Hand-Held Technologies
Harnessing the Clinical Power
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Objectives
1. Participants will be able to identify 3 or more potentially useful programs for a handheld computer.
2. Participants will be able to identify 2 or more sources of handheld computer programs.
3. Participants will be able to specify what they need in a handheld computer.

Class Notes

This will be a hybrid "What you can do" and "How to" talk. There will be general guidelines and examples with demonstrations, but the intent of the class is not to get into the minutia of how to operate specific handheld computers or specific programs. Time permitting questions are welcome. If you are reading this handout earlier in the day please feel free to start asking questions early. Generally, you can recognize Bob by his ponytail and turtleneck. He may be cutting edge in technology but in fashion he needs help.

To avoid excessive techno babble the discussion will be limited only to those devices that run the Palm OS® (operating system). Examples of trade names that run the Palm OS and may be referenced today are Palm VII, V, IIIx, III, m100, m105, m500, m505, Palm Pilot, IBM® WorkPad™, Handspring® Visor™, Sony CLIE™, TRGpro™.

Please ask any questions you may have during the session. If unable to attend the session or if questions come up later you can contact the speaker at his office, which is listed below. You can also talk with him through out the conference. Additional materials are at www.nurse.net/pda/

Geeky Stuff Made Easy:

Handheld computer is the generic term for small computers you can hold in your hand. Handheld computers are also known as PDAs or Personal Digital Assistants. Over the years NPs have clearly expressed the preference for skipping the geeky material and focusing on the practical realities of using computers. There is more than one operating system for handheld devices. Perhaps the most popular one in the health care arena is the Palm OS. That is the only one that will be considered here.

Windows CE, or a "lite" version of Windows is another popular operating system for small computers. The programs being reviewed here do not generally run on a Windows CE system.

Big Computers and Little Computers

In actuality a handheld computer does not require a big computer to run. Big computers do make it easier to back up the data on the little computer. Big computers are also most helpful when it comes to installing programs on the handheld and when restoring data after a crash. Most of the current computers will work to support your handheld computer. A handheld can run without any other computer to work with, but there are many advantages to having a big computer as well. (Big computers are desktops, laptops and other computers you can't hold in your hand.) Primarily the big

computer can provide a safe back-up for the data you have on your handheld. It also can provide an easy way to access the data and to input and modify the information on your handheld. The big computer also serves as a conduit to the outside world for the handheld. For example, you can use the big computer to connect to the Internet while synchronizing your handheld. You can then update information on your handheld directly from the Internet.

There continues to exist a debate on which big computer is best: a PC or a Mac. That discussion can be come very intense when advocates of each system get together. In so far as a handheld computer is concerned both PCs and Macs will work. That said, there is considerably more support for handheld computers working with PCs than Macs. If you are a Mac user, check specifically for compatibility with your system.

Handhelds generally fit into a cradle that is attached to the big computer. This cradle can connect through a USB port or a serial port. In the PC arena, newer machines will have a USB port, which is the up and coming replacement for the older serial ports; some of the new machines no longer have a serial port. USB ports are faster at transferring data than serial ports. If you have the choice of either one then pick the USB system. It will be faster. Actually doing this is easier that explaining it. What you do is to plug the cradle into the big computer. You then put the handheld computer into the cradle and press a button. The data from the big computer is exchanged with the little computer and they are synchronized. Plugging in the cradle is like putting a square peg in a square hole, nothing to it. As for the rest, think of it as magic, or great programming.

Basic Palm OS Functions: (The stuff that comes with your handheld computer.)

Address book: Your basic address book, but always in order! Display the list by name of the individual or of the organization. There is room for notes and four customizable fields that you can set up as you please. This interacts with other programs to allow a phone number to be imported into the to do list or date book.

Calculator: This is a basic calculator that can add, subtract, multiply and divide. There is a memory function. Multiple upgrades to this are available if you prefer a multi-function scientific calculator.

Date Book: This is an easy to use program that allows you to keep track of your appointments. It's easy to schedule recurring events on a daily, weekly, monthly and yearly basis. Changes are easy and you can view your calendar in day-at-a-glance, week-at-a-glance and month-at-a-glance. Enhancements are available to make this program even more helpful. It is also supported on the Palm Desktop that comes with a Palm OS device. You can thus use the program on your handheld and on your big computer. It even checks to see if you have changed things on both your big and little

computers. If so, a copy of both changes will be placed on both computers. You then select the one you want to keep.

