Safe prescribing: a titanic challenge

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The challenge to achieve safe prescribing merits the adjective 'titanic'. The organisational and human errors leading to poor prescribing (e.g. underprescribing, overprescribing, misprescribing or medication errors) have parallels in the organisational and human errors that led to the loss of the *Titanic* 100 years ago this year. Prescribing can be adversely affected by communication failures, critical conditions, complacency, corner cutting, callowness and a lack of courage of conviction, all of which were also factors leading to the *Titanic* tragedy. These issues need to be addressed by a commitment to excellence, the final component of the 'Seven C's'. Optimal prescribing is dependent upon close communication and collaborative working between highly trained health professionals, whose role is to ensure maximum clinical effectiveness, whilst also protecting their patients from avoidable harm. Since humans are prone to error, and the environments in which they work are imperfect, it is not surprising that medication errors are common, occurring more often during the prescribing stage than during dispensing or administration.

A commitment to excellence in prescribing includes a continued focus on lifelong learning (including interprofessional learning) in pharmacology and therapeutics. This should be accompanied by improvements in the clinical working environment of prescribers, and the encouragement of a strong safety culture (including reporting of adverse incidents as well as suspected adverse drug reactions whenever appropriate). Finally, members of the clinical team must be prepared to challenge each other, when necessary, to ensure that prescribing combines the highest likelihood of benefit with the lowest potential for harm.

Introduction

A hundred years ago, on Wednesday April 10 1912, the World's largest passenger ship began her maiden voyage from Southampton to New York. When she was launched in Belfast on 31 May 1911, the adjective 'titanic' was merely listed, and not defined, in the first Edition of the Concise Oxford English Dictionary published that same year [1]. However, the word is now regularly used to describe something (often a problem) of exceptional size and/or importance. The RMS *Titanic* was 175 feet from her keel to the top of her four funnels and 882.5 feet in length [2]. She was considered by some to be virtually unsinkable (Figure 1). After she did sink on the night of April 14–15 1912 only 5 days into her maiden voyage, the disaster shocked the world. The rapidly convened 1912 US Senate Investigation

quickly highlighted some of the organizational and human errors that may have led to the tragic final outcome [3].

The challenge to achieve safe prescribing is certainly one of both great size and huge importance to health care and so merits the adjective 'titanic'. The organizational and human errors leading to errors, and methods to minimize them, are discussed in this paper, and compared with the organizational and human errors that led to such loss of life when the *Titanic* sank.

Poor prescribing

Poor prescribing may take the form of under-prescribing, over-prescribing, mis-prescribing or medication errors.

Mis-prescribing can occur when an appropriate treatment is provided poorly (e.g. in too large a dose) or the

Figure 1

RMS Titanic departing Southampton on April 10 1912

wrong medicine is prescribed. Under-prescribing may occur when a patient is inappropriately denied the prescription of a medicine whose likely benefits to him/her greatly exceed the risk of harm. Over-prescribing describes the situation of the unwarranted prescription of a medicine whose risk of harm exceeds its likely benefit, overall or relative to another medicine [4]. Medication errors are defined as failures in the treatment process that lead to, or have the potential to lead to, harm to the patient [5].

Medication errors, like errors in general [6], may be caused by slips, lapses, mistakes or violations [5, 7]. Slips are errors which may occur when an acceptable plan does not result in the intended outcome because of an erroneous performance. They occur usually as result of a failure in attention. Lapses are unconscious errors in carrying out an acceptable plan, often due to temporary memory failure. Slips and lapses occur during the largely automatic performance of some routine task, and so are classified as 'skill-based errors'. Both involve the right idea, but the wrong execution [6, 7].

Mistakes are errors in the planning of an action [6, 7]. They occur when the wrong plan or idea is chosen, and these can be subdivided into rule-based mistakes and knowledge-based mistakes. Rule-based mistakes are those in which the individual misapplies, or fails to apply, a good rule they already possess or applies a bad rule. Knowledge-based mistakes occur in new situations when the individual does not have such an 'off the shelf' solution, and so consciously develops one that is incorrect [6]. Examples of these in relation to prescribing are described elsewhere [5, 7].

Violations are not errors, but deliberate deviations from safe operating practices, procedures, standards, rules, recommendations or guidelines. In most cases, it is not intended that deleterious consequences should follow [6].

