‘Training in critical care’, \textit{Current Anaesthesia and Critical Care}, 1997, \textbf{8} (4): 167-73.
had critiqued their anaesthetic colleagues from the beginning of intensive therapy in the late 1960s. Opening a Royal Society of Medicine Section of Anaesthetics meeting on 1 April 1966, Professor Tony Dornhorst, chair of medicine at St George’s Hospital Medical School, had stirred debate with a loosely veiled criticism of anaesthetists:

‘Physicians tend to be unimpressed with the published descriptions of units and their working. It often seems to them that the assessment of the results is naïve, survival being taken as equivalent of a life saved. They suspect that, however expert the handling of the apparatus, there is often a shallow understanding of the disease and an over-readiness to employ the most dramatic treatment; it is difficult, for example, to believe that all the tracheostomies performed are essential. One is tempted to say that treatment is often more intense than careful’.118

Dornhorst, like others, drew on generalisations about the personal and professional qualities of the different specialties – physicians had a deeper understanding of the pathophysiology of disease than the technophile anaesthetists. ‘It is, in fact, easier and quicker to master apparatus than to master disease’, Dornhorst continued. ‘Thus the right person to treat respiratory failure complicating lung disease is a chest physician and not a respirator expert’.119 Such views about the skills, qualities and preferences of anaesthetists and physicians were deeply entrenched, and the intensive care unit just one location in which they were played out. Similar opinions were expressed in Australia, such as this from Lindsay Worthley in 1981:

‘One of my anaesthetic colleagues when introducing me to intensive care for my first time stated that “our job is to make sure that if the patient dies he should do so with normal biochemistry”…This illustrated to me a conceptual problem when one approaches the patient simply as a physiological being’.120

Understanding of physiological principles was a necessary foundation, he continued, but manipulation and correction of abnormal values ‘only the first phase of therapy for acute illness’. Specialists should also be ‘skilled in the clinical diagnostic method, have an appreciation of the natural history of disease, and be able to formulate a long-term plan of

119 Ibid.
management for the patient’, expertise more often associated with physicians. From within anaesthesia, patrons of the multidisciplinary team approach played down their colleagues’ role. For example, in 1978 Alan Gilston argued, ‘despite the very significant, even dominant, role anaesthetists have played in the development of intensive care, its “capture” by this specialty will hinder its future advance’. His censure was evenhanded, as he later warned of a similar take over by physicians, describing ‘the increasing fragmentation of intensive care into highly specialised subdivisions, each jealously guarded by physicians of the relevant specialty’. Anaesthetists’ self-conscious assessment of their capabilities was perhaps best summed up by a Section of Anaesthetics debate held on 2 February 1979 at the Royal Society of Medicine. Seventy-two participants deliberated on the motion, ‘That this House believes that the highest standards of intensive care can be achieved by well trained anaesthetists’. After clarifying that the motion was to assert that anaesthetists were ‘as capable as anybody of providing the highest standards of intensive care’, the motion was carried by 69 votes to 3.

Intra-specialty tensions

There was also tension between two generations of anaesthetists. The older, more conservative generation had participated in the development of anaesthesia as a specialty. The one-part Diploma in Anaesthetics (DA) had been introduced in 1935, and had changed to a two-part examination (equivalent to, and modelled on the Fellowship of the Royal College of Surgeons) when the Faculty of Anaesthetists was founded in March 1948. This was important for establishing the right to full consultant status in the new National Health Service, and Fellowship examinations had followed in 1953. So despite their support for

121 Ibid.
123 Gilston, 1983, p. 211. Intensive care in specialised subdivisions had arguably been in place before intensive care units.
124 A Padfield, ‘Debate on intensive care’, Journal of the Royal Society of Medicine, 1979, 72 (10): 784-5. Those most likely to have opposed the motion were anaesthetists Dr Geoffrey Spencer, who felt that several years’ training and at least seven or eight sessions per week were necessary, and that this was ‘most unusual in Britain’, and Dr R S Atkinson, who agreed that one should give up administering anaesthetics to run a unit, which most consultant anaesthetists were unwilling to do. Physician, Jack Tinker, was probably the other to have voted against the motion, who during the debate had put emphasis on intensive care medicine, citing the dictionary definition of anaesthetist to argue against them taking charge of units. See also Tinker, 1976, p. 403, that intensive therapy required training in general medicine.
125 S J Snow, Blessed days of anaesthesia: how anaesthetics changed the world, Oxford, Oxford University Press, 2008, pp. 172, 183; Boulton, 1980, p. 331. It became an independent College of Anaesthesia in 1988, and gained the royal charter four years later.
closed units in principle (as mentioned in 7.3), anaesthetists Mushin and Lunn were concerned about the threat to the profession:

