Chapter 15

Creating a Curriculum Based Library Instruction Plan for Medical Students

Amy E. Blevins

Introduction

There are multiple situations in which a librarian may find themselves creating a multi-session or longitudinal curriculum-based library instruction program. Maybe you've been hoping to do just this very thing for a while, or you stepped into the shoes of a librarian that did this before you, or possibly you're finding your motivation from an external force. You might be facing this challenge with years of teaching experience or not. No matter what the situation, this chapter will provide tips and strategies for developing a well-rounded library instruction program that focuses on the use of both information literacy skills and evidence based practice principles.

Creating a successful evidence based practice instruction plan hinges on several things: experience with information literacy concepts, familiarity with the foundations and principles behind evidence based practice, an understanding of the foundational knowledge of medical students when it comes to library and information skills, knowledge of the curriculum being used within the medical school at your institution, and a basic understanding of pedagogy. You also need relationships with course directors, negotiation skills, and a willingness to learn from mistakes and constantly make adjustments to how and what you are teaching.

Information Literacy and Other Competencies

The first thing a library instructor should be familiar with is the set of standards for information literacy that the Association for College and Research Libraries has created. The standards indicate that students should be able to determine when they need information and then

be able to locate, evaluate, and synthesize information to answer their question while taking into account the ethical, legal, economic and social issues surrounding the use of information.[1] These competencies are partially echoed by the Association of American Medical Colleges (AAMC) in their 1998 document which states that medical students should have knowledge of information resources (such as MEDLINE, text books, diagnostic decision support systems, etc.).

It goes on to say that they also need the ability to retrieve information, using skills such as Boolean operators, and to critically appraise the information with which they are presented.[2] A list of learning objectives can be partially drafted by going through these two information literacy documents. Another useful resource is the Compendium of Library/Informatics Competencies for the Health Sciences Professions that was put together by Eldredge, et al.[3] This resource includes direct quotes regarding library/informatics competencies by degree program from organizations like the Accreditation Council for Graduate Medical Education and the American Nurses Association. According to an article by Eldgredge, et al., this resource might be updated every 3-5 years.[4] When developing and revising a library instruction plan, it can be useful to refer to the compendium for specific these specific competencies.

Evidence Based Practice

The AAMC also states that medical students should be "making decisions based on evidence, when such is available, rather than opinion."[5] Before you can draft a plan for a curriculum-based library instruction program, you need to be aware of the basic principles behind evidence based practice which uses clinical expertise, patient values, and the best research evidence to make decisions about patient care. It may be helpful to take some continuing education (CE) courses on evidence based practice such as "Supporting Clinical Care:

An Institute in Evidence-Based Practice for Medical Librarians" which is held at Dartmouth College. The Medical Library Association offers many other CE opportunities on this topic, some of which are online courses.[6] It is essential to be able to speak to medical educators about evidence based practice and how library instruction can provide medical students with the tools they need to access evidence based information. Due to the importance of this topic, there is an entire chapter devoted to providing an overview of the major concepts.

<div align="center">Student Knowledge and Information Seeking Behaviors</div>

When planning instruction, think about the prior knowledge and experience that medical students are bringing to the first semester of medical school. Despite the fact that medical students have at least one bachelor's degree and several years of college experience, many of them are relatively unfamiliar with libraries. If they have been exposed to library instruction or information literacy, they are likely still unfamiliar with health sciences resources. Even so, some students feel that they are already highly experienced searchers due to their prior experiences using the internet. In particular, students often feel that they do not need MEDLINE instruction. A study reported in 2004 showed that medical students frequently stated they did not need a class on MEDLINE, but a survey done in 2001 and 2002 for medical students and dental students showed that 71%-95% of the students indicated that they had learned something about many of the skills presented in class.[7] All students are different and skills and attitudes change over time, so you may want to include a way to assess student knowledge during library sessions and modify your lesson plans accordingly. One option is to incorporate questions into lectures and PowerPoint slides when teaching in-person that can be used to gauge understanding and test assumptions on student knowledge.

Another consideration that can assist with developing an instruction plan is the information seeking behavior of the target audience. A recent study done by Boumarafi[8] showed that students preferred print resources over electronic resources. Other studies cited showed students were more likely to consult a textbook or a friend when seeking information, and yet others listed MEDLINE as a primary source of information. Dawes and Sampson conducted a systematic review of 19 studies examining the information seeking habits of physicians. One study listed meetings as a primary source of information, 13 listed textbooks, 4 listed colleagues, and only one listed electronic resources as the primary source of information. In addition, many barriers to accessing information were discussed and it was estimated that physicians only seek out information for 30% of the questions that arise in their practice.[9] It is important to take this into consideration because the students that you teach will tend to model the behaviors they witness in the clinics and from their physician and resident mentors. Perhaps a part of the reason physicians pursue so few questions is because of a lack of familiarity with the resources available to them in addition to a lack of access to resources in general.

