Mobile Applications for Dermatology

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The number of available mobile applications has increased by 500% over the past 3 years. Searching for useful dermatology applications may be overwhelming. The following summary may help both advanced and budding dermatologists select useful programs.
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An overwhelming number of applications (apps) have been developed for mobile devices including smart phones and tablets. The growth in the number of apps is clearly driven by demand seen as downloads. The app section of iTunes boasts > 600,000 available downloads. In comparison, the android market has approximately 400,000 apps available to its consumers. Microsoft has the fewest number with approximately 70,000 apps in its Windows Phone Marketplace.

As evidenced by the sheer number of available applications, Apple is currently the leader of this market. In July 2008, Apple introduced the iTunes app section with approximately 800 apps. Within 3 days, > 10 million downloads of various apps were performed using the iPhone and iTouch platforms. By July 2011, Apple declared that 15 billion downloads had been performed.

Here, we present an overview of those applications useful in dermatology. Table 1 presents a summary of each app discussed. Each subsection within this overview highlights the benefits and the limitations of the application. In addition, recommendations are provided for the type of user that may most benefit from the app. The current platform availability and price are also listed. Owing to the rapid evolution in informational technology, these prices and platforms may change by the time of publication. For the most current information, visit http://www.derm.md.

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Textbook Apps

Textbook-type apps are robust enough for daily use in various medical specialties. Of these, 2 dermatology-specific programs are available across multiple platforms including those of Apple, Android, and Kindle. All contain reference figures that are useful for dermatologists starting practice and primary care physicians.

Fitzpatrick's Color Atlas of Dermatology

The Fitzpatrick's Color Atlas of Dermatology app includes > 1500 images. The app summarizes clinical manifestations, epidemiology, physical examination, treatment, and more. The user can search via text or figures. In addition, search terms are suggested via auto population, and the practitioner need not be as accurate with spelling. Previous search terms are saved to allow one to go back to a topic or photo easily. Photos include succinct descriptions of skin diseases, and text symbols denote incidence and morbidity. Overall, Fitzpatrick's Color Atlas of Dermatology is robust for a mobile application.

Disadvantages
There is no option to perform a combined text and figure search. Additionally, one cannot swipe between images pertaining to a given topic without having to go to the previous screen.

Conclusion
We recommend this app for daily use in a dermatology or primary care office.

Platform
iPad, iPhone, iPod Touch, Kindle, Android (created by Usatine Media LLC).

Cost
The cost of the application is $74.99 (Figs. 1A and 1B).

Table 1 Summary Table of Apps Reviewed

Name	Platform	Target User	Cost
Textbook Apps			
FitzPatrick's Color Atlas of Dermatology	iPad, iPhone, iPod Touch, Kindle, Android	Dermatologist Primary care	$74.99
Derm Atlas	iPad, iPhone, iPod Touch	Dermatologist Medical students Residents	$7.99
A2Z of Dermatology	iPad, iPhone, iPod Touch	Dermatologist	$3.99—iPhone $2.99—iPad
Color Atlas of Pediatric Dermatology	iPad, iPhone, iPod Touch, Kindle, Android	Dermatologist Primary care Medical students	$129.99
CME Apps			
iMCQs in Dermatology	iPad, iPhone, iPod Touch	Medical students Residents	$2.99
Dermatology In-Review Kodachrome Flashcard Series	iPad, iPhone, iPod Touch, Android	Residents Dermatologists	Free
Diagnostic Apps			
Pocket Derm	iPad, iPhone, iPod Touch	Nurses Medical students Residents	$0.99
iRash	iPad, iPhone, iPod Touch	Primary care Dermatologist office staff Patients	$2.99
Virtual Dx Mobile	iPad, iPhone, iPod Touch, Android	Dermatologist Primary care	$150/year
Derm 101	iPad, iPhone, iPod Touch, Android	Dermatologist	Free with http://Derm101.com subscription
Dermatology Patient Resource Apps			
UV Index	iPad, iPhone, iPod Touch	All patients	$0.99
Skin of Mine	iPad, iPhone, iPod Touch	All patients	Free
Skin Advocate	iPad, iPhone, iPod Touch	Dermatologist Primary care All patients	Free
CARD	iPad, iPhone, iPod Touch	Dermatologist All patients	Free
Journal Apps			
Skin and allergy News	iPad, iPhone, iPod touch	Dermatologist	Free
Skin Therapy Letter	iPad, iPhone, iPod touch	Dermatologist	Free

Apps, application; CME, Continuing Medical Education; CARD, Contact Allergen Replacement Database; UV, ultraviolet.