The problem of medication errors

The prescribing process can be divided into several stages. (Figure 2) The prescriber must first decide if any medicine or combination of medicines is indicated in a particular condition. He/she must then discuss (whenever possible) the expected benefits and possible risks with the patient, and then ensure that an appropriate dose and duration of the chosen medicine is prescribed. The medicine must then be dispensed and finally administered. Errors can occur during each of these processes [7].

Since humans are prone to error and systems in which they work are imperfect, it is not surprising that medication errors are common. They occur more frequently during the prescribing stage than during dispensing or administration [8, 9], and this particular subtype of medication error is then often referred to as a 'prescribing error'. However, because the term 'prescribing error' can be misunderstood, Aronson has suggested an alternative nomenclature for the sake of clarity, 'prescribing faults' for errors in decision making and 'prescription errors' for errors in writing the prescription [10]. This distinction can sometimes be very difficult to make in practice. The frequency of medication errors is difficult to determine accurately, because of differences in the definitions used. Nevertheless it was estimated that 1–2% of patients admitted to US hospitals were harmed as a result of medication errors [11]. Fortunately, since many medication errors are errors in writing the prescription, they are identified by pharmacists in hospitals before dispensing or administration occurs. Therefore harm is prevented and ideally, the error is subsequently drawn to the prescriber's attention [12]. One estimate, albeit over 10 years ago, is that that around 150 deaths occurred as a result of medication errors in England and Wales in 2001 [13].

Medication errors were the subject of an important report (the EQUIP study) commissioned by the General Medical Council (GMC) [14]. In 124 260 medication orders checked on 7 'census days' in 19 acute hospital trusts in North-west England in 2009, there was a mean error rate of 8.9%. An error rate of 8.4% was found in prescriptions written by first year foundation (FY1) graduates compared with 10.3% in FY 2 doctors. The errors most often occurred at the time of patients' admission to hospital. Potentially lethal errors occurred in less than 2% of the medication orders. Fortunately all such errors were intercepted by pharmacists before they could cause adverse drug reactions in the study [14]. An analogous study in general practice, also commissioned by the GMC, examined 6048 unique prescription items for 1777 patients and noted that 5% of prescription items contained either a prescribing or monitoring error, affecting almost 13% of patients. Although most of these errors were considered to be either of mild or moderate severity, almost 0.2% of all prescription items contained an error considered to be 'severe' [15].

Figure 2

The prescribing process. Optimal therapy is dependent upon close communication and collaborative working between highly trained health professionals, whose role is to ensure maximum effectiveness and to protect their patient from avoidable harm. Medication errors may occur during prescribing, dispensing or administration of medicines

The problem of adverse drug reactions (ADRs)

Serious ADRs (of which adverse drug interactions are a subset) are also common. In 2001, the Audit Commission estimated that around 1100 deaths occurred as the result of an ADR to a medicine in therapeutic use in England and Wales (approximately 10 times more than due to medication errors in 2001 according to that report) [13]. The trend of ADR associated deaths was consistently upwards in that report, whereas medication error-associated deaths appeared to have been relatively constant in frequency over the previous 5 year period [13].

In a very large observational study of 18 820 patients aged more than 16 years who were admitted over a 6 month period to two Liverpool hospitals, there were 1225 ADR related admissions (prevalence of 6.5%), with ADRs directly leading to admission in 80% of cases. The median bed stay for these admissions was 8 days, accounting for 4% of the hospital bed capacity [16]. If scaled up to the UK NHS, the projected annual cost of such admissions would be £466m and the overall fatality rate 0.15%. In this prospective study, the medicines most commonly implicated in causing these admissions were low dose aspirin, diuretics, warfarin and non-steroidal anti-inflammatory drugs other than aspirin. The most common reaction precipitating hospital admission being drug-associated was

gastrointestinal bleeding. Most reactions were well recognized, pharmacologically predictable in nature and potentially avoidable.

Poor prescribing can increase the risk of ADRs (including adverse drug interactions) and also of medication errors. However, not all medication errors will necessarily result in an adverse event [7]. This article outlines several factors that played a significant part in the Titanic disaster and these same factors can have a bearing on the outcome (good or bad) of prescribing. They are the 'Seven Cs', and if problematic, need to be addressed at either an individual or organizational level (or even both) if we are to aim for safe and effective prescribing.