Memo Pad: This is where you write those extensive notes and memos. File them in any one of up to 15 different categories that you can define. This is a good place to keep clinical notes and other information that usually ends up on hundreds of different scraps of paper. With the find function you can quickly locate what you want.

To Do: This is what can keep you organized. Set your to do list by priority, date due, category of things to be done. When done you can get immediate satisfaction by watching the item disappear, or let it remain but be checked off to show what you have done. Switching from one method to another is easy. Put those clinical follow-ups in here and show them on the date they are due.

Desktop: The Palm Desktop is supplied with a handheld running the Palm OS. It allows you to access your basic handheld programs on your big computer. This is also the way you can load a new program into your handheld. Anything you change in your desktop is changed in your handheld computer at the time you do a hot sync.

Hot Sync: Handheld devices are designed to be synchronized with a program on your personal computer that will both back up the data in your handheld and will also provide access to that data so that you can work on it when you are sitting in front of your computer. The synchronization takes place via a cradle. You place the little computer in the cradle and press a button. Through the wonders of technology, data is transferred and the information on the little computer and big computer match.

Back Light: This allows the handheld to be used in dim light or darkness. It's easy to use but does increase the battery drain. If this is important to you take the handheld you are considering and go into a dim and dark area to see if it works to your satisfaction. Color screens are always lit which contribute to the shorter battery life of color handhelds.

Beam me up Scotty: The beam function allows you to send information from your handheld to an associate. You can beam individual entries as well as your electronic business card.

Buttons: There are 4 physical buttons on the Palm and Visor, which can be programmed to take you directly to a specific program. As originally programmed these buttons take you to the date book, address book, to do list and memo pad. This makes it very convenient and fast to jump from one program to another. There are also 4 virtual buttons on the screen. One of these can be programmed to take you to whatever program you want. The remainder provides immediate access to Find, Menu and the list of available Applications.

Font size: The font size can be changed between small, medium and large to make it easier for you to use and read. Easy to do with

a menu selection or stroke of a stylus.

Alarms: You can set an alarm for your appointments that will go off anywhere from 1 minute before to 99 days in advance. This may help to keep you on time.

Find: Is the search function on the handheld computer. It is a very powerful tool, by entering a word, or part of a word, the entire collection of information on the handheld is searched and all matches are displayed on the screen. Once displayed you tap on the entry you want to review. It's great for locating clinical information, to find out who is calling you by entering a phone number or to locate an appointment with a friend.

Accessories:

Keyboard: While this is an optional item it is nice if you are planning to take a lot of notes and can keyboard quickly. They fold up compactly and hold the handheld up at an angle so you can watch the screen as you use the keyboard. It's certainly smaller and lighter than a laptop.

Stylus: Back when the only handheld computer was a Palm Pilot the only stylus was a skinny plastic stick. Now the basic stylus is still a 3/16 inch in diameter about 4 inches long that fits in you handheld, but you can get a great variety of pens with computer stylus tips that should satisfy anyone. Cross makes them, Y&C pens makes a very nice one and even pharmaceutical firms are giving away multiple tip pens that have a computer stylus in them.

Case: This is a nice accessory. There are a great variety of cases available. Some are tough enough to allow you to take your handheld computer white water rafting. The handhelds come with a protective cover for the screen and this provides a basic level of protection. It's still a good idea to get a case of some type. Most any case will offer some protection from a drop. Cases can also provide extra storage, such as for your credit or business cards.

Screen Protector: This is a must. It's a piece of clear plastic, which is applied directly to the screen and prevents scratches from occurring. One will last for a long time. If it gets damaged you peel it off and replace it with a new one. It's especially helpful if you forget to use your stylus and write on the screen with a pen.

Choosing Your Handheld:

Currently I'm suggesting that you select one of the PDAs that have 8 MB of memory. It should also have an expansion port that will allow you to add additional memory or other add-on hardware. There is an excellent article on choosing the correct handheld computer at http://www.money.com/money/magazine/palm/

Screen issues: Color is always nice, and often enhances readability. On the Visor the color screen is better seen in dim and dark conditions. Try them, including in a dim area, and decide

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which appeals to you more. The down side is that color uses up batteries faster. My current handheld has a color screen. .