When designing a library instruction program, it is essential to talk with students about why they are being taught about different resources and why the information being presented is vital. Remind students that they have access to certain resources no matter where they practice medicine and encourage them to become familiar with the resources they have available to them as students so that they can ask for them when they are practicing physicians.

In addition, you may want to talk with course directors and instructors to see what gaps they have noticed in their students' information and evidence-based practice skills. They will have experience with grading assignments and speaking with students on a level that most librarians cannot attain.

Using information regarding competency standards, information literacy, evidence-based practice, and pre-existing information skills of medical students, you should be able to put together a comprehensive list of the skills and knowledge that medical students should have upon graduating. At this point, some of the items on the list will be extremely critical, but others may be optional. You may find it helpful to separate out essential skills (such as the ability to run a keyword search in MEDLINE) from skills that may be less essential at this time (perhaps the ability to create an NCBI account for saving searches).

Choosing Resources to Present

The next step is to decide which resources you are going to introduce to the medical students. When you look at their courses and assignments, you will notice that they have varying needs at different points in their education. Typically, first year medical students will have a lot of background questions which are best answered by secondary sources and textbooks. As the students learn, they will develop more complicated foreground questions that may require primary resources. Not only should students be exposed to the different kinds of resources, but they should be taught when to use them.

As they gain the skills needed to engage in evidence based practice, they will find it helpful to use resources that provide them with evidence based information. Many health sciences libraries now have subject guides that list out their evidence based practice resources.[10, 11, 12] If your library has not done this yet, start one. The number of resources you choose to expose to students will greatly depend on the amount of time you have to work with the students. In general, you may want to stick to 2-3 resources per hour of instruction.

At the University of Iowa's Hardin Library, access is provided to more resources than can be covered during the library instruction session so the clinical education librarian worked with the developer of the evidence based clinical practice lectures to develop a flow chart based on the types of questions that students may have (see figure 1). The goal is to expose students to the fact that there are many resources at their disposal and that those resources are sometimes better suited to answering different types of questions.

<INSERT Figure 17.1 Near Here>

Medical Curriculum

Now that you have an idea of the resources and skills that you plan to cover, you need to figure out how to match up those resources and skills with your medical school curriculum. If you are new to your position or institution, you may want to start off by reviewing the website for your medical school or college. An obvious place for library instruction is with the evidence based practice curriculum. Find out when and how evidence based practice skills are being presented to the students and speak with the people responsible for this instruction. If possible, sit in on the evidence based practice lectures at your institution. This will help to ensure that your instruction is not in conflict with what the students are learning from other instructors and that the instruction is meaningful for the students.

For example, if the main focus of a course in the curriculum focuses on diagnosis and differential diagnosis, a library instruction session could demonstrate the different filters and subject headings in MEDLINE that can be used to find high quality articles on diagnostic tests. A brief summary of concepts such as likelihood ratios or sensitivity and specificity can also be worked into the lecture. During the same session, students might also be exposed to textbooks

such as *The Patient History: An Evidence-Based Approach to Differential Diagnosis* by Mark C. Henderson, et al. You might also highlight an electronic or mobile resource like VisualDx. If an assignment already exists, you could use the details of the assignment to tailor your lecture to the specific needs of the students. If an assignment does not exist, talk to the course director about developing a project where students are asked to select a diagnostic test for a patient based on evidence regarding the efficacy of the test.

Negotiating

Negotiating for class time can be one of the more challenging aspects of developing a library instruction plan. Work on establishing connections and building relationships before asking for a lot of face time in the curriculum. When speaking to course directors, be prepared to discuss the depth and value of instruction that you can bring to the table as a professional librarian. You might want to refer back to Part 1 of this book, for further information. Discuss the AAMC and ACRL competencies and talk about the ways in which students can sometimes be overly confident in their ability to find information due to exposure to common internet search engines. Most importantly, tie your learning objectives back into the learning objectives of a particular course or assignment. You may find that at first, you only see the students once. If that's the case, make the most of that session, and mention the other material that you would cover if you had the time. Sometimes, the students can be the strongest advocates for additional library instruction.

Instruction does not have to happen face-to-face. If you are unable to see the students for more than one session, you can still talk to course directors about posting a news item about library resources in their course management system or linking to tutorials and handouts created

by the library. Think of ways that you can maximize the time you do have with students by utilizing in-class activities and promoting active learning. Look into the teaching methods being used by the instructors in the medical school and leverage them for your own endeavors. As demonstrated in Part 3 of this book, there are many different ways to present material to your students.

