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Improving clinical decision support tools

Challenges and a way forward

Would you prescribe a drug without regulatory approval, for which the safety and efficacy are unknown? Unlikely.

Would you use a clinical practice guideline that is not endorsed by a peak body, with no accessible evidence for its recommendations and with its authorship unknown? Unlikely. Do you currently use decision support tools in your prescribing software that have not been evaluated or accredited, with unknown or variable quality and reliability? Very likely.

Clinical decision support (CDS) has developed in an environment that is largely uncoordinated and unregulated. Currently general practitioners work with systems that include basic decision support tools, such as warnings for drug-drug interactions and drug allergies. These tools vary between software systems^{1,2} and have generally not been independently evaluated for quality and reliability, nor are they certified.

There is an expectation that CDS will improve safety and quality of care for patients, and that this will translate into considerable cost savings and an increase in efficiency.³ There is some evidence that CDS can help align prescribing behaviour to best practice guidelines and reduce some types of errors and adverse drug events.⁴⁻⁶ On the other hand, CDS can be an annoying interference when it is not relevant in terms of timeliness, context or content.^{1,7} The consequences of poorly designed or implemented CDS can also be harmful, for example, adverse drug events have been reported when clinicians followed inappropriate dosage regimens recommended by a CDS tool.⁸

Ideally, CDS systems should 'provide clinicians or patients with clinical knowledge and patient related information, intelligently filtered and presented at appropriate times, to enhance

patient care'.⁹ In order to achieve this, in addition to drug interaction and allergy alerts, a minimum set of safety features should be included in all clinical software systems, including alerts for contraindicated drugs, drug dosage support (eg. paediatric dosage, dosage in renal impairment, warnings for potentially harmful doses) and timely warnings about newly identified medicine safety issues. These and other types of decision support should be underpinned by high quality, up-to-date information, and be implemented in such a way that they fit with workflow and are easy to use. Sounds simple? Unfortunately, it's not. The complexity involved in developing useful, usable and safe decision support systems is often underestimated.

For a decision support system to be useful, appropriate input data must be incorporated correctly into the clinical software system, appropriate rules or algorithms must be applied to the input data to convert it to an output, and the output must be presented to the user in a timely and meaningful way. Input data includes accurate patient data in a suitable format, and a high quality clinical knowledge base that contains information that has been properly transformed for decision support.

A core set of CDS features for clinical software should be defined in order for CDS to become more useful and usable for Australian GPs. Much work has already been done in this area,¹⁰⁻¹² however, implementing the guidance and recommendations is unlikely to progress without agreement and coordinated effort from multiple stakeholders. A vital ingredient in this process is an open line of communication between clinicians and clinical software vendors and implementers.

E-health is an Australian Federal Government priority, with the National E-Health Transition Authority (NEHTA) commissioned to progress

standards in relation to drug and disease terminologies, messaging and unique identifiers. These are all important foundations but unfortunately CDS is not currently within NEHTA's remit. Software vendors have expressed interest in a core set of features for CDS but they would require a national framework to be in place before they can progress with this work. Current priorities as part of this framework include identifying appropriate standards and guidance, endorsement of key guidelines to use as a basis for decision support, prioritisation of which features to implement first, and adequate remuneration for the development work.

Clinical decision support is likely to be a significant driver for uptake of e-health by consumers and health professionals and will be one of the key benefits of an e-health enabled Australia. Despite this, and the current flurry of federal government commissioned activity around e-health, CDS is not being progressed. Leadership is required to bring stakeholders together and encourage coordinated efforts in this area. This includes prioritisation of areas for development; provision of guidance on implementation and usability of decision support; and oversight of the evaluation and certification of CDS systems and knowledge bases. This is not a new concept,^{9,13} however, now it is time to make use of these ideas to move the CDS agenda forward.

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