‘A retreat from the field of anaesthesia by those trained as anaesthetists will be a serious loss to the community, because the development of the specialty will inevitably be slowed down. The anaesthetist himself will also lose heavily, since he will very quickly no longer be able to claim a range of knowledge and skill which is unique to him’.126

It was after all this expertise that made them invaluable, and in demand, in the intensive care unit.127 A loss of practitioners and a loss of identity were threats to status, which for anaesthesia was only recently won. In 1979, when anaesthetists failed to support a separate specialty of intensive therapy, the Faculty of Anaesthetists was at the same time in talks with the Royal College of Surgeons about gaining administrative and financial equality within the College, or the founding of an independent College of Anaesthetists.128 It was not the time to ‘lose’ intensive therapy.

**Lack of consultant posts**

A further concern for those promoting Higher Professional Training in intensive therapy was that trainees would not gain sufficient experience in their primary specialty. This might prove to be a problem at either ends of their career. What would happen if after two to three years of training in intensive therapy there was no consultant post to progress to? Dual qualified anaesthetists (FFC RCS and MRCP) could practise in anaesthesia and wait for a post. But proposed training schemes, according to Joe Stoddart, would not allow time for candidates to establish themselves in their primary specialty, so ‘he may well join the ranks of the time-expired senior registrars’.129 There was also uncertainty about intensive care as a career – just as there had been with nurses. In 1969, Mushin and Lunn had written:

‘Though the element of drama, throughout the day and night, inherent in intensive care may be attractive to younger specialists, it is unlikely that this will still be so in

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127 See for example Holmdahl in Poulsen, 1970, that ‘an anaesthetist who does not have close contact with work in the operating theatre can no longer have the same skill to support vital functions in the critically ill patient’, p. 489.


later life. We are apprehensive whether intensivism can maintain a lifelong interest. It is therefore difficult to see a career based on this work alone'.

Reservations were also expressed in the 1980s as specialist training and certification drew debate and comment. 'The work is so exacting that they might well have to retire from it in their fifties – and what would they do for the rest of their clinical careers?', asked R Loder in 1982.

Compromises for full-time training posts

In a climate of significant resistance to intensive care as a specialty, the Intensive Care Society continued to lobby for training. In 1984, its Education and Training sub-committee recommended at least 24 months exclusively dedicated to intensive care medicine, a period in the complementary specialty (internal medicine/anaesthesia), and a commitment to research, irrespective of whether trainees aspired to full or part time work in intensive therapy. As a compromise with gaining experience in their primary specialty, training would be taken in conjunction with higher professional training in this parent specialty, with no additional examination. It was considered unlikely that a single institution could provide all aspects of training, so regional packages were expected. Units would be assessed (as for specialist nursing courses) for patient numbers and case-mix, consultant supervision and teaching, and facilities (clinical and academic). The Inter-Faculty/Collegiate Liaison Group on Intensive Therapy reached similar conclusions, sending a circular to Postgraduate Deans. Five posts were created in 1986, under the auspices of the Joint Advisory Committee for Intensive Therapy (JACIT). Pilot schemes began in the Northern and South Western regions of the NHS, expanding to ten full-time posts after 1990.

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132 Willatts, 1984, p. 74. The sub-committee comprised Council plus three co-opted members. For a list see Telfer et al, 1984, p. 119.
133 Telfer et al, ibid, p. 120.
1986-1999

Even with full-time, recognised training posts, there was still a gap between recognition of a field of specialist practice and acknowledgment as a new specialty. In 1990, Sheila Willatts’s outlook was pessimistic. ‘At present there is no intention to develop a new specialty nor even a multidisciplinary subspecialty and the concept of an ‘intensivist’ is anathema to most anaesthetists and physicians in this country’, she wrote.\(^ {136}\) What campaigners wanted was parity. In 1983, the survey of senior registrars had concluded, ‘It is at present largely undertaken by doctors with\(^ {137}\) no formal training. In other branches of medicine, this would be totally unacceptable’. Patient care was evoked – that for their sake, intensive care consultants should be trained to same level of expertise in their specialty as in any other.\(^ {138}\) A review of training at all levels (beginning with undergraduates), by the Intercollegiate Committee for Intensive Therapy in 1993, came at a time when the whole of postgraduate specialist training was under review. One of the Committee’s outcomes was to propose a mechanism for certification – by submission of a dissertation, trainee log book, and oral examinations.\(^ {139}\) The first candidates for the UK Diploma in Intensive Care Medicine sat examinations in July 1998.\(^ {140}\) A year later, intensive care medicine was granted specialty status by the Specialist Training Authority.\(^ {141}\)

