“I’ll Just Google It”

The Case Against Internet Searching for Clinical Evidence

health.ebsco.com

EBSCO

Introduction

"Just Google it." Today we hear this phrase often. Google and other search engines, and the internet in general, have become a means and a source to answer a myriad of questions for many on a daily basis. Clinicians have a lot of questions, too. Internet search engine usage is common among healthcare professionals for finding answers to point-of-care clinical questions. However, there are issues with using search engines and internet sites—search flaws, unfavorable characteristics of search results and inconsistent site content quality, being the most prevalent. For clinicians to provide the most appropriate care, current evidence-based information, obtained via credible resources, must be easily accessed, assessed and applied.

Problem

In a systematic review of clinicians' (physicians, medical residents, physician assistants, nurse practitioners, nurses, dentists, and care managers) point-of-care questions, Del Fiol, Workman and Gorman (2014) identified that a minimum of one question occurs for every two patients seen. In addition, more than 50% of these questions stay unanswered, perhaps as a result of information overload (Miller, as cited in Clarke et al., 2013).

How do clinicians know that information on the internet is valid, reliable and current? This is an important question, as answers translate into patient care diagnoses, treatments, prognoses, care plans, and quality of life decisions for patients, making the use of unreliable, untrustworthy information a catalyst to potentially delayed, inappropriate, error prone and potentially fatal care. Indeed, knowledge gaps have recently been explicated as causative factors of untoward events (Brassil et al., 2017; Zipperer, 2014).

How do clinicians know that information on the internet is valid, reliable and current?

Prevalence of Internet Search Engine Use

To understand the prevalence of search engine use at the point of care, one UK and Spain study (Hughes et al., 2009) found that 80% of junior physicians reported using Google at least once over the course of a week. Another study of US internal medicine residents estimated that 63% used an internet search engine to identify evidence at least daily (Duran-Nelson et al., 2013). Additionally, Weng and colleagues (2013) found that > 90% of physicians, nurses and allied health professionals in Taiwan used a search engine when seeking health information, the most out of e-textbooks, online databases, e-journals, and other clinical resources. Utilization in this study was defined as access at least once per month during the previous six months.

Search Engine Issues

Regarding search specificity, internet search engines don't use controlled medical vocabularies, such as the International Classification of Diseases (ICD), which provide universal meaning to terms and phrases within a medical context. Controlled medical vocabulary use expedites search and retrieval of relevant information, making it more useful. In addition, internet search engines sometimes separate terms within a concept, thereby producing fragmented and irrelevant results.

In June 2017, Google was fined $2.7 billion by the European Union for "promoting its own comparison-shopping service in its search results, and demoting those of competitors" according to Margrethe Vestager, EU antitrust Commissioner (The Two-Way, National Public Radio). This is relevant as medical search results might also be slanted. For example, an article detailing a medication trial, whose manufacturer advertises on Google, might appear earlier in a search result list. Conversely, an article summarizing a competitor's drug product might be demoted to second or third page position, thereby escaping many users' access and consideration.

Information Deluge

One issue regarding internet search results is information overload, which as suggested by Bawden and associates, "occurs when information received becomes more of a hindrance rather than a help when the information is potentially useful" (as cited in Clarke et al., 2013, p. 180). Information overload as a hindrance is heavily addressed in the literature (Ayatollahi et al., 2013; Duran-Nelson et al., 2013; Formoso et al., 2016; Weng

et al., 2013). Possible effects of information overload have been noted by Miller as, "failing to process some of the inputs, processing information incorrectly, delaying the processing of information, accepting lower-quality information and giving up the search for needed information" (as cited in Clarke et al., 2013, p. 180), potentially leading to inadvertent patient care errors and/or knowledge gaps.

