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"What's App?" Utilizing Evidence Based Medicine Apps in the Clinical Setting

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What's App? Using Evidence-Based Medicine Smartphone Applications in Healthcare Practice

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Abstract: The medical community has utilized evidence-based medicine, or EBM, in practice for decades, and healthcare personnel are used to the idea of utilizing research and statistics to determine optimal treatment plans for patients. However, as technology advances, the use of electronics and EBM apps has increased in the clinical setting. While there are advantages to clinicians having resources at their fingertips, there are also obstacles that could harm or offend patients. As healthcare inevitably becomes more electronic, can providers strike the balance needed to effectively use EBM apps in practice to provide optimum patient care?

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For the modern healthcare provider, evidence-based medicine is, "the integration of the best research evidence with our clinical expertise and our patient's unique values and circumstances."[1] The term, often abbreviated as "EBM," was established in 1992,[1] but the concept of using research to determine treatment of patient symptoms has been prevalent since the mid-19th century.[2] With the overwhelming volume of research done every day, healthcare personnel rely on resources such as textbooks, professional journals, and websites to keep up with ever-changing practice guidelines. Additionally, the healthcare system is shifting to the electronic world by storing records, patient files, and pharmaceutical information online. Now more than ever, practitioners turn to their smartphones and tablets to make educated choices for and with their patients. As the use of technology becomes more integrated into the healthcare world, mobile EBM applications will play a growing role in practitioner assessments. But what exactly are these apps, and how effective are they in assisting healthcare providers in clinical decision making?

Evidence-based medicine is utilizing data from clinically relevant systematic research to influence patient care.[2] EBM is currently used in a variety of ways, including but not limited to: development of universal guidelines for care, deciding the "gold standard" tests for disease screening, calculating individual patient risk of disease based on related factors, and establishing which treatment would be the most effective for individual patient cases. These apps, also called electronic knowledge resources (EKRs), bring research and evidence to the clinician's fingertips through mobile technology devices. However, a clinician must answer specific questions before applying evidence to each patient. When looking at the evidence within research, one must ask,

> what is the relevant patient population, what intervention is being considered, what is the comparison intervention or patient population, and what outcomes are of interest?[3]

The questions can be abbreviated as "PICO."[3] If the PICO information in the app aligns with the specific patient, the clinician may then use the app to aid in the care of the patient.[3]

First and foremost, these apps are designed to be efficient and user friendly, allowing anyone with a smartphone to learn to use this technology in practice. More interactive than a traditional textbook, these apps allow the patient or provider the ability to click through different links, definitions, and treatment options to improve understanding. This technology allows a clinician to double check their assessment of a patient almost immediately in order to ensure the best possible treatment. In addition, these apps can be used collaboratively with patients. Providers can open these apps and look at them with the patient, showing them the statistical likelihood of a diagnosis based on symptoms, the patient's percent risk for a certain disease process, or the nationally-approved treatment guidelines. In utilizing this method of practice, patients possess more autonomy over their own care than in the past. The apps can become a means for dialogue between patient and provider, moving away from the paternalistic style of practicing medicine where the patient followed the doctor's orders without question.[4] Another benefit of EBM apps is that the apps make it easier to keep up with the constant stream of new information. The information provided on these apps can be updated faster than it takes to print the newest edition of a textbook or journal, which ensures that the most cutting-edge treatments and accurate resources are available to practitioners. For example, if a commonly used medication develops new adverse effects or contraindications that significantly alter the patient population who can safely take the drug, the information can be rapidly changed with an app update. The nature of smartphone apps lends itself well to the changing and growing data that is the foundation for evidence-based medicine.

Despite the positives of using EBM apps, there are still obstacles to their widespread use. Complications are especially present when apps are used as an exclusive resource. A major concern with EBM apps is reliable contact with this technology, since all providers may not have secure access to a smartphone or tablet. Even with access to the technology, app glitches can temporarily leave a provider without additional resources. Additionally, some providers could potentially become too reliant over time on information from the app and miss physical exam findings, key symptoms from a patient histories, or abnormal

presentations of disease processes when the app is not functional. To properly utilize these apps, practitioners must ensure all information within the apps is accurate.[5] Caution should be taken since, "there is currently no regulation of the information that is included in the apps or guidelines for recommended use. Judicious review of apps by the user is important before using the information to make treatment-related decisions."[6] Since there are no regulations, the trustworthiness of the information is entirely up to the discretion of the app user. Before utilizing an app, a practitioner should conduct research and know the sources of information, company sponsorships, frequency of updates, and if systematic protocol for information is used.[6] Finally, and perhaps most importantly, patients may feel as though the provider is not actively listening to them if the provider is using the app during their conversation. A study of 156 cases found that of the 84 cases utilizing EKRs, 25 cases were found to have tension and noted that, "EKR use in a clinical decision-making context may have negative consequences when three types of tension arise [user-computer tension, social tension, and organizational tension]."[7] When a patient feels as though his or her voice is not being heard during appointments, this builds a significant barrier to providing the best care for a patient.

The big question is: will these apps be used commonly in the future? As healthcare is shifting to online and mobile tools, the inevitable answer is yes. Between electronic records, patient satisfaction surveys, and scheduling appointments, many core functions are done through a wireless Internet signal. The next step will be the increased use of smartphone and tablet apps. In fact, practitioners are already using these apps regularly, including family medicine physician assistant Jorden Luther, PA-C:

> I use [the app] "Epocrates" every day, maybe every five patients or so. I can check doses, interactions, whether the drug is absorbed through the kidney or liver, side effects, and contraindications. I always tell the patient first, though. I ask, "is it OK if I use this reference?" or "let me make sure you can take this [medication]." I've never had a patient react badly to me using an app as long as I explain why first.[8]

This is just one of many ways healthcare providers are already effectively using EBM apps in practice.

If more work is done to ensure the quality of information on these apps, their use will increase. One systematic review found that in patients with type 2 diabetes mellitus, the use of EBM tools "was likely to improve process of care."[9] The key to providing the best patient-centered care is to utilize these resources in moderation, as an aid to practitioner knowledge, rather than as a replacement for a provider's acquired knowledge and experience. For example, a practitioner can record a patient's history, complete a thorough physical exam, and then utilize these apps to explain his or her findings to the patient or to show the patient different treatment options within the guidelines for that disease. However, the evidence on the apps is not enough.

> Without clinical expertise, practice risks becoming tyrannized by evidence, for even excellent external evidence may be inapplicable to or inappropriate for an individual patient.[10]

It is important for healthcare workers to remember that patients are still individuals, not just statistics. When used as a supplement to a provider's interpretation of symptoms, history, and exam findings, EBM apps can assist in patient understanding of disease and treatments, as well as spark a discussion about the various options available to a patient. The end goal for the use of EBM apps is to provide a safe and accurate means for patients to have autonomy over their own healthcare.

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