Whether the ‘days of the dabbler in the field’ were past or not remained contentious.\(^ {142}\) Aspiring intensivists could be trained and accredited, recognised as specialists, but still only practise intensive therapy part-time. The number of whole time consultant posts was small – more often they were advertised as posts with a ‘special interest in intensive therapy’, with sessions in the parent specialty. Very few were advertised outside anaesthesia departments, a poor incentive for physicians or surgeons to take up specialist training.\(^ {143}\) Trainees also had to consider whether a part-time responsibility was worth the additional two years of training.

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141 As training is conducted during and/or after training in a primary specialty, with a common programme, intensive care medicine in Britain is now labelled a ‘supra-specialty’. To be regarded as an independent primary specialty, training would need to be accessed directly after graduation from medical school. See H Barrett, J F Bion, ‘An international survey of training in adult intensive care medicine’, Intensive Care Medicine, 2005, 31 (4): 553-61, pp. 554-5.
142 Sheila Willatts had argued against this position in 1990, p. 475.
143 Stoddart, 1994, p. 117.
For many UK hospitals, combined posts were the only way they could afford intensivists, particularly in the economic climate of the late 1990s. 'A substantial proportion of intensive care services are delivered by practitioners working in this way [part time in conjunction with their base specialty], which offers a cost-effective solution to service provision for many hospitals', concluded Julian Bion and colleagues.\textsuperscript{144} In Britain, the clout of the primary specialty, associated notions of expertise and status, and the preference for flexibility of sessions in research, teaching or private practice, all shaped the development of intensive care medicine as a specialty. Economics further shaped the way it was delivered. But in 1999, British intensivists could say what Max Harry Weil had claimed in 1975: ‘Though it is wise to have second thoughts and test fundamental premises all along the way, we are emerging from our infancy as lustily as we could have hoped. We are, indeed, viable’.\textsuperscript{145}


Chapter 8: Conclusions

8.1 Introduction

I set out two aims at the beginning of this thesis: i) to produce the first study of British intensive care, and ii) to assess critically the position of intensive care as the epitome of modern medicine, since its practice captures many of the most important issues for patients, practitioners, administrators and planners in a modern health care system. In this conclusion, I first present my key findings, with reference to how my research has made an original contribution to the history of modern medicine, before suggesting a few areas for further research. I then review the key themes in my narrative of the development of British intensive care between 1948 and 1986, and assess to what extent intensive care was the epitome of modern medicine in this period.

8.2 Key findings

The development of British intensive care was not a linear progression from recovery rooms or Copenhagen, 1952-3, as portrayed in review articles in medical journals and textbooks. Instead it has had a multiplicity of origins, as I demonstrated in Chapters 2 and 3. In particular, I have shown the pivotal role of 'Progressive Patient Care', which has not been written about in detail until now. My description of events in 1962-1971 also challenges Jennifer Stanton’s account of this period as one of decisive ‘central involvement’.1 To claim that ‘solid central backing’ for the development of intensive care is evident in the 1970 Hospital Building Note belies the complexities in achieving this outcome.2 To a large extent, definitive policy guidance for intensive care was bound up with the wider implementation of PPC, and its successes and failures impacted on the development of units. My research has also revealed that British intensive care developed in a multiplicity of ad hoc forms shaped by local demands – patient case-mix; size, location and type of hospital; and expertise and interests of consultants. My work sets the single case studies produced by Helen Sweet and Jennifer Beinart (Stanton) in their full national framework and, because of the number of units and staff I have considered, tells a truly national story.3

My thesis has shown that practice was shaped by changing notions of critical illness, using the approach to medical categorisation used by Mark Jackson in his work on the feeble-minded. In my case, until c.1966, critical illness was seen as a phase of illness, the highest degree of nursing dependency. From c.1966, critical illness was predominantly seen as a pathophysiological state, the highest degree of medical and technological dependency. As I have shown, these notions of critical illness shaped unit design, staffing structures and admission criteria throughout the period of the thesis.

