DRAFT

UC Health Sciences Libraries Metasearch Exploration

Part II: Medical Faculty, Researcher, and Resident Focus Group Findings

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INTRODUCTION

The California Digital Library is working to create metasearch tools and software that campus libraries can use to craft search portals tailored to specific audiences and needs. A primary goal of the metasearch service is to assist users in efficient discovery of information across a range of resources. The UC Health Sciences librarians are exploring the possibility of creating a metasearch portal for health sciences faculty, residents, and graduate students.

Key Questions

1. What are the research *behaviors* of users who possess medicine and health sciences expertise?
2. What are the research *needs* of users who possess medicine and health sciences expertise?

METHODOLOGY

This round of needs assessment consisted of four focus groups: two with medical residents and two with medical faculty and researchers. The resident focus groups were held on March 6-8, 2006 at the UC Davis Medical Center. The faculty/researcher focus groups were held on April 17, 2006 at the UC San Diego Medical Center

Each focus group consisted of a facilitator, four to eight participants, and an observer. The facilitator used a list of prepared questions as a guide for the discussion. During the focus group sessions, the observer took notes on participants' responses to the facilitator's questions, as well as any ensuing discussion, using a laptop computer. In addition, if all participants consented, the sessions were recorded using a digital voice recorder.

FINDINGS

IN WHAT CONTEXTS DO HEALTH SCIENCES PATRONS' INFORMATION NEEDS ARISE?

> "When it's patient care, I'm on call and I get a call that I need to answer right away. I use Google. It's simply a matter of time – I need to learn about a subject quick, and I need to respond to a clinician."

The nature of clinician and health science patrons' information needs depends on the context from which they arise. For patrons directly involved in patient care, quick answers are needed, often at bedside. An experienced nurse commented, "As a bedside nurse, all you want to do is click an icon, maybe go through one or two pages to get an answer."

Residents noted that when they are on call, they could be anywhere, and clinicians may call them with questions at any time. Because they are responsible for finding answers as fast as possible, it is essential for them to have access to the Internet and access to trusted resources. A pathology resident gave the following scenario:

> If a pathology resident gets a call from a blood bank and she does not have a textbook with her or if a clinician calls with a question, she will "need to look up things online right away." She will try Google first, and if she either doesn't find an answer or wants a more in-depth answer, then she will use CRC [UC Davis' Clinical Resources Center]. Of course, with Google she would use information from trusted sites.

When doing research for "something you can get a publication out of," speed is not as crucial an issue. In this situation, patrons are likely to be searching for *information* rather than *answers*. Many residents reported using a combination of PubMed and Google, as well as other resources, such as UpToDate and eMedicine. One resident reported using PubMed for articles or presentations and UpToDate or eMedicine for clinical questions. Research activities ranged from basic background research on new topics to targeted searches for known items.

HOW DO PATRONS CURRENTLY MEET THEIR INFORMATION NEEDS?

> "It's really important for things to be online, because I can never make it out to the library."

For faculty, researchers, and residents, the Internet is their vehicle of choice for doing research. In particular, for residents it is important for information to be available online because they "can never get to the library." Patrons most often mentioned well-known resources, such as PubMed, and many reported using their campus portal to access resources. At Davis, many residents reported using the CRC portal page as their starting point. However, they expressed frustration with the inefficiency of getting to information through CRC compared to Google, which offers patrons a fast and easy-to-use way to find information and answers. Two residents shared that they felt less guilty about using Google for research because trusted resources, such as eMedicine and respected journals, generally appear near the top of the ranked results. One reported observing an increase in the number of direct links to scholarly articles in his search results.

Patrons stated that immediate access to full-text is best. In the case of textbooks, they reported that online text is helpful because it is searchable. However, textbooks on CD-ROM are also valuable because they contain high quality images for use in research and presentations. They are also helpful for looking up quick details. Patrons expressed a preference for PDFs over HTML pages, because of their superior image quality and their exact replication of supporting charts statistical data.

Although patrons do not have much direct interaction with the physical library, they do express appreciation for the library services that they use. They reported a high level of satisfaction using Request when documents were not immediately available. A resident at Davis described his positive experience using the library's "house call" service, where a librarian will help find articles that patrons have difficulty locating.

HOW DO PATRONS USE IMAGES?

Often, patrons are searching for images as well as publications. High-quality images are important not only in doctors' medical practice, but they are also an essential component of presentations and lectures. One clinician explained that because she lectures frequently, she needs a lot of images for her PowerPoint presentations. For lectures on her home campus, she draws from her extensive personal collection of images. However, for presentations off-campus, she has to replace her personal images with images from Google because of HIPPA concerns.

