

# Hand-held computers in health care: What software programs are available?

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## 1 Abstract

The technology sector of healthcare is entering a new evolutionary phase. The medical community has an obligation to the public to provide the safest, most effective healthcare possible. This is more achievable with the use of computer technology at the point of care, and small, portable devices could fulfil this role. A Modern Physician/PricewaterhouseCoopers 2001 survey<sup>1</sup> on information technology in Physician practices found that 60% of respondents say that physicians in their organisation use PDAs, compare this with 26% in the 2000 technology survey. This trend is expected to continue to the point where these devices will have their position on a physician's desk next to their stethoscope. Once this electronic evolution occurs, the practice of medicine will change. Doctors will be able to practice medicine with greater ease and safety. In our opinion, the new generation of PDA mobile devices will be the tools to enable a transformation of healthcare to a paperless, wireless world.

This article focuses on *uses for PDAs in health care*. Healthcare software is categorised into the following groups; reference/text book, calculators, patient management/logbook and personal clinical/study notebook. With a focus on the healthcare audience (the user), which can be registrar, consultant, nurse, student, teacher, patient, medical director and surgical.

## 2 What is a Personal Digital Assistant?

PDAs are set apart from other computer systems by the fact they are “personal”. They are your diary, your watch, and your mobile phone. They are of limited use to others and tailored to your needs. In healthcare there are few workers who do exactly the same activities, unlike a desktop or laptop personal computer, a PDA can be tailored to suit each individual and improve productivity rather than restrict a workers characteristics to suit a standardised PC. The major argument for equipping each worker with a PDA, rather than having a pool of machines that are handed over each shift, is the fact they are personal, PDAs go home with you and fit in as part of your life.

## 3 Uses for PDAs in health care

There are three main operating systems for PDAs. Palm OS occupies a large share (estimated 60 – 75%) of the market. Pocket PC and EPOC32 follow sharing 15% each. The Linux OS is still in Beta release. The software available for the operating systems defines the uses for PDAs health care professionals. The Internet was searched for healthcare related PDA software and the software was organised into relevant categories. In particular, characteristics, features and benefits to healthcare workers and teaching and learning in clinical practise were analysed. High-ranking applications that require further investigation were highlighted. There are five main categories of Healthcare software outlined below.

### 3.1 Reference/text book

The obvious example is a drug formulary such as the British National Formulary (BNF) transferred to electronic format. These are very popular among PDA users, most are free and carry disclaimers about content. The most well known is ePocrates<sup>3</sup> for the Palm (Figure 1) which is updated weekly on the Internet. Textbooks in medicine, surgery and anatomy are popular as are lists of definitions, procedure codes and laboratory reference values. Most reference material is managed with additional viewing software that compresses the data.

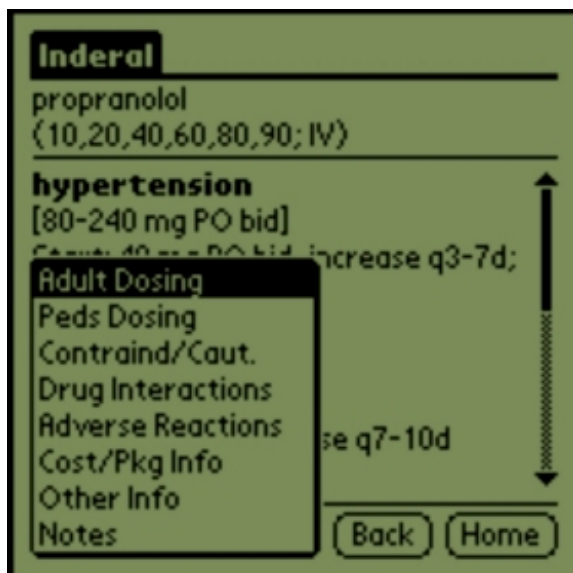


Figure 1. ePocrates drug database for the Palm

By far the majority (greater than 60%) of healthcare software is reference software with medical, reference values and drugs databases being equally popular. Surgical and anatomical texts or illustrations are uncommon. Reference software is almost exclusive and doesn't offer other features apart from some drug databases that offer drug dosage calculations. The plethora of data reflects the ease at which documents can be converted and stored on a PDA rather than the demand for such software. The size of some texts is reduced by using a compression program such as Tomeraider<sup>4</sup> (all platforms) or iSilo<sup>5</sup> (– Palm OS). Most commercial software use proprietary reader software to avoid piracy or ease development. Only one in four of the commercial reference software had any type of regular update service (Table 1)

	Updates		
	Daily	Weekly	Monthly
Medical Text		Clinical Update Biweekly	Clinical Guidelines Clinical Medicine Consult 2.0 Infectious Diseases MyDoktor 3.0 PEPID '99 (Portable Emergency Physician Information Database)
Drug database	Parkstone Med	ePocrates Rx & ID (Freeware)	