In Chapter 5, I demonstrated how the notion of ‘salvageability’ shaped decision-making in a resource-intensive field. Virginia Berridge cites Jennifer Stanton’s work on renal dialysis as an example of an expensive technology covertly rationed through the control exercised by doctors. My research has shown that admission to intensive care was both covertly and overtly rationed. From the early 1960s to the early 1980s, patients were admitted to intensive care units because their condition was considered reversible. However, what was considered reversible changed over time, and I have shown how doctors sought objective evaluation to aid and legitimate their decisions. At the same time, the intensive care unit continued to be used as a place of ‘last resort’, with admission criteria that were ‘somewhat capricious’. Or as intensivist Tom Torda confessed, ‘We simply didn’t know, who we could and who we couldn’t offer any hope to’.

As a small group of specialist practitioners from multidisciplinary backgrounds, I have demonstrated how intensive care doctors and nurses utilised national and international networks of exchange to develop expertise, status and critical mass. This corroborates other transnational histories of medicine, but I have uniquely shown that networks were used to share craft knowledge as much as academic research. I have also revealed the benefits and tensions evident in attempts to form an intensive care community, at a hospital, national and international scale.

For nurses and doctors, intensive care practice has been both generalist and specialist. My research has shown that British intensive care nurses, like their counterparts in America and

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7 Oral history interview, T Torda, p. 11.
Australia, performed both basic and technical nursing care, for medical and surgical patients, but specifically those who were critically ill. In new ground, I have explored the debate around the need for doctors to have a broad understanding of the complex but distinct interactions of critical illness, and shown that the question of whether this care was best delivered by intensivists or a multidisciplinary team was, in 1986, still unresolved.

8.3 Further work
In the period I have studied (1948-1986), two areas of further research would be productive. One is an examination of the role of industry in the development of intensive care. The Intensive Care Society ran an Industrial Liaison Group between 1978 and 1985, with a ‘Host-a-Rep’ scheme for units to host training visits for representatives of member companies. Records are held in the Intensive Care Society Archives at the Association of Anaesthetists of Great Britain and Ireland, but I did not have time to examine them in detail. The second is a comparison with accident and emergency medicine, as this is an area of clinical care with similar issues in play. As described in the Introduction, accident and emergency medicine overlapped with a late 1960s/early 1970s definition of critical care medicine. I chose to exclude this from my thesis, but a study of ‘intensive care’ outside ‘intensive care units’ would be a valuable comparison.

Going forward from 1986, the investigation of intensivists, specialist training and full-time duty in the intensive care unit should be undertaken, to include formal studies of ‘open’ and ‘closed’ units, UK and European diplomas, international competency-based training, and support and resistance towards the creation of the Faculty of Intensive Care Medicine (within the Royal College of Anaesthetists) in 2010. It could also take account of audits, the Intensive Care National Audit and Research Centre (ICNARC), evidence-based medicine, multi-centre trials, and other aspects of cost/benefit analysis. The value of this work would be to demonstrate the continuing complexity of the place of intensive care in modern medicine, and ways in which specialist practice and identities continued to change – challenging perceptions of a static endpoint in specialty recognition in 1999. Further study of lay accounts, including patient narratives, would give an essential insight into their role in shaping practice, not least changing expectations related to cost/benefit analyses.

8.4 Themes
A variety of actors have been present in this thesis. Nurses have been as important as doctors. Planners and administrators have had a role in the establishment of units and issuing of specifications. Intensivists and intensive care unit directors have positioned themselves as specialists in the care of the critically ill, while other consultants have refused to refer their patients, appraising their own skills and experience as superior. Patients and their families
have at times been active participants, voicing their needs and shaping practice – not the passive recipients portrayed in some of the existing literature. Actors’ categories have also been identified. ‘Pioneers’ worked long hours developing novel tools and methods in a problem-solving approach to life-threatening illness. Transplant surgeon ‘vultures’ represented colleagues who misunderstood the aims of intensive care, and its primary role as care for patients with potentially reversible conditions.

