

Access to Mobile Resources: How Does It Affect the Clerkship Experience?

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SETTING

The University of Vermont's College of Medicine, located in Burlington, Vermont, enrolls approximately four hundred students. In their third year of study, students participate in clinical clerkships in Pediatrics, Surgery, Neurology, Obstetrics and Gynecology, Family Medicine, Internal Medicine (in-patient and out-patient) and Psychiatry.



The clerkships are distributed throughout four practice sites: Fletcher Allen Health Care, Danbury Medical Center, St. Mary's Hospital and Eastern Maine Medical Center. Many clerkship students bring mobile devices, including smart phones, to their practice site(s), and the University's Dana Medical Library has been actively working to support mobile computing in medical education.

BACKGROUND

Mobile devices have become ubiquitous in academic medical education and medical apps and mobile optimized websites are numerous. Rigorous studies regarding mobile use in medical educational date from the period when PDA's were the popular "handheld" devices being discussed; and primarily explore usage by residents and practicing physicians (Kho, 2006).

There have been several recent explorations of medical student usage of mobile devices in clinical education. To date, most articles have been descriptive in nature, focusing on brands of mobile devices preferred and more general habits of usage. Favored resources typically include: point-of-care databases, drug guides, medical calculators, and immunization schedules. Although there is a widespread belief that mobile devices are helpful and convenient, there is desire expressed for increased institutional support, standardization of resources, and training (Chu, 2012).

There is a shortage of research linking mobile usage to improved educational or patient outcomes. The Liaison Committee on Medical Education (LCME) requires comparable educational experiences between geographically diverse sites. Appropriate instructional facilities and information resources must be made available. The research group wished to explore whether access to library-licensed content for mobile devices might further support the LCME standards and improve educational outcomes (LCME, 2012).

References:
Chu Larry F, Erlendson Matthew J, Sun John S, Alva Heather L, Clemenson Anna M. Mobile computing in medical education: opportunities and challenges. *Curr Opin Anaesthesiol.* 2012 Dec;25(6):699-718.
Kho Anna, Henderson Laura E, Dressler Daniel D, Kripalani Sunil. Use of handheld computers in medical education. A systematic review. *J Gen Intern Med.* 2006 May;21:531-537.
Liaison Committee on Medical Education (LCME). Functions and structure of a medical school [Internet]. 2012 May [cited 20 Mar 2012]. <<http://www.lcme.org/functions2011may.pdf>>.

"The curriculum of a medical education program must include comparable educational experiences and equivalent methods of assessment across all instructional sites within a given discipline."

LCME, II.B.1. ED-8

METHODOLOGY

Dana Medical Library offered instruction on clinical mobile resources. An online subject guide provided detailed instructions for finding and installing library-licensed mobile resources.

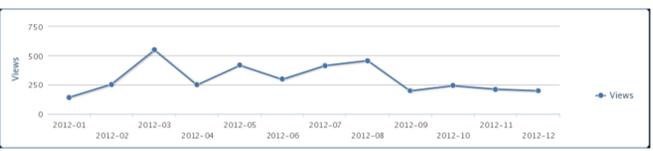
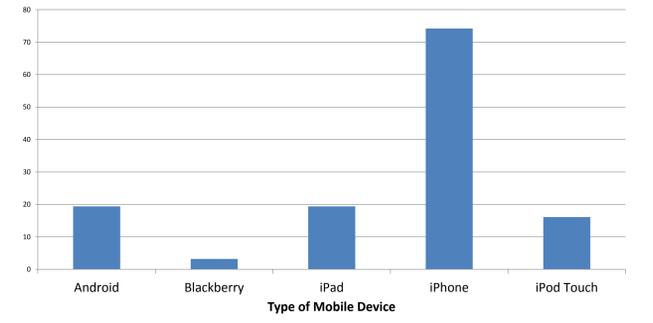


Assessment methods included web analytics measuring the utility of the subject guide and a survey. The survey was sent to all 111 students from the University of Vermont College of Medicine class of 2014

- Survey questions gathered data on:
- > Access to mobile devices
 - > Relevance of instruction
 - > Use of library-licensed mobile resources
 - > Benefits and barriers to mobile device use in the clinical setting
 - > Impact of access to mobile resources on educational experiences across clerkship sites

RESULTS

31 students completed the survey, a completion rate of 28%. All respondents owned a mobile device, despite efforts to recruit both users and non-users. Respondents showed a preference for Apple mobile devices.

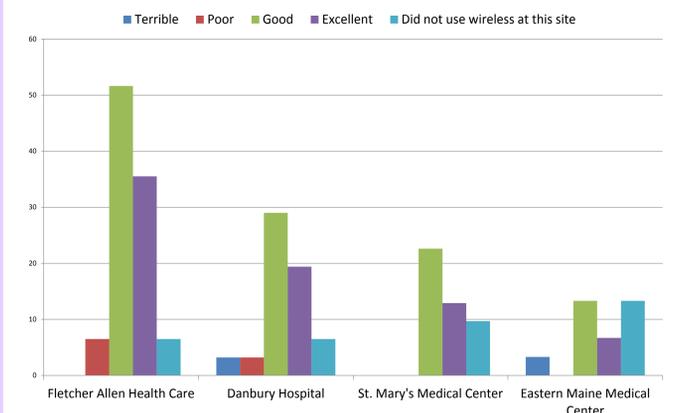


Traffic to the Mobile Apps subject guide in March 2012 was 218% higher than the previous month. A peak was also seen in the number of activation codes requested from the reference desk and the liaison librarian.

