Evidence Based Library and Information Practice

Problem Based Learning and Evidence Based Medicine: Utilizing the Librarian

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Setting

In 2004 the University of British Columbia (UBC) embarked on a distributed undergraduate medical education program (Bates, 2008). The distribution of the undergraduate medical program involves a multi-institutional partnership with four institutions across the province: the Northern Medical Program (NMP) based at the University of Northern British Columbia (UNBC) in Prince George, the Island Medical Program (IMP) based at the University of Victoria (UVic) on Vancouver Island, the Vancouver Fraser Medical Program (VFMP) based at UBC in Vancouver, and as of Fall 2011, the Southern Medical Program (SMP) based at UBC Okanagan in Kelowna. Since the start of the program, the number of NMP students grew from 24 to 32 students in just 3 years (Bates, 2008).

The librarian for the NMP began shortly after the distribution of the program to UNBC in Prince George. Over the years the NMP librarian has offered support to students in various ways through teaching, collection development, library advisory committee with faculty and student representation from each year, and traditional reference service offered both in the library and onsite in the medical building. The print collections are integrated into the main library at UNBC, as there is not a separate medical library (Fyfe, McDavid, Raworth, & Snadden, 2009). Faculty support for the NMP librarian in regards to professional development and the further growth of the librarian's role in the program

has always been encouraging; specifically, in regards to exploring methods of developing librarian-student relationships.

Problem

Evidence based medicine (EBM) developed out of the fundamental need for clinicians to apply critical appraisal at the bedside, and thus became a philosophy of practice (Guyatt & Rennie, 2002) involving the skill of using best evidence to make patient care decisions (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). The term was first coined by the McMaster University faculty in regard to medical practice and has since evolved beyond the scope of just medicine, now being used in other multiple health professions (Guyatt & Rennie, 2002).

Over the past two decades, the process for practicing EBM has undergone modifications but the fundamental principles of the five steps remain the same: 1) Asking Focused Questions, 2) Finding the Evidence, 3) Critical Appraisal, 4) Making a Decision and 5) Evaluating Performance ("What is EBM?", 2011).

Based on the amount of health information available, which has grown exponentially since the beginning of the EBM movement, EBM skills have become essential. This has proved challenging because the methods to obtain this information have evolved and changed in response to this growth (Dawes, et al., 2005). Not only have we seen the expansion of journals offering online full-text of articles, one can now search specialized databases created specifically for certain specialties (Dawes, et al., 2005) in response to evidence based medicine and "push" or "pull" knowledge dissemination and sharing (Montori & Guyatt, 2008). We have also seen attempts to guide clinicians in finding information in a strategic manner and consequently have seen the development of the hierarchy of evidence (Guyatt & Rennie, 2002), the "4S" model (Haynes, 2001), the "5S" model (Haynes, 2006) and now the "6S" model

(DiCenso, Bayley, & Haynes, 2009) of accessing pre-appraised evidence.

All of this is challenging to educators in undergraduate medical education and librarians attempting to teach students the skills required to practice EBM throughout their undergraduate education and beyond. As Diao, Galm, and Shamon (2009) noted, "Over the past decade, EBM has become increasingly integrated into the curricula of many medical schools. This change has been shown to improve students' ability to develop clinical questions and perform effective literature searches" (p. 17). This resonates with one of Guyatt's (1991) originating EBM statements that "For the clinician, evidence based medicine requires skills of literature retrieval, critical appraisal, and information synthesis." The struggle has been how to provide students with the skills necessary to become clinicians effective in practicing EBM.

Within the current University of British Columbia undergraduate medical program (MDUP), EBM and Informatics are integrated themes in the four year curriculum. Although there are pockets of each theme taught by faculty and librarians throughout the four year program it is difficult to ensure continuity. Problem based learning (PBL) case developers and tutors are all encouraged to integrate EBM into cases and sessions (Gill, Bradley, & Godolphin, 2009) but it remains unclear if this is being done in a consistent and regulated manner. According to the CanMEDs 2005 Physician Competency Framework physicians should be able to "critically evaluate information and its sources, and apply this appropriately to practice decisions" (Frank, 2005). Could a librarian, in the role of a PBL tutor, have an effect on students' EBM behaviour? Would this be another teaching opportunity for a librarian in regards to EBM?