Certain specialists, such as pathologists and radiologists, work with images throughout the course of their day. One researcher expressed a desire for a well-organized library of medical images. An ER Resident related his reasons for building his own image library:

> "Sometimes I carry my camera with me and take pictures of certain things…. I'd like to take more, because most of what we rely on is someone else's photograph or X-ray…. Everybody can look at the textbook and everybody sees the same picture because everybody has that textbook. But to see variations of it and to see something that came through in real life is invaluable."

Another resident reported taking still photographs through a microscope and expressed interest in a well-organized, shared library of images that included information about the images' diagnoses, salient features of the diagnosed disorder, and the properties of the features.

When asked if it would be helpful if the library licensed additional image sets, a pathology resident replied that she preferred searching on Google for images, because licensed sets generally contain the same picture from the same case for a given diagnosis. For her, it is more helpful and reassuring to have images from five different cases.

This pathology resident described her workflow in the following manner:

> First, she is presented with a slide or an image from which to make a diagnosis. At her level of experience, she can't just look at the image and make an instant diagnosis. She has to do a lot of research – "a lot of looking and reading." She continues, "It helps for me to type up what I think it is on Google, look at a range of images, and say, 'Hey, it kind of matches that one' and then go do my reading and research" on the characteristics of the disease. She then reads up on the patient and determines if they match. Finally, she sets the diagnosis and sends it to the attending physician who

either "yeas or nays" it. "That's how I do my learning…. That's why I need a broad range [of images]."

GOOGLE AND UC DAVIS' CLINICAL RESOURCES CENTER

> "I actually use Google for the bulk of my research online simply because images are a huge part of pathology… Google links us to all the important pathology sites directly. Compared to CRC, which there's really only two pathology links on CRC… and also the number of pages I have to go through and wait to load is much higher if I go to CRC. Whereas if I just go to Google, I type it in – boom – I get the pictures; I get the websites…. By the time I find a picture on CRC, I've gone through six or seven webpages."

Residents at UC Davis reported using both Google and CRC extensively, but for different purposes. They generally use Google for a "quick fix," i.e., to help them find specific items or answers. For example, several residents stated that for obtaining patient handouts, they preferred using Google over resources found on CRC. Another resident said that she found it easier to use Google to search for articles in MD Consult than MD Consult's native interface. A pathology resident observed, "I find Davis slides on Google." As noted in a previous finding, patrons turn to Google for finding medical images, because Google offers the following advantages over CRC:

- Ease of discovery
- Greater variety of image sources
- Quicker access to images

> "If I need in-depth information, then I go to CRC."

The residents at UC Davis reported using CRC mainly as a gateway to a few known resources. One resident listed the following 3 situations in which he uses CRC:

- For a quick answer in middle of shift
- Studying at home
- Doing research for project, research, or presentation

The resources he uses the most are the following:

- Medicare formulary
- UpToDate for quick answers
- Decision Support
- Electronic journals and textbooks

Although resident expressed appreciation for CRC as a research tool, they also felt that there was too much information on the page and that its design needed improvement. Most residents reported that they use 8-10 items on CRC. The following sentiments represent the general consensus of residents:

- We have very specific things that we use this page for; we don't need much of what's on the page.
- We want often-used items to be highlighted on the page; it's hard to distinguish things.
- Things get really lost; there's too much on the page.

- I had never really looked at the entire page. I just focused on library resources…. I never found UpToDate.
- Working at many different hospital locations, it's nice to have CRC… being able to go to a familiar page where resources are collected.

CRC is clearly an important launching point for residents, especially since they work from several locations. However, residents expressed a strong desire for better design and organization of the page. A number of them suggested that the ability to customize the page – to create a "My CRC" with the eight to ten resources they most often use – would be helpful.

Table 1: Resources mentioned during focus groups

by Faculty/Researchers	by Both Groups	by Residents
• Access Medicine • ACP Journal Club • AJNR • CP Online • ePhysician • InfoPOEMS (Patient-Oriented Evidence that Matters™) • Roger	• eJournals • Google • MD Consult • Melvyl/Request • Micromedex • PubMed • Textbooks online or on CD-ROM • UpToDate	• ACS Surgery • Cochran • CRC (UC Davis Clinical Resources Center) https://ucdcrc.ucdmc.ucdavis.edu/ • Drug references • eFacts • eMedicine • ePocrates • JAMA • Krames • NIH • NLM • Pathology websites • Picassa • Sanford Antimicrobial guide

ACCESS TO COMPUTERS AND THE INTERNET

Whether it's at home, at work, or at an Internet café, residents will use whatever computer is available to them. In medical centers, access to computers varies by department and by hospital ward. Pathology residents recognized that they were "lucky" to each have a computer. In contrast, an ER resident reported, "We're a busy ER. Sometimes there aren't any computers available." Even if there are computers available, sometimes they are not adequate for a particular application. For example, one resident related, "Clarity of images, especially radiographs, is important. Some of our monitors are terrible and have very poor resolution. I can't even tell what I'm looking at."

