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CME Review

# Mobile health applications in clinical practice: pearls, pitfalls, and key considerations

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Participants will be able to demonstrate increased knowledge of the clinical treatment of allergy/asthma/immunology and how new information can be applied to their own practices.

**Learning Objectives**

At the conclusion of this activity, participants should be able to:

- Describe mobile health applications and the potential benefits associated with use
- Evaluate a mobile health application in regards to accessibility, content, and privacy

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## Introduction

Mobile technology is rapidly transforming the delivery of health care. More than 100,000 health applications (apps) are available for download[1] by the more than 7 billion users with mobile subscriptions.[2] Advancement in technology often precedes the implementation of government regulation, and clinical practice recommendations lag even further behind when technology is incorporated into patient care. This article aims to inform physicians on the background of mobile health applications, including key definitions, how mobile health applications are currently used by patients and health care professionals, and the potential benefits of this technology in improving patient outcomes. This article also reviews important pitfalls and their implications, including privacy of patient information, content development, and data ownership. Lastly, a simple checklist tool is offered to enable physicians to assess mobile health applications before discussing their use with patients.

## Background

A mobile app is software intended for use on a mobile device.[3] Within the context of health care, terms such as *health app* and *mobile medical app* are common. The World Health Organization (WHO) has defined the term *mHealth* as medical and public health practices supported by mobile devices.[4] Apps are created in 1 of 2 ways: a native app is downloaded to the device and can run on a mobile platform irrespective of wireless connectivity but is limited to the operating system for which it was developed (ie, iOS, Android).[5] In contrast, a web-based app is a software application that can be used across mobile device operating systems but is executed on a server and requires Internet connectivity to run.[5] Once created, native apps are available to consumers through an online marketplace specific to the operating system of the mobile device, such as iTunes and Google marketplace. Web apps are not available through these stores and require independent marketing.

Health apps are a growing market, projected to be worth 26 billion dollars by 2017.[1] Between 2011 and 2013, a review of apps for asthma found a doubling in numbers.[6] A recent review of health apps found that most were available from either the Apple store or Google Play, although Google Play has a significantly greater number of apps available. This difference may reflect the stricter development criteria put in place by Apple to maintain the quality of apps made available through iTunes.[7]

More than a third of physicians recommend mobile health apps to patients,[8] and services such as iPrescribe and Appscript are used to facilitate the prescription of apps.[9,10] Forty percent of physicians agreed that apps could improve patient outcomes[8]; however, many indicated they would not prescribe apps because of perceived lack of regulatory oversight.[11] Although physicians may not be prescribing mHealth apps, it is estimated that 1.5 billion mobile device users worldwide will use mobile health apps by 2018.[12] App use is increasing among children, even those in lower socioeconomic households with lower rates of smartphone and tablet device ownership.[13] A 2015 survey found that nearly all (91%) teens used mobile devices and nearly one-quarter reported downloading mHealth apps.[14]

Most apps interact well with social media platforms, such as Twitter and Facebook, and several apps are specifically designed for easy sharing of a patient's weekly statistics. In addition, many mHealth apps promote themselves through advertising on social media channels, thus increasing their use. Unique to social media is the use of a hashtag before the search term, allowing for ease of search to locate topics, which is used by many for frequent searches (eg, #asthmapatients). Not-for-profit organizations, such as Allergy & Asthma Network, have developed mHealth apps for asthma monitoring. Patient advocacy groups, such as The Lung Association and the American Thoracic Society, have created accounts on social media platforms to promote information about apps for asthma on their websites. Social media is a natural extension of mHealth, and more than 40% of consumers say that information found via social media affects the way they deal with their health.[15]

## Benefits of mHealth Apps

Mobile devices and mHealth apps provide an accessible and convenient means for the user to interact with the health care system, facilitating patient control of health information while simultaneously reducing the burden and cost associated with health care delivery. Most mHealth apps focus on disease