GUIDING PRINCIPLES FOR PHYSICIANS RECOMMENDING MOBILE HEALTH APPLICATIONS TO PATIENTS

This document is designed to provide basic information for physicians about how to assess a mobile health application for recommendation to a patient in the management of that patient's health, health care, and health care information.

These guiding principles build on the Canadian Medical Association's (CMA) Physician Guidelines for Online Communication with Patients.[1]

Background

- Mobile health applications, distinct from regulated medical devices, may be defined as an application on a mobile device that is intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease. The functions of these applications may include:

  - The ability to store and track information about an individual or group's health or the social determinants thereof;
  - Periodic educational information, reminders, or motivational guidance;
  - GPS location information to direct or alert patients;
  - Standardized checklists or questionnaires.[2]

- Mobile health applications can enhance health outcomes while mitigating health care costs because of their potential to improve a patient's access to information and care providers.[3]

- Mobile health applications are most commonly used on a smart phone and/or tablet. Some may also interface with medical devices.

- The use of mobile health applications reflects an emerging trend towards personalized medicine and patient involvement in the management of their health information. By 2016, 142 million

health apps will have been downloaded.[4] According to some industry estimates, by 2018, 50 percent of the more than 3.4 billion smartphone and tablet users worldwide will have downloaded at least one mobile health application.[5]

- While mobile health application downloads are increasing, there is little information about usage and adherence by patients. It is believed that many patients cease to use a mobile health application soon after downloading it.
- Distributers of mobile health applications do not currently assess content provided by mobile health applications for accuracy, comprehensiveness, reliability, timeliness, or conformity to clinical practice guidelines.[6] However, mobile applications may be subjected to certain standards to ensure critical technical requirements such as accessibility, reachability, adaptability, operational reliability, and universality.
- Increasingly there are independent websites providing reviews of medical apps and checklists for health care professionals. However, the quality criteria used by these sites, potential conflicts of interest, and the scope and number of mobile apps assessed are not always declared by these groups.
  To date, randomized controlled trials are not usually employed to assess the effectiveness of mobile health applications. Some believe that the rigorousness of this type of assessment may impede the timeliness of a mobile health application's availability.[7]

- Some examples of the uses of mobile health applications include tracking fitness activities to supplement a healthy lifestyle; supported self-management of health and health information; post-procedure follow up; viewing of test results; and the virtualization of interaction between patients and providers, such as remote patient monitoring for chronic disease management. Some mobile health applications may be linked to a patient profile or patient portal associated with a professional or recognized association or medical society or health care organization.
- Some mobile health applications may be an extension of an electronic medical records (EMR) platform.

Guiding principles

- The objective of recommending a mobile health application to a patient must be to enhance the safety and/or effectiveness of patient care or otherwise for the purpose of health promotion.
- A mobile health application is one approach in health service delivery. Mobile health applications should complement, rather than replace, the relationship between a physician and patient.
- No one mobile health application is appropriate for every patient. Physicians may wish to understand a patient's abilities, comfort level, access to technology, and the context of the application of care before recommending a mobile health application.
- Should a physician recommend a mobile health application to a

patient, it is the responsibility of the physician to do so in a way that adheres to legislation and regulation (if existing) and/or professional obligations.

- If the mobile health application will be used to monitor the patient's condition in an ongoing manner, the physician may wish to discuss with the patient what they should watch for and the steps they should take in response to information provided.
- Physicians are encouraged to share information about applications they have found effective with colleagues.
- Physicians who require additional information about the competencies associated with eHealth and the use of health information technologies may wish to consult The Royal College of Physicians and Surgeons of Canada's (RCPSC) framework of medical competencies, CanMEDS.[8]
- Physicians may wish to enter into and document a consent discussion with their patient, which can include the electronic management of health information or information printed out from electronic management platforms like mobile health applications. This agreement may include a one-time conveyance of information and recommendations to cover the elements common to many mobile health applications, such as the general risk to privacy associated with storing health information on a mobile device.

