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Robert Brooks and Jeannine Creazzo, "Evolution of Mobile Device Use in Clinical Settings" (2014).
Proceedings of the Charleston Library Conference.
<http://dx.doi.org/10.5703/1288284315588>

Evolution of Mobile Device Use in Clinical Settings

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Abstract

In September 2014, Wolters Kluwer, Medical Research completed its second annual survey of end user search and access behavior with professional health information. The questionnaire addressed changes in clinical workflows resulting from the increased use of mobile devices in clinical settings. Through comparison with prior year's data, we contemplate changes in how specific use cases fit with specific devices, the effect of multiple screens on usage behavior, and how users value different content types in the mobile environment. With responses from over 12,000 users (approximately 4,000 physicians, 3,400 nurses, and the remainder medical students, faculty, and other provider groups), we identified a drastic 20% year-over-year increase in the number of professionals that routinely access "three screens" (tablet, smartphone, and desktop) for professional purposes. Significantly, the findings strongly support the notion that "more screens = more access," as both smartphones and tablets are becoming increasingly embedded, for a wider range of activities, in the clinical workflow.

Concurrently, increased demand for mobile access to healthcare information is creating new challenges for medical librarians. Faced with budget constraints and intensified scrutiny over spending decisions, librarians must balance demands for electronic and print resources while collaborating with IT departments to ensure mobile device access, support, and privacy adherence. Based on survey data, we conclude with "win-win" opportunities for librarians and vendors to work more closely together to increase the effectiveness of mobile initiatives, including the need for more comprehensive usage statistics and more flexible licensing models.

Mobile Usage Trends

Undoubtedly, the increased use of mobile devices by clinicians is changing both workflows and information consumption habits of healthcare professionals. Wolters Kluwer's 2014 end-user survey intended to identify market trends, better understand the impact of mobile device on information "use cases," and discover any emergent customer product or service demands arising from their changing preferences and behaviors with respect to mobile access.

According to our survey, 72% of physicians use tablets in their daily practice (up from 60% in 2013), and across all healthcare professionals, two-thirds reported to be "three screen users," routinely accessing tablets, smartphones, and desktops in their clinical workflows. This represents a 20% increase from 2013. As a result, while the average overall time spent accessing digital resources during the workday continues to increase (reaching 2.9 hours per day for physicians and 3.5 hours per day for nurses), the percentage of this

time spent on a desktop continues to decline. The desktop's "share" (based on time utilized) has fallen to 50%, while the smartphone represents 29% of usage time, and the tablet's share has risen considerably to 21%.

Additionally, our data confirms the popular belief that "more screens = more access." "Three screen users" report a 28% higher average number of daily "digital sessions," accessing digital resources an average of 37 times per day (vs. 29 times per day for other users). Significantly, our data also reinforces the idea that tablet access does not notably cannibalize other access mediums. In fact, four out of five heavy tablet users reported no decrease in their use of other digital access points, and 25% of this group even indicated that their tablet usage actually led directly to increased usage of other digital mediums.

Changing User Behaviors

Survey data also led to new insights in terms of the evolution of device use cases. For instance, while clinicians have historically lagged behind

students and residents in terms of using mobile devices for reading journal articles, our new data suggests that this gap is closing. According to a recent article in the *Journal of the Medical Library Association*, 50% of students and residents read journal articles on mobile devices.¹ Our survey found an increase in physician use of both tablets and smartphones for reading articles, reaching 33% for tablets and 21% for smartphones. Nurses reported slightly lower levels of journal reading on mobile devices, with 24% using tablets and 17% using smartphones.

Increased tablet ownership is also changing clinician behavior at the point of care in two distinct ways. First, the tablet continues to transition from being purely a desktop alternative for research (“lookup”) to being increasingly used for direct patient management. More than one in eight physicians now use tablets in the clinical workflow, and this will only increase as more applications allow for integration with clinical notes and electronic medical records. Additionally, while smartphones remain the predominant source for access to drug information, tablets have now surpassed smartphones as the preferred source for access to evidence based tools at the point of care. This is indicative of a growing interchangeability between phones and tablets, with tablets now being accessed almost as often per day by physicians as smartphones (3.5 times for tablets vs. 4.3 time for smartphones).

Surprisingly, the greatest insight from our data may be about what is not changing—the resiliency of the desire to access print versions of journals. Even as online and mobile journal access continues to grow, now at 86% for physicians and 80% for nurses, there was not a corresponding drop in access to print journal content, which remained flat at around 65% of all end users. However, there was a 10% drop in physician respondents that stated they “typically” access print journals, so this may indicate an underlying

decline in the actual number of times print journals are accessed.