RESULTS

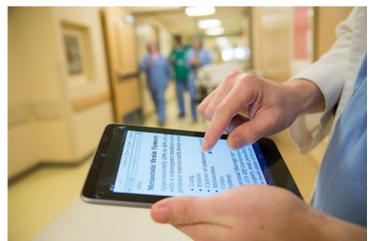
Attended Class	Number	Percentage	Class Helpful	Number	Percentage
Yes	18	58.1%	Yes	17	94.4%
No	13	41.9%	No	1	5.6%
Looked at Online Guide	Number	Percentage	Guide Helpful	Number	Percentage
Yes	16	51.6%	Yes	14	87.5%
No	15	48.4%	No	2	12.5%
Sought Help from Library	Number	Percentage	Assistance Helpful	Number	Percentage
Yes	8	25.8%	Yes	8	100%
No	23	74.2%	No	0	0%

Of the 58% of respondents who attended the instruction session on mobile resources, 94% found the class helpful. Half of the respondents looked at the Mobile Apps subject guide; 88% of those who did found it helpful. Approximately 25% of respondents sought out individual assistance at the library, and all who did found it helpful.



Wireless access was generally rated Excellent or Good at all four clerkship sites.

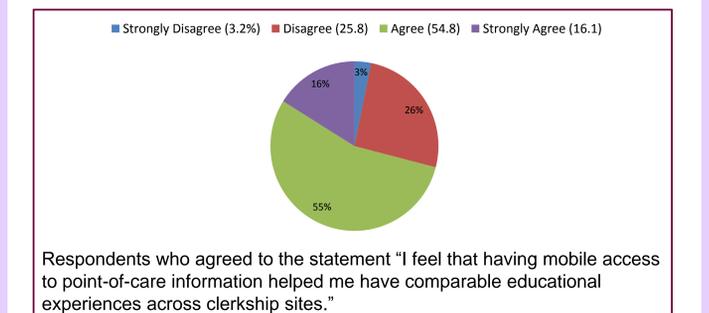
45.2% (n=14) survey respondents identified one barrier to mobile use as "not the kind of information I needed/wrong apps." Students were also asked which apps or information they wished to have. Eight (8) respondents specifically mentioned wanting access to an UpToDate app.

- Respondents identified the following apps they found useful (titles in bold are library-supported apps):
- **First Consult**
 - Framingham/ATPIII risk score
 - Immunization schedules
 - Medical abbreviations
 - ClniCalc
 - Surgery 101
 - **Micromedex**
 - ECG source
 - **Academic journals**
 - Dragon Dictation
 - **Visual Dx**
 - USMLE World
 - MedCalc
 - Lab Values
 - Electronic health record app
 - EPSS preventative guidelines
 - RedBook (pediatric ID)
- 

RESULTS

Respondents who agreed to the statement "Having access to mobile apps during this clerkship improved my clerkship experience."

Family Medicine	Inpatient Medicine	Neurology	OB/GYN	Outpatient Medicine	Pediatrics	Psychiatry	Surgery
100%	81%	85%	69%	71%	80%	84%	79%



CONCLUSIONS

Nearly half of the Class of 2014 attended the optional instruction session. Requiring instruction would reach more students. According to qualitative feedback from the survey, library instruction could be improved by providing in-class assistance installing and authenticating apps. A large number of students did not seek additional assistance from the Library; many indicated they were unaware of the subject guide. This suggests a need for further promotion and marketing of mobile resource support by the Library. Researchers were surprised that two of the most commonly used apps were not library licensed (ePocrates and Medscape). The most common barrier cited by respondents was a discrepancy between their clinical information needs and available apps. This implies a role for the library in curating a list of library and non-library apps of use in the clinical setting. Finally, almost all of the respondents who reported taking a mobile device on a rotation agreed it facilitated access to clinical information and improved the clerkship experience. Supporting mobile resources for clerkship education is an area for continued effort and improvement.

FUTURE IMPLICATIONS

Students in the UVM COM Class of 2015 have been issued Android tablets for use during their clerkship year. Library instruction and support of mobile resources for clerkship will be tailored accordingly. The instruction session will be mandatory and has been expanded to a two-hour session which will include support in installing and authenticating apps. Demand remains high for mobile access to UpToDate. A license signed in October 2012 now provides clerkship students off-site access to the mobile-friendly site. Institutional access to the UpToDate app is expected to become available in 2013. The subject guide continues to be updated to reflect current mobile resources and user needs. Recommended non-library licensed apps have been added to assist students in selecting appropriate apps useful in the clinical setting. Finally, there is concern that issues such as patient privacy and professionalism need to be addressed as students blend personal and professional mobile computing in a single device. One particular area for study is the use of electronic health records on mobile devices.