Navigating the seven 'Cs'

1. Communication failures

When Jack Phillips, the Titanic's senior Marconi Wireless Operator received an ice report warning from his counterpart Cyril Evans on the RMS Californian, which was stationary and surrounded by ice, at 21.05 h New York time on April 14 1912, Phillips jammed the signal because he was too busy communicating with the wireless station at Cape Race in Newfoundland, largely on behalf of passengers who had messages to send or receive [3]. After all, Phillips was a Marconi, not a White Star employee, and Marconi's

Figure 3

Positions of ships around the Titanic after she hit the iceberg. The nearest ship, RMS Californian, could not receive the Titanic's CQD/SOS call because her Marconi wireless system was shut off and her only wireless operator had turned in for the night. (Figure adapted from reference [3])

business was largely dependent on the passengers' needs being met. As a result, he almost certainly did not receive details of the location of the Californian [2]. Prior to that message at least three other ice warnings had been received by Captain Smith, the Titanic's captain, with coordinates indicating ice on the north and south sides of her track [3], but Captain Smith failed to ask that the ship be slowed, and left the bridge at around 21.30 h. The Titanic struck the iceberg at 23.40 h.

When Wireless Operator Phillips began broadcasting the SOS from the Titanic, his distress signals could almost certainly be heard a thousand miles away at night. Unfortunately, they could not be heard by the ship most able to reach her and rescue her passengers and crew (Figure 3). The exact position of the RMS Californian remains uncertain, but it is likely that she was around 20 miles away at most. However, Wireless Operator Evans on the Californian had then switched his Marconi system off, had gone to bed at 23.35 h and was only awakened by his First Officer at around 03.30 h after the Titanic had already sunk [3]. Thus, a series of failures in communication played a major part in determining the occurrence and scale of the disaster.

Good communication is a vital prerequisite of good prescribing, dispensing and administration. In the EQUIP study, it was noted that a group of errors could not be clearly classified using Reason's approach, and these were termed 'communication errors'. Half of those associated

with FY1 doctors were related to a senior doctor's error (e.g. telling the FY1 to prescribe the wrong dose of a particular medicine). On other occasions, it was poor communication between the health professional and the patient that resulted in a medication error [14]. Good communication between community pharmacy and general practice is also vital [15].

Good communication with patients and carers is also essential, including obtaining a full medicines history (including over the counter, herbal or other complimentary medicines), and a history of medicines allergies and intolerances. Over a quarter of medication errors were attributable to incomplete medication histories being obtained at the time of admission to hospital in one systematic review [17]. Failures may also occur in relation to written communications. It is very important to have agreed standards for the writing of prescriptions [18]. Prescriptions should also be written legibly, since an inability to read handwriting was cited as a cause of poor communication in one study [12].

Another important aspect of good communication in prescribing is the reporting of adverse prescribing events (and near misses), e.g. through the National Reporting and Learning System (<http://www.nrls.npsa.nhs.uk/>) [15] and also of suspected adverse drug reactions (e.g. by the MHRA's yellow card scheme in the UK). These systems help to identify drug safety issues so that changes can be made

in order to minimize future harm, since effective risk management is vitally dependent on the establishment of a reporting culture [19].

2. Critical conditions

Although the night of Sunday 14 April was moonlit, still and clear, the calmness of the sea made it difficult to see icebergs because of lack of any swell around their base. In addition, Frederick Fleet, the lookout in the forward crow's nest had no binoculars and was reliant on his eyesight in the darkness. The lookouts had asked for binoculars in Southampton, but were told that there were none for them [19]. The ship was steaming along at around 21.5 knots, so there was little time to change course when Lookout Fleet eventually saw the 'black object' that was the iceberg and sent a warning to the bridge. All these critical conditions contributed one after the other to cause the collision.

Medication errors are just one of the many types of human error. Reason has described the system-based 'Swiss cheese' model of defences, barriers and safeguards preventing a hazard from producing 'harm' or a 'loss' [20]. He chose Swiss cheese in this model because the barriers have defects (like the holes in Emmental cheese). However stretching the analogy further, he suggested that these 'holes' are continually opening, shutting and shifting their location, and it is only when a hole in each slice momentarily lines up that it allows a hazard to traverse the barriers and become a harm.

Reason argued that there were two causes for the holes in the defensive layers. The system may be susceptible to 'active failures'. In relation to medication errors, these are the unsafe acts of commission or omission perpetrated by those individuals in contact with the patient. They are made up of the slips, lapses, mistakes and violations discussed earlier.

