Scope and delivery of evidence-based care

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Importance of critical care

Healthcare around the world, to a greater or lesser degree, encompasses the treatment and care of people with a wide range of conditions. Some will be critically ill and clinical decisions and interventions will have immediate and fundamental impact on whether they live and/or their degree of recovery. It is, therefore, imperative that treatment and care of critically ill patients is the best that can be provided. Excellence, however, requires appropriate interventions with a strong evidence base and practitioners[1] who are competent to deliver treatment and care. The aim of *Critical Care Manual of Clinical Procedures and Competencies* is to support optimum treatment and care for patients who are critically ill by detailing the latest research and rationales for evidence-based procedures and competencies in each specific area. As such, the manual is ideally placed to be used as a reference and resource for advancing critical care practice and education.

Background and classification of critically ill patients

Critical care[2] has developed considerably over many years, with a number a key policies and initiatives emphasizing and escalating the pace of change. A significant transformation took place following the publication of the critical care modernisation policy document entitled 'Comprehensive Critical Care' (DH 2000a). This strategy document led to a restructure of the organization of critical care services by advocating that provision of care should extend beyond the walls of intensive care units and be comprehensive in meeting patients' needs. It highlighted the provision of care within a continuum of primary, secondary and tertiary care, with the greater part of services in the secondary care setting. It set out the vision for how critical care should be delivered, replacing the division of intensive care beds and high dependency beds with a classification system focused on levels of care (Table 1.1). 'Critical care' is a global definition, and is used as an umbrella term for intensive and high dependency care and includes the care of critically ill patients on the ward (DH 2000a: 7).

The classification system provides a blueprint for delivering critical care services along a continuum which spans from managing the healthcare needs of patients with multi-organ failure patient (level 3) to those at risk of their condition deteriorating (level 1). Individuals whose needs can be met on general hospital wards without support from the critical care outreach teams are not considered critically ill (level 0).

[1] In this text the term practitioner is used to refer to all staff who deliver care. This includes, for example, doctors, therapists, dieticians, nurses, etc. It also extends to healthcare assistants involved in delivery of care.
[2] The term 'critical care' is generally intended to include care and treatment.

Table 1.1 Classification of critically ill patients (DH 2000a, © Crown copyright 2011)

Classification	Definition
Level 0	Patients whose needs can be met through routine ward care in an acute hospital
Level 1	Patients at risk of their condition deteriorating, or recently relocated from higher levels of care, whose needs can be met on an acute ward with additional advice and support from a critical care team
Level 2	Patients requiring more detailed observation or intervention, including support for a single failing organ system or postoperative care, and those 'stepping down' from higher levels of care
Level 3	Patients requiring advanced respiratory support alone or basic respiratory support together with support of at least two organ systems. This level includes all complex patients requiring support for multi-organ failure

The organization of care for different categories of patient varies according to patient requirements and also how this is accommodated by the local service. At present, patients with level 3 needs are generally cared for in a clinical area that is designated primarily for this category of patient and is often referred to as an intensive care unit. This is because this group need high levels of monitoring, intervention and organ support that requires specialist expertise and equipment. Sometimes the level 3 care facility is also a 'specialty only' unit (such as patients with neurological problems or burns).

Patients with level 2 and 1 needs are cared for in a variety of settings. These include a designated level 2 and/or 1 unit (which may or may not include specialist-only beds); specific area/beds within a level 3 facility (which may or may not include specialist-only beds); and specific area/beds within a level 0 care facility (which may or may not include specialist-only beds). Patients requiring level 2 and 1 care on a level 0 care facility are often there on a temporary basis with the support of the multidisciplinary critical care outreach team.

While the levels of critical care (1 to 3) are clearly defined (DH 2000a) and therefore allow for a joint understanding of the needs of patients and the required level of care, a variety of service organizations' designations and terms have been used to describe critical care facilities; these include intensive care unit (ITU or ICU), critical care unit (CCU), high dependency unit (HDU), special care unit (SCU) and post-anaesthetic care unit (PACU). It is important, therefore, that the patient's needs and the care facility are clearly and accurately identified and that all involved in service planning and provision and delivery of care have a shared understanding in order to effectively and efficiently meet the patient's requirements. For the purposes of this manual the term 'critical care' follows that of more recent documentation and developments and refers to patients requiring care at levels 1 to 3.