Source Credibility

For information to be judged as credible and therefore trustworthy, multiple characteristics must be evaluated; information must be reliable, valid, current, free from bias, and with appropriate scope and depth coverage. Website assessment guides for healthcare information do exist, for example, the DISCERN Instrument (Charnock, 1998), the HONcode (Health on the Net Foundation [HON]), the eHealth Code of Ethics (Rippen & Risk, 2000) and the General Assessment and Content Assessment questionnaires (Saleem, 2010). Naturally, it takes time to apply these tools to internet-sourced information, time that most healthcare practitioners don't have when seeking an answer to a question, as, on average, less than three minutes is spent seeking an answer (Del Fiol et al., 2014).

There are few accrediting bodies for website content where the principal users are healthcare professionals. One such organization is the Health on the Net Foundation, whose HONcode "is a code of ethics that guides site managers in setting up a minimum set of mechanisms to provide quality, objective and transparent medical information tailored to the needs of the audience" (HON). As of May 2, 2017, the HON has certified over 7,300 websites; this number includes those intended for patients, those intended for professionals and those intended for both patients and professionals (HON). Certification is voluntary, good for one year and free; renewal is fee-based. Certified websites meet HONcode principles (Figure 1); the website can then display an HONcode seal (Figure 1). Most significant is that upon first review, less than 5% of websites seeking HON certification are in compliance (Boyer, 2013). EBSCO Health products are in compliance with HONcode principles (EBSCO Health).

HONcode: Principles (Short Version*)

1. **Authority** - Indicate the qualifications of the authors
2. **Complementarity** - Information should support, not replace, the doctor-patient relationship
3. **Privacy** - Respect the privacy and confidentiality of personal data submitted to the site by the visitor
4. **Attribution** - Cite the source(s) of published information, date medical and health pages
5. **Justifiability** - Site must back up claims relating to benefits and performance
6. **Transparency** - Accessible presentation, accurate email contact
7. **Financial disclosure** - Identify funding sources
8. **Advertising** - Clearly distinguish advertising from editorial content

** Complete statements are available on each principle: http://www.hon.ch/HONcode/Pro/Conduct.html*

Figure 1: HONcode Principles (short version).

Solution

Pre-appraised medical information is available for point-of-care decision support. The term pre-appraisal refers to resources that "have undergone a filtering process to include only those studies that are of higher quality, and they are regularly updated so that the evidence we access through these resources is current" (DiCenso, Bayley and Haynes, 2009). As a guide to assist clinicians in searching resources to find the most useful information for decision-making, the Evidence-Based Healthcare Pyramid 5.0 Framework was introduced in 2016 (Alper and Haynes), the most current iteration of similar models (Haynes, 2006; DiCenso and colleagues, 2009a, 2009b; Alper, 2014; Alper and Haynes, 2016) (Figure 2). Using the Evidence-Based Healthcare Pyramid 5.0 model, clinicians are encouraged to start with resources at the pyramid's apex (systems) where time spent to navigate and identify high-quality evidence is less; time spent to answer clinical questions progressively increases (and comprehensiveness generally decreases) as resources are utilized toward the pyramid's base (studies) (Alper, B.S. and Haynes, R.B. [2016]).