Table 1. Commercial reference software updates

What is reference software used for? The most popular audience is junior staff and they use it for clinical management decisions. Commercial drug databases are of limited use to New Zealand hospitals as each provides their own "Preferred Medicines List or PML". This can be easily converted to any PDA format and used as a portable reference text. PML's may not contain other drug information such as methods of action and alternative brand names; free drug databases are useful for this. Our own experience is when the drug is easy to lookup we will look them up and peruse their various

characteristics, over time you become familiar with most main drugs and realise how useful a drug database is as a learning tool. Medical texts and handbooks are useful for Interns and house surgeons to aid learning. These people do not make most vital management decisions and it is unlikely they need weekly or monthly updated medical texts, therefore any of the other less expensive or free medical texts would be adequate. Most of this type of learning is done with traditional textbooks although handbook type files are useful. As with drug databases, users will avail themselves of the service if it is easy to access for example; current students will go to the computer lab and read *Harrisons Online* as it is easier than searching the textbook. In hospital practice registrars make the majority of clinical decisions, often after discussion with their consultant. The current trends towards *Evidence Based Medicine* are questioning this relationship as traditionally management decisions were made on consultant preference rather than best evidence. Ideally the registrar should research the topic, find the best management for their patient and then discuss it with the consultant. It is impossible to do this in the time constraints, and in practice the consultant guides the registrar via telephone or ward round. But now there are subscription services that provide *Best Evidence* services on the Internet, such as, the Cochrane database and Best Evidence. Others such as Prodigy for primary care<sup>5</sup> and Best Bets EBM for ED<sup>6</sup> are useful free sites. The University of Toronto<sup>7</sup> is performing a Pilot trial with their own EBM database. One of the best subscription sites is<sup>8</sup> which supplies best practice, and another highly recommended though untested site is which is part of the Oxford Clinical Handbook system<sup>9</sup>.

EBM is the next step in modern healthcare, and PDAs can deliver it. Registrars are the most appropriate link in the chain to introduce a PDA combined with Internet based EBM resources.

### 3.2 Calculators

Either simple single calculation type programs such as re-warfarinisation tables or multiple calculation type programs are available which work out blood gases to Mini Mental State exams (Figure 2). Often these are combined with a database to allow monitoring of successive values, for example, diabetic blood sugars on the one patient. Drug formularies can be combined with calculators to work out dosage regimes. Calculation software is an essential part of any health workers PDA even if just for conversion of pounds to kilograms.

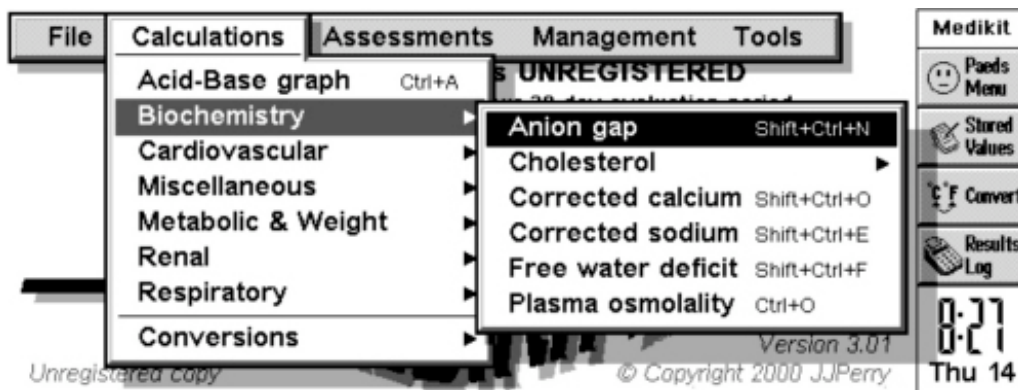


Figure 2. Medikit calculation software for EPOC32

Calculators suited three types of audience; patients, juniors and specialists. There are many available for patients to manage their self-medication, most commonly diabetes. The patient orientated software was not fully investigated, as it was not the focus of the research. Some are included as examples only and may not be representative. Few commercial calculators (Table 2) were solely calculators. The more advanced calculators were involved in drug dosing calculations combined with a formulary. Notably most comprehensive products are shareware or free, which is great for junior staff but as mentioned becomes a problem when life and death decisions are made on software that is not rigorously checked for accuracy. Possible solutions for New Zealand would be for a specialist to review the non-commercial calculation software and accredit it for use in the hospital, updates would have to undergo the same accreditation. It is unlikely that automated drug prescribing will occur in

the next few years in New Zealand public hospitals. This system is driven by the need for billing to private insurance companies and so exists in the USA health market, for example Parkstone Med has daily updates of insurance policies.

	Recommended Calculators	Other Commercial Software
<b>Shareware</b>	MediKit v 3.01 Chartnote 3.13 MedCalc 3.91 Medmath	
<b>Commercial</b>	ePatient 2000 Parkstone Med PEPID '99	Pedisuite ER Suite CE On-Call Professional Doxuite

Table 2. Calculation software

It is notable that few calculators combined intuitive usability and comprehensiveness and so the recommended applications stood out. An accredited calculator and Preferred Medicines list on a PDA would suit the student to registrar audience and increase PDA desirability as a useful tool. A recent innovation is evidence-based calculators such as Medrules and MD EBM 2.01 for Palm OS, and Inforetriever 3.0 for WinCE. These help analyse data using Bacion theory to give the best clinical decision. Although excellent clinical tools the Palm versions carry disclaimers and should not be used for clinical decisions but as teaching software. All provide journal references and are excellent teaching aids. Inforetriever (Figure 3) is commercial and has regular monthly updates, a very useful tool that works well in PDA format.