My thesis has been set within the British healthcare system, with recognition of the roles of the Ministry/Department of Health, regional hospital authorities, and the Royal Colleges and Faculties. My narrative has followed England and Wales most closely, but has not excluded Scotland or Northern Ireland. Examples of clinical practice have been drawn from these areas – for example the Progressive Patient Care trial at the Mid-Ulster Hospital in 1961, the multidisciplinary-led intensive therapy unit established at the Western Infirmary, Glasgow, in 1968, and the papers on the treatment of bomb blast injuries in Belfast presented at the RCN Symposium on Intensive Care in 1974. Policy innovations and practice have also been considered – notably the Scottish Home and Health Department’s decision to favour an intensive care area for each 60-bed ward (the ‘Falkirk ward unit’ model) during the 1960s, rather than a single intensive care unit, and the influence of the definitions of intensive nursing care and intensive therapy developed in a meeting at the Scottish Hospital Centre.

A transnational approach has enabled me to take into account the adoption of, and resistance to, ways of organising intensive care in America and Australia. At times, and in certain aspects, British intensive care was an international player, so this is not just a national story, and it will be of interest to historians of American and Australian medicine. As I have shown, British doctors and nurses made study visits to American units throughout the period, but also hosted visits from American and Australian clinicians. The Intensive Therapy Nursing Group and Intensive Care Society were established a year before their American counterparts, and their inauguration of World Congress and the World Federation of Societies was an accolade. British intensive care lost its lead in 1979, when the Faculty of Anaesthetists of the Royal Australasian College of Surgeons awarded its first intensive care diploma, nineteen years before the British diploma.

To study the development of a new medical specialty, I have used Rosemary Stevens’s approach to specialisation (with attention to societies, training and certification, full-time staff, bed allocation for a specific section of the patient population). There has been much further work on specialisation since Stevens’s book in 1966, notably George Weisz’s *Divide*.
and conquer: a comparative history of medical specialization, in 2006. But I have taken this historiography further by drawing attention to the development of specialist practice, an examination of what Patricia D’Antonio calls the ‘processes of doctoring and nursing’. This is necessary in order to go beyond the organisational features of a developing specialty – to show more continuity and change over the period, and the individual and team work in creating ‘intensive care medicine’. It is also an approach advocated by Michael Worboys and Aya Homei, for its recognition of practitioners’ multiple roles, identities and types of work.

The material culture of intensive care has been central to my study, as signalled in every chapter by starting with an object or collection of objects. This is novel in histories of medicine. I have presented them as a further insight into practice, through examinations of use and users. I selected a range of objects: ones that practitioners identified as definitive to their practice (mechanical ventilators and the Swan–Ganz pulmonary artery catheter), and those that might be considered ephemeral (a Congress souvenir); large-scale engineering solutions (piped oxygen) as well as low-tech tools (large format charts); and technologies that were considered contentious at the time (patient monitors and The London Hospital Survival Predictor). Above all, I have challenged technologically determinist accounts of the development of intensive care by showing the contingencies of use. Finally, my inclusion of material culture drawn from museum collections also testifies to the use of objects as a source in historical research, an approach seriously underplayed in histories of medicine.

8.5 Epitome of modern medicine

I want to end my thesis with an assessment of the claim I made in the Introduction about intensive care being the epitome of modern medicine in the period 1948-1986.

Firstly, my thesis has confirmed the view that intensive care was high tech and high cost – see for example the escalating costs of installing technology in units such as the Royal Albert Edward Infirmary, Wigan, in the mid-1960s. But I have challenged any simple equation between technology and cost by showing that most of the expense was one-to-one nursing staff, and that nursing craft and low tech instruments were just as important to practice. In my narrative through the decades, I have shown that specialist care of the critically ill

became central to the practice of modern medicine. Yet, many units were small – from four to six beds, accommodating only 1-2% of the hospital’s inpatients. It was a highly visible field of clinical care for so few patients.

The accomplishments of intensive care in terms of lives saved were often remarkable. Referring doctors witnessed the recovery of patients who would previously have died. Beyond anecdote, medical staff presented their results in departmental mortality and morbidity meetings and hospital Grand Rounds, and published research with data on outcomes, although results were equivocal. Randomised controlled trials were exceptionally difficult (practically and ethically) because of the need for a control group. By the end of my period, research on outcomes was heading towards measure by units or institutions rather than patients. Rather than a systematic approach, the development of these life-saving techniques and procedures was frequently made by trial-and-error, in on-the-spot problem solving and decision-making. The relative isolation of intensive care units meant that ‘best practice’ was not always easy to share on a broad scale, even with the launch of journals, societies and meetings in the late 1960s-early 1970s (and good personal connections). Thus, I have shown that intensive care was not simply a new site in which existing technologies and practices were used, rather that the changing demands of managing critical illness led to the development of new specialist practice.