Another aspect of interest was the potential impact on librarian-student relationships within the NMP. As Spak and Glover (2007) noted in their evaluation of the Personal Librarian program at the Cushing/Whitney Medical Library, librarians had been

concerned about the declining contact with medical students due to the continued growth of the online world and the Personal Librarian program was the answer. The evaluation process revealed development of librarian-student relationships. These relationships became clearly defined, including what students could expect from a librarian, knowing who they can contact, the ability to obtain timely feedback from students, and, in some cases, the relationships continued after graduation. (Spak & Glover, 2007)

At NMP it was felt that the librarian as a PBL tutor could have this same effect on the development of librarian-student relationships; meaningful and sustainable relationships. Could a librarian be an effective PBL tutor? What kind of tutor evaluations would the librarian receive from the students? Would the librarian receive similar feedback from the students as other PBL tutors? It was decided to expand the librarian's role to include PBL tutoring.

Evidence

Since the implementation of PBL into undergraduate medical school curricula across Canada and abroad, librarians have responded to this curricular change by implementing creative and unique programs to ensure medical students are developing lifelong learning skills to be able to meet EBM competencies. PBL involves a process of inquiry that requires students to identify problems, develop hypotheses, describe mechanisms, gather information, acknowledge limits of knowledge, and create learning issues accordingly (Office for Faculty Development and Educational Support, 2009). PBL cases progress throughout the week requiring students to utilize a systematic approach to generating hypotheses and applying information. Lectures, labs, and learning issues provide the students with the knowledge required to approach each case.

PBL has been supported by librarians in various ways including tutoring, co-tutoring, collection development, the creation of toolkits, and liaison roles that involve student and tutor support (Eldredge, 2004; Eldredge, et al., 1998; Fitzgerald, 1996; Ispahany, et al., 2007; Koufogiannakis, Buckingham, Alibhait, & Rayner, 2005; Satterthwaite, Helms, Nouravarsani, Van Antwerp, & Woelfl, 1995). However, these early attempts to utilize the librarian within the PBL curriculum were not as focused as the one described in this paper. Much of the literature was written in the mid-1990s in response to the shift in integrating PBL into undergraduate medical education (Rankin, 1996). Eldredge's (2004) article on tutoring in PBL is the only article found that depicts a librarian in a sole tutoring PBL role, similar to the one described in this paper.

There is a great deal of literature looking at EBM and PBL, and the librarians' role in teaching and support in EBM for undergraduate medical programs. Based on the qualitative comments provided in the tutor evaluations, there is evidence that a librarian as a PBL tutor can have an effect on the students' knowledge and demonstration of EBM behavior. A trial done at the University of Alberta compared PBL groups with librarians as co-tutors to groups without, in regard to knowledge about health information. Based on a pre- and post-test given to the students in each group, the trial found that the groups with librarian co-tutors had a significant impact on the level of health information knowledge (Koufogiannakis, et al., 2005). Student evaluations of the librarian as a PBL tutor provide evidence that a librarian acting as a sole tutor can have an effect on the students' engagement in EBM behaviour.