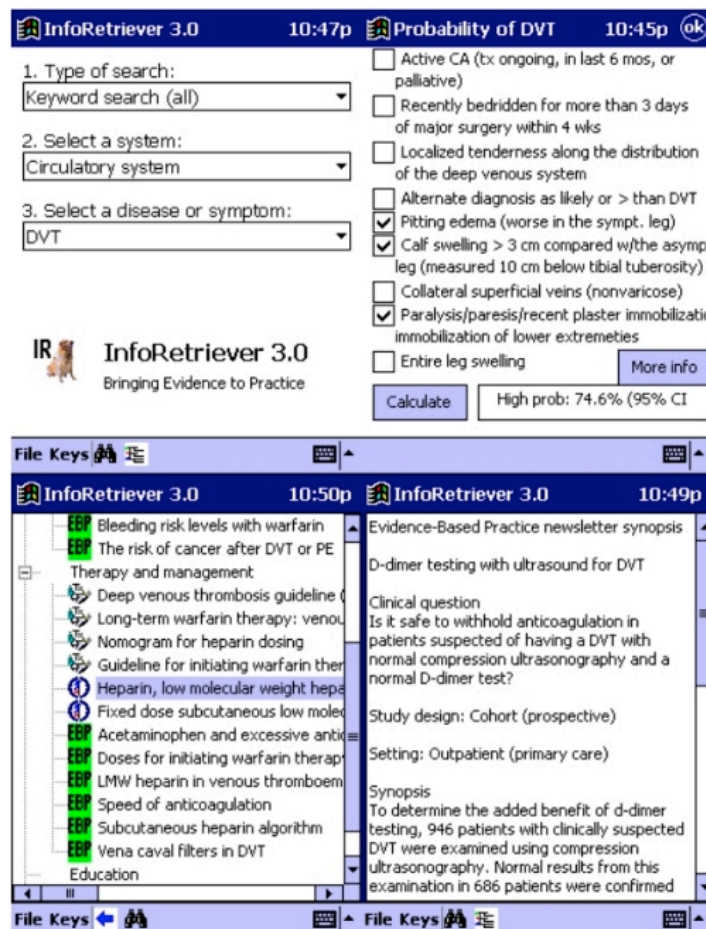


Figure 3. Screen shots for EBM calculator Inforetriever

### 3.3 Patient management/logbook

Patient Information Management systems are big business. On a smaller scale most PDAs are not integrated into the system so they act more as a replacement for the scraps of paper a busy House Surgeon carries around with patient stickers attached. This type of ward management software is popular and some organised wards transfer the data from PDA to PDA as a type of electronic hand-over. More advanced packages allow a clinical record to be kept as well. For example the lab tests ordered – the results, X-ray findings and billing. This can all be printed out as a discharge summary and can save time scanning back through notes for salient points. In anticipation of SNOMED Clinical Terms coding system due this year (replaces READ CT, ICD10 & 9, OPCSv4 and other systems), an international system will be recognised and universally adopted (UK, USA, Australia and New Zealand) which will aid in standardised software development. Unfortunately the coding system is massive and wireless links with PDAs acting as terminals may be required. There are many problems with keeping a *collective* clinical record on computer, it is unlikely to be fully realised for many years yet, unlike the general practitioners system that works well. Logbook systems are commonplace and PDAs perform this task very well. Logbooks can be used for training purposes (Figure 4). or Clinical Audit. Nothing beats a PDA and they soon become essential as a logbook of some type for every health care worker.

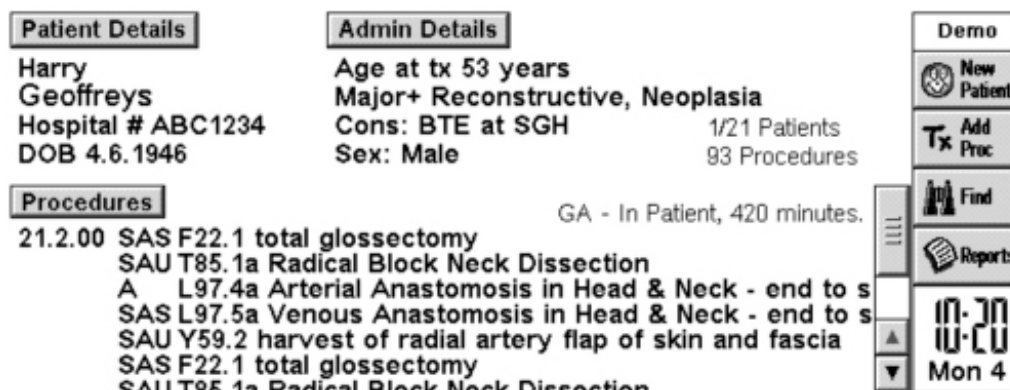


Figure 4. Screen shot for Trainee Surgical Logbook for EPOC32

### 3.4 Personal clinical or study notebook

Each health worker has a notebook of some type where they create their own dataset, whether it is surgeons glove size or good ideas for a research project. Most PDAs come equipped with on board software to allow personal organisation either using agenda entries or a jotter pad. Specific health-care notebooks fall into three subcategories:

Citation managers allow for download or entry of journal and other referenced material (Figure 5), they are very handy for clinicians as the facts are readily at hand. Although wireless communication to medical resources is more commonplace, a personal database of choice articles is still useful. Brain mapping or project planning software with a healthcare focus is uncommon but useful to those who know how to use them, especially those who think on the run. Simple Medical Notebooks or database systems offer little over non-medical systems, but there is always someone trying to make a few dollars re-inventing the wheel.