Derm Atlas

The Derm Atlas app functions as a true atlas rather than a textbook. The app includes 384 diagnoses in 40 different categories. Often multiple photos per diagnosis are included. This feature is particularly advantageous in clinical practice where diseases present in a variety of manifestations. Most currently available apps include only a single "classic" photograph.

Searching is particularly efficient with this application. One can search features via categories, diagnoses, or keywords. Photo features include zoom and scrolling through images with the flick of a finger. In addition, the search bar auto populates.

Disadvantage

The application is a good photo atlas that does not provide as much information as a summarized textbook. Each image includes brief text, but the text is succinct. As a result, the app may not be as informative to the primary care physician.

Conclusion

We recommend this app for daily use in a dermatology office. In addition to the low-cost point, the application is useful for students in dermatology.

Platform

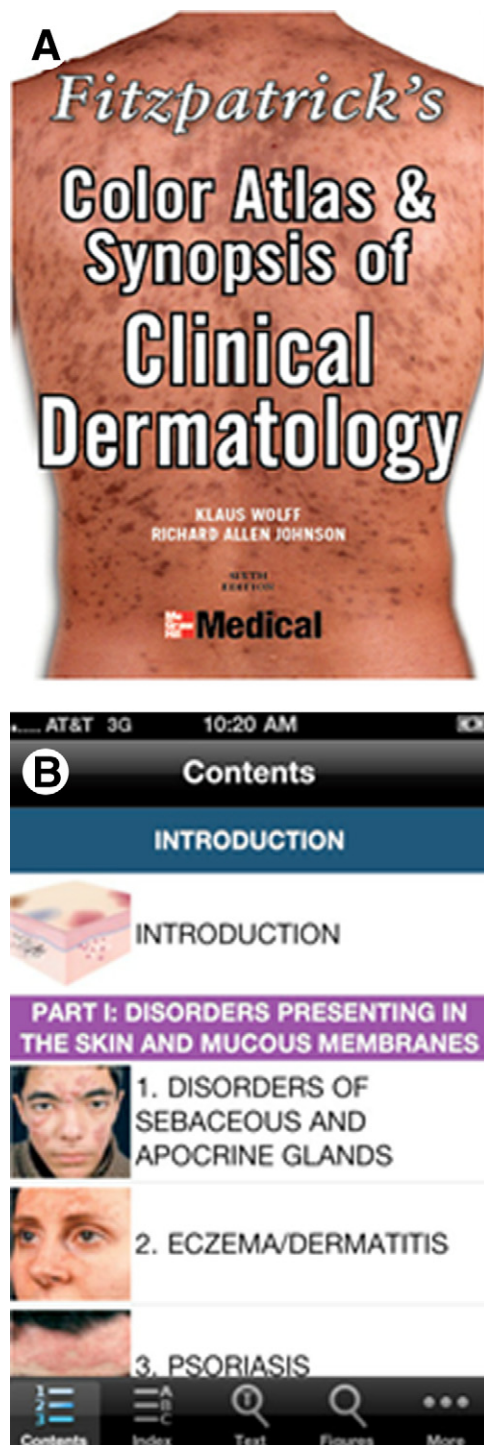iPad, iPhone, and iPod Touch (created by Brainz Solutions Ltd).

Figure 1 Fitzpatrick's Color Atlas of Dermatology.

Cost

The cost of the app is $7.99.

A2Z of Dermatology

This low cost app serves as a mini textbook. The app covers a wide range of dermatologic topics and is based on the Quick Reference Atlas of Dermatology by Dr Ian Williams and Dr Vivienne Ankrett. It includes brief text on 115 diagnoses with photos that can be easily enlarged with the pinch-to-zoom feature on Apple's platform.

Disadvantage

This app has limited treatment options, one picture per condition, and no "Search" function.

Conclusion

We recommend this app for daily use in a dermatology office.

Platform

iPhone, iPad, and iPod Touch (created by Luapps Ltd).