Other holes represented 'latent conditions', which Reason called the 'resident pathogens' within the system. In relation to health care, such conditions may be time pressures, poor staffing, fatigue or inexperience. These conditions are particularly important because they are more amenable to proactive identification and correction before an adverse reaction occurs. Harm usually occurs only when there is a failure of one or more of the successive layers of defences, barriers and safeguards in the system [20]. Such an outcome is graphically illustrated by the report into the death of an elderly female from Cambridgeshire with rheumatoid arthritis on methotrexate. There were 19 consecutive critical events (including medication errors) described by the inquiry, which involved a range of health professionals in the secondary care sector as well as in the community [21].

3. Complacency

Captain Smith, the Titanic's captain had observed in 1907 that 'When anyone asks me how I can best describe my experience in nearly 40 years at sea, I merely say, unevent-

ful. Of course there have been winter gales, and storms and fog and the like. But in all my experience, I have never been in any accident . . . or any sort worth speaking about. I have but one vessel in distress in all my years at sea. I never saw a wreck and never have been wrecked nor was I ever in any predicament that threatened to end in disaster of any sort.' [22] Captain Arthur Rostron of the Carpathia, giving evidence to the Board of Trade enquiry, had also noted that 'Ships are built nowadays to be practically unsinkable, and each ship is supposed to be a lifeboat in itself . . . The naval architects say they are unsinkable under certain conditions', although he swiftly qualified his comments by saying that 'What the exact conditions are, I cannot say' [3]. It would not be surprising if an atmosphere of complacency regarding the Titanic existed prior to the night of April 14 1912.

While the majority of medication errors do not reach patients because pharmacists and nurses often act as an efficient 'safety net', this means that some doctors stop worrying about making errors, use 'automatic thinking' and fail to check their prescriptions with others [14]. In their study of 88 potentially serious prescribing errors, Dean and colleagues noted that some junior doctors suggested that they trusted the pharmacists to do their role so much that they would sometimes not bother to look up doses [12]. These same authors noted two violations in their study, both of which consisted of doctors not properly checking the doses of prescriptions written by final year medical students, despite being aware that the hospital policy required the checking of the whole prescription [12]. They also observed that many doctors did not seem to consider the task of prescribing medicines to be important and that there was a low self-awareness of making errors [12]. All of these observations suggest that there may be a degree of complacency around prescribing. It has been noted that '*the price of patient safety is chronic unease. Complacency is the greatest enemy*' [23]. Reason has also stated that '*high reliability organizations which have less than their fair share of accidents recognize that human variability is a force to harness in averting errors, but they work hard to focus that variability and are constantly preoccupied with the possibility of failure*' [20].

4. Corner-cutting

When the Titanic was built, the longitudinal bulkhead that had been used in ships like Brunel's RMS Great Eastern 50 years earlier had gone. She had only a single metal skin hull, rather than the double skin that had saved the Great Eastern from a similar fate when she had hit uncharted rocks off the coast of New York in 1862, which tore a gaping hole 25 m long in her hull [24]. The Titanic indeed had fifteen transverse bulkheads (the same as the Great Eastern) but these now had doors cut into them, and (apart from the first bulkhead from forward) extended only 10 feet (rather than 30 feet) above the waterline. In addition, there were lifeboat places for only 1182 of the 2201

passengers so that valuable deck space was not used up housing them. Considerations of safety had gradually given way to those of increased convenience, capacity, speed of travel and reduced cost (after all 'time is money'). Soon after the Titanic disaster, her sister ship, the already built RMS Olympic was being refitted with an inner hull for added safety [24]. Lessons had been learned from the tragedy and corner cutting was no longer acceptable.

Corner cutting also occurs in the health care setting, often built upon the shaky foundations of complacency. The most common type of rule-based error in the EQUIP study was doctors failing to check their prescription with another member of staff or a reference source, saying that they 'thought they knew' what they were doing and nothing serious was likely to happen. Lack of time has also been cited as a common reason why important information is not checked in order just to 'get the job done' [14] or to gain back lost time [15].