There were seven titles in the Training record category, which were essentially surgical logbooks (Table 3). There are many more titles due to the fact most logbooks are individual to the specialty and often to the region. For some reason anaesthetists were the first off the mark and produced palm-top anaesthetic logbooks literally years before any others. Logbooks are either a stand-alone package or just the data entry part and the actual computing power is done on the PC. Most logbooks are the transfer of a paper based system to a computer and they are often flawed, as a computer system can collect much more detail and manage relational databases. The choice of logbook is made by whether one is available for your specialist-training field and suits the requirements. Commercial software offered no benefits over shareware.

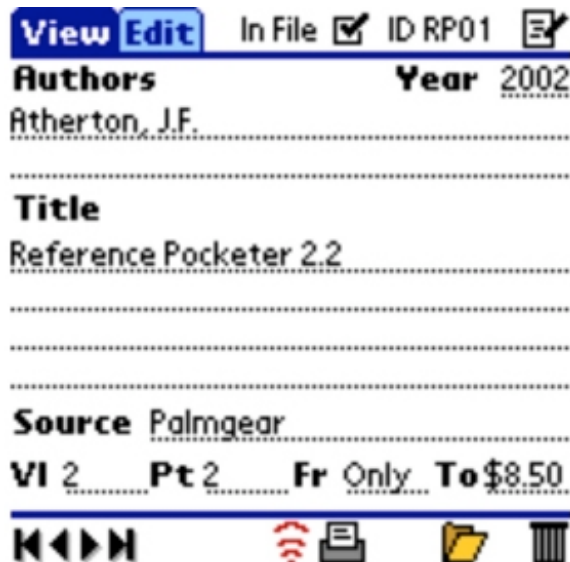


Figure 5. Reference Pocketer for the Palm, Citation Manager

Release type	Title	EPOC32	PalmO/S	WinCE	PC-Mac
Commercial	Anesthesia Assistant 3	No	Yes	No	No
Commercial	prologger	No	Yes	No	Yes
Shareware	AnaeStats	No	Yes	No	No
Shareware	Ob/Gyn Stat Tracker	No	Yes	No	No
Shareware	sLOG	Yes	No	No	No

Table 3. Training record/logbook software worth considering

### 3.4.1 Ward management software

Ward management helps with day to day running of the ward, it provides ability to record blood results and create to do lists. Notably WinCE software features in most of the worthy software (Table 4)

Release type	Title	EPOC32	PalmO/S	WinCE	PC-Mac
Commercial	Patient Tracker 5.1	No	Yes	Yes	Yes
Commercial	Doxuite	No	No	Yes	No
Commercial	ePatient 2000	No	Yes	Yes	Yes
Commercial	Mobile MedData Charts	No	Yes	Yes	No
Commercial	Mobilephysician.net	No	Yes	Yes	Yes
Commercial	PatientKeeper	No	Yes	Yes	Yes
Commercial	PocketChart	No	No	Yes	No
Commercial	PocketPractitioner 2002 Office V2.0	No	Yes	No	Yes
Commercial	Touchbase	No	No	Yes	No
Fully supported commercial	Parkstone Med	No	No	Yes	No
Shareware	WardWatch v2.5	No	Yes	No	No
Shareware	Chartnote 3.13	Yes	No	No	No
Shareware	Client L 4.02	Yes	No	No	No

Table 4. Ward management software worth considering



The acknowledged problem with ward management software is the lack of integration into the ward computer system. Shareware and some of the commercial software require the manual entry of patient data such as name, address and lab results. One of the authors used Client\_L in a busy UK hospital and found it useful, but after two months he returned to using a piece of paper and patient stickers. The reason was the time it took to enter all the initial data. He would only manage patients for one or maybe two days due to the 1:4 daily rota. More than a day's management and his piece of paper would have filled up, he thinks a PDA would be helpful after three to four days of same patient contact. Commercial software such as PatientKeeper and Touchbase synchronise via wireless or Internet links to auto-populate themselves with the doctors' patient demographics and lab results. This is the ideal system but hard to imagine occurring overnight in a New Zealand public hospital, particularly considering the focus of these programs is often to improve insurance billing and coding. *Mobilephysician.net* shifts the hospital data onto the Internet so it can be accessed remotely or by any platform, patients can also access the information and schedule appointments.

Software tends to be either low spec or very high spec but modular software such as Touchbase allows you to purchase only the features you want, such as ward management and auto-population. Most commercial software overlaps as a clinical record and there is no easy solution or half way step for ward management.

