The EAHIL Workshop 2007, Poland

Pip Divall, Sarah Sutton,
Linda Ward

Best EAHIL First Timer Oral Presentation
Pharm-Assist: Using Personal Digital Assistants (PDAs) to Assist in Pharmacy Decisions

Introduction

University Hospitals Leicester continued its award winning[1] work on Personal Digital Assistants (PDAs)[2] in the clinical setting by running a cohort study on the use of PDAs by Pharmacists on medical wards.

PDAs are hand-held computers that originally were designed as personal organizers. The basic features of a PDA are an address book, notepad, clock, calculator and e-mail. A 2006 systematic review[3] of surveys of PDA use by health professionals, internationally concluded that younger physicians and residents are more likely to use a PDA. They are typically used for administrative and organisational tasks, but do have the potential to be used for clinical decision making, drug information and recording patient information. The reviewers highlighted an "urgent need to evaluate the effectiveness and efficiency of specific tasks using handheld technology".

The Clinical Librarian (CL) team at University Hospitals Leicester (UHL) have lead previous studies on the use of PDAs by doctors.[4] In this study the CL team joined with the Pharmacists of the Medicine and A&E Directorate of UHL.

Aim

To investigate the question: Does having a PDA loaded with relevant information resources influence the number of interventions made by a Pharmacist during ward rounds?

Primary outcome:

Change in frequency of Pharmacist interventions on the wards to alter or amend drug charts for patients, before and after the availability of a PDA with appropriate reference material

Secondary outcomes:

- Reported time taken to use PDA in relation to primary outcome;
- Reasons for the interventions;
- Reported ease of use of PDA as a reference tool on the wards.

This presentation will outline the methods used in this study and describe our initial findings.

Methods
The study was a before and after evaluation to assess the impact of a PDA based clinical reference tool, Dr Companion,[5] compared to usual practice.

The participants were 11 pharmacists working in general medical wards at UHL.
The number of participants was determined by the number of PDAs available and Pharmacist response. In order to detect a minimum clinically significant difference of 20% in the number of interventions made, a power calculation revealed a minimum of 33 participants was required. As this was not possible with the limited resources, the study results can only be descriptive, with the study itself a pilot and an opportunity to explore the practicalities of conducting such a study in a workplace setting.

Dr Companion is a suite of substantially UK Evidence Based and authorised pharmacological information, which works from one "plug and play" Secure Digital Card. The same card can be used in a Pocket PC, Palm, Desk Top or Lap Top and some smart phones.

The usual practice for a Pharmacist in the cohort would be to carry paper copies of authorised pharmacological information (usually the *British National Formulary* (BNF)), consult with Web based information later in their office or to consult colleagues. In addition, some Pharmacists already had their own PDA with US pharmacological information on the device.

Data on the number and type of interventions made by Pharmacists in the ward setting over a period of one month was collected between April 2007 and June 2007. Following the introduction of the PDAs and *Dr Companion*, between June and Augusts 2007, the same data was collected for a further month. The before-and-after questionnaires were designed in close consultation with the pharmacy team to enable bench marking with other research taking place in the department.

The questionnaires allowed multiple-choice, time recording and free-text responses. The data collected was descriptive, self-reported use of pharmacological information to support ward work. Informal discussions with participants supplemented the information gathering.

Results
It was hoped that second phase of this study would have been completed in August 2007, in time for presenting to the EAHIL conference, but after the submission deadline for this paper to the conference organisers. The results for the primary outcome measure, i.e. changes in use of reference materials after the introduction of a PDA, cannot therefore be reported here but will be published and disseminated as soon as they are available. Initial results for the following are as follows:

Primary outcome
Frequency of intervention

The EAHIL Workshop 2007, Poland

Pip Divall, Sarah Sutton,
Linda Ward

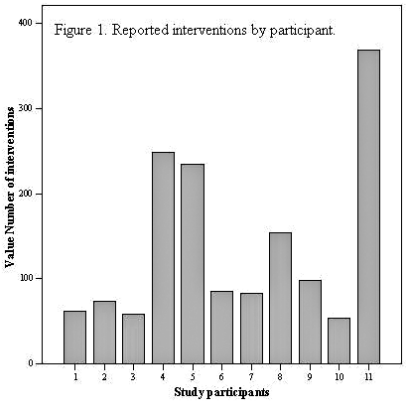

Figure 1.
Reported interventions by participant

In the initial data collection period the number of interventions reported by the eleven Pharmacists participating was 1536. Figure 1 shows the frequency distribution of this data.

The data is not normally distributed, with a median number of interventions reported of 85 (IQR = 172).

Reviewing the initial data by purpose of intervention shows that safety and efficacy are the two most often cited reasons for intervention.

