Mobile Applications for the Oncology Advanced Practitioner

WENDY H. VOGEL, MSN, FNP, AOCNP®

Smartphone, personal digital assistant (PDA), Blackberry, iPhone, Android,... and the list goes on! Is it a fruit, an alien, a phone, or a computer? And how can any of them assist the oncology advanced practitioner (AP) in his or her clinical tasks?

Smartphones such as the Blackberry, the iPhone, and the Android are cell phones with advanced technology that allow access to point-of-care information and medical software applications. The PDA is a handheld computer that offers the same access but without phone services. All of these devices allow the user to perform many tasks traditionally done from a computer, including accessing the Internet. Current medical information that previously may have been obtained from a medical textbook may now be accessed from a single handheld device. Each of these devices may also offer standard features such as the ability to play music, take photographs or videos, perform mathematical calculations, access email and text messaging, manage an address book and calendar, use a global positioning system (GPS), and much more.

These devices have become invaluable to the healthcare practitioner. At the bedside, the clinician can have instant access to clinical references, medical calculators, patient records, and drug databases. An advantage of a smartphone is that it has Internet capability wherever there is cell phone coverage. This feature generally has a fee in addition to regular cell phone use charges. The PDA may be able to access the Internet if it has Wi-Fi capabilities and a Wi-Fi connection, but it should be noted that there may be a fee to access the Internet dependent upon the Wi-Fi service available.

Choosing a Smartphone or PDA

How do you know what device is best for you? With the multiple capabilities that each device offers, the choice often comes down to personal preference. However, one of the first things that should be considered is whether Internet access is desired, and if so, how access will be obtained: through a cell phone service or via Wi-Fi? Checking with the IT department of your healthcare facility may be beneficial in becoming acquainted with certain specifications required to access the facility's network. Some facilities may even allow access to electronic medical records (EMR) through a smartphone or PDA.

The next decision to be made is regarding the type of operating system you prefer. Currently, there are several on the market: Palm, Windows Mobile, BlackBerry, iPhone, and Android. The Android phone is the newest on the market and runs on the Google-developed Android operating system. Traditionally, the Palm OS has had the widest variety of medical software applications, but the other operating systems are quickly catching up. When purchasing software applications, it is necessary to ensure that the applications are compatible with your device's operating system,

Table 1. Websites for medical software applications for smartphones and PDAs

CollectiveMed	www.collectivemed.com
Epocrates	www.epocrates.com
Handango	www.handango.com
Lexi-Comp	www.lexi.com
Medical Wizards	www.medicalwizards.com
MeisterMed	www.meistermed.com
Merck*Medicus*	www.merckmedicus.com
PalmGear	www.palmgear.com
pdaMD	www.pdamd.com
Skyscape	www.skyscape.com
StatCoder	www.statcoder.com
QxMD	www.qxmd.com

Note: This is a nonexhaustive listing. PDA = personal digital assistant

Table 2. Drug reference software for smartphones and PDAs

Software title	Website	Cost
AHFS Drug Information	www.skyscape.com	$99/year
A to Z Drug Facts	www.unboundmedicine.com	Silver: $49.95 (free updates for one year) Gold: $99.95 Platinum: $149.95
Davis's Drug Guide	www.medicalwizards.com	$49.99 (free updates for one year)
Epocrates	www.epocrates.com	Epocrates Rx: free Epocrates Rx Pro: $99/year Epocrates Essentials: $159/year Epocrates Essentials Deluxe: $199/year
Lexi-Comp	www.lexi.com	Lexi-Drug Allergies: $40/year Lexi-Drug: $75/year Lexi-Drug & Lexi-Interact: $115/year Lexi-Clinical Suite: $175/year Lexi-Select: $215/year Lexi-Complete: $285/year
Natural Medicines Comprehensive Database 2009	www.skyscape.com	$92/year

Note: Prices subject to change. PDA = personal digital assistant; AHFS = American Hospital Formulary Service

as they are not interchangeable. It might be helpful to peruse the available medical software that would benefit your clinical practice prior to deciding what device and operating system to purchase.