It is worth noting that as well as the varying levels of critical care requirement and the locations where this care can be delivered, the characteristics of the patient population are important in determining the level of care required. The considerable heterogeneity of the patients is a challenge, as differences in age and sex; type, trajectory and duration of disease; co-morbidities and complications all cause difficulties in defining a patient requiring critical care (Vincent and Singer 2010).

The varying patient characteristics and the complexity of caring for the critically ill has resulted in the requirement for teams of multidisciplinary specialist critical care practitioners to deliver the care, including: doctors, nurses, advanced critical care practitioners, physiotherapists, dieticians and healthcare assistants engaged in patient care. Although at times specific individuals within the team are involved in the delivery of particular aspects of the care, the overall delivery of critical care is highly reliant on teamwork and the ability of a number of varied types of practitioner to deliver the care over time. Therefore throughout this manual the term critical care practitioner (or practitioner) will be used to represent the various specialist critical care roles.

National guidance

Over the past few years NHS strategies have focused on improving quality, patient care safety, patient outcomes and cost effectiveness of treatment and care (DH 2007a, 2009, 2010a; Richardson 2011). To achieve this, the critical care modernisation strategy recommended that guidelines, standards and protocols for critical care be developed by multiprofessional staff (DH 2000a)[3] (*see also* Table 1.2). In 1999, the National Institute for Clinical Excellence was introduced to act as a politically independent body aimed at improving the quality of care by setting national standards, developing evidence-based guidelines for a variety of conditions and issuing guidance on patient safety (Sibson 2011). It was high-profile examples (such as the Bristol Royal Inquiry [BRI 2001] into children's heart surgery) that have in part served to precipitate key developments and changes in how healthcare professionals' competence is monitored (Sibson 2011). In an attempt to regain public confidence and control the spiralling economy, the NHS engaged in implementing a series of wide-reaching measures. These were devised to reduce risks by ensuring that clinical interventions were informed by an evidence base, regular auditing of practice, and by the maintenance of staff performance and competency. Alongside these NHS initiatives were the rising public expectations for more explicit justification and rationale for interventions used in patient care and for increased engagement with service users in the evaluation of healthcare services (Williams 2006; NICE 2007, 2009).

[3]Although the use of guidelines is not unique to critical care, it is central objective of the NHS strategy.

In summary, the policies and changes to the NHS and critical care have collectively spearheaded improvements in the delivery and management of critical care services, resulting in greater inter-professional collaboration serving to enhance patient outcomes. Stemming from these changes has been the establishment of patient care pathways, a more coherent and systematic approach to the early identification of patient at risk of deterioration, more effective use of critical care beds, and improvements in length of critical care unit stay, discharge rates and mortality rates (Williams 2006).

Evidence-based practice

Concomitantly with major organizational changes and reforms, a new evangelical movement in the form of evidence-based medicine (which was subsequently a term applied to other professions in the form of evidence-based practice/healthcare, nursing) became embedded within the NHS and radically transformed the overall culture, clinical management of patients and research activity (Davies and Nutley 1999; Trinder and Reynolds 2000; Craig and Smyth 2002). Universal acceptance and adoption of this phenomenon was unparalleled within healthcare and led to the establishment of international networks of evidence-based practice communities and support as exemplified by the Cochrane Collaboration. According to Trinder and Reynolds (2000: 12), factors such as economic constraints and concerns by health practitioners and the public over standards of clinical practice made evidence-based practice intellectually and intuitively appealing and a natural way forward, quite simply 'a product of its time'. Prior to this point, many interventions and practices for patients had been based on rituals, traditions and the individual preferences of clinicians. In many instances, practices and interventions lacked a scientific basis and were potentially detrimental to patients' wellbeing and recovery (Swinkels et al. 2002). This approach to care and treatment was expensive, did not provide a standardized approach to management, even for patients with the same conditions and in turn led to inconsistency in outcomes. For the purposes of this chapter, the term 'evidence-based practice' is used, as it can be considered a more generic term for the wider healthcare professions.