Cost

The cost of the app is $3.99 for iPhone, and the HD version is $2.99 for iPad.

Color Atlas of Pediatric Dermatology

Based on the McGraw–Hill textbook, the Color Atlas of Pediatric Dermatology app is useful to any practitioner. It contains > 900 high-quality images with descriptive text. After an initial search, multiple pictures will populate and the viewer can click on an individual image. Users can narrow their search by browsing diseases by general categories or alphabetically. In addition, one may search via figures or text. The results are grouped based on that category.

The content of this application is clinically relevant. Disease overview includes pathophysiology, physical and laboratory findings, and basic treatment options. This information is located directly under the image, and the user has the option to read more in detail by clicking the associated link.

The Color Atlas is available on multiple platforms. It is currently available on all mobile platforms including Android, Kindle, and Apple systems.

Disadvantage

Overall, the Color Atlas app is useful, but there are a few limitations. Descriptive text is not included in the initial table of images. Instead, the user must enlarge each image to view the associated text. Therapeutic options are limited. Although the application provides a basic treatment plan, dosing options are not included. As a result, the practitioner will have to use another manual or app to correctly prescribe a medication. Finally, the application is expensive. Some critics claim a less expensive alternative app is Visual Dx. Many claim the 2 applications are comparable in content quality.

Conclusion

We recommend this app for daily use in a dermatology or primary care office. It is useful for medical students, but the cost may be prohibitive.

Platform

iPad, iPhone, iPod Touch, Kindle, Android (created by Usatine Media LLC).

Cost

The cost of the application is $129.99.

Continuing Medical Education Apps

Continuing medical education applications are useful for reviewing one's knowledge within the field of dermatology.

Although there are only 2 apps currently available, both are useful to students, residents, and practicing physicians.

iMCQs in Dermatology

The multiple choice questions (iMCQs) in Dermatology app is ideal for medical students and physicians preparing for board examinations. This app includes 229 multiple-choice dermatology questions written by Dr Charles Roberts. The questions closely resemble real-life scenarios and include short descriptive explanations/answers to enhance learning.

This application allows the user to target areas of limited knowledge. The questions are divided into various sections such as dermatitis, surgery, and pathology. In addition, there is an optional "hint" mode allowing one to guess multiple times before moving on to the next question. The app automatically records your scores in each section, allowing users to assess their strengths and weaknesses to better focus their studies.

Disadvantage

The disadvantage of this application is it includes no option to re-examine a question once the answer is submitted.

Conclusion

We recommend this app for medical students and residents.

Platform

iPhone, iPad, iPod Touch (created by Luapps, Limited).

Cost

The cost of the app is $2.99 (Figs. 2A and 2B).

Dermatology In-Review Kodachrome Flashcard Series

The Dermatology In-Review app is ideal for dermatology and primary care board preparation. This app contains only 300 slides, but the number of slides is increasing monthly. Within these slides, the user has the option to group flashcards into a stack. One can save a stack for review at a later time, add new cards to an existing stack, or create a new stack of slides altogether. To have access to the app, one must register with the Dermatology In-Review Online Practice Exam and Study System.

Disadvantage

The app has a limited number of slides currently available.

Conclusion

We recommend this app for medical students and residents.

Platform

iPhone, iPad, iPod Touch, Android (created by Educational Testing and Assessment Systems [ETAS]).