Learning from Mistakes aka Assessment

No one is perfect. There will be times when you present to a class and realize that you forgot to mention an important resource, or the material you chose to cover was too advanced for your students. It is ok. The important thing is to learn from your mistakes and make the session even better the next time you teach. Talk to your students and learn from your consults. Some of the best teaching examples can come from an impromptu encounter at the reference desk or in the hallway. Talk to your course directors every year and make sure that you understand what they are teaching and what assignments they are asking the students to complete. There are many ways to go about assessment and many things to assess along the way. Look through Part 4 of this book for more examples of formal an information evaluations. The important thing is that you never get too comfortable or attached to your lesson plans and that you remember change is constant and practically guaranteed.

Beg, Borrow, and Steal: aka Learn from Others

You are not alone and you do not need to recreate the wheel. There are numerous articles, posters, and papers on different ways to present MEDLINE, evidence based practice skills, information literacy, etc. You can go to a library conference like the Annual Medical Library

Association (MLA) Conference or the local MLA Chapter conferences, join a list-serv or a group on FaceBook or LinkedIn and follow librarians on Twitter to learn from your peers firsthand. There are few articles published that specifically discuss curriculum based library instruction for medical students that takes place throughout their medical education, but there are several librarians talking about their efforts through posters or mentions in other articles.[13, 14, 15, 16]

Every effort should be made to ensure that library instruction is delivered in a way that complements the assignments and information being presented in lectures while building on information literacy skills and competencies. Creating a curriculum integrated library instruction plan may seem like a daunting task, but it can be done with a little knowledge, some negotiation skills, and the desire to take your teaching to the next level.

---

[1] Association of College and Resarch Libraries. Information Literacy Competency Standards for Higher Education 2000; http://www.ala.org/acrl/sites/ala.org.acrl/files/content/standards/standards.pdf. Accessed April 12, 2013.

[2] Association of American Medical Colleges. Report II: Contemporary Issues in Medicine: Medical Informatics and Population Health 1998; https://members.aamc.org/eweb/upload/Contemporary%20Issues%20in%20Med%20Medical%20Informatics%20ReportII.pdf. Accessed June 19, 2013.

[3] Eldredge JD, Morley SK, Hendrix IC, Carr RD, Bengtson J. Compendium of Library/Informatics Competencies for the Health Sciences Professions. 2011; https://repository.unm.edu/handle/1928/15363. Accessed June 19, 2013.

4 Eldredge JD, Morley SK, Hendrix IC, Carr RD, Bengtson J. Library and informatics skills competencies statements from major health professional associations. *Med Ref Serv Q.* 2012;31(1):34-44.

5 Association of American Medical Colleges. 2.

6 Medical Library Association. Continuing Education 2013; http://www.mlanet.org/education/. Accessed June 19, 2013.

7 Lawrence JC, Levy LS. Comparing the self-described searching knowledge of first-year medical and dental students before and after a MEDLINE class. *Med Ref Serv Q.* Spring 2004;23(1):73-81.

8 Boumarafi B. Electronic resources at the University of Sharjah medical library: an investigation of students' information-seeking behavior. *Med Ref Serv Q.* Oct 2010;29(4):349-362.

9 Dawes M, Sampson U. Knowledge management in clinical practice: a systematic review of information seeking behavior in physicians. *Int J Med Inform.* Aug 2003;71(1):9-15.

10 Schardt C. Evidence-Based Practice. 2013; http://guides.mclibrary.duke.edu/ebm. Accessed June 19, 2013.

11 Blevins A, Wallace S. Evidence Based Practice. 2013; http://guides.lib.uiowa.edu/ebp. Accessed June 19, 2013.

12 Health Sciences Library. Evidence Based Health Care (EBHC). http://hslibraryguides.ucdenver.edu/ebhc. Accessed June 19, 2013.

13 Eldredge JD. 4.

14 MacEachern M, Townsend W, Young K, Rana G. Librarian integration in a four-year medical school curriculum: a timeline. *Med Ref Serv. Q.* 2012;31(1):105-114.

[15] Blevins A. Building Evidence-Based Practice Skills in Medical Students with a Four Year Curriculum Integrated Plan. Medical Library Association May 3-8, 2013, 2013; Boston, MA.

[16] McEwen HA, Johnson R, Stockton LM, et al. Evidence-Based Medicine Integration into Medicine Curriculum. Paper presented at: Medical Library Association; May 3-8, 2013, 2013; Boston, MA.