Definitions

Evidence-based medicine/practice (EBP) has been defined as:

> the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients, based on skills which allow the doctor to evaluate both personal experience and external evidence in a systematic and objective manner.
> (Sackett et al. 1997: 71)

In the above definition it is implied that the expertise of clinicians and patient choice should be integrated with best

Table 1.2 Differences between protocols, procedures and guidelines

Protocols	Procedures	Guidelines
A protocol should be developed by a multidisciplinary team with the aim of providing a complete account of the steps required to deliver care or treatment to a patient Typically they are either developed locally to implement national standards (such as National Service frameworks or guidelines produced by NICE; see below) or to establish care provision drawing from the best available evidence in the absence of nationally agreed benchmarks (Institute for Innovation and Improvement 2011)	Procedures are operational elements that arise from local protocols. They are applicable to individual patients with each detailing the order of activities to be performed It is not uncommon for these to be developed prior to writing a protocol and they should also be underpinned by the best evidence	Clinical guidelines are systematically developed statements that seek to support healthcare professionals and patients' decision making under specific circumstances (Thomas and Hotchkiss 2002) Guidelines can cover conditions (asthma), symptoms (chest pain), clinical procedures (endotracheal suctioning) and responses (resuscitation of unresponsive and unconscious people). Again, guidelines are intended to reduce variations in practice, to optimize care and treatment, and provide the means of increasing the accountability of healthcare professionals. The effectiveness of guidelines is based on a systematic appraisal of research and meeting a series of key criteria that include reliability and validity of data, cost-effectiveness and clinical applicability (Thomas and Hotchkiss 2002). The development of clinical guidelines is a labour-intensive process that demands skill in critical appraisal, time to systematically evaluate the quality of research, consultation with experts, and therefore may take two years to complete (Snowball 1999)

evidence, derived from specific sources of empirical data, to inform decisions about the care of individual patients (Gray 2009). In practical terms, EBP is the systematic evaluation of published evidence to assess the effectiveness of current practices, and novel or established interventions (Hewitt-Taylor 2003). Best research evidence in this context is described as:

> clinically relevant research, often from the basic sciences of medicine, but especially from patient centred clinical research.
>
> (Sackett et al. 2000: 1)

The above statements specify the direction of what should happen and describe practical techniques to address the chasm between research and clinical care (Trinder and Reynolds 2000). In particular, research that has direct application to patient care is differentiated from clinical studies without immediate and practical relevance. The focus on clinical relevance is intended to help healthcare practitioners concentrate their attentions on research that benefits patients and improves the delivery of high-quality care provision. The inclusion of structured methods for systematically evaluating research is pivotal in supporting healthcare practitioners to assess the merits and contributions of research to their field. Finally, EBP offers a platform to enable practitioners to make decisions that reflect research findings and to apply empirical data to the care and management of individual patients (Trinder and Reynolds 2000).

In contrast, clinical expertise applies to:

> the ability to use our clinical skills and past experience to rapidly identify each patient's unique health state and diagnosis, their individual risks and benefits of potential interventions, and their personal values and expectations.
>
> (Sackett et al. 2000: 1)

Integrating patient values is about addressing:

> the unique preferences, concerns and expectations each patient brings to the clinical encounter and which must be integrated into clinical decisions if they are to serve the patient.
>
> (Sackett et al. 2000: 1)

Overall, EBP is about developing vision whereby the quality of care can be advanced not only through the application of patient-centred clinical research but by incorporating systematically generated research-based knowledge, the expertise derived from practice, and the preferences and perspectives of those under the care of healthcare providers (Pearson and Craig 2002). According to Trinder and Reynolds (2000), a key element of EBP, aside from providing directions about what should happen, is the provision of practical approaches and guidance for resolving the gaps between research and patient care. The evidence-based practice ideology also incorporates a framework for making

clinical decisions drawn from clinical studies for applying these to individual patients.

Delivering care that is based on evidence of effectiveness can standardize service delivery, improve diagnostic techniques, optimize health outcomes and maximize the use of healthcare resources (Bick and Graham 2010). EBP can also enable clinical staff to respond to the needs and demands of changing patient demography (Cook et al. 1996). Similarly, evidence-based clinical effectiveness can be defined as a set of specific clinical interventions which, when used for a particular patient or population, achieves its purposes. The intention is to maintain and improve health and secure the greatest possible health gain from available and limited resources (DH 2007b). The ideology has also served to overcome the gap between research and clinical practice by encouraging enquiry directed at improving patient outcomes.

