The essence of patient safety

Part 1

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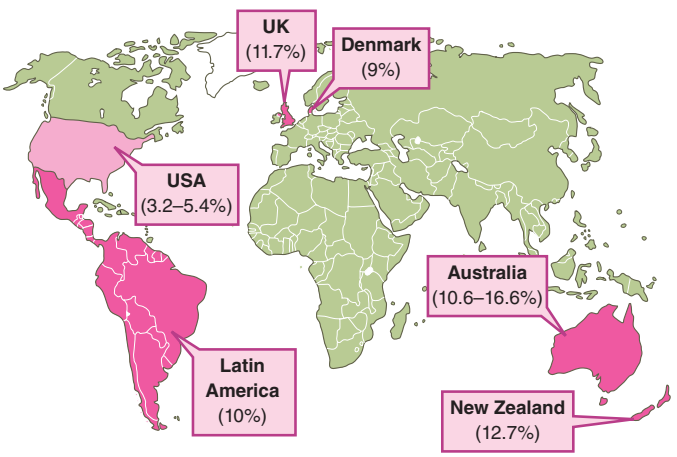
1 Basics of patient safety

Table 1.1 Patient safety terms

Patient safety term	Definition
Harm	Any physical or psychological injury or damage to the health of a person, either temporary or permanent Harm is usually classified as no harm, low harm, moderate harm, severe harm or death.
Near miss	Any patients safety incident that had the potential to cause harm but was prevented, resulting in 'no harm' (although this is a term of variable definition).
Adverse event (AE)	An event involving unintended harm to a patient that resulted from medical care. Traditionally, the term used for an adverse event was 'iatrogenesis.'
Preventable adverse event	An event involving patient harm as a result of wrong or inappropriate action ('error of commission') or failing to do the right thing ('error of omission').
Adverse drug event (ADE)	Any incident in which the use of a medication (including prescribed drugs, but also dietary supplements) results in harm to a patient. ADEs include adverse drug reactions (i.e. known side effects that occur even when the medication is used as intended), as well as events in which the drug has been used erroneously (prescribed at the wrong dose, administered in the wrong way etc.). ADEs that result from medication errors are often called 'preventable ADEs.'
Patient safety incident (PSI)	Any unintended or unexpected incident that could have harmed or did harm the patient. This includes 'near misses.' The term 'patient safety incident' is preferred to 'error', as the latter has a more negative connotation.
Critical incident*	A term first coined in the 1950s and made famous by a classic human factors study by Cooper of 'anaesthetic mishaps.' Cooper and colleagues brought the technique of critical incident analysis to a wide audience in healthcare, and followed the definition of the originator of the technique. They defined critical incidents as occurrences that are 'significant or pivotal, in either a desirable or an undesirable way.' Cooper and colleagues (and most others since) chose to focus on incidents that had potentially undesirable consequences. This concept is best understood in the context of the type of investigation that follows, which is very much in the style of root cause analysis. Thus, significant or pivotal means that there was significant potential for harm (or actual harm), but also that the event has the potential to reveal important hazards in the organisation. In many ways, it reflects an expression used in quality improvement circles: 'every defect is a treasure' . In other words, these incidents, whether near misses or disasters in which significant harm occurred, provide valuable opportunities to learn about individual and organisational factors that can be remedied to prevent similar incidents in the future.

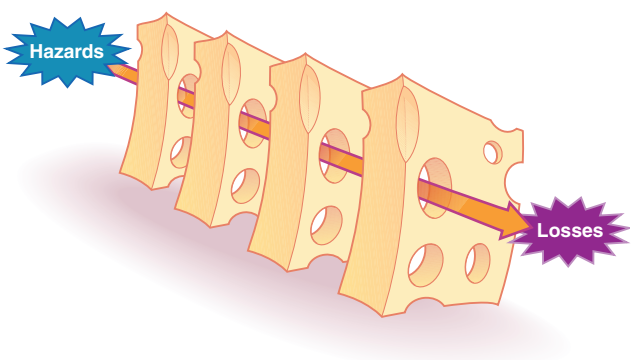
*Source: *Cooper et al 1978. Reproduced with permission of Wolters Kluwer Health.*

Figure 1.1 Frequency of errors in medical care (adverse event rate)



Source: *Adapted from de Vries et al 2008. Reproduced with permission of BMJ Publishing Group Ltd.*

Figure 1.2 The Swiss cheese model of how defences, barriers and safeguards may be penetrated by an accidentaly trajectory



Source: *Reason J 2000. Reproduced with permission of BMJ Publishing Group Ltd .*

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Introduction

As healthcare has become more effective, it has also become more complex and involves the use of new technologies, medicine and treatments. We are also now treating a greater proportion of older and sicker patients. These factors, coupled with decreased financial resources in most settings, can result in errors.