Cost

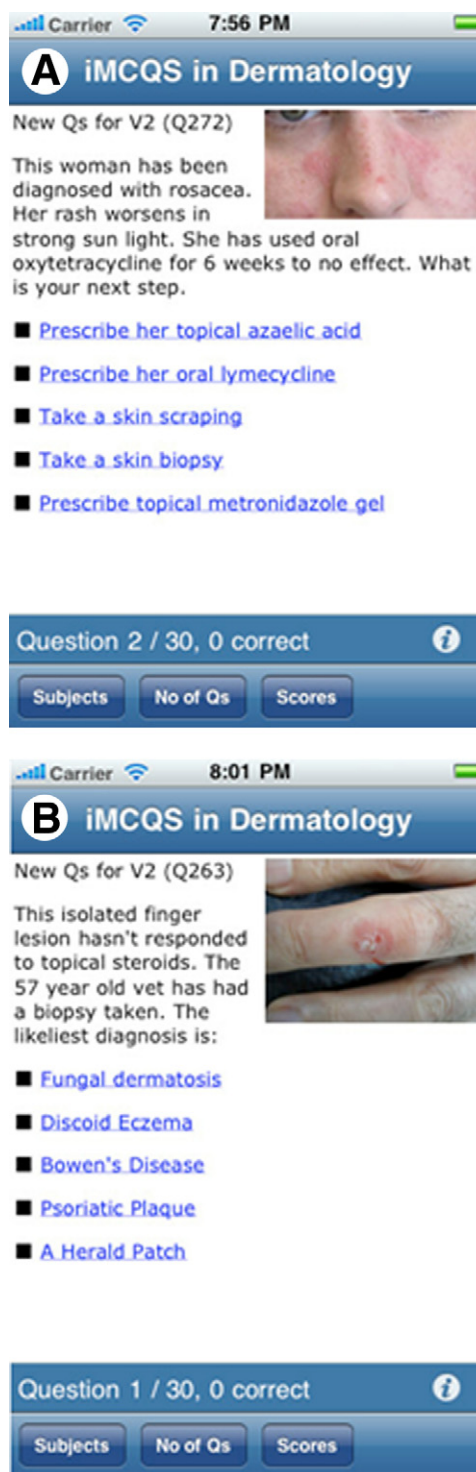It is free for residents and recertifying dermatologists (Figs. 3A and 3B).

Figure 2 iMCQs in Dermatology.

Diagnostic Apps

Pocket Derm

This popular app allows primary care physicians and the lay public to quickly identify dermatologic conditions. Ranking number 2 among all downloaded medical applications, Pocket Derm includes > 50 dermatologic diagnoses with associated images and definitions. One can search by lesion

Figure 3 Dermatology In-Review Kodachrome Flashcard Series.

Figure 4 Pocket Derm.

characteristics or diagnosis. In addition, the application includes a glossary of essential search terms.

Disadvantage
At this time, the app is limited to 50 diagnoses.

Conclusion
We recommend this app for daily use in a primary care office. In addition, it may be useful for nurses, medical students, and residents. Finally, the public may find this application useful.
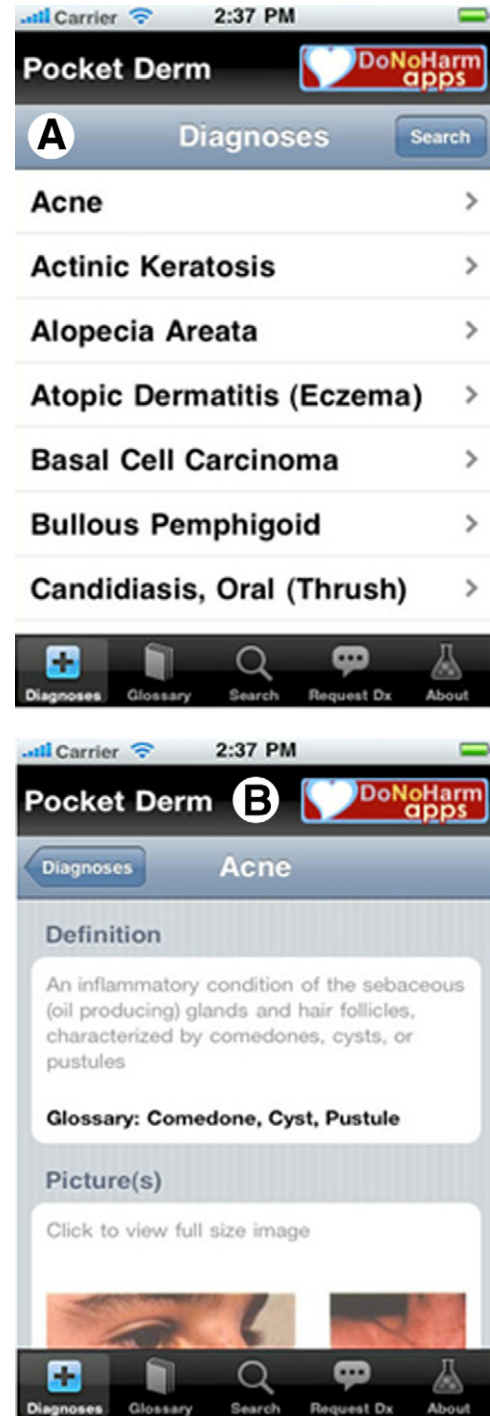
Platform
iPhone, iPad, iPod Touch (created by DoNoHarm).