The ultimate aims of evidence-based practice can be summarised as being to:

1 provide appropriate and effective care
2 standardize treatments
3 make best use of available resources
4 improve outcomes
5 promote safety and reduce harm.

Youngblut and Brooten (2001) provide a useful distinction between practice supported by evidence and practice based on evidence. In the former, for example, articles, but not necessarily research, may be retrieved to support and continue a practice or protocol. In the case of the latter, the evidence from well-designed research studies is systematically reviewed, the recommendations are identified and the practice/protocol is amended accordingly. While the benefits of evidence-based practice have been well documented in terms of standardizing care, cost effectiveness, improving the quality of care, and mortality and morbidity outcomes, there are studies reporting that many critical care practitioners do not appreciate the value of research to their role and are unfamiliar with methods of accessing and systematically evaluating data from published work (Bucknall et al. 2001; Pravikoff et al. 2005). It has been acknowledged that the development of the EBP movement requires that healthcare practitioners are trained in interpreting and using research data, and that research findings are widely disseminated to facilitate their accessibility (Cook et al. 1996; Trinder and Reynolds 2000; Newman and Roberts 2002).

Debates on the nature of 'evidence'

There are many areas of contention and confusion regarding evidence-based practice, many of which concern definitions of 'what counts as evidence' and how it differs from 'science,' 'research' and 'clinical effectiveness' (Swinkels et al. 2002; Murray et al. 2008). Key challenges have also related to the meaning that patients, family members, healthcare professionals and other stakeholders attribute to the concept of

EBP. In broad terms, 'evidence' may comprise findings generated from research, understandings from basic sciences, clinical expertise and expert opinion (Youngblut and Brooten 2001). It may also encompass knowledge from expert patients; indeed, those with chronic conditions are well informed about their conditions and current treatments. This reflects the current consensus that evidence in delivering patient care can come from a number of sources (Bick and Graham 2010).

This view is in stark contrast with the EBP dogma, where data from experimental, quasi-experimental trials and case control studies (which embrace 'quantitative research' designs) are accorded higher status than other forms and sources of evidence. This is due to the perception that data from these study types is associated with a more scientific (positivist), bias-free, (so-called) objective and rigorous traditions (Murray et al. 2008) (*see* Table 1.3). Consequently, it is believed that the results of such studies can be replicated and applied to wider populations. Importantly, these studies are instrumental in establishing the safety and effectiveness of clinical interventions and in confidently predicting responses to therapeutic measures (Hewitt-Taylor 2003). Within the hierarchy of evidence, large, properly designed randomized controlled trials (RCTs) are considered by some as the 'gold standard' for determining cause-and-effect relationships and as such have greater potential to influence clinical decision making. However, the results of a single study are usually not sufficient to support a wholesale adoption of either a treatment or clinical intervention. Nevertheless, evidence analysed as part of a systematic review of RCTs may produce findings to either recommend the cessation of accepted treatments and diagnostic tests or the implementation of more accurate, reliable and effective substitutes. Consequently, data produced from RCTs have dominated debates on what counts as evidence, causing confusion for many healthcare practitioners and other healthcare stakeholders (Swinkels et al. 2002).

Table 1.3 Hierarchy of evidence levels

Level	Descriptor
I	Evidence obtained from at least one systematic review of multiple well-designed randomized controlled trials
II	Evidence obtained from a least one properly designed randomized controlled trial of appropriate size
III	Evidence from well-designed trials without randomization; cohort, time series or matched case-controlled studies
IV	Evidence from well-designed non-experimental studies from more than one centre or research group
V	Opinions of respected authorities, based on clinical evidence, descriptive studies and reports of expert committees

Proponents of the hierarchy of evidence are critical about data from qualitative studies due to the lack of control, objectivity, rigour and because of their inability to generalize the findings to a wider population (Swinkels et al. 2002). 'Qualitative studies' are typically concerned with understanding human behaviour, experiences and reactions to events, and as such often rely on semi-structured interviews, observations and interpreting data sources such as photographs, biographies, diaries, historical archives and other textual material. However, in developing clinical practice it is not always methodologically or ethically appropriate to use RCTs to study particular aspects of care. In addition, not all practice aspects important to patients can be studied through clinical trials for ethical, cultural and political reasons (Youngblut and Brooten 2001). Studying the experiences and perceptions of patients can provide useful insights and understandings, unveiling the challenges and difficulties they encounter during critical care unit admission that cannot be captured through quantitative data. Qualitative data and subsequent analysis can also provide insights into whether some treatments are acceptable to patients and highlight directions for possible interventions (MRC 2000, 2008). Critics of the EBP argue that an over-reliance on experimental studies displaces the role of intuitive judgements, unsystematic clinical experience and pathophysiological rationale in guiding decisions about the care of patients (Goding and Edwards 2002; Swinkels et al. 2002).