Intensive care had multiple meanings. In the Introduction, I argued that its technology was at once awesome and terrifying, life-saving and dehumanising – and my research has shown how this was experienced by patients, nurses and medical staff. It was encountered in relation to single technologies such as the mechanical ventilator, as well as the aggregate of technologies in the unit. I have illustrated that interventions could rescue a patient from the brink of death, but often at the expense of their autonomy – and provocatively suggested, like David Rier, that this was perhaps one modern medical environment where patients and their families willingly surrendered their autonomy?

As in other histories of modern medicine, I have demonstrated that intensive care in Britain developed through collaboration and conflict. As portrayed in histories of critical care nursing in America and Australia, I have shown that doctors and nurses in Britain worked closely

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11 Oral history interview, S Willatts, pp. 8-9; for an example of efforts to demonstrate that intensive care led to improved outcomes see P Safar, A Grenvik, ‘Organization and physician education in critical care medicine’, Anesthesiology, 1977, 47 (2): 82-95.


together, with a blurring of roles, yet there were also stresses and strains when those roles were ill-defined or challenged. But I have also demonstrated tensions within professions – the isolation of the 'elite' intensive care nurse, and the debates between anaesthetists, physicians and surgeons on how best to manage the unit and its patients. I have shown both the explicit and underlying power politics in the processes of becoming identified as specialists in intensive care medicine.

The expectation to find life in the balance with death, in a high-pressure environment where decisions had to be made rapidly, has been substantiated by my research. But as manifest throughout my thesis, basic nursing care and attention to patients' welfare were by no means neglected. Lives saved were not the only measure of success, as this quote from moral theologian Gordon Dunstan, answering questions put to him at a meeting of the Intensive Care Society in 1984, demonstrates:

"The success of intensive care is not, therefore, to be measured only by the statistics of survival, as though each death were a medical failure. It is to be measured by the quality of lives preserved or restored; and by the quality of the dying of those in whose interest it is to die; and by the quality of human relationships involved in each death".

In conclusion, my thesis has shown that the history of intensive care is a history of changing specialist practices, both nursing and medical. It has been shaped by these practitioners, but also by patients and their families, and all those who might potentially become patients or carers. Practice developed within intensive care units, both general and specialist, as well as in special care areas that preceded and ran alongside them. At times it grew from immediate, problem-solving responses to life-threatening illnesses, and at other times it grew in tandem with changing notions of critical illness as a nursing, medical or technological dependency. It also developed as an accretion of craft knowledge gained through exchanges with colleagues nationally and internationally. There was no standard pattern of practice, so its forms were as

manifold as its practitioners, although successes and failures were shared with others for the benefit of patient care. The responsibility was grave – they held life in the balance.
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Box 29 [DR/ICS Correspondence Box 3]

Box 36 [DR/ICS Box 4]

Box 37 [DR/ICS Box 5]

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Appendices

Appendix A: Oral history interviews – frequently asked questions

Biographical
How did you become interested in intensive care?

Intensive care units and practice
When did you begin to work full time in intensive care?
How did you communicate the work of intensive care to hospital colleagues?
Did you have a unit handbook? [Or, did you have any means of standardising practice?]

Intensive care as a specialty
How would you define an intensivist?
How did your training prepare you for work in intensive care?
When did you join the Intensive Care Society? What were your reasons for joining?
How were decisions made? What were the most difficult decisions?
Did you have regular contact with any intensive care doctors or nurses overseas? What did you discuss?

Closing questions
What were the successes of intensive care? What were your measures of success?
What were the failures of intensive care?
If you had to choose one object to represent your work in intensive care, what would it be?
Appendix B: Departmental working group on Progressive Patient Care