It may appear that time can be saved by memorizing drug doses, but this approach is not reliable and can be potentially dangerous. One alternative approach is not to expect medical students to remember (or be assessed on) doses of any medicines except those which will be used in specific emergency situations (e.g. anaphylaxis, cardiopulmonary resuscitation etc.) when speed of response is vital. Woods has stated that it is reasonable (and proper) that details of dose should be looked up, rather than committed to memory [25]. However he also notes that prior awareness of contraindications, drug interactions and toxicities is essential for safe prescribing, and this is in turn, is dependent on a thorough knowledge of the clinical pharmacology of all drugs in common use [25]. A recent study identified 100 such drugs most commonly prescribed in primary and secondary care [26] and these were also the groups of drugs most commonly associated with errors in the EQUIP study [14]. Knowledge of the clinical pharmacology of these core medicines can only be learned by hard work and application, and certainly not by cutting corners.

5. Callowness

Callowness is defined as 'lacking in experience or maturity' [1]. While many of the Titanic crew were experienced sailors, this was a new ship with which they could not have been familiar, and many only joined her a few hours before sailing. This unfamiliarity was not helped by having only a single cursory lifeboat drill in Southampton. They simply lowered two of the starboard boats into the water and hoisted them back onto the boat deck half an hour later [3]. It was not until she was 2 days into her maiden voyage that a list of which lifeboats crew members should attend to in the event of an accident was even posted. The Senate investigation noted that no system had been adopted for loading the boats, so that although there were places for 1176 persons, only 711 lives were saved. The unfamiliarity of the crew and passengers with any evacuation procedures may also have contributed to members of the crew

on one side of the ship interpreting the rule 'women and children first' more rigidly so that some lifeboats were launched with vacant places, and fewer lives were saved than might have been otherwise possible [3].

Experience in prescribing can best be gained by practising this task on a regular basis, and future prescribers should be given this opportunity throughout their undergraduate training. Education in rational and safe prescribing should also occur in foundation training, in higher specialist training and as part of continuing professional development of GPs and hospital doctors. In a US study, the rate of medication errors by hospital residents declined by 78% between their first and fourth year of training ($P < 0.001$), indicating that training and practice help to reduce errors [27]. However Woods has pointed out that 'the learning curve seen in the US study is no more acceptable in pharmacotherapy than it would be in surgical practice' [25]. When a doctor graduates, he/she must already be able to prescribe drugs safely, effectively and economically, including providing a safe and legal prescription [28].

Familiarity with procedures includes familiarity with the appropriate charts and forms. The EQUIP report stated that the design of drug charts was a primary cause of prescribing errors and so they recommended that a standard in-patient drug chart should be introduced throughout the NHS [14]. In NHS Wales, a single national in-patient medication administration chart was first introduced in 2004. It was accompanied by nationally agreed prescription writing standards and supported by an e-learning program. An acute inpatient version, a long stay in-patient version and a version for paediatric use have all been produced and are regularly updated. These charts are used in conjunction with several supplementary charts (e.g. for anticoagulant prescribing) [12].

6. Courage of convictions

The US Senate and the British Board of Trade enquiries both rounded on the crew of the Californian, and particularly on her captain, Arthur Lord. It was clear that the crew had seen several white rockets, which were the standard warning at sea in the event of a ship in distress. Despite this, they had failed to take decisive action, or to wake the wireless operator until 03.30 h, and the Californian remained stationary all night in the loose ice. The US Enquiry stated that '*such conduct, whether arising from indifference or gross carelessness, is most reprehensible, and places on the commander of the Californian, a grave responsibility*' [3]. Lord spent the rest of his life unsuccessfully trying to clear his name and died in 1962, aged 84 years.

It can sometimes require courage to question the advice or directions of senior colleagues in medicine, or even to seek help and advice from them. While it is important that health professionals are able to accept leadership by others, it also vital that they 'place patients' needs and safety at the centre of the care process' [28] which may require them to question some instructions. Dornan and

colleagues recommended that doctors should encourage trainees to challenge instructions from more senior doctors when necessary, as this would reduce the prevalence of errors. To achieve this, they also suggested that 'undergraduate programmes should develop habits of mind which include openness to feedback, willingness to seek help, and willingness to challenge instructions or information from practitioners which the student believes to be incorrect' [14].

Doctors, pharmacists and nurses are the three health professional groups most involved with prescribing, dispensing and administration of medicines. Prescribing, dispensing and administration of medicines are components of a complex prescribing process and it is vital that these health professionals feel comfortable communicating with each other (Figure 2). It has been noted that relationships between doctors and pharmacists are not always ideal, with 'bidirectional ambivalence', poor communication and lack of cooperation commonly observed between community pharmacists and general practitioners [29]. Similar issues can occur between nurses and doctors [30]. It is in the interests of patients that professional groups understand and respect each other's distinct contribution, work well within teams and are prepared to challenge other team members when necessary, to ensure safe prescribing occurs.