Finally, our data provides detail into specific online journal access and search behaviors. 52% of physicians indicated that their primary method to access online journal content was through institutional resources, while 48% relied predominantly on personal subscriptions. In terms of search preferences, respondents overwhelmingly favored public sources such as PubMed (60%). Less than half of respondents initiate a search by visiting a journal-specific website. This growing preference for journal-agnostic search is also evident from a substantial 25% decrease in the number of respondents who rated search within a specific journal as “an important way to search for journal content.”

Implications for Content Providers

In today’s clinical environment, where 63% of physicians access medical research on tablets, and 43% via smartphones, publishers must adapt to this new norm of “three-screen access.” With all three devices now being used (to varying degrees) across the use cases of search, reading, and point-of-care reference, successful content providers will be the ones that can meet rising customer expectations for a *single user experience* across device types. Given that users generally do not have the time read full-text during search, a majority (67%) save an article (in print or online) for reading when convenient, with increased desire to seamlessly share documents across all their mobile devices for anywhere, any time access.

Another opportunity from increased mobile usage is the enhanced ability for providers to better understand their users at the individual level, catalyzing the development of new products, services and business models. Our survey data reveals that, at minimum, publishers should look to redesign content for deeper integration with professional workflows, including services such as headlines, synoptic content, and alerts customized to the end user. Finally, publishers should

¹ Boruff J., Storie, D., “Mobile devices in medicine: A survey of how medical students residents and faculty use smartphones and other mobile devices to find

information.” *Journal of the Medical Library Association*, 102(1), 22–30.

continue to monitor the use of social media and networking sites. Our data found that over seven in ten physicians and eight in ten nurses utilize social networking as a source for professional information. This is consistent with an earlier study that found that on a weekly basis, 61% of physicians scan social media and 46% actively contribute to online postings and discussions.² Presumably, increased use of mobile devices will also lead to increased time spent by professionals on social media. Publishers should both stay abreast of social media trends, such as the popular platforms and destinations beyond mainstream sites like Facebook, as well as find ways to engage users through targeted content or better collaboration tools.

Implications for Medical Librarians

Medical libraries play a fundamental role in providing awareness and access to informational resources for a range of patron groups, including physicians, nurses, nurse practitioners, residents, fellows, medical and nursing students, nonclinical staff, patients, and visitors. Through strategic acquisition of print and electronic resources, medical librarians and their colleagues contribute to reducing the length of hospital stay, promoting patient safety, and reducing medical errors. However, in today's cost-conscious environment, libraries are increasingly forced to justify their budgets and purchase decisions, while facing increasing patron demand for increased mobile access options. While these conflicting forces are adding complexity to collection management strategies, there are also emerging technological barriers that can impact usage levels for mobile resources. Medical librarians must partner with internal IT departments in order to ensure data privacy and security, IT support for certain mobile devices, and bandwidth availability. Also, patrons needing to visit multiple access points (virtual private network [VPN], proxy server) in order to log in to the resources can be discouraging and cumbersome.

² McGowan, B. S., Wasko, M., Vartabedian, B. S., Miller, R. S., Freiherr, D. D., Abdolrasulnia, M. (2012), "Understanding the factors that influence the adoption and meaningful use of social media by physicians to share medical information." *J Med Internet Res*, 14(5): e117.

Given both the rapid changes in end-user mobile data consumption habits as well as technical uncertainties in implementing mobile initiatives, libraries are understandably encouraged to remain cautious and focus on providing access to a smaller number of highly used mobile resources instead of a huge collection until library-licensed mobile resources have streamlined processes.³ However, based on our customer survey, there are a number of low-risk opportunities for librarians and content vendors to work together to increase the value of mobile resources. Specifically, librarians should utilize multiple communication methods (instruction, orientation, library's website, and social media posts) to educate patrons on off-site access, embargo dates and license restrictions, and attempt to redirect patrons away from search engines by communicating to them on an ongoing basis all the resources (both licensed and free products) that are available to them and how to access them. It is also critical to use multiple tools and surveys to collect substantial feedback from patrons to determine what types of mobile devices patrons use and which formats they prefer their resources to be in.

Librarians should collaborate with content providers around mobile product development, quality, and creating a simplified login process. Both parties should also work together to collect comprehensive usage statistics, allowing them each to see who is using the database, what access points they are using to gain entry to the database, and what resources within the database they are using and not using. This data can lead to the development of new, more flexible licensing models, which will ultimately yield benefit to both parties. Finally, given the constant evolution of mobile products and clinical uses, it is essential to continually monitor user preferences to be able to meet their changing information needs.

³ Boruff, J., Storie, D. (2014), "Mobile devices in medicine: A survey of how medical students residents and faculty use smartphones and other mobile devices to find information." *Journal of the Medical Library Association*, 102(1), 22–30.