At Davis, residents noted that computers in "East 5" are already in short supply and that when the hospital adopts electronic charting, "demand for computers is going to skyrocket." A resident stressed that there has to be easy access to computers, because they "don't have time to write stuff down and look it up later."

HOW DO PATRONS DISCOVER NEW RESOURCES?

Resource discovery is a challenge for medical faculty, researchers, and residents alike. All groups reported that they relied heavily on resources that were familiar to them. One faculty member noted, “They [residents] get hooked on UpToDate and they just stay there.” Residents tend to focus on Google and UpToDate unless pushed to use other resources. For residents, the pressure to come up with answers quickly makes it unrealistic to expend the extra effort to find and use the best information resource versus quickly finding an answer that is “good enough.” Residents expressed the feeling that that they need to know such a broad range of things that there’s no way to know everything. Instead, they need to know *how* to find things.

Among all three groups, there was a general lack of awareness of the services and resources that their own libraries provided. At UC Davis, a number of residents reported learning about CRC as a result of the outreach and education efforts of librarian Rebecca Davis. However, many patrons at both UC Davis and UC San Diego expressed surprise when their more knowledgeable colleagues mentioned library resources that they used on a regular basis. “You can do that?” and “Do we have to pay extra for that?” and “I didn’t know we had that” were some of the sentiments expressed.

When asked how they found out about new resources, patrons gave the following responses:

- Via word-of-mouth: "When your attending tells you to go there and look it up." and “Somebody suggested Micromedex, and I use it all the time now.”
- Google: “If it is so good and so popular, then it'll come up on Google.”
- Library orientations: “But as a resident, you just don't get over there.”
- Advertisements/Email solicitations
- 30-day free trials

WHY IS RESOURCE DISCOVERY AND ADOPTION SO DIFFICULT?

> "An information retrieval system will tend not to be used whenever it is more painful and troublesome for a customer to have information than for him to not have it."
>
> —Calvin Mooer[1]

Once patrons become comfortable using a certain set of resources, it is difficult for them to expand into other resources. One major factor for this is the effort required to learn and remember how to access and search any given resource. Patrons recognized that the library offers courses on electronic resources, but they reported that lack of time prevents many from taking advantage of them. When asked how the library might entice them to make time for these courses, residents gave the following suggestions:

- Make the courses mandatory and offer free food
- Offer online courses in addition to the classroom-based courses
- Funnel the information through individual departments

At UCSD, one researcher expressed appreciation for the laminated pocket information card that librarian Craig Haynes had created for using electronic resources.

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[1] From http://www2.library.unr.edu/molo/virtuallib1.html: Mooer's Law was first articulated in American Documentation, 11(3) (July 1960), p.ii. Reiterated in: Bulletin of the American Society of Information Science, 23(1), October/November 1996, p. 22-23.

An issue that affects residents more than faculty is the cost of resources. Patrons must be willing to pay for not only the program itself, but also the quarterly updates. A pathology resident reported that cost is why she has not put pathology programs on her PDA "even though it would be really helpful." She noted, "We have a generous book fund, but my book fund was gone by the second month." A faculty member who was sensitive to this issue deliberately did not use one of her favorite resources when working with residents because that resource was not available through the library. She paid for a personal subscription to the service, and she felt that the high cost would be prohibitive for most residents.

However, while cost may prevent patrons from adding new resources to their research repertoire permanently, it does not prevent them from trying them out. They reported that they often receive offers for 30-day free trials from publishers in their email and mail, and in some cases, the resource turns out to be useful.

HOW DO PATRONS MANAGE INFORMATION?

Patrons used a variety of methods to keep track of electronic articles. As with other academic researchers, most practiced some combination of printing and filing or saving to a hard drive or USB flash drive. Some patrons reported that they deliberately did not save PDFs to a local drive because they found that they were unable to locate them when needed. They felt that it was easier to find the document by searching the original repository than by looking through their personal folders. Only a few reported using a bibliographic manager, such as EndNote.