In 1993, Vernon (1995) conducted a survey of PBL tutors within 22 medical schools across North America in order to assess likes and dislikes about tutor PBL experiences compared to traditional medical education. He found one of the most rewarding aspects of tutoring PBL was building tutor-student relationships (Vernon, 1995). At NMP although relationships are made through traditional librarian-student interactions, such as teaching and research consultation, a

relationship built as a faculty member could have the potential for sustainable relationships, and to further develop our roles in EBM and as faculty members. Eldredge's (2004) experience certainly attests to this, as he describes how his role as a tutor increased the level of respect received from his fellow library and non-library faculty members within the program. As a sign of this respect, Elderdge received the designation of "Master tutor" from his peers, as well as an acting role as EBM chairperson, and was an appointed member on a curriculum committee (Eldredge, 2004). The same could be said for developing librarian-student relationships. Satterthwaite, et al. (1995), found that the employment of librarians as small group facilitators for the unique Integrated Clinical Experience resulted in a higher number of students exploring the services and resources available at the library. Building relationships early in a student's education has the potential for expanding beyond the undergraduate program, into their residencies, and beyond. Further, the previously mentioned Personal Library program at the Cushing/Whitney Medical Library found that the relationships the librarians built with students lasted beyond graduation, which is important for continued lifelong learning (Spak & Glover, 2007). It is, however, too early to tell if that will be the case in this study.

In previous years, the librarian held regular reference hours in the Health Sciences Centre which was anecdotally deemed unsuccessful, because students did not interact with the librarian in regard to asking the librarian questions, which was expected and is what the literature reveals (Tao, McCarthy, Krieger, & Webb, 2009). Although anecdotal, since the NMP librarian's involvement as a PBL tutor began, the students have begun seeking her out for assistance with EBM and informatics questions.

The literature on PBL tutors divulges a breadth of discussion about the type of background a tutor needs in order to facilitate PBL (Schmidt & Moust, 1995; Schmidt, Van Der Arend, Moust, Kokx, & Boon, 1993).

Barrows (1992) maintained that an ideal tutor would be both an expert in the subject area and a good facilitator; however, Barrows' realized this is not always realistic and concludes that tutors without subject knowledge can be excellent facilitators. Thus the NMP tutor's role focused on facilitation of the PBL process, regardless of content expertise to highlight the following characteristics (Office for Faculty Development and Educational Support, 2009):

- Ensuring all students are involved in the group process.
- Providing guidance to ensure that the learning process progresses and students meet case objectives.
- Monitoring the learning progress of the group and each student.
- Probing student knowledge using guiding questions.
- Managing group dynamics.
- Assisting students in developing independent, self-direct learning skills.

Based on the existing evidence in the literature, it was hypothesized that a medical librarian would be an effective PBL tutor based on EBM expertise, critical thinking skills, previous experience in small group learning, communication skills, and the ability to negotiate different learning styles and abilities.

Implementation

The NMP librarian became a PBL tutor in the fall of 2007, beginning with a second year Endocrinology & Metabolism five week block. In preparation for tutoring, the librarian took a two-day PBL tutor training course offered by the Faculty of Medicine at UBC. This course provided the librarian with additional facilitation skills required for tutoring PBL. The librarian also engaged in tutor shadowing prior to the block in order to feel confident in a PBL setting. Currently, the librarian has been a tutor for four first and second year PBL blocks: one second year Endocrinology & Metabolism block, two first year Cardiology blocks, and one second year Reproduction block. It must

be noted that the librarian is assigned as a tutor to random blocks based on tutor scheduling and librarian availability.

Students evaluate tutors at the end of each block using an assessment tool prescribed by the program. Each tutor is evaluated by each student in the respective PBL group based on the following criteria, plus any additional comments regarding strengths and suggestions for improvement:

- Ensured a safe learning environment and encouraged critical thinking (e.g., courteous, helped group adhere to ground rules, modeled constructive communication, used open-ended questions, encouraged critical evaluation of evidence).
- Held students and the group accountable (e.g., recognized need for additional external information, encouraged accountability for information).
- Facilitated individual and whole group functioning (e.g., provided adequate direction, helped identify & deal with tutorial functioning, encouraged participation, provided constructive feedback, kept group activity flowing*)*.

The student ratings and comments for the librarian were compared to those of other tutors in the same block for each of the four blocks.