Batteries: Generally 2 AAA batteries last for a couple of weeks. I like to use batteries that you replace rather than the built in rechargeable ones. If you are draining batteries a lot it's easier to swap out the replaceable batteries and keep on computing. An emergency battery pack is available from www.talestuff.com. It allows you to use standard AA batteries to run or recharge a PDA with built in batteries. Since the power level of the rechargeable batteries can drop off precipitously with use this is a handy device to have if you use your PDA extensively. Lithium ion batteries in the Visor Prism will last 3 to 5 years. There is no harm to charging them before running low. They will last for 5 to 6 hours of actual use. Decreasing the screen contrast, or brightness, may extend the battery life.[1]

Graffiti®: is the name of the handwriting recognition program used by handheld computers running the Palm OS. Write with the stylus in the Graffiti writing area to quickly enter alphanumeric information

on your handheld. This alphabet is similar to the normal strokes you make when writing block letters. It can be rapidly mastered. There is even a game included to help you master the Graffiti writing system. Still, it is faster for a skilled keyboarder to enter information. This can be done from the big computer the handheld synchronizes with or from an accessory keyboard. There is also an on-screen keyboard that can be displayed on the handheld which is especially useful for those infrequently used characters. Giraffe is a game that comes with your handheld computer; it is a fun way to learn the Graffiti characters.

Memory: A minimum of 8 MB of memory is suggested. The drug reference programs use 1 or more MB of memory and the 2 MB handhelds do not have adequate memory to run them well.

Wireless connectivity: This can be a nice but rather expensive option. It's likely to be most useful to advanced users who travel a lot. There may be a future use with electronic prescription writing. Details on this are yet to be worked out.

Obsolescence: Whatever you buy will be replaced by something slicker and better in a couple of months. Get the best you can when you make your purchase and use it. You'll probably be replacing it in 2-3 years.

Legal Issues Related to Patient Information on Handheld Computers:

Is your use of a handheld computer sanctioned or authorized by the institution? If the institution does not know or does not have a written policy on the use of the computer, then there is a question as to whether it is appropriate for you to take patient records off site. Although you may up- or download your computer during the course of the day, (so you are not taking the "record" offsite) most computers have a default backup. Thus, copies of records or other items entered into the computer may remain in your backup storage even when they have been deleted. This record, whether complete or even the last record, is the property of the institution. Your taking this record (even on your backup) off the premises might violate patient confidentiality.

Isn't using a computer like my handwritten notes or personal log? It depends on how the computer is used. If you are taking complete patient files or scanning in portions of the file that you have not written, or computerized personal data, entered by the institution, then you are taking property that belongs to the institution. Questions remain about whether one's own personal impressions and notes can be co-owned, and whether or not you may be able to retain that information. Any other information taken from the patient record immediately transforms that file into a patient record which belongs to the institution. You need to have permission to take the record and retain it offsite.

Security is a real concern with the uploading of records onto one's handheld computer. While you might feel that the records are secure, the reality is that anyone else who gets possession of your handheld could get access to those records. Even though your intention is not to share those records, realize that theft is rampant and that you and the institution would be liable if others got those records.

If there is a lawsuit electronic records are discoverable. If there is a lawsuit where any record that you have downloaded is requested, all copies of that record are discoverable and the institution has an affirmative obligation to provide those to the requesting litigant. The law now requires that the institution provide all electronic versions of any record, which means that the institution has an obligation to provide the record that is retained on your handheld computer. That is why it is imperative that the institution develops and approves any policy related to the use of handheld computers.[2]

Practice Safe Computing:

Every computer you use should be immunized to protect it against the viral epidemic that is occurring. As with our patients, immunization can prevent serious disease and deaths, in this case to our computers and the data they contain. Some rules for safe computing.

Get and run an anti-viral software. Both McAfee

(www.mcafee.com) and Symantec (www.norton.com) have anti-virus software that you can run on your big computer. Programs for handheld computers are also available through these companies. At a minimum, when you run an anti-viral program, set it up to scan all files rather than selecting only program files to be scanned. Additionally, configure the anti-viral software to run anytime you download email or files from the Internet and to scan regularly when you are not using the computer.