When asked about the value of alert services, residents responded that they did not find them useful. One resident stated that she knew about them but didn't use them because knowing article titles alone doesn't help her. Another reported that she does have PubMed send her new articles from a saved search, but taking the next step after getting table of contents doesn't fit into her workflow. An ER resident noted that he usually has specific questions he's trying to answer, so he "doesn't want to get bombarded by stuff that's not relevant." Since they already receive an abundance of email everyday, patrons do not want email that does not directly pertain to them.

HOW DO PATRONS USE PDAS?

Residents reported that the hospital issued PDAs to all of them for the purpose of tracking work hours, so that hospital can monitor compliance with work-hour restrictions using a program called eValue. Residents noted that, at this point, PDAs are not really practical for point-of-care decision making, other than drug references. However, they observed that it would be helpful to be able to look up a quick reference on the PDA rather than have to find a free computer workstation.

When asked about other uses of PDAs, patrons gave a wide range of responses. One surgery resident used his PDA to log cases. Some used their PDAs as a personal planner to keep track of appointments and contact information. Others downloaded drug references and other "pocket" medical references, such as ePocrates and UpToDate, to their PDAs. However, it was noted that the cost of acquiring and keeping these references up to date discouraged their use. Patrons also observed that the PDAs small screen size and limited battery life made them impractical for surfing the Web and viewing documents. An increase in availability of computers on the floor may also decrease the utility of PDAs.

WHAT FRUSTRATIONS AND CHALLENGES DO PATRONS EXPERIENCE IN THEIR QUEST TO FIND INFORMATION AND ANSWERS?

"I know that information is out there somewhere and I can't get to it."

The challenges faced by patrons may be summarized as follows:

- Awareness of what's available
- Knowing which resource is best to use
- Getting access to resources and getting to the information

Many patrons demonstrated a lack of awareness of the services and resources that are currently available to them. Paradoxically, although patrons recognized that they used a very limited array of resources, they reported, "The main problem is getting too much back." One faculty member reported that her colleagues have great difficulty finding things online. Despite their desire to expand their arsenal of resources, patrons reported experiencing frustration trying to access or remember how to access electronic resources. One researcher admitted, "If there's a big learning curve, I'm not going to do it."

Many patrons reported encountering problems trying to access resources using a proxy server. The inability to access licensed materials from off-campus presents a major problem for patrons whose work schedules require them to do research from home. One faculty member noted that his fellows often use Google to look up articles. However, after perusing the search results page, they become frustrated by the inability to access what appears to be "the best" material. As a result, they default to less trusted material – the "Reader's Digest stuff" – instead. Another researcher observed that sometimes PubMed doesn't reflect UCSD's holdings/licenses accurately.

Residents reported having to contend with another type of problem. An ER resident stated, "I don't have the ability to stay around and do research [because of work-hour restrictions]." Thus, he has to do research from his home, where he often runs into access issues. "Getting stonewalled at home is a real thorn in my side." Another resident reported that many people in her department either don't know that CRC exists or they have forgotten their login information.

Other challenges include the difficulty in searching older medical literature that is not online and the difficulty dealing with information silos. As one researcher stated, "Anyone who's trying to follow a patient over 20 years is screwed."

METASEARCH

Pro: "Not every pathology resource has everything you need…. I can't just go to one place and expect to find my answer there. I have to go to several different ones."

Con: "From a personal perspective, I know what each of these [resources] offers me… I don't know if the format you're suggesting [i.e., metasearch] would really yield any benefit for me."

When presented with the idea of metasearch as a research tool, patrons gave a variety of responses. Some pointed out that a few resources, such as MD Consult, already act as a metasearch. However, one faculty member expressed dissatisfaction with the way MD Consult interfaces with native sites. Another patron noted that the last thing she wants to do after running

a search is “read through multiple chapters from multiple textbooks.” Others worried that a large metasearch would overwhelm them with information.

> “In theory it sounds good, but I think you end up with the same amount of information, it’s just twisted and backwards. If you want another reference… you still have to back up somewhat. Whether it’s one click or two clicks, you’re still backtracking and zigzagging back and forth. Is that too much information? Well, yeah! If you type in ‘prostate cancer’ you’re going to have over a million references easily…. Maybe it’s a cool idea because it’s different, but in the end you end up doing the same amount [of work]…. From a personal perspective, I know what each of these [resources] offers me… I don’t know if the format you’re suggesting would really yield any benefit for me.”