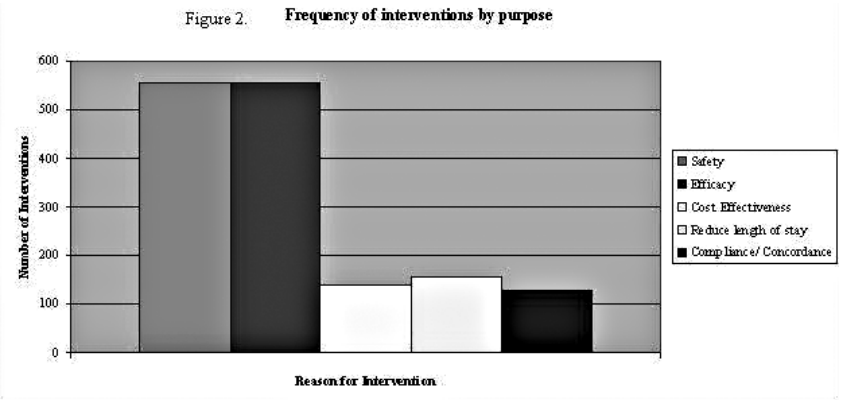

Figure 2. Reason for intervention.

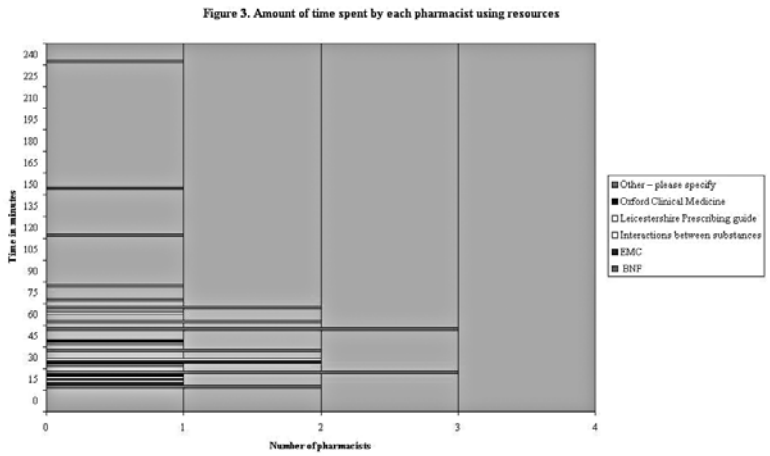

Figure 3. Amount of time spent by each Pharmacist using resources.

Secondary outcomes

- *Time spent consulting reference sources*

Figure 3 shows results for the initial data collection phase of the study which illustrates the number of minutes per month spent in total by the 11 Pharmacists in reviewing key resources to aid their practice.

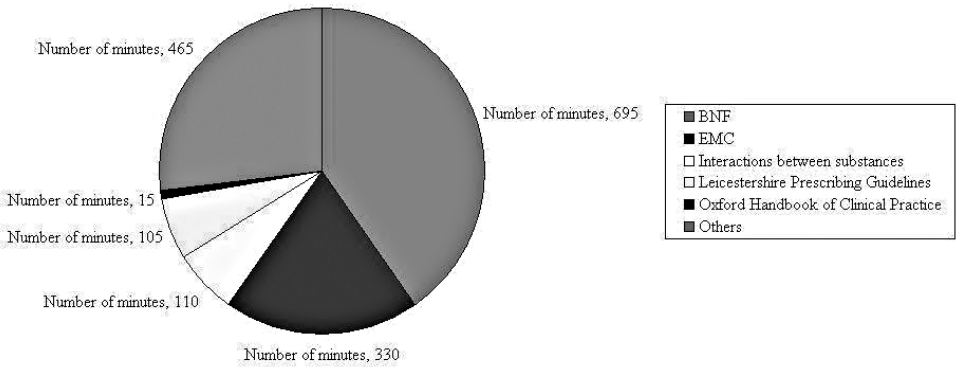

Figure 4. Amount of time spent by Pharmacists using resources.

Figure 4 shows that the *British National Formulary* (BNF) is the most frequently used resource, although a breakdown of the results by individual Pharmacist as shown in Figure 3 illustrates that there is some variability between practitioners in this.

In addition to the data collected on ward rounds, the Pharmacists were asked to list the resources they used in other settings to support their practice. This is shown in Figure 5. The data is evenly spread between pharmacy department resources, discussion with colleagues, contacting Medicines Information and Other sources which are listed in Table I.

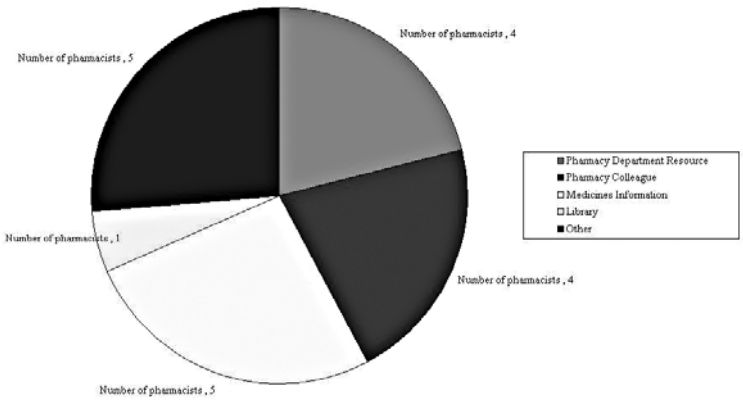

Figure 5. Information sources used by Pharmacists to support practice.

