

On Evidence-Based Practice

The goals of evidence-based practice, research, or guidelines are to incorporate the three perspectives of clinician, patient, and best research evidence in order to arrive at the best outcome possible for the patient. This highest-level of abstraction of the evidence-based paradigm and its challenges as outlined in Bazian Ltd. (2005) and Sackett and Rosenberg (1995) is based on the premise that the subset of "evidence" (whether it be research articles, guidelines, electronic medical records, drug interaction alerts, etc.) that is delivered to the clinician is both "the best" research evidence and also the most relevant. "Best judgment" by the roles of the clinician and patient should never be overruled by the "best subset of evidence" as delivered by complex systems of data and computational intelligence when you consider the challenges of both the user (searching skills) and the machine.

It is impossible to peruse or have access to all the articles, research materials, and guidelines available locally, nationally, and internationally--there is an overwhelming amount of information. The combined efforts of biomedical/health informatics, computer science, and computational intelligence (various forms of artificial intelligence and artificial decision making sciences) are employed to act as "information gatekeepers". In a study by Fenton and Badgett (2007), two knowledge repositories, UpToDate and the National Guidelines Clearinghouse (NGC), were compared for searching and retrieval of information related to common questions asked by primary care physicians. The Fenton and Badgett (2007) study demonstrated that "the two resources had a significant difference in the number of documents retrieved and that neither resource provides comprehensive coverage of questions in the sample" (p. 258). With UpToDate being a subscription service and NGC being a public service, Fenton and Badgett (2007) found that "UpToDate returned a minimum of 1 document for 11.6% more questions than NGC, whereas NGC retrieved more documents when content was found for a question" (p. 257). Also, they found that "current practice guidelines, as reflected by those in the NGC, addressed **at most** two-thirds of the selected clinical questions". Fenton and Badgett (2007) noted that the relevancy and quality and timeliness of the data returned also needed to be explored and taken into consideration in future studies. Additional issues brought to light were problems of redundant or conflicting data (conflicting guidelines or recommendations or alerts) and the high possibility of "human error" in preparing/tagging/data-entry of the data (e.g. guidelines, articles, etc.) so that it may be searched upon. If the search engine requires markups and there is an error in the metadata, that would definitely skew a search.

Fenton and Badgett (2007) also mentioned the study by Alper, Stevermer, White, & Ewigman (2001) where two expert physician searchers were employed to search fourteen medical databases for the answers to twenty medical questions. Alper et al. (2001) found that no single database answered more than 70% of the questions and ten of databases answered between 20-50% of the questions. The time it took the expert searchers (as opposed to those physicians with less experience performing electronic searches) ranged from 2-6 minutes for each question (Alper et al., 2001).

The studies by Fenton and Badgett (2007) and Alper et al. (2001) hopefully help to develop an awareness to the fact that in the ebb and flow of information, one has to be mindful not to overrule good, present human judgment via the clinician and patient roles by a subset of

"best" evidence presented by an artificial gatekeeper. The issues of searching and retrieving "best" articles and guidelines impact decision making on one end of the spectrum. On the other end are clinical decision support systems (CDSS) which play an even more critical role in patient care as they impact the "front lines" of decision making. The role of CDSS may be explore in a future post.

References

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