Viewing evidence through a single lens offers a distorted perspective of knowledge and evidence, and in the case of quantitative outlook, the approach reduces and objectifies patients into numerical values. Adopting a purely quantitative approach will obscure the opportunity to capture the multidimensional nature of a patient's experiences and perceptions of their illness. Hek (2000) and Mckenna (1999) advocate including the perspectives of patients, family members or carers and the expertise of clinicians, and combining these with data from rigorous and robust studies to produce a more individualized and informed approach to decision making. This perspective is aligned with notions of patient centeredness and holistic care delivery (Hek 2000). Increasingly, research councils now advocate the inclusion of exploratory qualitative studies involving patients to inform the development of complex interventions trials in helping to assess acceptability, compliance, issues of sample recruitment, retention and delivery of intervention (MRC 2000, 2008).

Two further areas of debate revolve around the commissioning and funding of research and on the outcomes of RCTs. Increasingly, many large international RCTs are funded by industry, often with little input from patient groups or other key stakeholders, the outcomes of which may be primarily driven by commercial interests. While public and patient engagement in the UK is contributing to health service development (DH 2004; NICE 2010), this involvement needs to expand to developing the research agenda that reflects the health needs and priorities of society. The introduction of Academic Health Science Networks

(2012) seeks to encourage greater collaboration between a number of stakeholders, including industry partners, to drive forward the dissemination of innovations, the translation and promotion of research, and to support education and training to enhance the delivery of high-quality care provision which is responsive to the needs of the population and which benefits the economy (DH 2012).

Turning to the results of RCTs, the outcomes are primarily focused on implementing treatments that apply to the average patient, rather than the individual. This distinction is of importance to service users. However, despite the above debates there has been growing recognition, within critical care and beyond, that qualitative data and analysis can complement quantitative findings and contribute to the effectiveness of care measures and improve professional practice and the overall quality of the research (Nordgren et al. 2008; Rusinová et al. 2009). A qualitative approach to research can also illuminate contextual features, as well as the success or failure of interventions by understanding patients and healthcare practitioners' acceptance and/or rejection of treatments and EBP respectively (Britten 2010).

To counter and challenge the traditional evidence-based hierarchy, Rycroft-Malone et al. (2004) have proposed an alternative for a broader evidence base that emphasises and places patients centre stage. It is further argued that effective practice is determined through practitioner interactions and relationships with patients and this can be assessed by drawing up several sources of evidence (*see* Figure 1.1).

The integration of these elements allows for scientific and empirical sources to meld together with practitioner expertise and patient preferences in a more holistic approach. Importantly, knowledge gained from practice and personal knowledge associated with life experiences of dealing with different contexts and patient situations accords a wealth of expertise that practitioners (and some patients and carers) contribute to the decision-making process. This proposed
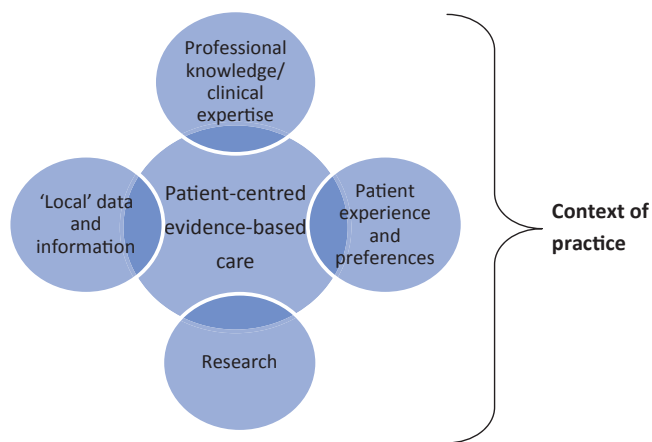

