Big Problems with Supporting Clinical Decisions

Dean Sittig*

Department of Medical Informatics, Northwest Permanente, Portland, OR, USA

Abstract

There is a pressing need for high-quality, effective means of designing, developing, presenting, implementing, evaluating and maintaining all types of clinical decision support capabilities for clinicians, patients and consumers. Using an iterative, consensus-building process we identified a rank-ordered list of the top 10 grand challenges in clinical decision support. This list was created to educate and inspire researchers, developers, funders and policy-makers. The list of challenges in order of importance that they be solved if patients and organizations are to begin realizing the fullest benefits possible of these systems consists of: improve the human computer interface disseminate best practices in CDS design, development and implementation; summarize patient-level information; prioritize and filter recommendations to the user create an architecture for sharing executable CDS modules and services combine recommendations for patients with co-morbidities prioritize CDS content development and implementation create internet-accessible clinical decision support repositories use free text information to drive clinical decision support mine large clinical databases to create new CDS.

Keywords: Clinical decision • Clinical databases • Implementation

Introduction

Identification of solutions to these challenges is critical if clinical decision support is to achieve its potential and improve the quality, safety and efficiency of healthcare. Numerous nearby, local and public drives have urged medical services suppliers to carry out best in class clinical data frameworks, focusing on training bunches going from single doctor practices to enormous coordinated conveyance organizations . In order to cut costs and improve care quality, efforts have been made to develop longitudinal, interoperable electronic health records (EHRs) for each and every patient. However, it is uncertain whether these efforts will accomplish these objectives. Many electronic health records (EHRs) do not currently include robust clinical decision support features or functions, despite models and pioneering deployment efforts indicating that a high level of clinical decision support (CDS) is essential to achieving these objectives. In addition, if the objective of gathering "complex genomic profiling data toward the goal of personalized medicine" is to be accomplished, the quantity and complexity of the data that is available, in addition to the decision support that is required to appropriately interpret and respond to that data, will increase exponentially. As a result, clinicians, patients and consumers all have a pressing need for high-quality clinical decision support tools. The term clinical decision support will be defined in this paper as "refer broadly to providing clinicians or patients with computer-generated clinical knowledge and patient-related information, intelligently filtered or presented at appropriate times, to enhance patient care," according to a widely used guidebook.

Description

Advanced clinical decision support for participants in the delivery of

***Address for Correspondence**: Dean Sittig, Department of Medical Informatics, Northwest Permanente, Portland, OR, USA; E-mail: dean.f.sittig@ap.org*

healthcare is recognized as having potential value by many. Even though there have been a variety of successes at specific sites in individual domains, there are currently few CDS implementations in routine clinical use that have substantially delivered on the promise to improve healthcare processes and outcomes. However, even these successes have not been widely replicated in general. There are a lot of reasons why these systems don't spread. The complexity that arises from the nature of decision making, the intellectual challenge of creating knowledge, the technical dimensions of delivering CDS and social aspects of incorporating changes into clinical care" are just a few of these examples. While trying to distinguish and portray the key difficulties that should be survived assuming we are to accomplish these expected advantages, we (the creators alongside a few clinicians) utilized an iterative, agreement building cycle to produce a rundown of the main 10 thousand difficulties in clinical choice help. After that, we sent this list out via email to everyone so that they could rank the challenges from one (the most important) to ten (the least important). No ties were permitted [1].

For patients and organizations to begin reaping the full benefits of these systems, we ranked the challenges according to their importance. We hope that this list will assist in educating and inspiring stakeholders who are in a position to advance the state of CDS technology and practice, particularly informaticians worldwide and those who fund them and thus expedite productive explorations. These difficulties are in line with the strategic goals that a panel of experts recently laid out in a roadmap for national action on CDS. The entire content of a complicated patient's data cannot be retained or processed by anyone; Clinicians need to keep in mind the most significant information and conclusions that are relevant to the situation at hand. The CDS challenge is to create one or more brief synopses of a patient's pertinent past medical history, current condition(s), physiologic parameters and current treatment(s), as well as to intelligently and automatically summarize all of a patient's electronically available clinical data, both free text and coded. These outlines ought to be adequately nitty gritty to empower a clinician to comprehend the patient's on going condition as though she had spoken with the patient's all's medical services suppliers [2,3].

These summaries aim to provide each decision-maker with all of the essential data they need to make the best decisions possible; Different summaries may be required to address the perspectives of various clinicians and workflows, particularly for patients with complex data. Furthermore, these synopses ought to supply required information naturally to Albums applications that help such choices. The physiological state of the patient should be able to be derived from a wide range of data sources and codified as an intermediate variable by this summarization engine. This intermediate variable could then be used as a reliable data item in another part of the logic, such as patient is on

anticoagulation therapy or patient is pregnant. Clinicians will need to be able to quickly and accurately comprehend a patient's pertinent medical history as the amount of patient-specific clinical information that is electronically available grows [4,5].

Conclusion

In the end, it may be possible to distil vast amounts of data into a concise set of indicators that permit an at a glance assessment of the patient's condition. Automatic triggering of more extensive and specific CDS is also possible with improved data-driven derivation and statement of a patient's condition and related data. In relation to clinical decision support, we have identified a number of obstacles that, if addressed, we believe can unlock its substantial potential. There are undoubtedly additional challenges that are significant, but these are clearly the most significant set. Addressing these issues will take some time and the responses will probably differ slightly, but moving forward along this path will move things forward. We asked a few of our colleagues to rank the challenges in order of importance from most to least important so that we could attempt to prioritize their resolution in order of importance for patients and organizations to begin reaping the full benefits of these systems.

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Conflict of interest

No potential conflict of interest was reported by the authors.

References

1. Hall, Deborah A., Alberto R. Ramos, Jeffrey Marc Gelfand and Aleksand er Videnovic, et al. "The state of clinical research in neurology." Neurology 90 (2018): e1347-e1354.

2. Meador, Kimford J. "Decline of clinical research in academic medical centers." *Neurology* 85 (2015): 1171-1176.

3. Chetlen, Alison L., And rew J. Degnan, Mark Guelfguat and Brent Griffith, et al. "Radiology research funding: current state and future opportunities." *Acad Radiol* 25 (2018): 26-39.

4. Kearney, Anna, Nicola L. Harman, Anna Rosala-Hallas and Claire Beecher, et al. "Development of an online resource for recruitment research in clinical trials to organise and map current literature." *Clinical trials* 15 (2018): 533-542.

5. Seufferlein, Thomas and Guido Adler. "Klinische forschung in deutschland am Beispiel der onkologie." *Oncol Res Treat* 33 (2010): 1-5.