Reducing Medical Record Errors

Introduction

Errors in medical records can have wide-ranging consequences for the patient, the clinician and the institution. Seemingly simple errors can have dire effects; an error transposing a decimal point may cause a massive overdose or the mishearing of 'does' for 'doesn't' in transcription could alter a diagnosis completely.

Increasingly complex patients and treatments, with huge numbers of clinical professionals involved in their care, increase the importance of an accurate medical record. An increasingly litigious culture around medical errors only enhances the need to ensure mistakes are minimised.

Although highly trained, dedicated and efficient, clinical professionals are—nonetheless—human. Mistakes happen; busy people with multiple distractions may forget to record pertinent details or be called away before a patient note is completed. The traditional narrative form of producing medical records allows individuals to record in different styles, and means omissions or simple variations in emphasis change the way the record is interpreted by other professionals, or crucial information is difficult to extract. Yet, in this era of sophisticated electronic technology, possibilities exist which can help improve consistency and reduce errors to an absolute minimum. A full and accurate medical record can only help ensure 'gold standard' care for the patient, accurately reflect professionals' actions and opinions and protect the institution should complaints arise.

Types of error

Within the medical profession—as in any profession—there are many different types of error. Mistakes can be made due to lack of knowledge, perhaps resulting in an incorrect diagnosis by a junior doctor. Mistakes of omission can be made, either when the right question isn't asked of the patient or a pertinent detail isn't recorded. Errors can also be made when an action isn't made in a timely manner, such as if a nurse forgets to carry out some teaching with a patient during a busy shift. Mistakes can also be made when data is incorrectly transposed between prescription charts or from a paper medical record onto a billing document in medical coding. Transcriptionists can also mishear dictation; mistakes which may not be picked up at the proof-reading stage might enter the permanent record of that patient.

It may not be immediately straightforward to see how technology can help with all these errors, and some are more obvious than others. However, with the right system, and the right approach, technology can reduce the possibility for error in many of these areas.

Report templates and synoptic reporting

The benefits of report templates—or synoptic reports—are better established in some areas than others. The American College of Pathologists was a leader in recognising the potential benefits of synoptic reports when, in 2004, they published guidelines on the reporting of cancer pathology specimens [1]. Since then, increasing evidence has become available that synoptic reporting for

cancer pathology improves the inclusion of essential information. In 2016, a large meta-analysis of available evidence identified reports on over 35,000 subjects. They found that synoptic reports overwhelmingly included more essential information than traditional narrative reports, with many elements being included in close to 100% of reports [2]. As well as this obvious benefit to patients, the report also provided us some information on other potential advantages of the synoptic report. For example, they found that contrary to the initial fear of many that synoptic reports might take longer to produce, in many cases reports were actually quicker to write. Synoptic reporting was also well-liked by both pathologists and the wider multi-disciplinary team, helping with communication and data extraction.

Such strong evidence of the success of synoptic pathology reporting has encouraged other specialties to investigate their potential use. A group in the USA introduced electronic operation notes to a small gynaecological unit for a limited time. Comparing the same user's performance on old-style dictated reports and electronic synoptic reports, they found that synoptic reports took a similar amount of time to produce, were available in the patient record in less than an hour (compared to an average of 10 days) and were more complete [3].

Such improvements have the immediate and obvious benefit of improving patient care since complete and accurate information on their treatment or diagnosis is available more quickly. Synoptic systems also have the possibility to reduce institutional costs by removing the need for transcriptionists and potentially reducing clinicians' time spent proof-reading transcribed reports.

Electronic medical records

Errors in the medical record arise both from the way the information is recorded (with narrative entries allowing individual variation and omissions) and how it is stored. Most medical professionals will be familiar with the difficulties arising from huge volumes of paper medical records, often poorly filed and sometimes even missing at the time of a consultation. Information may be difficult to find, difficult to read and recorded in a myriad of different styles.

Electronic medical records mean that the complete record is available wherever the patient is, or where any of the professionals caring for them needs to see it. The information is searchable and bookmarked, and may be recorded using standardised templates. In addition to these perhaps obvious benefits, electronic records can help improve care and reduce errors in a range of other ways.

Prompting best practice

Well-constructed electronic medical records can prompt clinicians to conform with local best practice guidelines, or deliver gold-standard care. This can apply to standardised care plans to promote gold-standard nursing care and documentation [4] or systems using so-called 'decision support' to prompt or query an action against best practice guidelines [5]; for example, an order for a blood test or x-ray which isn't indicated by the given diagnosis might be questioned. While it's obviously crucial the clinician has the option to override the prompt, such mechanisms at least ensure the decision is properly scrutinised.