Figure 1.1 Four sources of evidence base for patient-centred practice. (From Rycroft-Malone et al. 2004. Reproduced with permission from Wiley.)

framework recognizes that integrating evidence from research is vital, but care must also reflect the individual's experiences, values and preferences, and the practitioner has a key role in mediating interventions to ensure compliance and improved patient outcomes (Rycroft-Malone et al. 2004). Local context can provide a wealth of sources that can shape and improve practice; this can include local and national policies, audits of practice, patient stories and population demographics. All these should be incorporated to inform the evidence base that guides the delivery of patient-centred healthcare. An example of how patient, carer and practitioners' expertise and research can be brought together is the development of benchmarks for fundamental care (DH 2010b). This document (*Essence of Care 2010*) was designed to reflect patients' and carers' views of their health and social care needs and preferences. It can be used with other sources of evidence to improve patient-centred care (*see also* Chapter 2). In summary, the Rycroft-Malone model offers an alternative approach in understanding evidence-based practice, it acknowledges that scientific knowledge is key to informing decisions, but it equally acknowledges that practitioners draw on a variety of important sources to guide and shape patient care.

Another related concept emanating from North America is the best 'patient-focused practice' model (McCauley and Irwin 2006), which likewise challenges approaches to delivering individualized patient care (Kjörnsberg et al. 2010). The values behind patient-focused practice aim to promote a holistic patient-centred approach and increase practitioner–patient interactions, where communication, continuity of care and congruence are central concepts (McCauley and Irwin 2006; Kjörnsberg et al 2010). There is also an emphasis on multidisciplinary collaboration, patient and public involvement in decisions affecting care giving with more open consideration to including multiple sources of evidence and perspectives.

Supporting evidence-based practice

In practical terms, there are many activities within healthcare that can support evidence-based practice and clinical effectiveness, and these can be split into three main components. The inclusion of service users is important and part of an overall NHS strategy (Thomas and Hotchkiss 2002). The following should be in place nationally and locally within organizations.

- **First, setting evidence-based standards through the development of local and national evidence based guidelines, protocols and procedures** (Thomas and Hotchkiss 2002). Guidelines, procedures and protocols are a mainstay for improving standards of care, reducing patient risk and enhancing the quality of service provision. They all aim to achieve the same outcomes, but have distinctive functions (*see* Table 1.2). Another development includes the introduction of 'care bundles' that are a collection of guidance developed from a strong research

base. They are another example of how patient outcomes can be systematically improved and complications reduced by standardizing practice (Fulbrook and Mooney 2003; McClelland 2007; Tolentino-Delos Reyes et al. 2007; Wip and Napolitano 2009; Robb et al. 2010).

- **Second, activities supporting delivery of evidence-based standards/effective care such as providing staff with knowledge and skills, clinical decision support systems and assessment of competencies** (Dawes et al. 2000). Developing and maintaining generic and specialist competencies through ongoing assessment are the cornerstones for guaranteeing that standards are high and that patient risk is minimized (these issues are explored further in Chapter 2).
- **Third, a quality process of improving patient care and outcomes through the systematic review of practice and measuring performance change against recognized standards** (DH 2007b). Clinical audit is a mechanism that enables healthcare professionals to regularly monitor and review their practice against agreed national benchmarks. Where practice is below standard or where there is need to assess the impact of new service on patient outcomes, measures before and after the implementation of the change/innovation are compared to determine whether improvements have occurred. Inter-professional and cross-institutional working is regarded as pivotal in improving patient outcomes through developing critical care pathways and in translating research findings into practice (DH 2012).

Integrated governance

Evidence-based practice is an integral part of the Clinical Governance framework and was developed in response to escalating costs of healthcare, quality and standards of patient care, increased public interest in safety and effectiveness of clinical interventions (DH 1998; NHSE 1999). The Clinical Governance framework and subsequently Integrated Governance (DH 2006) framework are part of a wider strategy to improve quality of patient services and the effectiveness of decision making by emphasizing greater accountability among NHS organizations and staff for:

- continuous quality improvement
- safeguarding high standards of care
- promoting patient safety
- creating an environment for excellence to flourish.

