The smartphone has opened up a world of medical information accessible at our fingertips via applications (apps). Almost two thirds of adults in the United States have smartphones.1 In 2012, 52% of smartphone owners used their smartphones to look up health information, and 20% of owners had a health app.2 In 2014, there were more than 100,000 health-related apps, a number that has rapidly increased over the past two years.3,4

The utility of apps is limited only by our imagination. As providers, there are apps for risk calculations to determine therapies (e.g. American College of Cardiology Guideline Clinical App), reminders for preventive screening (e.g. Agency for Healthcare Research and Quality ePSS), reference databases (e.g. Medscape, UpToDate), and apps to help broaden our differential diagnoses (e.g. Diagnosaurus D Dx). As teachers, we have audience response apps (e.g. MQlicker) and synopses of formative articles (e.g. Journal Club). As team members, there are HIPAA-compliant communication tools (e.g. HipAA Chat, Amion), the Food and Drug Administration (FDA)-approved diabetes trackers linked to our electronic health record (EHR) (e.g. BlueStar), and shared productivity tools (e.g. Google documents/drive). As patients, too, we have stress reduction apps (e.g. Relax: Stress and Anxiety Reduction App), pharmaceutical price comparator apps (e.g. GoodRX), calorie counters for weight loss (e.g. MyFitnessPal), and apps to motivate us to flee from the next zombie attack thereby encouraging exercise (e.g. Zombies, Run!).

Given the ubiquity of apps in our lives and our medical practice, training and certification of medical professionals will undoubtedly shift to keep up with this easy access to vast amounts of data, focusing more on how we interface and process data rather than our ability to retain information. The next step will be to critically assess and effectively filter what we allow into our virtual and actual memories and onto our screens.

App Regulation
FDA regulation of medical apps is decidedly narrow, addressing only apps where “functionality poses a risk to a patient’s safety if the mobile app were to not function as intended.”5 For example, an attachment that converts a smartphone into a glucometer or an app that receives blood pressure readings directly from a monitor may come under FDA regulation. A commonly cited app that received FDA approval is the WellDoc BlueStar app for diabetes. Its functionality includes the ability to track diabetic control, access self-management tips, engage social support by contacting family members, and interface with providers and the EHR. This app requires a prescription and is backed by studies showing modest treatment benefit.6 While FDA regulation of an app is more the exception than the rule, the FDA approval stamp is highly reassuring. Unfortunately there is little guidance regarding how to approach the vast majority of other apps that are not FDA approved.

Evaluating App Quality
The assumption of quality information can lead to an under-appreciation of the inherent biases and safety concerns with app usage. Unlike a clinician’s trained skepticism when reviewing clinical trials, providers have not prioritized critical appraisal when approaching apps. In addition, while our personal reviews of an app may be honest and well intentioned, there have been too many reports of companies selling positive reviews to boost sales.7,8 We cannot rely on unregulated user ratings to determine app quality.

One proposed solution to more appropriately evaluate the quality of individual apps is to create a peer review process to vet mobile apps for professional use, particularly those used in patient care. A centralized body that publishes validated criteria could make the important quality metrics for apps easily digestible. Some websites attempt to do this; however, conflicts of interest are difficult to decipher, and often revenue is generated with advertisements. It may be up to our professional societies to curate lists of approved apps. Until we have this type of review, we recommend using apps created by well-known reputable organizations, which often have internal peer review processes.

Privacy Concerns
The lack of transparency regarding collection of user information within individual apps raises significant privacy concerns for patients and providers alike. As providers tasked with non-maleficence, this is of considerable importance as we begin recommending apps to our patients. A recent letter in JAMA highlighted the undisclosed sharing of health information.

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formation with third parties, even in apps with a privacy policy. In addition, free applications may pose a larger privacy threat to users than paid applications. One analysis of more than 1.7 million apps on the Google Play market found that free apps were 314% more likely to access a user’s address book and 401% more likely to track a user’s location than paid apps.10

Our tendency to recommend a free app to our underprivileged or hesitant patients, therefore, may backfire—putting those very patients at higher risk for privacy breaches.

Heightened awareness of the potential harms of app usage is critical to combating privacy concerns. A healthy level of concern from physicians is essential, as is the education of our students and patients.

These three questions can help to raise awareness and guide us toward reputably sourced apps:

1. Who makes this app?
2. What are the developers’ biases?
3. What are the potential harms of using this app, including privacy breaches?

Conclusion

Smartphone applications have exploded in health care without a concomitant rise in their regulation. As care providers, we must approach this as an opportunity, harnessing the potential power of these patient activation and clinical support tools while being wary of potential harms, such as breaches of privacy. The benefits of the information stored in apps, in combination with maximally efficient storage in our smallest white coat pocket, cannot be overstated. We will not be able to stop or slow the onslaught of new apps nor should we attempt this. We should utilize apps as the latest medical tool, encouraging responsible use among physicians and patients alike. To limit inherent bias and privacy concerns, we must question the motivation for app development and be vigilant regarding potential harms associated with their use. For now, one thing is for sure: The apps in our white coat pocket are changing our practice of medicine.

References