One suggestion is to use one of the readily available PDA telnet programs and/or Internet browser, depending on the hospital, with wireless access to the LAN. A page or screen can be set up by IT to generate current patient lists and lab / imaging results for each logged on user. This would provide most of the available hospital computer services onto the PDA. Additional services are available at some hospitals such as online Imaging/X-ray booking at Wellington, New Zealand, electronic discharge summaries at Invercargill, New Zealand. No proprietary software would have to be produced for the PDA and nor would the solution be platform specific. The availability of data in ones hand really does save time and aids productivity. WinCE solutions are popular because scaled down versions of Microsoft products are included in the operating system as well as the ability to write in Visual Basic rather than learn a proprietary PDA language. Therefore WinCE PDAs are most likely to make the jump from a dumb terminal to a basic integrated ward management package in New Zealand. MediHPC performs some of the above tasks by facilitating integration of a WinCE machine with hospital enterprise systems.

Clinical Audit is not funded in New Zealand it is unlikely that any hospital is going to action PDA software for audit. Nevertheless some departments have done this at their own personal cost. All Oral and Maxillofacial Surgery departments, for example, south of Auckland, New Zealand have introduced a standardised Palmtop Logging system for Casualty attendances<sup>10</sup>. This has proved very worthwhile and some of their data is certainly changing and improving practice. Note that clinical audit is quite different to a computerised clinical record.

### 3.4.2 Clinical record

Title	PalmO/S	WinCE	PC-Mac	In NZ Dollars
ePatient 2000	Yes	Yes	Yes	\$160.00
Mobile MedData Charts	Yes	Yes	No	\$70.00
Mobilephysician.net	Yes	Yes	Yes	\$1,200.00
Palm Electronic Medical Records 8.1	Yes	No	No	Unknown
PatientKeeper	Yes	Yes	Yes	\$70.00
PocketChart	No	Yes	No	Unknown
PocketPractitioner 2002 Office V2.0	Yes	No	Yes	\$200.00
Touchbase	No	Yes	No	Unknown
Digital Assist Palm Medical Charting	Yes	No	No	\$4,500.00

Table 5. Worthwhile clinical record software

PocketPractitioner 2002 Office V2.0 and patient keeper have their own open programming language to allow third party developers to add their own influence. It links with the hospital system and does most things required. Mobile MedData Charts is effectively the patients notes in your hand, plus all lab and pharmacy facilities. Touchbase has the novel feature of dictation that is then transmitted for typing, each module of Touchbase covers a need in healthcare such as wireless receipt and acknowledgement of lab results. Digital Assist Palm Medical Charting is what seems to be an ED charting program, although there must be more to it for the price, most reviews are not kind to it.

These software are a pipedream for New Zealand systems. Even if a small hospital adopted them as a trial we are still faced with the problem that not all workers will suit a PDA, resulting in other methods for these users to access and enter data, either through secretaries or desktop PC's.

In saying this there are some visionaries in New Zealand. The school dental services in Wellington, Christchurch and Taranaki have equipped all School Dental Therapists with palmtop computers and complete patient records are kept on them (Molaris School Dental System). Wellington has kept this data for almost ten years and can do world-leading analysis on child dental health at the touch of a button. Palmtops obviously suit the mobile needs of a Dental Therapist, even start and finish times for each patient are kept to help plan allotment of resources. Taranaki has linked their system to the national hospital patient register and it is notable that the School Dental Service has cleaned up large parts of the database by eliminating double ups and other coding errors with patients.

### 3.4.3 *Personal clinical or study notebook*

Citation managers were few and so if one is available then use it (Table 6). Databases could be created from the inbuilt software but features such as import from Medline and Web synching are useful features in the shareware versions, and hard to write yourself.

Study Notebooks were available but offered nothing of any value. Making ones own simple database or word file to build up a knowledge base is simple to do on the in built applications. Tablet based systems may not favour this due to their slow data input.

<b>Citation Managers</b>	
Qcite	EPOC32
Reference Pocketeer	Palm OS

*Table 6. Available citation software*

## 3.5 **Utility software**

For healthcare workers the main utility software is that of document viewers. They either offer conversion and viewing of PC or Internet based documents or compression of documents. Web page viewers such as Avantgo<sup>2</sup> allow for updates of pages each time one synchronises with the PC, which can then be viewed offline later in spare time. In the healthcare setting wireless updates can provide X-ray reports to appear when they are available or updated patient lists as you walk about the hospital, this type of technology is commonplace. Downloading the days lecture notes for reading later on the train may seem great, but in practice it does not happen. The level of demand for this service is quite different than for lab results or referral letters, despite the underlying utility software being identical.

Many palm OS based solutions require additional software to run. Some of the additional software such as Tomeraider is available on all platforms, and makes good sense. Tomeraider compresses text files into a flat database format and is very fast. There are conversion programs and readers for the various platforms, but they are often less than perfect. Palm has the most medical reference data but as mentioned a lot of it is unnecessary, most is stored in iSilo or hanDBase format, which can be read by EPOC32 but not WinCE as yet. All three platforms have PDF and HTML viewers as well as telnet and web browsers. Palm OS is the weakest in terms of web browsing due to its low resolution screen and limited processing power. Software such as AvantGo for the palm and WinCE takes the



web page and converts it into an offline format for later viewing. It features an automated synchronisation system so each time the palm is synched with the PC the selected web pages are checked and new developments are updated to the palm. This is an excellent feature for clinical updates, newsletters, timetables and memorandums.