Characteristics of a safe and effective mobile health application

A mobile health application does not need to have all of the following characteristics to be safe and effective. However, the more of the following characteristics a mobile health application has, the likelier it will be appropriate for recommendation to a patient:

1. **Endorsement by a professional or recognized association or medical society or health care organization**

As recommended by the Canadian Medical Protective Association (CMPA), it is best to select mobile health applications that have been created or endorsed by a professional or recognized association or medical society.[9] Some health care organizations, such as hospitals, may also develop or endorse applications for use in their clinical environments. There may also be mobile health applications associated with an EMR platform used by an organization or practice. Finally, some mobile health applications may have been subject to a peer review process distinct from endorsement by an association or organization.

2. **Usability**

There are a number of usability factors than can complicate the use of mobile applications, including interface and design deficiencies, technological restrictions, and device and infrastructure malfunction.

Many developers will release periodic updates and software patches to enhance the stability and usability of their applications. Therefore, it would be prudent for the physician recommending the mobile health application to also recommend to the patient that they determine if the application has been updated within the last year.

Physicians considering recommending a mobile health application to a patient may wish to ask about the patient's level of comfort with mobile health technologies, their degree of computer literacy, whether or not the patient owns a mobile device capable of running the application, and whether or not the patient is able to bear potential one-time or ongoing costs associated with use of the application.

Physicians may consider testing the application themselves beforehand to understand whether its functionality and interface make it easy to use.

3. Reliability of information

Physicians considering recommending a mobile health application may wish to understand how the patient intends to use the information, and/or review the information with the patient to understand whether it is current and appropriate.

Information presented by the mobile health application should be appropriately referenced and time-stamped with the last update by the application developer.

4. Privacy and security

There are inherent security risks when a patient uses mobile health applications or enters sensitive information into their mobile device. Mobile devices can be stolen, and the terms of use for mobile health applications may include provisions for the sharing of information with the application developer and other third-parties, identified or un-identified, for commercial purposes.

In 2014, the Officer of the Information and Privacy Commissioner of Alberta assessed approximately 1200 mobile applications and found nearly one-third of them required access to personal information beyond what should be required relative to their functionality and purpose, and that basic privacy information was not always made available.[10]

Physicians entering into and documenting a consent discussion with their patients may wish to include the electronic management of health information in the scope of these discussions, and make a notation of the discussion in the patient's health record.

If physicians have not entered into and documented a general consent discussion, they may wish to indicate to the patient that there are security risks associated with mobile health applications, and recommend that the patient avail themselves of existing security features on their device. Physicians may wish to recommend to the patient that they determine whether a privacy policy has been made available which discloses how data is collected by the application and used by the developer, or a privacy impact assessment, which demonstrates the risks associated with the use of the application.

Some mobile health applications may feature additional levels of authentication for use, such as an additional password or encryption protocols. If all other factors between applications are equal, physicians may wish to recommend that patients use mobile health applications adhering to this higher standard of security.

5. Avoids conflict-of-interest

Physicians may wish to recommend that patients learn more about the company or organization responsible for the

development of the application and their mandate. There is a risk of secondary gains by mobile health application developers and providers where information about patients and/or usage is gathered and sold to third parties.

A standardized conflict of interest statement may be made available through the mobile health application or on the developer's website. If so, physicians may wish to refer the patient to this resource.

Physicians who develop mobile applications for commercial gain or have a stake in those who develop applications for commercial gain may risk a complaint being made to the College on the basis that the physician engaged in unprofessional conduct if they recommend mobile health applications to their patients in the course of patient care.

6. Does not contribute to fragmentation of health information

Some mobile health applications may link directly to an EMR, patient portal, or government data repository. These data resources may be standardized, linked, and cross-referenced.

However, health information entered into an application may also be stored on a mobile device and/or the patient's home computer, or developers of mobile health applications may store information collected by their application separately. While there may be short-term benefits to using a particular mobile health application, the range of applications and developers may contribute to the overall fragmentation of health information.

If all other factors between applications are considered equal, physicians may wish to recommend mobile health applications which contribute to robust existing data repositories, especially an existing EMR.

7. Demonstrates its impact on patient health outcomes

While not all mobile health applications will have an appropriate scale of use and not all developers will have the capacity to collect and analyze data, physicians may wish to recommend mobile health applications that have undergone validation testing to demonstrate impact of use on patient health outcomes. If mobile health applications are claiming a direct therapeutic impact on patient populations, physicians may wish to recommend that their patients seek out or request resources to validate this claim.

References

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