Cost
The cost of the app is $0.99 (Figs. 4A and 4B).

iRash

The iRash app includes > 40 common skin conditions. Rashes are organized alphabetically and divided categorically. Each diagnosis includes a clinical image along with

causation, differential diagnoses, and treatment options. Overall, the application assists physicians in reaching a clinical diagnosis while providing educational information for the patient.

Disadvantage
The app reviews a limited number of diagnoses. Moreover, only one photo is associated with each rash.

Conclusion
We recommend this app for daily use in a primary care office and for the common public. Dermatology offices may use this app in educating nurses and staff.

Platform
iPhone, iPad, iPod Touch (created by Graysoap Design).

Cost
The cost of the app is $2.99.

Visual Dx Mobile

The Visual Dx app is useful for medical students, residents, midlevel providers, primary care physicians, and dermatologists. This robust app includes 21 modules covering > 800 diseases and > 14,000 images. Both nondermatologists and core specialists may identify a disease based on the patient's age, stage, and skin type. Each disorder highlights diagnostic pearls and tests with resultant management options. Moreover, the user is able to search > 700 medication-induced diseases. Finally, Visual Dx includes ICD-9 codes to allow both primary care physicians and dermatologists to quickly bill for a patient's visit.

Disadvantage
A costly yearly subscription is required.

Conclusion
We recommend this app for daily use in a dermatology or primary care office.

Platform
iPhone, iPad, iPod Touch, Android (created by Logical Images).

Cost
It is free to download with a $150 per year subscription required (Figs. 5A and 5B).

Derm 101

This app highlights content from http://Derm101.com. The user can search features alphabetically or by popular topics, such as acne and basal cell carcinoma. Each disease state includes a descriptive overview, clinical images, and treatment options. In addition, differential diagnostic images have zoom features and descriptive text.

Disadvantage
Although the app is free for downloading, a yearly subscription to http://Derm101.com is required. The current cost is $120 per year.
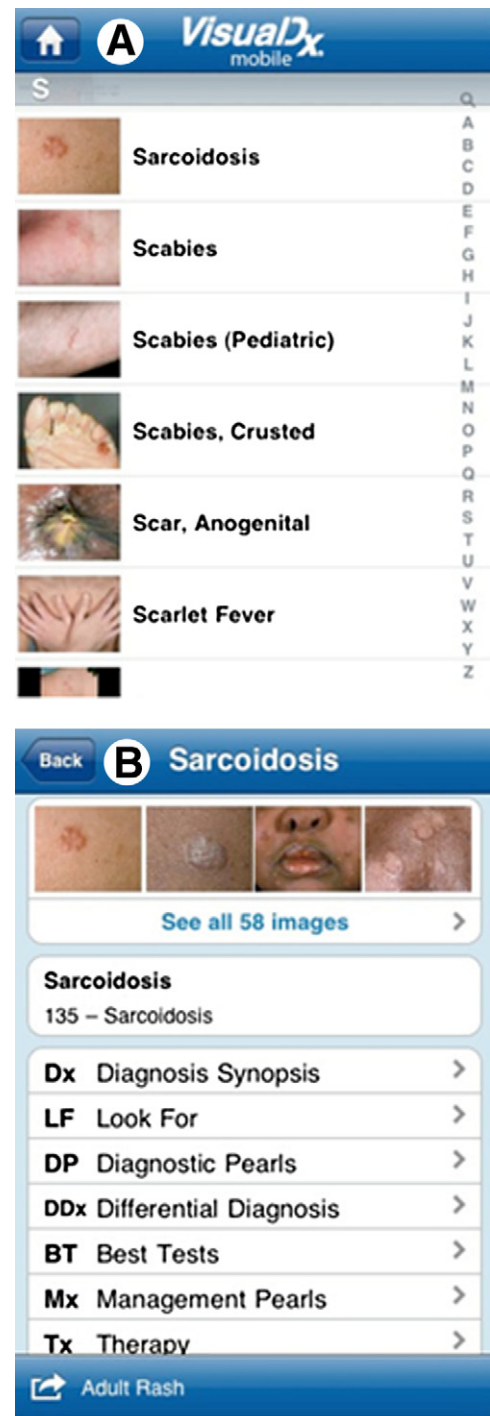

Figure 5 Visual Dx Mobile.