Outcome

Based on the student evaluations of the librarian for each of the four blocks, the librarian received comparable ratings to other tutors. In addition to comparable ratings, the librarian garnered significant qualitative results from the evaluations. EBM is an encouraged curricular theme throughout the four year program. In PBL, case writers and block chairs develop cases often with EBM integrated into the week's content. Tutors are encouraged to engage their students in EBM practices, often requesting that students cite their sources and challenge conflicting knowledge found in the literature. In the small

groups that the librarian tutored, the students made the connection between the librarian and the librarian's role in EBM without it being explicitly stated. For example, some of the feedback received over the four blocks included:

- "As a librarian, she encouraged us to evaluate evidence and site [sic] our sources."
- "I liked that she asked us for our sources once in a while, especially if there was conflicting information."
- "She was a strong advocate for sighting [sic] sources of information and encouraged us to seek information from a variety of different sources."

Reflection

Expanding the role of the librarian within the NMP has involved exposing the librarian to first and second year medical students as a PBL tutor. The ratings received by the librarian from the students have been comparable to that of other tutors in each block. In other instances of small group facilitation, librarians discovered that the communication skills used during the reference interview are similar skills used in the facilitation of small group learning (Miller, 2001; Satterthwaite, et al., 1995). In reflection, the probing aspect of PBL tutoring is quite similar to the probing of knowledge librarians engage in during a research consultation.

PBL requires a great deal of dedicated time from tutors for preparation, weekly tutor meetings, PBL tutorials and assessments of the students. Other attempts of librarian tutor and co-tutors in PBL, or similar small group learning environments, have reflected time as a challenge and barriers for librarians to become tutors (Koufogiannakis, et al., 2005). Vernon (1995) found that tutors' disliked the time requirements for PBL. In this scenario, the librarian was able to negotiate reduced reference hours in order to meet the time demands of tutoring PBL as it was deemed valuable for the librarian to continue in this role. At first the librarian spent many hours

preparing for each block and each week's case in order to overcome the lack of subject knowledge. It was soon realized that the facilitation skills involved in tutoring is what is key to a tutor's success within PBL. Once this was realized and embraced, preparing for PBL became less and less of an onerous task.

Outside of the comparable tutor evaluations, the librarian became a "known" figure within the NMP amongst the students and faculty. Through her role as a tutor, the librarian built sustainable relationships with the other tutors and students. Meeting with the other tutors for the block was really helpful in that the librarian could ask clarifying subject related questions, ask for tips on providing feedback for students, learn how others deal with difficult group dynamics and share success stories. Having contact with the students outside of "traditional" librarian roles has provided the librarian with great insight into the process of PBL, the students' use of resources in that environment, and has opened another venue for discussion of resources. The librarian also developed relationships with the students not often found in intermittent interactions within a library setting. Based on the librarian's experience described here, it is noted that future areas of exploration and research could be done relating to librarians as PBL tutors in regards to relationship building and its impact on EBM, since this case study is based on one librarian's experience as a tutor. It would also be helpful to evaluate whether students' perceptions of librarians change with the exposure of a librarian as a PBL tutor in addition to traditional roles. Furthermore, as the landscape of the healthcare environment evolves, we as educators need to adapt to better prepare our students for the future. One future direction would be exploring if having a librarian as a PBL tutor changes medical students' future scope of practice and how they interact with their future patients.

Conclusion

A great deal of literature exists regarding the librarian's role within PBL, which depicts librarians supporting both students and faculty. However, little research exists regarding librarians as PBL tutors as depicted in this paper, and the impact this exposure has on librarian-student relationships and EBM. Based on the CanMEDS competencies (Frank, 2005) described previously, this study highlights for the first time how the librarian can play a critical role in the development of lifelong learning skills. Based on the experiences at the NMP, these librarians suggest that further involvement of the librarian in medical education should be explored as they provide a valuable and still underutilized role in medical training. Currently the librarian continues to tutor PBL, has maintained relationships with students and other tutors, and has taken on other roles within the program.

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