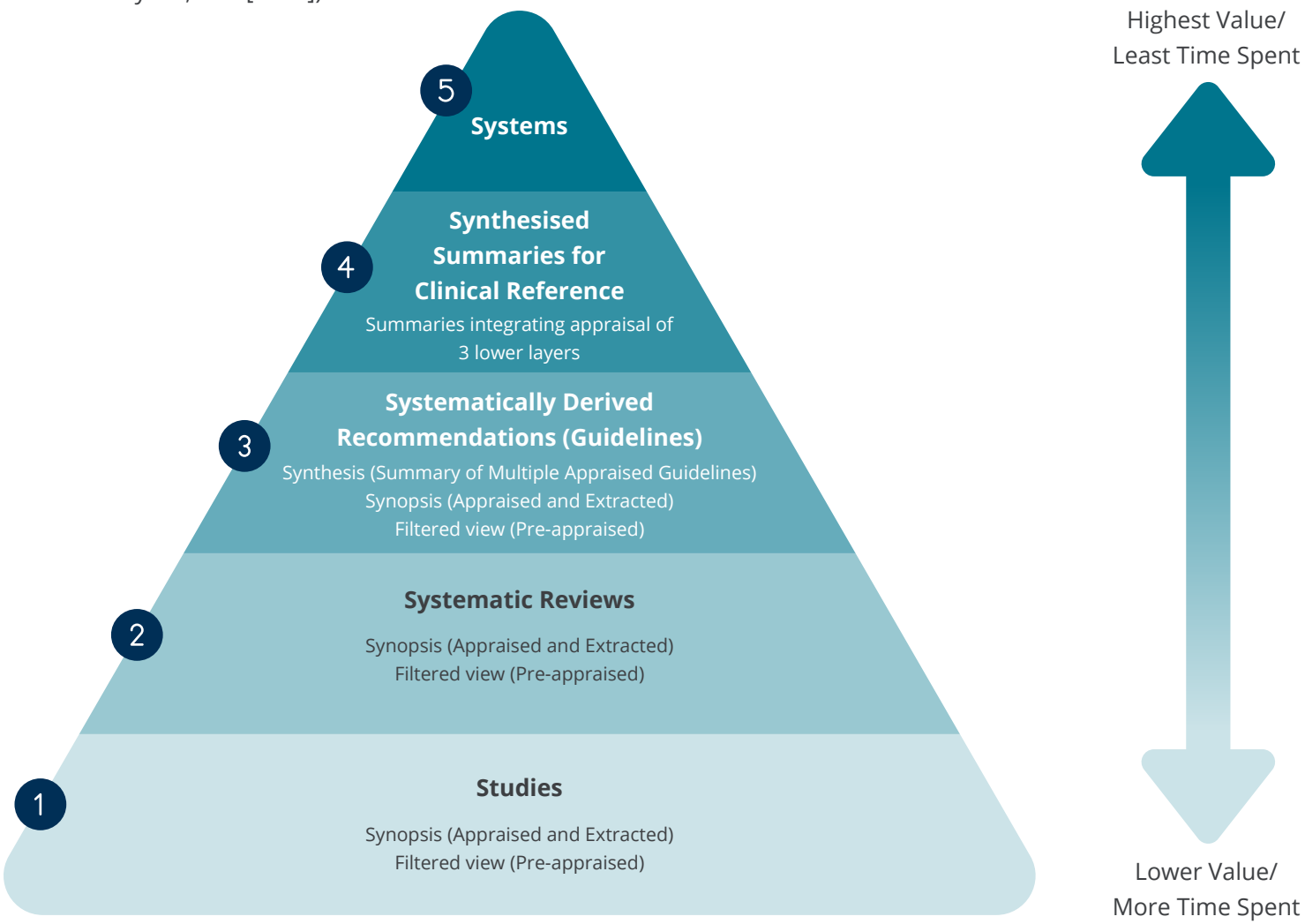

Figure 2: The Evidence-based Healthcare Pyramid 5.0 (Alper, B.S. and Haynes, R.B. [2016]).

5.0 Systems (e.g., computerized decision support systems), at the pyramid's peak, are listed as the tightest evidence as they factor each individual patient's demographic (e.g., age and gender) and clinical (e.g., allergies, diagnoses) information into evidence which is provided to the clinician (Alper, B.S. and Haynes, R.B. [2016]). EBSCO's DynaMed® and *Nursing Reference Center™ Plus* products are examples of 4. Synthesized summaries for clinical reference. Additionally, when these products are embedded into an EMR via HL7 infobutton, they become part of a computerized decision support system.

In considering credibility criteria set forth previously, DynaMed and *Nursing Reference Center Plus* contain reliable, valid, current and comprehensive information, the editors of which have disclosed all relevant possible conflicts. The following is a detailed review of both products per each credibility criterion (Table 1).