The EAHIL Workshop 2007, Poland

Pip Divall, Sarah Sutton,
Linda Ward

Of the "other" sources used by the Pharmacists the most popular was the UHL Document Management System, which includes clinical guidelines for the Trust.

Source	Time spent on accessing this resource in minutes
ADIS Insight	5
Dosettes	5
Drug Company	15
IDIS Search	10
In House Dispensing Tablet Booklet	40
Internet	5
IV Monographs	15
JAC computer system	10
Mansley Guidelines	10
Medical Company	5
Medicines Org	5
Micro Approval List	10
Microbiology	5
Micromedex	40
Mobile Micromedex	10
MTIMI Full Search	5
National Electronic Library of Medicine	5
Nova	10
Palliative Care Formulae	15
Palliative Care Website	20
PPI Guidelines	5
Renal Handbook	5
RPSGB	10
UHL Document Management System	65
UHL Guidelines	10
UK Medicines Information	5

Table I. "Other" sources of information used by Pharmacists.

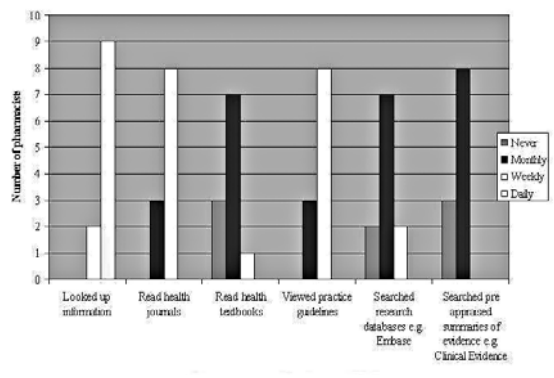

Figure 6.
Pharmacists' information finding activities

The Pharmacists were also asked about the frequency of their wider information finding activity, which showed that information was being looked up on a daily basis by most Pharmacists but that they were not using health textbooks, databases or pre-appraised summaries very frequently. This is shown in Figure 6.

Discussion

The study was limited by the small number of participants. As the Chief Pharmacist was keen to audit current practice, it was imperative for Pharmacy staff to participate, however the response rate was limited by the Pharmacists' workload and availability to participate. The initial start date for the study was postponed when it was decided to wait for the latest edition of the *BNF* to be added to the *Dr Companion* chip to enable its effective and legal use on the wards. This delay made the full publication of this study's results in this paper not possible.

Preliminary findings for the second phase of the study show a preference for paper or PC based reference materials. This could be for a number of reasons:

- Habit;
- New format takes time to get used to;
- Actually have good access to paper and PC – so do not need PDA;
- PDA BNF format same as Web one – tricky to use;
- PDA does not have resources the Pharmacists want on it yet – Trust based information such as IV and drug policies.

Some Pharmacists in the trial felt that the PDA resources might have been more helpful for junior Pharmacists who need to refer to sources more often.

Conclusions

Pharmacists make a large number of interventions each using a variety of different resources. While the main results have yet to be reported as the study is not complete, it is possible to conclude that Pharmacists make use of a number of different resources that had not previously been taken into account. If these are all available in a PDA format, this may reduce the amount of time taken looking up information, while increasing the number of interventions made. Initial findings from the second phase indicate that the Pharmacists in the study group preferred using the print *BNF* and pre-existing PC/online based resources.

Pip Divall, Sarah Sutton, Linda Ward
University Hospitals Leicester NHS Trust,
and University of Leicester, Leicester, UK.
pip.divall@uhl-tr.nhs.uk

REFERENCES

1. Health Informatics Community [website on the Internet].London: NHS Faculty of Health Informatics. [updated 2005 Mar 24; cited 2007 Jul 17]. Accolade Winners Announced; . Available from: http://www.informatics.nhs.uk/cgi-bin/item.cgi?id=1261&d=11&h=0&f=0
2. Honeybourne C, Sutton S, Ward L. Knowledge in the Palm of your hands: PDAs in the clinical setting. Health Info Libr J. 2006;23(1):51–59.
3. Garritty C, El Emam K. Who's using PDAs? Estimates of PDA use by health care providers: a systematic review of surveys. J Med Internet Res. 2006;8(2):e7.
4. Honeybourne C, Sutton S, Ward L. Knowledge in the Palm of your hands: PDAs in the clinical setting. Health Info Libr J. 2006;23(1):51–59.
5. Drcompanion.com [homepage on the Internet]. Stockholm: Medhand International AB.: c2000-07 [cited 2007 Jul 17]. Available from: http://www.drcompanion.com/