### **3.6 Other considerations (teaching/study/learning aids)**

There is limited software available for teaching purposes. There are many titles available which would be great learning aids due the easy access of information such as drugs databases. They can be useful for quickly accessing data such as eponyms, references and drugs but the size and format of textbooks makes them superior. Flash card equivalent software is available and they would be great.

### **3.7 Problems with study**

Software is not only rapidly developing but we estimate two thousand Medical PDA software titles are available. Most are nothing special but with such a number fragmented across websites with maybe two or three resellers and then three or four reviews (which date) it becomes difficult to completely collate and find all software. Few hospitals use PDAs hospital-wide and there is a lot of enthusiast software written and used in departments that is not published on the web. The data collected is therefore not complete but we hope it is representative.

## **4 Conclusion**

There is an enormous resource on the Internet for healthcare related PDA software. The current software has been categorised into five categories and eighteen subcategories. Half the software fits into more than one category, in particular the use of computational features on reference data for example calculating drug doses from drug formularies and best treatments from Evidence based texts.

Healthcare workers have varied roles and the suitability of software to different audiences has been recorded. Teaching and learning on computer systems is still at early stages in healthcare education. Most learning for students is either by formal study or on the job experience. PDAs bridge this gap by providing formal study references traditionally bound to the library, in the palm of their hand – while “on the job”. Each category of software improves productivity and so allows for more experience. Benefits have been outlined in the text, one disadvantage not mentioned is the need for juniors is to do “the hard yards”: PDAs allow for menu choices and list options but nothing beats having to formulate ones own history, examination, investigations and problem list onto a blank piece of paper. Juniors need to be proficient at this as it helps consolidate a lot of knowledge, teachers need to be aware of the pitfalls and supervise carefully.

High-ranking applications are grouped on the database and many mentioned in the text. The choice of applications should not be made *only* on their features but on what will sell the best. To have PDAs readily adopted by healthcare workers they need to be instantly usable and fill a need. Therefore Preferred Medicine Lists and Lab results on hand are great “sales tactics”.

## **5 Funding**

We wish to acknowledge the support from the Division of Health Sciences, University of Otago, Dunedin, New Zealand for opportunity to research new initiatives in Health Science Education.

## Appendix A: Definite hit software

	Student	House Surgeons	Registrar / Trainee	GMP	Consultant	Clinical heads
Reference / Textbook	Drugs Database + PML. Half the suitable software is non commercial	Drugs + PML, Medical & Lab Reference	EBM literature or online EBM eg. Uptodate.com		Drugs + PML EBM software	
Calculator	Appealing but should do this manually to understand the process	A definite				
Patient Management / Logbook			Training Logbook	Clinical record that syncs with PDA – most GMP's have PC		Audit Logbook (To supply to the clinical staff.)
Personal Clinical / Study / Notebook					Citation Manager	
Utility Software	Document viewer, Web browser & Email					
Other		Wireless access to Hospital Lab results and ordering.	Wireless access to Hospital Lab results and ordering.			

## Appendix B: Reference software suitable for students

Release type	Title	Platform				Category				
		EPOC32	PalmO/S	WinCE	PC-Mac	Reference/ Textbook	Calculator	Parent manage- ment/Logbook	Personal/Clinical Study Notebook	Utility software
Commercial	5 Minute series ID, Paeds, Ortho, Sports, Toxicology, A2z of drugs		*	*	*	*				
Commercial	Cardiology eHandbook		*		*	*				
Commercial	Documents To Go Professional 4.0		*							*
Commercial	Doxuite			*		*	*	*		
Commercial	EMS Gold 1.3 / Pocket Trauma 1.2		*			*				
Commercial	Infectious Diseases		*			*				
Commercial	Medical Dictionary Bundle /Beiks/ 2.0		*			*				
Commercial	Obstetrics for Primary Care Physicians		*		*	*				
Commercial	PDATox		*	*		*	*			
Commercial	Pedisuite		*	*		*	*			
Commercial	PocketMedicine Series		*	*		*				
Freeware	Cancer Staging and Treatment** 1.9		*			*				
Freeware	Drugs Database (BNF)	*	*		*	*				
Freeware	SurgicalDB 1.0	*				*				
Fully supported commercial	Digital Assist Palm Medical Charting		*					*		
Shareware	MD EBM 2.01		*				*			
Shareware	MiniRD 1.0		*				*			
Shareware	Orth v1	*				*	*			
Shareware	PregCalc Pro PregCalc Pro		*				*			
Shareware	sLOG	*						*		
Shareware	USMLE 1: Review (Demo) 1.1		*			*				
Shareware	WardWatch v2.5		*					*		
Commercial	5 Minute Medical Consult		*	*	*	*				
Commercial	MyDoktor 3.0	*	*	*		*				
Commercial	Wash Mn1™ (The Washington Manual of Medical Therapeutics, 30th Edition)		*	*	*	*				
Freeware	eDrugsDatabase 1.0		*			*				
Freeware	MedCalc 3.91		*				*			
Freeware	MedMath		*				*			
Shareware	MediKit v 3.01	*					*			
Commercial	Clinical Guidelines		*			*				
Commercial	Clinical Medicine Consult 2.0		*	*		*				
Commercial	Clinical Update Biweekly		*			*				
Commercial	ePatient 2000		*	*	*	*	*	*		
Commercial	Inforetriever 3.0		*	*	*	*	*			
Commercial	Mobilephysician.net		*	*	*			*		
Commercial	PatientKeeper		*	*	*			*		
Commercial	PEPID '99 (Portable Emergency Physician Information Database)		*	*	*	*	*			
Commercial	Touchbase			*		*		*		
Freeware	ePocrates Rx & ID		*			*				
Freeware	MedRules		*				*			
Fully supported commercial	Uptodate.com	*	*	*	*	*				
Shareware	Client L 4.02	*						*		
Shareware	Qcite	*							*	
Shareware	Reference Pocketer 2.2		*						*	