<table>
<thead>
<tr>
<th>Ministry of Health officers, as at meeting on 26 March 1963¹</th>
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<tbody>
<tr>
<td>Dr W Lees</td>
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<tr>
<td>Dr M A Heasman</td>
</tr>
<tr>
<td>Miss Kathleen A Raven</td>
</tr>
<tr>
<td>Miss Constance Biddulph</td>
</tr>
<tr>
<td>Miss Mary Le Q Mitchell</td>
</tr>
<tr>
<td>Miss H M Simpson</td>
</tr>
<tr>
<td>Mr R T P Pronger</td>
</tr>
<tr>
<td>Mr Walker</td>
</tr>
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<td>Mr Downer (Secretary)</td>
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<tr>
<th>Hospital service representatives²</th>
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<tbody>
<tr>
<td>Dr J O F Davies (Chair)</td>
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<tr>
<td>Miss Irene M James</td>
</tr>
<tr>
<td>Dr K R D Porter</td>
</tr>
<tr>
<td>Miss M M Puddicombe</td>
</tr>
<tr>
<td>Miss L Pugh Jones</td>
</tr>
<tr>
<td>Dr John Revans</td>
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¹ This was the first meeting after publication of the interim report, and the last time the group met as a whole. MH 159/45: Working Party on Progressive Patient Care: minutes, papers and draft report, 1963-1967, National Archives, Kew.

² All representatives except Davies were listed in the interim report (so it is possible that Davies was the author). Ministry of Health, ‘Progressive patient care: interim report of a departmental working group’, Monthly Bulletin of the Ministry of Health and the Public Health Laboratory Service, 1962, 21: 218-26, p. 218.
Appendix C: Extract from 'Mead Ward, Nurses Manual', September 1968

<table>
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<td>2. Preparation of Bed Area</td>
</tr>
<tr>
<td>Pressure Areas</td>
<td>3. Receiving patient from Theatre</td>
</tr>
<tr>
<td>Dental Care</td>
<td>4. Cardiac Unit Blood &amp; Fluid Balance</td>
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<tr>
<td>Urinary Catheters</td>
<td>4. General Information - Routine Investigations</td>
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<td>Bowels</td>
<td>4. Physiotherapy</td>
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<tr>
<td>Standard Bed Area</td>
<td>5-6. Apex-Radial Pulse</td>
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<td>T.P.R. Charts</td>
<td>7. Under Water Seal Drain</td>
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<tr>
<td>Fluid Balance Charts</td>
<td>8. Care &amp; Removal of Chest Drains</td>
</tr>
<tr>
<td>Serotonin, Trophymen &amp; Lipophyllan</td>
<td>9. Monitoring of Arterial, Left &amp; Right</td>
</tr>
<tr>
<td>Cerebrospinal Fluid</td>
<td>10. Atrial Pressures</td>
</tr>
<tr>
<td>Reanimation after Cardiac Arrest</td>
<td>12. Epinephrine Drip</td>
</tr>
<tr>
<td>Diagnosis &amp; Initiation of a Cardiac Arrest</td>
<td>13. Lignocaine Drip</td>
</tr>
<tr>
<td>Cardiac Massage</td>
<td>14. Drugs, Defibrillation and After-Care</td>
</tr>
<tr>
<td>Artificial Ventilation during Reanimation</td>
<td>15. Physiological Normals</td>
</tr>
<tr>
<td>Drugs, Defibrillation and After-Care</td>
<td>16. Diagnosis of E.C.G. Tracings</td>
</tr>
<tr>
<td>Tracheostomy</td>
<td>17. Tracheostomy Preparation of Bed Area</td>
</tr>
<tr>
<td>Tracheostomy Preparation of Bed Area</td>
<td>18-19. Recovery Care following Oesophagectomy of Jaw</td>
</tr>
<tr>
<td>Closure of Tracheostomy</td>
<td>22. Diagrams, Photographs &amp; Specimen Charts</td>
</tr>
</tbody>
</table>


Courtesy private collection of Sheena Ross
**Appendix D: General Intensive Care Panel, Joint Board of Clinical Nursing Studies, c.1972**