Credibility Criteria	DynaMed	*Nursing Reference Center Plus*
Reliability	Evidence-based appraisal methodology* consistently applied to article review for possible inclusion.	Evidence-based appraisal methodology* consistently applied to article review for possible inclusion.
Validity	Evaluated via evidence-based appraisal methodology.*	Evaluated via evidence-based appraisal methodology.*
Currency	Updated daily via evidence-based appraisal methodology.*	Updated weekly via evidence-based appraisal methodology.*
Avoiding Conflicts of Interest	Editors disclose all relevant possible conflicts. Editors with significant conflicts are strictly prohibited from editorial decision making.	Editors disclose all relevant possible conflicts. Editors with significant conflicts are strictly prohibited from editorial decision making.
Comprehensiveness	Topics cover all medical specialties and the entire medical diagnostic and treatment process.	Topics cover all nursing specialties and the entire nursing scope of practice.

Table 1

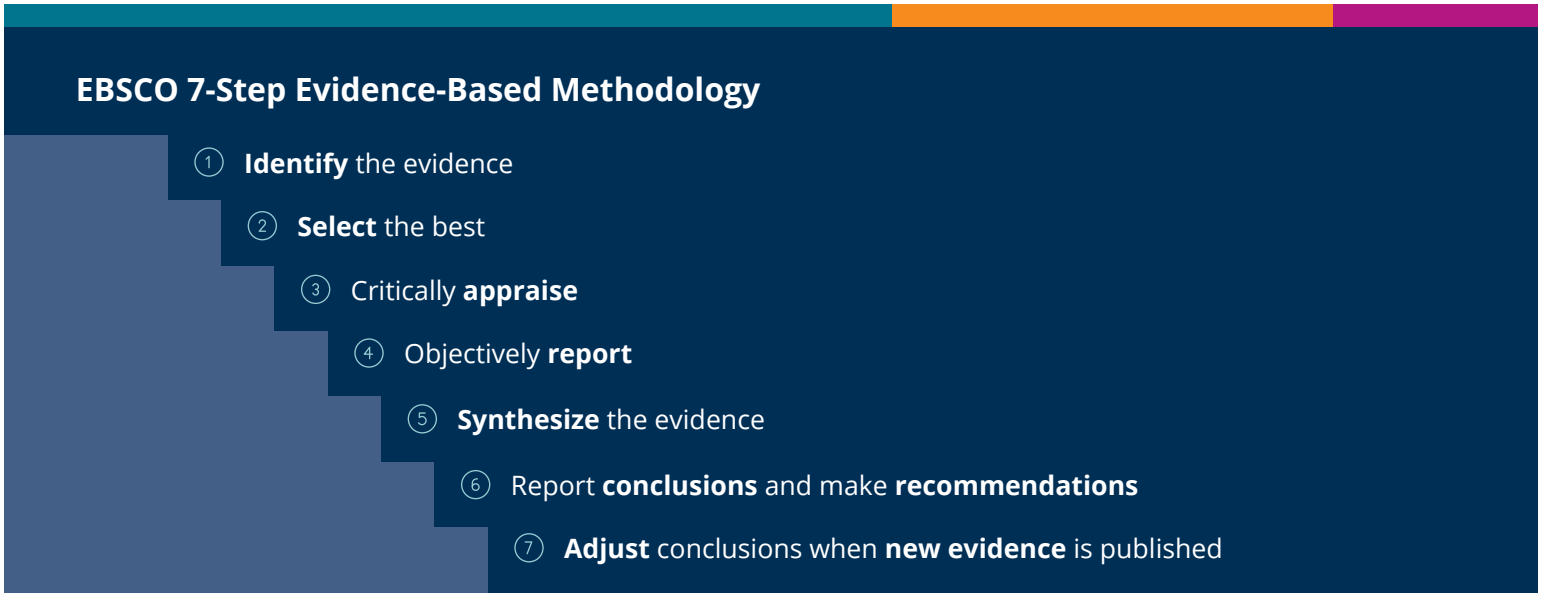

Figure 3: *EBSCO 7-Step Evidence-Based Methodology

The EBSCO clinical resources highlighted in Table 1 follow EBSCO's 7-Step Evidence-Based Methodology.