## Appendix C: Notable reference software

Release type	Title	Student	H/S	Registrar/Trainee	GMP	Consultant	Admin	Clinical heads	Teachers	Patients	Reference/Textbook	Calculator	Patient Management / Logbook	Personal / Clinical Study Notebook	Utility software	Brief Description
Shareware	AnesthesiaDrugs 4.0.4			*		*					*					
Shareware	CodeMeister 2.02		*	*	*	*					*					ICD9 codes for USA
Shareware	Orth v1	*	*	*							*	*				orthopaedic coding, scoring, classifications
Shareware	USMLE 1: Review (Demo) 1.1	*	*								*					US med exams flash cards
Fully supported commercial	Parkstone Med		*	*	*	*					*	*	*			Drug prescriber, biller, referrer
Fully supported commercial	Uptodate.com	*	*	*	*	*		*	*	*	*					Online EBM database
Freeware	Cancer Staging and Treatment** 1.9	*	*	*	*	*					*					staging and tx text
Freeware	Drugs Database (BNF)	*	*	*	*	*					*					BNF on palmtop
Freeware	eDrugsDatabase 1.0	*	*	*	*	*					*					drugs database
Freeware	ePocrates Rx & ID	*	*	*	*	*					*					drugs and infectious diseases database
Freeware	SurgicalDB 1.0	*	*	*							*					Surgical Database
Commercial	5 Minute Medical Consult	*	*	*	*						*					Oxford handbook type
Commercial	5 Minute series ID, Paeds, Ortho, Sports, Toxicology, A2z of drugs	*	*	*	*	*			*		*					Medical Handbooks on any topic, pay for each individually
Commercial	Cardiology eHandbook	*	*	*		*					*					Cardiology text
Commercial	Clinical Guidelines	*	*	*		*		*			*					Clinical guidelines text
Commercial	Clinical Medicine Consult 2.0	*	*	*	*	*					*					medical ref oxford handbook style, can buy just one specialty or all (this package) clinical medicine series
Commercial	Clinical Update Bi-weekly	*	*	*	*	*		*	*		*					biweekly medical update email sent to the palm
Commercial	Doxuite	*	*	*							*	*	*			Patient management
Commercial	EMS Gold 1.3 / Pocket Trauma 1.2	*	*	*							*					Trauma and ACLS guide
Commercial	ePatient 2000	*	*	*	*	*	*	*			*	*	*			Patient management
Commercial	ER Suite		*	*	*						*	*				combines pedisuite, drip calculator, fluid wizard and PDA Tox
Commercial	Infectious Diseases	*	*	*	*	*					*					infectious diseases text
Commercial	Infotriever 3.0	*	*	*	*	*			*		*	*				ClinicalDecision making tool based on EBM
Commercial	Medical Dictionary Bundle /Beiks/ 2.0	*	*							*	*					Medical Dictionary 38000 defns
Commercial	Mobile MedData Charts		*	*	*	*	*	*			*		*			Patient Management System links to hospital system

Release type	Title	Student	H/S	Registrar/Trainee	GMP	Consultant	Admin	Clinical heads	Teachers	Patients	Reference/Textbook	Calculator	Patient Management / Logbook	Personal / Clinical Study Notebook	Utility software	Brief Description
Commercial	MyDoktor 3.0	*	*	*	*	*			*		*					Medical database over 1500 entries
Commercial	Obstetrics for Primary Care Physicians	*	*	*	*						*					Obstetrics handbook text
Commercial	PDATox	*	*	*	*	*					*	*				Drug poisoning guide
Commercial	Pedisuite	*	*	*							*	*				Paediatric guide and calculator
Commercial	PEPID '99 (Portable Emergency Physician Information Database)	*	*	*	*	*			*		*	*				Medical & drug reference and calculator Editions are Emerg Med, Student, Medicine, Nurses, Paramedic, pharmacy
Commercial	PocketChart			*		*	*	*			*		*			Patient management clinical record
Commercial	PocketMedicine Series	*	*	*	*	*			*		*					medical texts almost any topic, each a separate purchase
Commercial	Touchbase	*	*	*	*	*	*	*			*		*			Modular patient management, drugs, billing and reference system
Commercial	Wash MnI™ (The Washington Manual of Medical Therapeutics, 30th Edition)	*	*	*	*	*					*					Medical text USA