Critical to the successful implementation of the Integrated Governance agenda is the promotion of the increased use of evidence-based guidelines and the development of systems, processes and a national infrastructure of support and performance monitoring (McSherry and Pearce 2007). To assist these processes, new bodies such as the National Institute for Clinical Excellence, the Commission for Health Improvements and National Service Frameworks were established (Thompson and Learmonth 2002). The subsequent

development of national and local standards in the form of specialty-based guidance and protocols were ways of engaging with and developing a culture of quality enhancement, thereby meeting clinical governance objectives. Integrated Governance seeks to continue strengthening organizational and professionals' obligation in improving the quality of care (DH 2006). This can be achieved through raising the standards of care, promoting patient safety, minimizing variations in care outcomes and improving access to healthcare services while underpinning decisions on the most current evidence known to be effective for the target population (NHSE 1999; DH 2006, 2012).

Keeping updated, expanding the knowledge base and maintaining professional competency are seen as integral expectations of healthcare practitioners and core strands of the governance strategies. A commitment to lifelong learning by practitioners (DH 2000b) is recognized as vital to maintaining standards and advancing the quality of patient care. In many ways this manual supports and moves forward this agenda by providing a robust framework for developing skills, knowledge and competency of healthcare professionals within the discipline of critical care practice.

Another key component to clinical and integrated governance (DH 2006) is risk management. Risk management can be defined as practising safely, aiming to develop good practice and avoiding or reducing the occurrence of harm to patients (McSherry and Pearce 2007). Adverse events in relation to healthcare practice are often preventable and may happen due to the following.

- Failure to strictly follow procedures in the care of patients.
- Technical failure/inappropriate and incorrect use of medical equipment.
- Poor records, documentation and intra-professional communication.
- Healthcare practitioners performing tasks for which they have not been trained or deemed to be competent.
- Failure to act and respond appropriately.

In 2000, the National Patient Safety Agency was set up to address many of these issues and create an NHS culture that would aim to improve patient safety. It sought to systematically learn from and analyse organizations' experiences, and to share these with others through the production of alerts, guidance and strategies to reduce harm.

A further national development supporting evidence-based practice was the establishment of the National Institute of Clinical Effectiveness (NICE). NICE (2008) bases decisions on published evidence, expert panels and evidence developed from real-life experiences. NICE attempts to ensure the evidence is of good quality and is relevant, and includes specialists who are invited to share their experience and advice on how guidance might be put into practice. Patient and carer involvement is equally vital to providing an understanding of what matters most to them and their families. In this way, NICE makes recommendations in the

form of guidance for care based on best evidence of clinical and cost-effectiveness (Bick and Graham 2010).

Despite concerns regarding the nature of evidence, there is consensus that to improve patient outcomes, clinical treatments and care should be delivered in a standardized manner, be cost-effective, low risk, and informed by the findings of rigorous and robust research. The preferences of patients must be considered and respected, and decisions should embrace the expertise of frontline healthcare professionals. Delivering high-quality care that reflects national standards is the remit of all healthcare practitioners regardless of grade or organizational status. In this manual, we aim to guide critical care practitioners to develop skills, knowledge and clinical competence, to promote their confidence and comprehensively advance their practice within the field of critical care and beyond. To achieve these aims and objectives the chapters have been structured to facilitate depth of learning, skills and competence in a range of patient situations.

Using this book

The aim of book is to help practitioners make informed decisions about care of the critically ill based on appraisal of the best evidence available. Following Chapter 2, which introduces the competency framework, each subsequent chapter has been formatted with the following subheadings.

- Definition of the practice area – an operational definition reflecting the aspects of care and/or treatments to be addressed.
- Aims and indications – an overall aim that outlines what healthcare professionals should achieve in delivering care. The indications reflect the conditions under which the care is required to be implemented.
- Background
  - Anatomy and physiology – to support applied understanding of treatments/interventions and their relevance in improving patient outcomes, it is essential that clinicians have a sound grasp of related anatomy, physiology and pathophysiology. This in-depth awareness will also facilitate recognition of potential adverse side effects associated with individual treatments.
  - Evidence and current debates – although there is strong evidence for many interventions used in everyday clinical practice, there are areas and activities where there is little empirical data and guidance is based on consensus views of leading experts. In these sections, debates and controversies regarding novel therapies and the abandonment of certain interventions is reviewed.
  - Review of detailed components of practice area.
- Guidelines, trouble shooting and competency tools – the competency framework is outlined in Chapter 2 and principles applied thereafter.
- References, background reading, websites.

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