Update your anti-viral program regularly. Do this frequently, it's reasonable to check the web site for the anti-viral program every 1-2 weeks, or use the auto-update feature in the software.

Viruses have been found on handheld computers. You can get these when you hot-sync with your big computer and also when you have a program beamed to you. It is a good idea to run an anti-viral program on your handheld computer along with your big computer. Viruses found thus far are the Liberty Crack, Phage and Vapor. McAfee considers them low-risk at this time, as they are rare. This will change.

Do not open any files attached to email unless you scan them for viruses with a current anti-viral program and you are expecting the files. Many viruses spread this way without the sender being aware the virus is sending you an infectious program.

Do not download files from strangers. Before you download and run a program you should know whom it's from and what you expect it to do. Then, always run an anti-viral program to check the program before allowing it to run on your machine. When in doubt, throw it out.

Make frequent back-ups. If you can't afford to lose your work, make a back-up copy and store it on a floppy, zip-drive or tape that is away from your computer.

Clinical Programs:

ePocrates: qRx™ version 4.0 is a rapid drug reference that automatically updates itself when you synchronize your handheld computer. The program is extremely well thought out and well planned. You can search by drug name or by class. Multiple configuration options allow you to default to searching by either drug name or class. The initial page you open to can be information on adult dosing, pediatric dosing, contraindications and cautions, drug interactions, adverse reactions, cost and package information, other information and a notes page for your personal notes on that medication. You can easily select any of these screens regardless of where you start. Cost information is from drugstore.com. Tables are included under the heading "Tables" in the drug list. This includes ACLS information, inhaler colors, narcotic equivalents, therapeutic drug levels, thrombolytic criteria and the pediatric immunization schedule.

As you enter letters to spell out what you are looking for the

program jumps down the screen highlighting the drug name, or class, before you finish writing. This allows you to select the medication quickly. Searching by class of medication is just as simple as long as you know what class of medication you are looking for. This option requires making selections through at least two menus. This could be helpful if you were unsure of what calcium channel blocker you wanted to use.

"Other Information" includes the pregnancy category, lactation recommendations, metabolism, excretion, and DEA Schedule. It also gives the mechanism of action.

Downloading ePocrates can be a bit confusing at first. The site is well documented and steps you through the process. There are a lot of steps to follow and understand.

The menu icon in the bottom left corner provides the user with different applications and operations. The most useful function is the drug interaction operation. Simply input all the medications that the patient is on and the ePocrates will give you information on interactions that may occur. This is a great time saver when you are writing prescriptions for clients that are taking multiple medications.

Perhaps the greatest strength of this program is the auto updates, which occur every time you synchronize your handheld. As information is exchanged the program will save "DocAlerts". These are health warnings concerning the changes of dosing and removal of products from the market. For example, ePocrates DocAlert provided notification a day after Lotronex was pulled from the market. Now if you look up Lotronex, it says that it was pulled from the U.S. market. An insurance formulary module is currently in development.

Cost: Free. Memory: Roughly 1100 K (1 MB)
URL: www.epocrates.com

Tarascon ePharmacopoeia: This is the complete and upgraded electronic version of its popular pocket medication guide. It is extremely well organized. Tabs down the left side of the opening page allow the user to look up medications via drug class, by drug name, or by common drugs that the user has selected. Searching by class of drug is extremely efficient and systematic. However, searching by drug name was less user-friendly. Unlike ePocrates after putting in a few letters, the medication list will scroll down but not highlight the drug name. The user is forced to scan approximately 12 medications to find the one desired. Of particular interest is the tab labeled "common". This function allows the user to list medications that are used frequently and find them quickly. The top tab is labeled tables. Within the tables are lists of useful information such as medications commonly used during pregnancy, inhaler colors, and emergency contraception.

Each medication page has the same abbreviations and symbols that Tarascon users have come to understand. The medication pages

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automatically open to the adult doses with abbreviations for the method of metabolism, pregnancy category, safety in lactation, DEA controlled substance, and cost across the top. For those who are unfamiliar with Tarascon symbols, selecting the category will provide the user with the symbol translation. Across the bottom are tabs for pediatrics, forms, notes by Tarascon, personal notes, and a little skull and cross bones symbolizes warnings. There is even an Rx symbol that is set up for future prescription writing software. The information on each medication page is rather crammed.