## Appendix D: Notable calculator software

Release type	Title	Student	H/S	Registrar/Trainee	GMP	Consultant	Admin	Clinical heads	Teachers	Patients	Reference/Textbook	Calculator	Patient Management/Logbook	Personal / Clinical Study Notebook	Utility software	Brief Description
Shareware	Chartnote 3.13		*	*	*	*						*	*			Patient management software for physicians
Shareware	Diabetes Manager 2.23									*		*				Diabetes tracker manager with food database
Shareware	MD EBM 2.01	*	*	*	*	*						*				Evidence Based Medicine Stats Calculator
Shareware	MediKit v 3.01	*	*	*	*	*						*				Advanced comprehensive medical calculator
Shareware	MiniRD 1.0	*	*									*				dietitians calculator
Shareware	Orth v1	*	*	*							*	*				orthopaedic coding, scoring, classifications
Shareware	PregCalc Pro	*	*	*		*						*				Pregnancy Calculator
Fully supported commercial	Parkstone Med		*	*	*	*					*	*	*			Drug prescriber, biller, referrer
Freeware	MedCalc 3.91	*	*	*								*				Medical Calculator - many cales
Freeware	MedMath	*	*	*								*				Medical Calculator Multiple
Freeware	MedRules	*	*	*	*							*				EBM calculator
Commercial	Doxuite	*	*	*							*	*	*			Patient management
Commercial	ePatient 2000	*	*	*	*	*	*	*			*	*	*			Patient management
Commercial	ER Suite		*	*	*						*	*				combines pedisuite, drip calculator, fluid wizard and PDA Tox
Commercial	Inforetiever 3.0	*	*	*	*	*			*		*	*				ClinicalDecision making tool based on EBM
Commercial	PDATox	*	*	*	*	*					*	*				Drug poisoning guide
Commercial	Pedisuite	*	*	*							*	*				Paediatric guide and calculator
Commercial	PEPID '99 (Portable Emergency Physician Information Database)	*	*	*	*	*			*		*	*				Medical & drug reference and calculator Editions are Emerg Med, Student, Medicine, Nurses, Paramedic, pharmacy



## Appendix E: Notable patient management software

Release type	Title	Student	H/S	Registrar / Trainee	GMP	Consultant	Admin	Clinical heads	Teachers	Patients	Reference/Textbook	Calculator	Patient Management/Logbook	Personal/Clinical Study Notebook	Utility software	Brief Description
Shareware	AnaeStats			*		*							*			Anaesthesia Logbook for USA
Shareware	Chartnote 3.13		*	*	*	*						*	*			Patient management software for physicians
Shareware	Client L 4.02	*	*	*		*							*			patient tracker, manager
Shareware	Ob/Gyn Stat Tracker			*		*							*			Obs & Gynae Logbook
Shareware	sLOG	*	*	*		*							*			Surgical trainee logbook, amazing
Shareware	WardWatch v2.5	*	*	*									*			Ward management for residents
Fully supported commercial	Digital Assist Palm Medical Charting	*	*	*	*	*							*			Emergency Dept Patient Charting software
Fully supported commercial	Molaris School Dental System						*	*					*			School Dental Service Clinical Record data
Fully supported commercial	Parkstone Med		*	*	*	*					*	*	*			Drug prescriber, biller, referrer
Freeware	SCATA Logbook			*		*							*			Anaesthetics logbook
Commercial	Anesthesia Assistant 3			*		*							*	*		Anaesthetics Logbook
Commercial	Doxuite	*	*	*						*	*	*	*			Patient management
Commercial	ePatient 2000	*	*	*	*	*	*	*		*	*	*	*			Patient management
Commercial	Mobile MedData Charts		*	*	*	*	*	*		*			*			Patient Management System links to hospital system
Commercial	Mobilephysician.net	*	*	*	*	*							*			Patient Management give wireless / internet front end
Commercial	Palm Electronic Medical Records 8.1		*	*	*	*	*	*					*			Patient management software - synchs to bigger Windows version. Pay for windows version - undisclosed cost \$\$\$
Commercial	PatientKeeper	*	*	*	*	*	*	*					*			Complete Patient Management System links with hospital system - open architecture language for 3rd party devlpt
Commercial	PocketChart			*		*	*	*		*			*			Patient management clinical record
Commercial	PocketPractitioner 2002 Office V2.0		*	*	*	*							*			Complete Patient management links to PC
Commercial	prologger			*									*			OB & Gyn Logbook
Commercial	Touchbase	*	*	*	*	*	*	*		*			*			Modular patient management, drugs, billing and reference system
	MedCheck 1.3				*					*			*	*		Monitors care giver administration of meds

## Appendix F: Notable notebook software

Release type	Title	Student	H/S	Registrar/Trainee	GMP	Consultant	Admin	Clinical heads	Teachers	Patients	Reference/Textbook	Calculator	Patient Management/Logbook	Personal/Clinical Study Notebook	Utility software	Brief Description
Shareware	Qcite	*	*	*	*	*			*					*		Citation manager like endnote but more useful, imports from medline
Shareware	Reference Pocketer 2.2	*	*	*	*	*			*					*		citation manager
Commercial	Anesthesia Assistant 3			*		*							*	*		Anaesthetics Logbook
	MedCheck 1.3				*					*			*	*		Monitors care giver administration of meds

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