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
</tr>
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<tbody>
<tr>
<td>Miss P Ashworth</td>
<td>Broadgreen Hospital, Liverpool</td>
</tr>
<tr>
<td>Miss B Davis</td>
<td>Royal Free Hospital, Hampstead, London</td>
</tr>
<tr>
<td>Dr E K Gardner</td>
<td>Barnet General Hospital, Finchley, London</td>
</tr>
<tr>
<td>Miss J Haynes</td>
<td>Brompton Hospital, London</td>
</tr>
<tr>
<td>Dr W Lees</td>
<td>Department of Health and Social Security</td>
</tr>
<tr>
<td>Miss E A Loach</td>
<td>The General Infirmary, Leeds</td>
</tr>
<tr>
<td>J B Pennybacker (now resigned)</td>
<td>The Radcliffe Infirmary, Oxford</td>
</tr>
<tr>
<td>Miss M Salter</td>
<td>The London Hospital, London</td>
</tr>
<tr>
<td>Dr E Sherwood Jones</td>
<td>Whiston Hospital, Prescot, Lancashire</td>
</tr>
<tr>
<td>Professor JP Shillingford</td>
<td>Hammersmith Hospital, London</td>
</tr>
<tr>
<td>Dr G Spencer</td>
<td>St Thomas’ Hospital, London</td>
</tr>
<tr>
<td>Miss M Stewart</td>
<td>University Hospital of Wales, Heath Park, Cardiff</td>
</tr>
<tr>
<td>Dr M K Towers</td>
<td>Harefield Hospital, Northwood, Middlesex</td>
</tr>
<tr>
<td>Miss M Webster</td>
<td>Queen Elizabeth Medical Centre, Edgbaston, Birmingham</td>
</tr>
<tr>
<td>Miss G C Willman</td>
<td>Manchester Royal Infirmary, Manchester</td>
</tr>
</tbody>
</table>

Appendix E: Syllabus for intensive therapy nursing course, St Thomas’ Hospital, c.1966

Syllabus for Intensive Therapy Course 26 weeks

1. Planning and Administration of Intensive Therapy Units.
2. Basic Nursing Care of critically ill patients.
3. Physiotherapy - Chest - Passive Movements
4. Bacteriological aspects of I.T.U.
5. Resuscitation following cardiac/respiratory arrest.
8. Anatomy and Physiology of Respiratory System.
   Oxygen Therapy
   Necessity for and management of patients on artificial ventilation
   (Cape, Engstrom, Trigemina, Bird).
   Management of chronic respiratory deficiency (iron lung, Cuirass,
   Nockling Bed, etc.).
   Management of patients with endotracheal tube.
   Tracheostomy,
   Blood Gas Tensions and Acid Base Balance.
   Radiology of the Chest.
   Monitoring E.C.G.
   Monitoring of cardio-vascular pressures.
   Management of patients following Myocardial Infarction.
   Artificial Pacemakers.
   Cardiac Catheterisation.
   Cardio-Pulmonary Bypass.
   Cardiac Surgical Conditions and Procedures and Post-operative
   Management.
    Paediatric requirements.
13. Anatomy and Physiology of the Kidneys.
    Renal Failure.
    Reasons for Peritoneal Dialysis and Haemodialysis.
    Management of Peritoneal Dialysis.
    Care of Patients Following Renal Transplant.
    Visit to Chronic Haemodialysis Unit.

...continued overleaf
    Neurological Aspects of I.T.U.
    Head Injury.
    Care of the Unconscious Patient.
    Care of Paralysed Patients.

15. Management of shock following severe trauma.

16. The work of the Medical Social Worker.

_ Organisation of Lectures, etc._

1st Day: Orientation to hospital.
1st Week: Work in I.T.U.
2nd Week: 5 full study days.

Thereafter study days are held weekly except when nurses are involved with night duty. Nurses on day duty will be given a tutorial on an appropriate topic.

Set written work will be done each week for the first half of the course.
Two nursing case studies will be expected.
Practical instruction will be given as necessary.

4 days are spent at the Chronic Respiratory Unit.
1 afternoon will be spent observing cardiac catheterisation.
1 afternoon will be spent visiting the Renal Unit.

Nurses participating in the I.T.U. Course will not be supernumerary to the establishment of the I.T.U. staff. We guarantee that the nurses will always be released for their arranged lectures. In theory, nurses will have 5 hours per week for lectures and private study. In practice, there will be weeks when nurses are on night duty and therefore have no lectures, but this is compensated for by longer periods when on day duty.

A hospital examination is held in the 25th week of the course. Successful candidates will be awarded a certificate.
Appendix F: Intensive care sisters’ meetings at The Hospital Centre, London

Bibliography (in chronological order)


Hospitals represented at final meeting on 9 March 1967

Barnet General Hospital
Bristol Royal Hospital
Broadgreen Hospital, Liverpool
Brompton Hospital, London
Central Middlesex Hospital, London
Edinburgh Royal Infirmary
Glasgow Royal Infirmary
Kettering General Hospital
The London Hospital
Royal Berkshire Hospital, Reading
Royal East Sussex Hospital, Hastings
St Andrew’s Hospital, London
St Thomas’ Hospital, London
Salisbury General Infirmary
Sefton General Hospital, Liverpool
University College Hospital, London
Whiston Hospital, Prescot