Cost: Free. Memory: Roughly 995 K (1 MB)
URL:
http://www.medscape.com/Home/Topics/multispecialty/directories/dir-MULT.Mobile.html

Lexi-Drugs: Can be configured to different presentations by the user who can easily switch between the specialty options to change their desired "view" of the information. The ability to change this information is useful for students or those practicing in different specialty areas. There is the option to do an essential or comprehensive installation to adjust the amount of memory used. Information on over 1600 drug monographs covering over 3900 U.S. brand names for the essential installation and over 7000 U.S. and Canadian brand names for the comprehensive installation.

This program is updated with changes posted to the database multiple times per week allowing. You can then download and synchronize the information. All updates are included with your annual subscription.

Cost: $75/yr. Memory: 2-4 MB depending on configuration. Will run on expansion card. URL: http://www.lexi.com

iScribe: is making it simple for nurse practitioners to begin using PDAs to perform electronic prescribing. The software and technical support are free at present. All that is needed is a PDA, a printer, and an infrared sensor for the printer. The i5000 program was specifically designed for the Palm Operating System and is very easy to install on your PDA. iScribe has several different tutorials for the new user to facilitate the transfer from hand written paper prescriptions to electronic printed prescriptions.

The program itself requires that four fields be entered for each patient. This can be done at the beginning of the day or at point of care. Having all the patient information already entered before the patient interaction decreases prescription writing time. The true power of this program is realized after writing just a few prescriptions. After the patient is selected a quick list of your favorite drugs are displayed with a code that states whether the medication is covered by the patients insurance. Select the medication and your favorite sig is displayed. The last step is to beam the information to the printer and then sign the printed prescription. Each prescription prints on a single page with a sticker at the bottom of the page with a copy of all of the

prescription information. Remove the sticker and place it in the chart for ease of documentation. As an added bonus iScribe has included an ICD-9 coding reference.

This is an intuitive program to use and can save time by preventing callbacks due to scrawl, incorrect doses, and dispensing the wrong amount. The i5000 is the first step in the quest for simple electronic prescriptions. iScribe also has excellent technical support.

Cost: Free. Memory: Roughly 3 MB (up to 5 MB for install)
URL: http://www.iscribe.com

qID: This is a custom-built infectious disease application designed specifically for Palm OS handheld devices. Fast and comprehensive, qID helps you find antimicrobial recommendations in a concise and clinically relevant format at the point of care. In addition, qID works with ePocrates qRx, allowing you to get detailed drug information quickly and easily.

With data on over 400 bugs and 400 drugs, qID helps you narrow down your diagnosis within seconds, allowing you to search for antimicrobial recommendations by location, drug or bug. You can look up empiric or specific drug therapies, depending on whether your culture results have returned. If you need more information about the drug, simply tap the name and you instantly launch into qRx for more comprehensive drug information such as adverse reactions, contraindications, and drug interactions. By clicking "back" you return instantly to qID.

Concise and authoritative, qID provides you with gold-standard infectious disease information from academic specialists from across the country. Developed in collaboration with infectious disease specialists, the information is compiled and distilled from peer-reviewed literature, guidelines, and other reference sources and communicated to you in a concise and clinician-friendly format. Although lacking in an automatic update option an updated version is made available monthly.

Cost: Free. Memory: Roughly 450 K (0.5 MB)
URL: http://www.epocrates.com/products/qID/

Griffith's 5 Minute Clinical Consult: captures the enormous size of the well-respected Griffith's text and reduces it down into the palm of your hand. More than 1000 clinical topics are covered. Over 500 expanded clinical topics are neatly broken down into sections that appear on the right side of the screen. For each expanded clinical topic you will find information classified in Basics, Diagnosis, Treatment, Medications, Follow-up, and Miscellaneous headings.

This program links to the Lexidrugs medication reference directly. While there is adequate treatment information including drugs of choice and standard treatment protocols, this function allows the provider to switch over to Lexidrugs and obtain additional information. Despite the convenience it is easy to unintentionally to

get stuck in Lexidrugs. Should this happen, it is necessary to reopen the 5 Minute Clinical Consult. The program is useful and user-friendly. It is quite possibly the most well organized medical reference database to date.