Those who reacted positively to the idea of metasearch were drawn to the potential for streamlining their information seeking workflow. However, patrons expressed the viewpoint that metasearch would be useful only if it provided direct links to articles. One resident likened metasearch to Orbitz, an online travel-booking site, and said, “If you could just get the PDF right off the bat, that would be the best thing. On PubMed, you never know whether you'll be able to get full text before clicking a bunch of times.” Another resident made it clear that Google is the gold standard:

> “That would depend on the link that CRC [UCD search portal] could provide…. If it provides a link and it takes me directly into that article, that would be optimal. That’s usually what Google does. It brings you directly into the article. But if you’re sending to us the first page of UpToDate, and then we still have to type in our search and keep looking for it, well that kind of defeats the purpose.”

When asked about the ability to customize the selection of sources for metasearch, all agreed that that this would be a highly desirable feature. One resident suggested UpToDate, eMedicine, Cochran, MD Consult as one grouping. Others remarked that it would be very helpful to see search terms in context, as well as the number of returned results from each source.

CONCLUSION

In examining the information seeking behaviors and needs of medical professionals, we must ask the following question:

Why do patrons rely on Google as a gateway to medical information when there are better resources targeted to their interests?

The following reasons are often cited:

- Convenience: Google offers easy access, easy interaction, and speed.
- Success: Google offers a high likelihood of finding something usable.
- Familiarity: Google is already part of people’s information seeking workflow.

The most noteworthy point, however, is that the findings from these interviews are consistent with general trends encountered in assessments of students and researchers in other academic fields.

- There is an increased dependence and use of Google and Google Scholar for academic research.
- There is a lack of awareness of the resources and services that the library offers.
- There is a lack of understanding of the differences between licensed and free resources; thus, patrons do not realize what the library offers them. Furthermore, because the library's resources are harder to use, the default is Google.

Combating these trends and addressing patrons' information needs will require innovative solutions. Metasearch may help remedy some specific deficiencies. However, the findings from this round of focus groups demonstrate a clear need for a well-designed entry point to library resources. To be successful, this entry point must offer the following:

- Effective categorization, naming, and grouping of resources.
- Detailed, up-to-date, easy-to-follow directions on accessing resources from off-campus via a proxy server.
- Information that is provided in a format that is easy for patrons to access and use, such as printed and laminated pocket references.

In the limited time that clinicians, researchers, and residents have for research, librarians must provide easy access to what they want and help them remain up-to-date with the ever-expanding choice of information resources.

APPENDICES

APPENDIX A: QUESTIONS AND OBJECTIVES

Library Experience (warm-up)

Objective: Determine what residents' experiences with library have been in the past and how familiar they are with library services.

1. What kind of library research instruction did you receive in medical school? How is that different from your residency?
2. What do you think that librarians can offer? (In other words, are clinicians aware of what libraries can offer?)
3. Within your field, how important is training in using library resources?

Technology Use

Objective: Determine what kinds of technology are available to residents within their professional and personal settings.

4. What kinds of technology resources do you use? Own? Have access to?
5. When and where do you use technology?

Information Needs

Objective: Determine the origin and nature of questions that residents' need to research.

6. [Scenario exercise]
7. At what stages of patient interaction do research questions that require looking at a database come up? What types are there?
8. What are your typical immediate information needs? How do you get answers to these questions?
9. What are your information needs when you have more time? How do you find answers to these questions?
10. How have your research questions/information needs changed over the years? Do the needs of 1st year residents differ from the needs of a 4th year resident? If so, how?
11. Is all research for working with patients? i.e. Do you do research for conferences and presentations?

Research Habits

Objective: Determine the current research habits and behaviors of residents. Determine the "points of pain."

12. When and where do you typically do research?
13. If you need to look something up quickly, what do you use?
14. Do you ever do research from home? (Are there problems setting up a proxy server, etc.?)
15. For those who have done library research, how/where do you start?
16. What challenges have you encountered?

Resource Discovery

Objective: Determine how users learn about new resources.

17. How do you discover new resources and publications? How do you keep up with what library has to offer? With your fields?

Management of Information

Objective: Determine the current information management practices of residents.

18. When you find a good article or resource, how do you keep track of it?

APPENDIX B: SCHEDULE

UC DAVIS MEDICAL CENTER

Monday, March 6, 2006

- Pathology Resident (2)
- Surgery Resident (2)
- Internal Medicine Resident (2)
- Emergency Medicine Resident (1)

Tuesday, March 7, 2006

- Pathology Resident (1)
- Family and Community Medicine Resident (1)
- Neurology Resident (1)
- Orthopedic Surgery Resident (1)

UC SAN DIEGO MEDICAL CENTER

[need list of participants' departments]

Monday, April 17, 2006, Morning

- Clinician (3)
- Researcher (2)
- Nurse (1)

Monday, April 17, 2006, Evening

- Research/Administrative Assistant (1)
- Pathology Researcher (1)
- Clinician in Clinical Genetics (1)