Teaching and training

Electronic patient records can help in teaching and training in a range of ways. Scrutiny of a clear and complete medical record with timelines for decision-making can help show clinicians where performance could be improved. EMRs are also increasingly being used in medical student teaching, both to allow creation of 'virtual patients' and to provide students with hands-on experience of prescribing and recording of medical information [6,7].

Prescribing errors

Prescribing errors make up a large proportion of medical record errors in the vast majority of studies. Handwriting prescriptions, often from memory, or
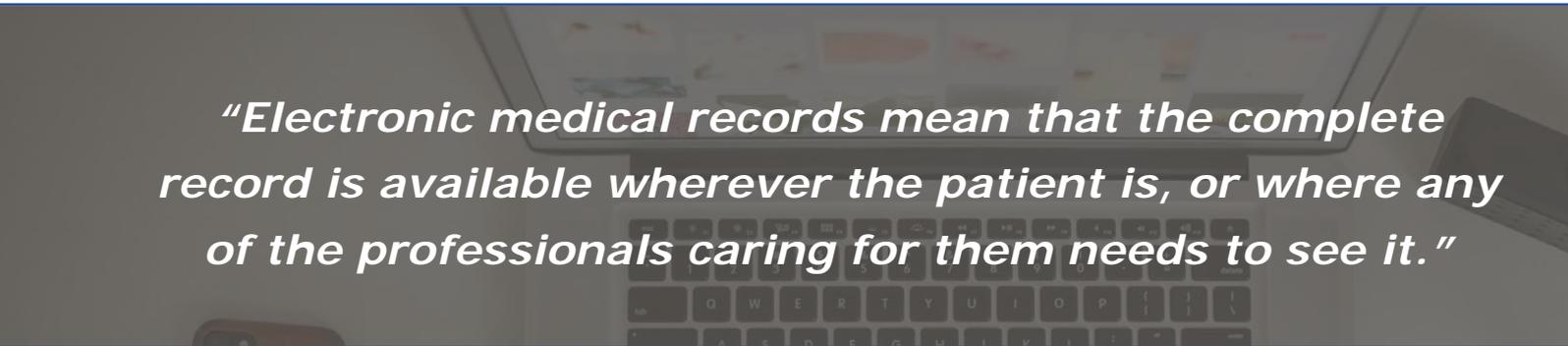
"Electronic medical records mean that the complete record is available wherever the patient is, or where any of the professionals caring for them needs to see it."

relying on mental arithmetic to calculate doses, readily introduces mistakes. Even the most basic electronic prescribing system which alerts the user to allergies or potential drug interactions can significantly reduce errors. A review of the evidence published in 2014 showed that avoidable adverse drug events were reduced by over 50% by using such a system [8].

More sophisticated systems can calculate suggested doses based on patient weight, or pre-allocate administration times and even allow barcode scanning of both patient and medication to reduce the possibility of administration errors; some can even prompt a pharmacy when supplies are running low [9].

How to succeed in implementing an electronic record system

So much depends on the choice of system, and the ability to tailor it to local practices. Care needs to be taken to ensure the adequacy of data entry [10], as systems which are 'clunky' or demand large volumes of seemingly irrelevant material will encourage incomplete record keeping and are unlikely to be popular. However, a well-managed system which highlights relevant information can improve efficiency, recording accuracy and prevent omissions or duplications [11].

Introducing sophisticated forms of electronic patient records like synoptic reporting can seem daunting both to clinicians and to institutions. Such systems can be perceived as costly and unwieldy, or feared to demand more time of already pressed individuals. A few key steps in managing the change process may be invaluable in ensuring the success of the whole project.