Cost: $75. Memory 3 MB (works on expansion cards)
URL: http://www.lexi.com

Guide to Natural Products: (GNP) is an excellent resource for NPs faced with patients taking multiple "natural" supplements. This unique reference gives the health care provider the necessary information needed to make educated decisions about supplements, and other natural products.

The index was not as complete as expected, it does not include vitamins and minerals. While vitamins and minerals are usually found in other medical references, it would have been nice for them to be included in this reference. Another omission is the lack of dosing information for products with accepted/standard doses.

The reference program provides clinically relevant information, including uses, side effects, and toxicology. There are details on 120 popular natural products.

Cost: $39.95/yr. Memory: 617 K
URL: http://www.factsandcomparisons.com

PEPID: (Portable Emergency Physician Information Database) is a medical reference tool designed with emergency personnel in mind. With over 40 specialists contributing to its development, this comprehensive database provides a wide array of information. PEPID includes information concerning diagnosis, signs and symptoms, differential diagnosis, pathophysiology, and treatment for both common and extremely rare conditions.

Learning how to navigate through PEPID takes about 15 minutes. The Table of Contents includes general topics such as Trauma, Organ Systems, Resuscitation, Specialties, and Drugs. These general topics then get more specific as you go from page to page. For example selecting Drugs takes you to a listing of conditions you may be treating. This listing includes Anesthesia, Dermatology, Pain and Infections. The Drugs section has over 1000 commonly used drugs and also contains important information on Overdoses and Antidotes as well as current information on Immunizations and Vaccinations. The Drugs section even contains facts on commonly abused drugs and their street names. There is also a section on prescribing for pregnant patients.

When looking for something specific, it is easier to use the Alphabetical Index. This index allows you to key in the first three letters of what you are looking for, and then takes you to a listing of words that start with those letters.

The convenience of PEPID lies in its portability and ease of use. The entire reference fits into your handheld computer. Should it be inconvenient for you to carry a palmtop computer, PEPID can also

be installed on your big computer. Information is also updated regularly and is available via email, PEPID's web site, or disk.

Cost: $39.96 for 6-month license, $14.95 update renewal. Free demo is available.
Memory: Roughly 2253 K (2.2 MB)
URL: http://www.pepid.com/

Tool: This is based on the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). It is an interactive guideline tool designed to assist the clinician in implementing the ATP III Cholesterol Guidelines at the point of care. It contains usable information from ATP III including:

- ATP III classification of lipid levels.
- ATP III CHD risk assessment.
- Therapeutic Lifestyle Changes (TLC).
- Drug therapy for lipid lowering.
- Information on the metabolic syndrome.
- Issues for special populations.

The clinician should be thoroughly familiar with the ATP III Guidelines prior to using this reference tool in patient care.

Cost: Free. Memory: approximately 340 K
URL: http://hin.nhlbi.nih.gov/atpiii/atp3palm.htm

DoseCalc Plus: This program is intended to assist in the repetitive task of calculating medication doses. You enter the weight in either pounds (lb) and ounces (oz) or in kilograms (kg) using the keyboard or Graffiti. Drop-down lists for categories of medication, and for the medications in each category are available in the upper right corner. Drop-down lists are in mg/kg/day and doses/day as well as available solution concentrations. In case doses are calculated or rounded up to above the maximum recommended dose, a warning appears advising of the maximum.

A running history of recent calculations is kept in a log. This history can be saved to the Memo Pad for future reference, or to be transfered to the desktop computer for permanent storage and/or printing.

Cost: $20, free trial available. Memory: approximately 65 K
URL: http://pocket-doc.com/

MedMath: This is a medical calculator for handheld computers with over 25 commonly used medical formulas and scores. The clinician can set units preferences, for example kg or lbs. Information is provided about each equation and its origin. It does not have the ability to store patient information and thus uses less memory. There is a screen-displayed keypad making it unnecessary to use Graffiti to enter numbers.