7. Commitment to excellence

The RMS Carpathia was 58 miles from the Titanic with ice between her and the stricken ship. Her skipper, Captain Rostron, showed true commitment and enormous courage when he doubled the lookouts and sailed the ship at full speed ahead through the ice, rescuing all the survivors. The Senate enquiry recorded that he was '*Deserving of the highest praise and worthy of especial recognition*' [3]. For his actions, he was awarded the US Congressional Gold Medal (along with the Presidential Medal of Freedom, the highest civilian award in the USA), and was later made Knight Commander of the Order of the British Empire and a Commodore of the Cunard Line.

A similar commitment to doing the very best is necessary if individuals and organizations in health care are to achieve the highest standards of patient safety. Dornan and co-workers [14] recommended five main targets to improve patient safety by minimizing errors. Firstly, they suggested that there should be improvements in the clinical working environment. In relation to this, they recommended the introduction of electronic prescribing systems, but warned that their introduction should be monitored to identify any new errors associated with their use. The important leadership role of senior doctors in promoting good prescribing was also highlighted, as well as the importance of provision of acceptable working conditions and the inculcation of a safety culture within the NHS [14].

The remaining four recommendations of the EQUIP study report all concerned the pivotal role of education in promoting safe and effective prescribing. The authors recommended that education and summative assessment in practical prescribing should be part of every undergraduate programme. They stated that education in practical prescribing should also be part of FY1, with explicit feedback regarding individual prescribing practice. The report also suggested that prescribing practice should be included in higher specialist training and consultant continuing professional development. Finally, the authors recommended that team-based education in safe prescribing should be a feature of in-service education to encourage doctors at all levels of seniority to communicate effectively with pharmacists, nurses and other multidisciplinary members of the health profession team [14].

Epilogue

The US Senate Sub-Committee on the Titanic sinking first convened on April 19 1912, just 5 days after the disaster, and it reported very rapidly (on May 28 1912). It recommended that all passenger ships should have sufficient lifeboat capacity for every passenger and member of crew. A minimum of four crew members should be assigned to each lifeboat, and they should be skilled in handling them, and drilled at least twice a month in lowering and rowing the boats. In addition, a wireless operator should be on duty around the clock, and there should be auxiliary power for the wireless in case of main power failure. A water-tight inner skin for large passenger ships was recommended, and transverse bulkheads were to end at a water-tight deck [3]. Similar recommendations were made by the British Wreck Commissioner's Inquiry chaired by Lord Mersey [31]. Many of these recommendations became part of the International Convention for the Safety of Life at Sea (SOLAS) which was passed 2 years later. International agreement was obtained for the International Ice Patrol, which continues to identify icebergs in the North Atlantic Ocean that could threaten transatlantic sea traffic. Lessons had been learned, although it had taken a tragedy for things to change.

In many respects, the delivery of safe and effective health care is even more complex than the provision of safe transportation. The marked variety of different services that need to be provided to individual patients, the major uncertainties, the vulnerability of patients and the fact that there is one-to-one or at least few-to-one delivery makes health care different from many other services [32]. Individual repeated incidents in medicine with serious outcomes may not have the same immediate impact on the public as a major transport accident (which may affect many hundreds of individuals at a specific time), but the cumulative loss over a period may be just as great or sometimes even greater.

Safe and effective prescribing is dependent upon a sound understanding of the pathophysiology of disease and the pharmacology of the relevant therapeutic agents. The understanding of these issues is continually developing, so lifelong learning is essential for all prescribers [33]. Prescribers can also be supported by guidelines and computerized decision support systems [15], but a solid foundation in pharmacology and therapeutics at undergraduate level will allow them to use these resources most appropriately. Educators should ensure that future prescribers understand the importance of continuing good communication with patients, carers and fellow health professionals. Interprofessional learning opportunities may help different health professional groups to work better together [34]. Educators should also ensure that students are aware that complacency, corner cutting and a failure to show the courage of their convictions are all threats to patient safety, and that a commitment from all of us to the highest standards of prescribing behaviour is necessary in order to do the very best for our patients.

Competing Interests

There are no competing interests to declare.

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