Conclusion
We recommend this app for daily use in a dermatology office.

Platform
iPhone, iPad, iPod Touch, Android (created by Silverchair).

Cost
This is a free app with required subscription to http://Derm101.com.

Dermatologic Resources for Patient Apps

Ultraviolet (UV) Index

Developed by the Environmental Protection Agency, this app is useful for everyone. The UV Index app has the ability to detect how bright the sunlight is in a particular area correlating the level of harmful UV radiation based on a scale of 1 through 11. After entering in skin type, sunscreen sun protection factor, local terrain (beach, city, park, etc), and cloud cover, one receives the UV local index. In addition, the app provides an estimate for the length of time for sun exposure before skin damage occurs. UV Index also promotes the importance of sunscreen use and wearing protective clothing materials. Although useful for everyone, this app is especially useful for those patients with skin conditions that are more sensitive to sun exposure.

Conclusion

We recommend this app for every patient.

Platform

IPhone, iPad, iPod Touch (created by FeedVision, LLC).

Cost

The cost of the app is $0.99 (Figs. 6A and 6B).

Skin of Mine

This app allows the patient to track various dermatologic issues. The user takes photos of their lesions and the app compares the lesion over various time frames (weekly, monthly, etc.). If one chooses to have an expert opinion on the lesion, there is a "Select Expert" option. The app forwards the information to a doctor or nurse practitioner with an associated price of $30-$50 per visit. Thus, the app provides convenience and flexibility with consultation available at any time. The doctor or nurse will reply within 24 hours, providing prescriptions or recommendations for over-the-counter treatments. The app covers a variety of skin problems including psoriasis, acne, wrinkles, vitiligo, nevi, melasma, spider veins, and more.

Disadvantage

Online consultations are only available in 17 states. In addition, the quality of the photograph taken will limit the diagnostic ability of the practitioner.

Conclusion

We recommend this app for the common public.

Platform

IPhone, iPad, iPod Touch (created by Medical Image Mining Laboratories).

Cost

This application is free.

Skin Advocate

The Skin Advocate app helps physicians find patient advocacy groups for patients with chronic and severe skin condi-
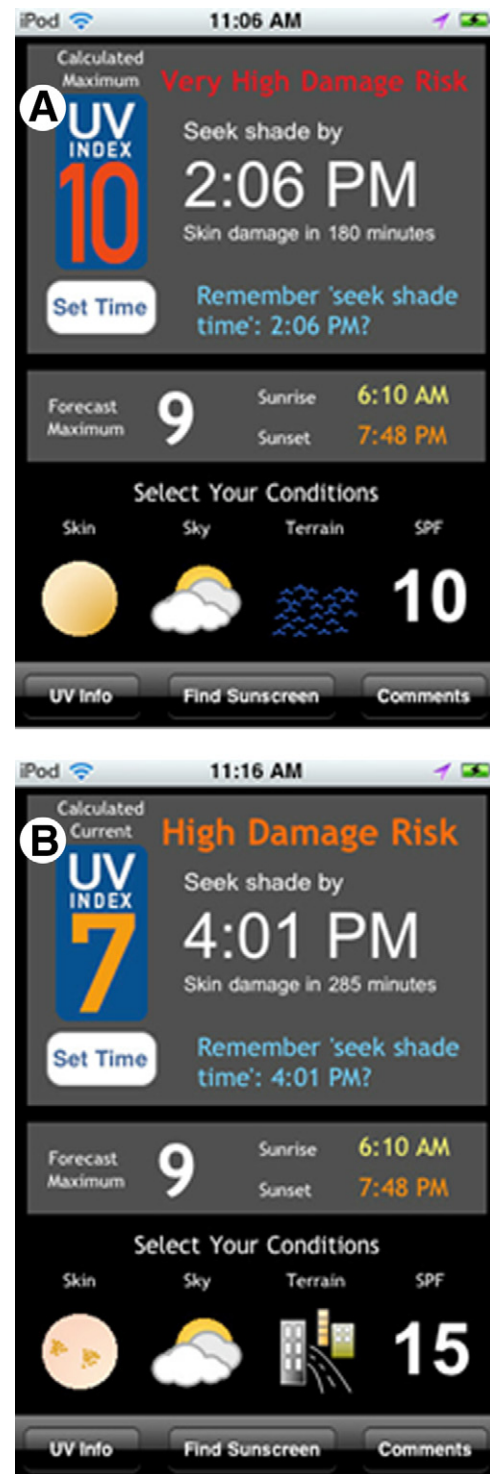