Calculations include: A-a O2 Gradient, Absolute Neutrophil Count, Anion Gap (Serum), Anion Gap (Urine), Basal Energy Expenditure,

Body Mass Index, Body Surface Area (Dubois), Cockcroft-Gault Equation, Corrected QT (QTc), Corrected Serum Calcium, Corrected Serum Phenytoin, Corrected Serum Sodium, Creatinine Clearance, Fractional Excretion of Sodium, Henderson-Hasselbalch Equation, Hepatitis Discriminant Function, Ideal Body Weight, Likelihood Ratios, Mean Arterial Pressure, Number Needed to Treat, Osmolality (Serum), Osmotic Gap (Stool), Posttest Probability (Sensitivity/Specificity), Posttest Probability (Likelihood Ratios), Reticulocyte Index, Transtubular Potassium Gradient, Water Deficit and Winters' Formula

Cost: Free. Memory: Roughly 36 K
URL: http://mail.med.upenn.edu/%7Epcheng/medmath/index.html

MedCalc: is a medical calculator for handheld computers with over 50 commonly used medical formulas and scores. This free program is available by itself or comes bundled with Tarascon ePharmacopeia. You can store patient information after performing a calculation. This may be convenient to monitor a patient's progress with weight loss or BMI but does raise issues of medical record confidentiality. MedCalc also allows the clinician to set units preferences, for example kg or lbs. While useful for primary care providers, MedCalc would probably be most helpful for nurse practitioners practicing in an acute care or inpatient setting. A strong point is the ability to customize a selection of formulas that best meets your practice style.

Available calculations include: Age Calculator, Absolute Neutrophil Count, Body Mass Index (BMI), Creatinine Clearance, Glomerular Filtration Rate, Henderson-Hasselbalch, Ideal Body Weight, LDL Cholesterol, Post-test Probability (LR and sens/spec), Predicted Peak Flow and Pregnancy Calculator.

Cost: Free. Memory: Roughly 300 K
URL:
http://www.medscape.com/Home/Topics/multispecialty/directories/dir-MULT.Mobile.html

STAT GrowthCharts: This program calculates growth percentiles based on the June 2000 revision of the CDC Growth Charts for the United States. It includes new body mass index-for-age charts. Enter the age in years and months using the pop-up lists. The weight, height, and head circumference can be entered using graffiti. Metric or English units can be used. If head circumference is included, HC-Age percentile is presented. If no head circumference is input (non-infants), BMI-Age percentile is included if applicable. Information on the new CDC growth charts can be found at http://www.cdc.gov/growthcharts/

Cost: Free, advertising supported. Memory: Roughly 130 K
URL: http://www.statcoder.com/

STAT Cardiac Risk: This application estimates coronary heart disease risk using the Framingham Heart Study Prediction Scores (1998 update). Enter in age, sex, total cholesterol, HDL, blood

pressure, smoking, and diabetes status and see the absolute risk of angina pectoris or MI over the course of 10 years. It helps clinicians to communicate the total effect of multiple risk factors for heart disease. Lists average cardiovascular risk for age as well as idealized risk. Option to use mmol/L as well as mg/dl cholesterol units.

Cost: Free, advertising supported. Memory: Roughly 22 K
URL: http://www.statcoder.com/

Humor: You can store those jokes you wanted to use clinically in your little computer and then look them up quickly. For your first joke:
Q. What do you call a 6th grade girl throwing paper airplanes?
A. A palm pilot.

Resources:

NP Central: Links, reviews and information on handheld computers. http://www.nurse.net/pda/ Electronic copies of this handout will be available at this website. You can send copies to friends, give it to your students and other wise share it.

Y & C Pens:
University of Washington Bookstore: Free shipping of Y & C pens, refills and supplies. 206.634.3400.
Colorado Pen Company. http://www.coloradopen.com. 425.709.3285.

Handspring: http://www.handspring.com/

Palm: http://www.palm.com/

Palm Gear: http://www.palmgear.com/

http://www.freepalm.com/medical/

http://www.handheldmed.com/

http://www.keepkidshealthy.com/pedipilot.html

http://www.rnpalm.com/

National NP Directory: http://www.npclinics.com/
Find a nurse practitioner or list yourself so consumers can find you.

Acknowledgements:

The reviews were adapted from work done by Marty Couret, MSN, NP, and also from manufacturer provided information.

Self-Assessment Questions
1. Select 3 or more potentially useful programs for a handheld computer from the handout above.
2. Select from the handout above 2 or more sources of handheld computer programs.
3. List 3 key things that you want in a handheld computer.

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[1] Personal communication with Handspring Technical Support, April 2001.

[2] The information in this section is adapted from information originally posted to the NP-Clinical on-line discussion group by Winifred Carson, JD, practice counsel to ANA. It is used with her gracious permission.