The last decision to be made is whether or not to have cell phone services on your device. If so, you will have to select a cellular service carrier and contract plan. Carriers will discount the device you purchase significantly when you sign a service contract (typically one- or two-year contracts). Each carrier has different smartphones available, and the selection may change over time. The Palm Pre is available from Sprint; the Blackberry Storm and the Android smartphones are only offered by Verizon; and at this time, the iPhone is only offered by AT&T. When choosing your service carrier, check the reliability ratings of the service and coverage areas.

Medical Software Applications

There are many different medical software applications available for use on your smartphone or PDA, including drug references, medical calculators, medical texts, continuing education programs, medical guidelines, coding applications, diagnostic assistants, data-driven formulas and risk assessment tools, and much more. Table 1 is a nonexhaustive list of some of the many websites that specialize in medical software applications for handheld devices. These applications can vary widely in cost, although some are free and some are "shareware" (software available for free trial with the understanding that users will voluntarily pay a fee to the author or publisher for continued use). Prior to purchasing any smartphone or PDA software, it is important to ensure that it

is compatible with your device and operating system.

DRUG DATABASE SOFTWARE

A good drug database that has the ability to run a drug interaction check is a necessity. Table 2 lists some reliable drug reference programs that may aid the oncology AP in his or her practice. Epocrates provides a free database that includes adult and pediatric dosing, contraindications, adverse effects, pricing, formularies, drug calculator, and drug interaction cross-check. This software can be upgraded with additional services such as an infectious disease guide, alternative medicine database, pill pictures, disease monographs, diagnostic and laboratory tests, ICD-9 and CPT codes, and a medical dictionary. Lexi-Comp has several drug database products including a drug allergy database that includes drug reactions by

drug class, considerations when managing patients with reported allergies, and more. Lexi-Comp's basic drug database may also be upgraded with features such as laboratory and diagnostic procedures; medical calculators; and Harrison's Practice, a primary medicine diagnosis and management tool. Natural Medicines Comprehensive Database 2009, offered by Skyscape, gives information on herbs, vitamins, minerals, supplements, interactions, uses, safety, and efficacy. AHFS (American Hospital Formulary Service) drug database provides more extensive evidence-based data and is also available from Skyscape. All of the drug references listed in Table 2 are updated frequently. Some software applications require a document reader that may be downloaded for free or for an additional cost.

GENERAL MEDICINE CLINICAL REFERENCES AND TOOLS

Table 3 lists general medicine clinical references and tools that the oncology AP may find useful. Diagnosaurus is a unique free tool that has more than 1,000 differential diagnoses to assist in medical decision making. Many of the sources listed in Table 1 include medical calculators. When using a drug database, check to see whether it has the medical calculators that are needed for a specific clinical practice. For example, the Epocrates drug databases come with a body surface calculator, creatinine clearance calculator, and a calculator for body mass index, among many others. Medical dictionaries are also available from the sources listed in Table 1. Medscape Mobile is an application that includes specialty-focused news, mobile CME, and a drug database and interaction checker. Currently, it is available only for the iPhone and Blackberry but is expected soon to support additional operating systems.

ONCOLOGY- AND HEMATOLOGY-SPECIFIC MEDICAL SOFTWARE

In addition to the more general medical software discussed above, there is also software specific to oncology and hematology. Table 4 provides a non-exhaustive list of some of the many oncology/hematology resources and software available for PDAs and smartphones. PEPID RN Oncology Nursing Society (ONS) Oncology Nursing Suite is a fully integrated, comprehensive, point-of-care information resource designed specifically for oncology nurses. It provides a drug database, more than 2,400 medical topics, medical calculators, and an integrated drug interactions generator. This software program also includes the ONS's PEP (Putting Evidence into Practice) cards. The ACR Appropriateness Criteria offer the most recent evidence-based clinical practice guidelines for imaging decisions. Epocrates Medtools: Essentials for Oncology includes the Gail model Breast Cancer Risk Calculator, Renal Cell Cancer Prognosis Calculator, and the most commonly used oncology calculators. The U.S. Preventive Services Taskforce Recommendations assist clinicians in selecting the correct screening, counseling, and preventive medication services appropriate for a patient based on age, gender, and selected behavioral risk factors. Risky-Disky is Palm-based software useful in assessing breast cancer risk per the modified Gail model, the Claus model, and the Frank model. It predicts the 5-year risk for breast cancer