Figure 6 Ultraviolet (UV) Index.

tions. The app includes a brief overview of the organizations goals, contact information, Web site link, and more. A "Share" button is located on the top right of the screen to share contact information of an advocacy group with a patient or their family member(s). Importantly, the e-mail will be sent from the Society for Investigative Dermatology's server with a "do-not-reply" address. Thus, the physician's personal e-mail address is kept confidential.
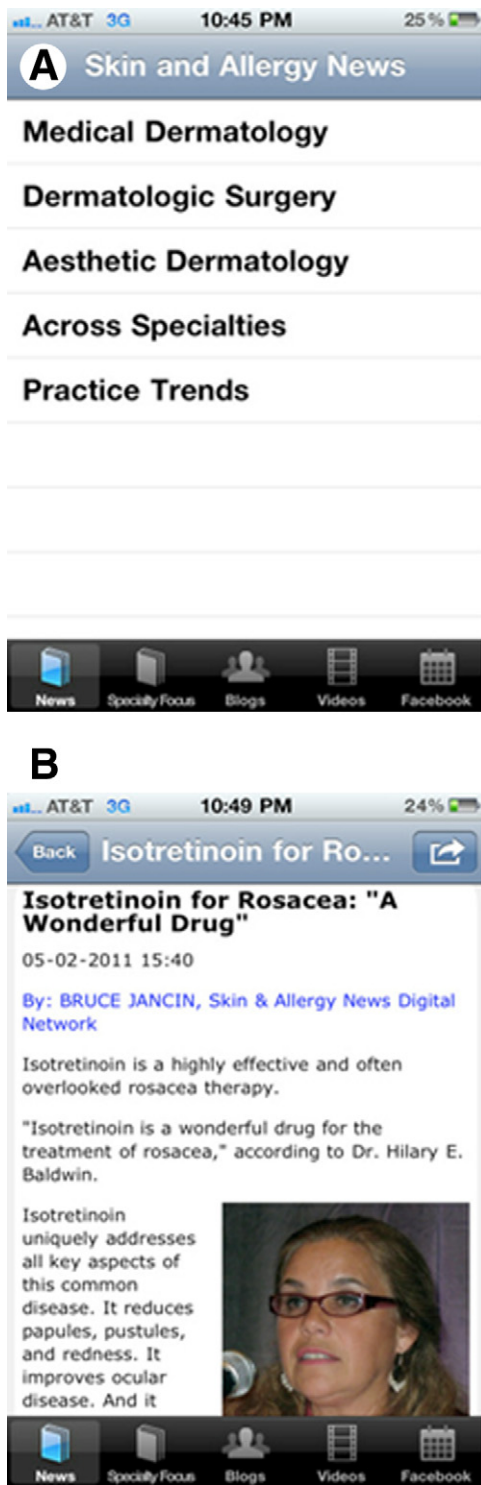
Figure 7 Skin and Allergy News.

Conclusion

We recommend this app for dermatology and primary care offices. In addition, this resource would be useful for the lay public.

Platform

IPhone, iPad, iPod Touch (created by the Society for Investigative Dermatology).

Cost

The cost of the app is free.