Conclusion

Medical information sourced via internet search engines can be overwhelming in quantity and of varying quality, causing much time spent in order to identify useful evidence, if it's found at all. When information is found, its validity isn't often easily and quickly identifiable. Alternatively, pre-appraised decision support resources save precious time since the information's already been assessed for credibility, allowing clinicians to apply trustworthy information in caring for patients. Information that's credible, current and of highest quality is essential for providing timely, effective and efficient evidence-based patient care.

Interested in learning more about EBSCO's robust suite of evidence-based clinical decision support tools including Dynamed, *Dynamic Health*™, and *Nursing Reference Center Plus*? Visit our website today.

Visit Our Website

About the Author

Jackie Skeith, MS, RN-BC, is currently Health Implementation Manager, US Northeast Region and Canada, at EBSCO Health. A registered nurse, Jackie worked clinically in medical-surgical and cardiac step-down units. Jackie's held healthcare informatics positions in hospital, home health and vendor settings for over 20 years. She has a master's degree in healthcare informatics and is a board-certified informatics nurse.

Sources

1. Ademiluyi, G., Rees, C. E., and Sheard, C. E. (2003). Evaluating the Reliability and Validity of Three Tools to Assess the Quality of Health Information on the Internet. *Patient Education and Counselling*. 50 (2): 151–55.
2. Alper, B. S. (2014). Evolution of EBM: from synthesized evidence and varied guidance to synthesized guidance. Presented at International Society for Evidence-based Health Care (ISEHC) conference; Taipei, Taiwan. www.isehc2014.tw/files/ptt/SL-01-Brian%20S.%20Alper.pdf
3. Alper, B. S. and Haynes, R. B. (2016). EBHC pyramid 5.0 for accessing preappraised evidence and guidance. *Evidence Based Medicine*. 21 (4) 123-125.
4. Ayatollahi, H., Bath, P.A., Goodacre, S. (2013). Information needs of clinicians and non-clinicians in the Emergency Department: a qualitative study. *Health Information & Libraries Journal*, 30: 191–200.
5. Boyer, C. (2013). *When the quality of health information matters: health on the net is the quality standard for information you can trust*. Health on the Net Foundation. www.hon.ch/Global/pdf/TrustworthyOct2006.pdf
6. Brassil, E., Gunn, B., Shenoy, A. M., Blanchard, R. (2017). Unanswered clinical questions: a survey of specialists and primary care providers. *Journal of the Medical Library Association*. 105 (1), 4-11.
7. Charnock, D. (1998). *The DISCERN Handbook - Quality criteria for consumer health information on treatment choices*. Abingdon, England: Radcliffe Medical Press Ltd.
8. Clarke, M. A., Belden, J. L., Koopman, R. J., Steege, L. M., Moore, J. L., Canfield, S. M. and Kim, M. S. (2013). Information needs and information-seeking behaviour analysis of primary care physicians and nurses: a literature review. *Health Information & Libraries Journal*. 30: 178–190. doi:10.1111/hir.12036
9. Del Fiol, G., Workman, T.E., Gorman, P.N. (2014). Clinical Questions Raised by Clinicians at the Point of Care - A Systematic Review. *JAMA Internal Medicine*. 174(5): 710-718. doi:10.1001/jamainternmed.2014.368
10. DiCenso, A., Bayley, L., Haynes, R. B. (2009a). ACP Journal Club. Editorial: Accessing preappraised evidence: fine-tuning the 5S model into a 6S model. *Annals of Internal medicine*. 151 (6): JC3-2, JC3-3.
11. DiCenso, A., Bayley, L., Haynes, R. B. (2009b). Accessing pre-appraised evidence: fine-tuning the 5S model into a 6S model. Evidence-Based Nursing. 12(4), 99-101.
12. Duran-Nelson, A., Gladding, S., Beattie, J., Nixon, L.J. (2013). Should we Google it? Resource use by internal medicine residents for point-of-care clinical decision making. *Academic Medicine*. 88 (6): 788–94. DOI: dx.doi.org/10.1097/ACM.0b013e31828ffdb7
13. EBSCO. Is EBSCO in compliance with the HONcode. connect.ebsco.com/s/article/Is-EBSCO-in-compliance-with-the-HONcode
14. EBSCO Health. *Evidence-Based Methodology*. health.ebsco.com/about/editorial Accessed 1/4/18.
15. Formoso, G., Rizzini, P., Bassi, M., Bonfanti, P., Rizzardini, G., Campomori, A., Mosconi, P. (2016). Knowledge transfer: what drug information would specialist doctors need to support their clinical practice? Results of a survey and of three focus groups in Italy. *BMC Medical Informatics and Decision Making*. 16: 115. DOI 10.1186/s12911-016-0355-7
16. Harris, R. (2016). *Evaluating Internet Research Sources*. VirtualSalt. www.virtualsalt.com/evalu8it.htm Accessed 1/4/18.