Multiple studies have highlighted the importance of involving 'on the ground' professionals from the very early stages. The delayed roll-out of a nationwide electronic record system in the Netherlands noted this as one of the key early problems [12]. Identifying and recruiting 'champions of change' who are respected by other professionals can hugely aid the introduction [13]. Use of available evidence showing efficiencies gained and improvements in patient care from similar institutions may also help alleviate fears. Comprehensive support from the institution—ensuring the provision of IT and technical support both during and after the change, along with time set-aside for training and personalisation—will also ensure a smooth transition.
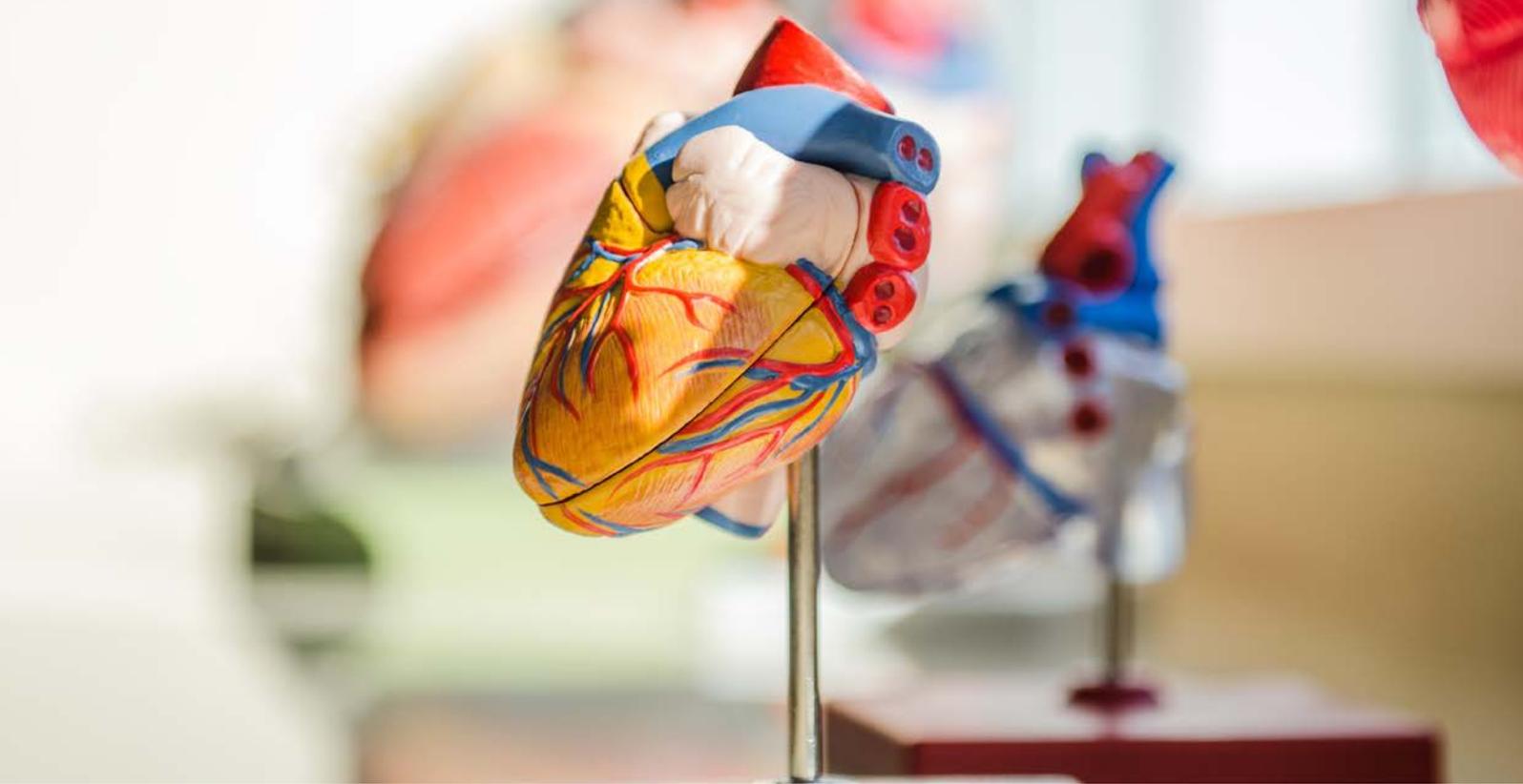
There is no doubt that wholesale introduction of an electronic patient record system presents a considerable commitment both financially and conceptually. However, potential financial savings and improvements in patient care are substantial [14].

Summary

Medical record errors arise from a multitude of sources. Poor handwriting, individual recording styles, omissions, poor filing and simple mistakes can all lead to errors. Some of these will translate into patient harm through delays, drug errors or incorrect diagnoses. In the world of increasingly complex diagnoses and treatment options, with multiple professionals involved in patient-care, the potential for error only rises. Smart use of technology to help prevent omissions, prompt best-practice, help in training and allow the timely availability of complete medical records, has the potential to help dedicated professionals reduce errors in the medical record to an absolute minimum.

While we may be some way from universally available complete electronic patient records, the technology *is* available to significantly reduce medical recording errors.

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