Contact Allergen Replacement Database (CARD)

Including > 8100 allergens and potential crossreactors, the CARD app significantly helps all individuals suffering from allergies. The app contains > 7000 catalogued products pre-screened against specific allergens. Products are searchable by category, manufacturer, or product name. Individual al-
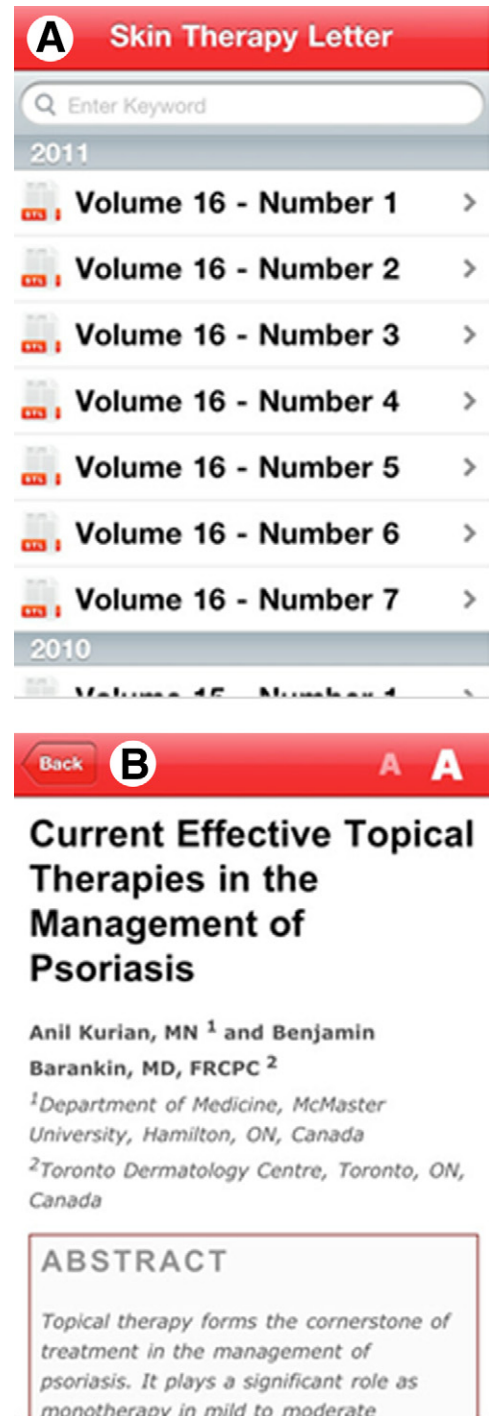

Figure 8 Skin Therapy Letter.

lergies can be logged, and the app identifies all products that include those ingredients. As a result, the user can easily avoid these items. Moreover, the app includes a personalized diary where one can attach photographs of an allergic outbreak and educational information about their contact dermatitis. CARD is continuously updated to keep ingredient lists less than a year old. In addition, it includes product alerts in the event a product becomes unsafe because of a formulation change. With this application, individuals can efficiently screen skin care products for allergenic chemicals.

Conclusion
We recommend this app for the common public and daily use in a dermatology office.

Platform
IPhone, iPad, iPod Touch (created by Preventice in collaboration with Mayo Clinic).

Cost
The cost of the app is free.

Journal Apps

Skin and Allergy News
Skin and Allergy News is an excellent source of news and commentary about clinical development. Although the written publication has been available since 1970, the electronic app categorizes journal articles by specialty and topic. It provides clinicians with the latest dermatologic news from various sources. The app is owned by The International Medical News Group Division of Elsevier (IMNG) Medical Media and is integrated with YouTube, Facebook, e-mail, and contacts.

Conclusion
We recommend this app for daily use in a dermatology office.

Platform
IPhone, iPad, iPod Touch (created by WalesTales Software).

Cost
The cost of the app is free (Figs. 7A and 7B).

Skin Therapy Letter
Indexed by the U.S. National Library of Medicine and listed in MEDLINE and INDEX Medicus, *Skin Therapy Letter* has been providing clinicians with dermatologic articles since 1995. The search bar auto populates relevant journals, and the app updates automatically. As a result, the user is consistently provided the most recent articles.

Conclusion
We recommend this app for daily use in a dermatology office.

Platform
iPhone, iPad, iPod Touch (created by Skin Care Guide).

Cost
The cost of the app is free (Figs. 8A and 8B).

Conclusions

Mobile platforms are revolutionizing the practice of medicine by providing convenient access to information. The aforementioned apps will help the practitioner improve their diagnostic resources without cumbersome textbooks. Patients will appreciate the up-to-date information and the ability to better understand their diagnosis and treatments without access to a medical library. As the applications being created today continue to evolve and improve, we can expect to look for even more useful apps in the future.