Table 3. General medicine software for smartphones and PDAs

Software title	Website	Cost
5-Minute Clinical Consult	www.unboundmedicine.com	$79.95/year
Diagnosaurus 2.0	www.books.mcgraw-hill.com	Free
Harrison's Manual of Medicine	www.unboundmedicine.com	$59.95/year
Medscape Mobile	iPhone: www.medscape.com/public/iphone Blackberry: www.medscape.com/public/blackberry	Free
Merck Manual	www.unboundmedicine.com	$49.95/year
Mobile Merck*Medicus*	www.merckmedicus.com	Free
Oxford Handbook of Clinical Medicine	www.unboundmedicine.com	$44.95/year

Note: Prices subject to change. PDA = personal digital assistant

and the consequences of 5 years of tamoxifen therapy.

Although the technology may seem overwhelming at first, most of the software is user-friendly. Explore the applications of interest by utilizing the free trials offered. Read the consumer evaluations and ratings for products you are considering. Smartphones and PDAs can improve your efficiency and your accuracy in medical decision-making. Your labcoat pockets will be lighter, too!

Are there topics you would like to see addressed in the Tools & Technology section? We'd like to hear from you! Please send your suggestions to editor@advancedpractitioner.com.

Table 4. Oncology and hematology software for smartphones and PDAs

Software title	Cost	Operating systems*	Website
ACR Appropriateness Criteria	$55.95/year	A, B, I, P, W	www.skyscape.com
AJCC Staging Manual	$69.95	P	www.handango.com
Anticoagulation Advisor	$24.95	P	www.palmgear.com
@Hand: Hematology 1.0	$29/year	I, P, W	www.medicalwizards.com
Bethesda Handbook of Clinical Oncology	$46.95	A, B, I, P, W	www.skyscape.com
Clinical Hematology and Oncology	$16.95	P, W (document reader required)	www.pdamd.com
Epocrates Medtools: Oncology	Free	P, W	www.epocrates.com
Evidence-based Medicine Guidelines: Oncology	$34.00/year	A, B, I, P, W	www.skyscape.com
Febrile Neutropenia MASCC Risk Score	Free	B, I	www.qxmd.com
Handbook of Cancer Risk Assessment and Prevention	$39.95	B, I, P, W	www.skyscape.com
Handbook of Radiation Oncology	$37.95/year	A, B, I, P, W	www.skyscape.com
ICD-9 Coder	$9.99	B	www.qxmd.com/apps/icd9
MeisterMed	$39.95	B, I, P, W (document reader required)	www.meistermed.com
M.D. Anderson Surgical Oncology Handbook	$46.95/year	A, B, I, P, W	www.skyscape.com
Mosby's Oncology Drug Reference	$42.46/year	A, B, I, P, W	www.skyscape.com
National Guideline Clearinghouse	Free	Varied	www.guideline.gov/resources/mobile-resources.aspx
Oncology Nursing Drug Handbook	$53.95/year	A, B, I, P, W	www.skyscape.com
PainSTAT	$20.00	P	www.handango.com
PEPID RN ONS Oncology Nursing Suite	$199.90	B, I, P, W	www.pepid.com/products/rnons/
RiskyDisky	$19.95	P	www.palmgear.com
U.S. Preventive Services Taskforce Recommendations	Free	B, I, P, W	epss.ahrq.gov/PDA/index.jsp
Washington Manual Hematology and Oncology	$33.95/year	A, B, I, P, W	www.skyscape.com
Washington Manual of Oncology	$41.95	A, B, I, P, W	www.skyscape.com

Note: Prices subject to change. PDA = personal digital assistant; A = Android; B = Blackberry; I = iPhone; P = Palm; W = Windows Mobile.