Two influential reports – *To Err Is Human* (1999) produced by the US Institute of Medicine and *An Organisation with a Memory* (2000) produced by the UK Government's Chief Medical Adviser – heralded the start of the global patient safety movement in the late 1990s. Both reports recognised that error was common during the delivery of healthcare: Figure 1.1 gives estimates of harm globally in hospitals. The figure of 1 in 10 patients being harmed is commonly quoted in the world of patient safety.

The reports drew attention to the poor performance of healthcare, as a sector, worldwide on safety compared to most other high-risk industries. Notably, aviation has shown remarkable and sustained improvements in levels of risk to air travel passengers over the last four decades. Both reports called for greater focus on, and commitment to, reducing risks in healthcare. In October 2004, the World Health Organization (WHO) launched a patient safety programme, in response to a World Health Assembly Resolution (2002) urging WHO and member states to pay the closest possible attention to the problem of patient safety. Its establishment underlined the importance of patient safety as a global healthcare issue. In other countries, specific bodies dealing with patient safety were set up: the National Patient Safety Agency (NPSA), which is now part of NHS England; the Agency for Healthcare Research and Quality (AHRQ) in the United States; the Canadian Patient Safety Institute (CPSI); and the Australian Commission on Safety and Quality in Health.

Despite these notable efforts, the current state of patient safety worldwide is still a source of deep concern. As data on the scale and nature of errors and adverse events have been more widely gathered, it has become apparent that unsafe actions are a feature of virtually every aspect of healthcare. Furthermore, there is a paucity of research on the frequency of errors and their associated burden of harm in areas such as primary care and mental health. Reports of the deaths of patients regularly feature in media reports in many countries and undermine public confidence in health services. Moreover, many events recur, with efforts to prevent them ineffective. These could be in part due to a punitive culture of individual blame and system failures. Initial, widely quoted estimates of the number of deaths due to medical error may have been exaggerated. For instance, a study by Hogan *et al.* (2012) of 1000 deaths at 10 representative UK NHS trusts found that only 5% were judged preventable, with 'preventable' being defined as having a greater than 50% probability that better care would have prevented death.

There is also growing concern of late amongst patient safety experts that despite all the efforts made to date, the patient safety momentum might stall as we have been at it for almost a decade and countless initiatives have been thrown at clinicians who may be overwhelmed.

Definitions

'Patient safety' can be defined as reducing the risk of unnecessary harm associated with healthcare to an acceptable minimum. An 'acceptable minimum' refers to current knowledge, resources available and the context in which care was delivered, weighed against the risk of non-treatment or other treatment. Simply put, it is the prevention of errors and adverse effects to patients associated with healthcare. Further key definitions are given in Table 1.1.

Concepts

The large-scale technological disasters on oil rigs, nuclear power plants and aviation in the 1980s led to more of a *systems-thinking* approach to developing safer workplaces and safer cultures. The same approach applies to healthcare; it is rare that a doctor or nurse is to blame for an error, but the environment and systems they work in play a strong part. James Reason, an eminent psychologist, developed the 'Swiss cheese' model (see Figure 1.2) to explain the steps and multiple factors associated with adverse events. Key points to note in this model are:

- *Defences, barriers and safeguards* exist to protect patients from hazards, such as alarms on syringe drivers or anaesthetists reminding surgeons to ensure that an adequate pre-operative work-up of the patient has taken place. These defences can be breached, like the holes in slices of Swiss cheese. However, unlike in the cheese, these holes are continually opening, shutting and shifting their location. The presence of holes in any one 'slice' does not normally cause a bad outcome. Usually, this only happens when the holes in many layers momentarily line up to permit a trajectory of accident opportunity – bringing hazards into damaging contact with patients. The holes occur due to a combination of *active failures* and *latent conditions*
- *Active failures* are the unsafe acts committed by people who are in direct contact with the patient or system. They take a variety of forms: slips, lapses, fumbles, mistakes and procedural violations
- *Latent conditions* arise from decisions made by designers, builders, procedure writers and top-level management. They can translate into error-provoking conditions within the local workplace (e.g. understaffing requiring the use of locum doctors). They can also create long-lasting holes or weaknesses in the defences (e.g. the intensive care unit being in a different building from the operating theatre)

Another notable individual, Jens Rasmussen, suggested that errors occurred due to deficiencies in *skills* (e.g. asking a junior doctor to perform a laparotomy), observation of *rules* (e.g. not washing hands before performing a procedure) or *knowledge* (e.g. being unaware that gentamicin levels need to be checked).

Subsequent chapters will build on the concepts discussed here and equip the reader with the knowledge to identify and rectify potential threats to patient safety.