17. Haynes R. B. (2006). Of studies, syntheses, synopses, summaries, and systems: the "5S" evolution of information services for evidence-based health care decisions. *ACP Journal Club*. 2006;1 45: A8.

18. Health Management Technology. (February, 2018). *EBSCO Health Resource named 2018 Best in KLAS for clinical decision support*. www.healthmgttech.com/ebsco-health-resource-named-2018-best-in-klas-for-clinical-decision-support

19. Health on the Net Foundation. May 2, 2017. *The HONcode: What is it?* www.hon.ch/HONcode/Pro/Visitor/visitor.html

20. Hughes, B., Joshi, I., Lemond, H., Wareham, J. (2009). Junior physician's use of Web 2.0 for information seeking and medical education: A qualitative study. *International Journal of Medical Informatics*. 9; 78: 645–655.

21. KLAS Enterprises, LLC. (November, 2016). *Clinical Decision Support 2016: Providers Expect EMRs to Drive CDS Impact*. All rights reserved. www.KLASresearch.com

22. Rippen, H. and Risk, A. (2000). e-Health Code of Ethics. *Journal of Medical Internet Research*. Apr-Jun; 2 (2): e9. doi: 10.2196/jmir.2.2.e9

23. Saleem, T. (2010). Assessment Tools for Health Information websites: Using comparison of NHS Direct and MedlinePlus for health information about heart failure as an example. [Electronic Version]. *Journal of Health Informatics in Developing Countries*, 4(2), 20-34, from www.jhidc.org/index.php/jhidc/issue/view/10

24. The two-way: breaking news from NPR. June 27, 2017. *Google Hit With $2.7 Billion Fine by European Antitrust Monitor*. https://www.npr.org/sections/thetwo-way/2017/06/27/534524024/google-hit-with-2-7-billion-fine-by-european-antitrust-monitor. Accessed 1/2/18.

25. Weng, Y., Kuo, K. N., Yang, C., Lo, H., Shih, Y., Chiu, Y. (2013). Information-searching behaviors of main and allied health professionals: a nationwide survey in Taiwan. *Journal of Evaluation in Clinical Practice*. 19 902–908.

26. Young, J. M. & Solomon, M. J. (2009). How to Critically Appraise an Article. *Nature Clinical Practice Gastroenterology & Hepatology*. 6(2):82-91.

27. Zipperer, L. (2014). *Patient safety: perspectives on evidence, information and knowledge transfer*. Burlington, VT: Ashgate Publishing Company.