Identification of the Theme

Theme #1: Evidence/Research Based Practice in the Professional Curriculum

How effectively are we educating students to use evidence/research based approaches to practice?

As part of the university’s central mission to expand biomedical knowledge and enhance quality of life in our communities, we want to produce health care practitioners who can provide the best possible quality of health care. To accomplish this, student practitioners must critically evaluate new emerging treatments and diagnostic tools found in both basic science and clinical science research literature, and apply new knowledge appropriately to patient and animal care. In short, we seek to produce health care practitioners who can effectively and rapidly apply new knowledge into practice using their critical reasoning skills. To do this, our students must become lifelong learners and actively engage in ‘bench to bedside’ approaches to health care. Our graduates need to be able to critically evaluate new knowledge and research before applying it to patient and animal care. To assist with this goal, all of the Western University of Health Sciences’ professional programs promote EBP and research in the curricula, an approach that allows students and faculty to evaluate clinical and basic science research for their relevance in the decision making process in patient and animal care.

The university is aware of how well students attain outcomes related to professional cognitive knowledge using data from professional licensing exams. What still needs further development is to know how effectively our programs integrate health care research and how effectively our curriculum promotes the application of evidence and research into health care practice as a student learning outcome.

Alignment with WASC

The WASC Evidence Based Practice research was found to have various alignments with Western Associate of Schools and Colleges (WASC) standards. The panel sought to investigate how evidenced based practice is clearly recognized and articulated as an educational objective at Western University (CFR 1.2). Also, the EBP panel sought to verify faculty knowledge, beliefs and attitudes toward EBP through an administered faculty survey (CFR 2.1). Western University graduates also received an alumni survey (CFR 2.1) to assess their knowledge, skills, beliefs, and current practices of EBP and if they learned about it while at Western University. Also investigated were faculty expectation of students’ learning and attainment of EBP skills (CFR 2.3, CFR 2.4). Students in a pilot study, done by the EBP panel, were administered an exam and student work was analyzed in order to assess particular strengths and weaknesses in their EBP skills and knowledge (CFR 2.2 b). Finally, through the EBP panel’s pilot study research, examples and methods of how colleges and programs might assess students’
understanding of various EBP steps (CFR 4.3) will be provided and colleges and programs can use the data to impact their curriculum and pedagogy (CFR 4.7).

**Literature Review**

*Overview*

In order to determine how effective Western University integrates health care research and the application of evidence into practice into the curricula of the various colleges and programs, the panel needed to investigate an applicable definition, teaching methods and the appropriate assessment instruments utilized in order to evaluate student knowledge, skills, behaviors and attitudes towards EBP in medicine and the health profession.

The initial task of the EBP panel was to define evidence based medicine (EBM) and practice so that the definition could be most relevant and applicable across the various health care colleges and programs at Western University. Many definitions have been utilized in literature for what encompasses EBM; however, the primary definition that is used most commonly by researchers and academicians working in this area was offered by D. Sackett (1996), revised in 2000, and then refined in 2005 by the same group (Strauss, 2005) to incorporate patient values. This currently accepted definition is “EBM (or EBP) is the integration of the best research evidence with our clinical expertise and our patient’s unique values and circumstances.” While this does not cover all aspects of EBM in all healthcare specialties, it is broad enough that it can be used as a blanket statement in most instances, and further explanation can be included as a supplement to a definition utilized by a specific organization.

*Teaching Evidence Based Practice*

Most health profession programs teach concepts of EBP at some point in their curricula. Many medical schools incorporate information, activities or courses on EBP into their clinical years or postgraduate/residency programs (Bradley, Oterholt, Herrin, Nordheim, & Bjørndal, 2005; Coppus et al., 2007; Davis et al., 2007; Dorsch, Aiyer, & Meyer, 2004; Green & Ellis, 1997; Herbert et al., 2004; Killeen & Barnfather, 2005; Lee et al., 2005; Leung et al., 2003; Schilling, Wiecha, Polineni, & Khalil, 2006; Shuval et al., 2007; Smith et al., 2000; Stewart et al., 2005), while others introduce EBP concepts during the first two years of the curriculum (Chipchase, Williams, & Robertson, 2007; El Ansari, 2004; Finkel, Brown, Gerber, & Supino, 2003; Hardin & Robertson, 2006; Holloway, Nesbit, Bordley, & Noyes, 2004). Very few programs include targeted information, instruction and activities on EBP throughout the pre-clinical and clinical years (Wanvarie et al., 2006). Furthermore, methods vary widely and their effectiveness has not been thoroughly evaluated. In general, teaching activities are designed to address one or more skills required for successful implementation of EBP and they are typically aligned with the five steps of evidence based practice. Few approaches to teaching EBP address all of these steps; and, even fewer have demonstrable success in teaching all of
the skills needed to adequately and consistently integrate EBP into clinical practice (Coomarasamy & Khan, 2004; Flores-Mateo & Argimon, 2007).

EBP is taught using many different methods, including courses and workshops, computer based tutorials, medical rounds, journal clubs, activities embedded in clinical experiences, or a combination of several approaches. Journal clubs have traditionally been a primary method of teaching EBP; however, this format tends to best address the appraisal step; occasionally includes formulation of clinical questions and some acquisition skills; and, rarely incorporates application and assessment steps (Hatala, Keitz, Wilson, & Guyatt, 2006; Lee et al., 2006; Liu & Stewart, 2007). Coumarasamy and Khan (2004) performed a systematic review of 23 studies evaluating the effectiveness of stand-alone versus clinically integrated methods of teaching EBM on knowledge, critical appraisal skills, attitudes, and behavior. While stand alone teaching methods improved knowledge, clinically integrated methods improved all four outcome measures.

Werb and Matear (2004) performed a systematic review of the literature from 1996-2002 to identify effective teaching methods in dentistry education. The authors mention that faculty training and the need to overcome faculty barriers to teaching EBP are important considerations in any EBP teaching program. They go on to suggest that EBP teaching methods should use clinical scenarios in the classroom to teach the principles of EBP (pre-clinical applications) and require students to demonstrate that recommendations for patient care are based on best available evidence (clinical applications).

Although there is literature that goes on to discuss successful methods for teaching EBP, there are still some skills that present with greater difficulty to master. Deficits in student learning EBP steps include the inability to learn the critical analysis/appraisal skill and difficulty in understanding of statistics. Barriers to practicing EBP include the lack of easy and quick access to scientific literature, and time constraints. Slawson and Shaughnessy (2005) argue that we should be teaching a form of information management rather than the full EBP process to most clinicians.

Assessment instruments can be used to evaluate the effectiveness of a single educational intervention, or to compare the effectiveness of different types of interventions aimed at teaching EBP. These assessments evaluate educational effectiveness by measuring one or more student learning outcomes: knowledge, skills, attitudes, and/or behaviors toward EBP. Straus et al (2004) identified three critical factors that need to be considered when designing assessment instruments; 1) the learners (doctors) and their needs and learning styles (doer, user or replicator), 2) the dose and delivery method of the teaching intervention as well as its focus (which of the five steps of EBP it addresses: ask, acquire, appraise, apply, assess), and 3) the educational outcomes being assessed (attitudes, knowledge, skills, behaviors and clinical outcomes-the last two need to be assessed in a clinical practice setting). Assessment instruments are usually structured around a clinical case-based scenario, followed by questions that focus on one or more areas of EBP (Holloway, Ramos, McCluskey, Gruppen, & Smith,
Clinical case-based scenarios can also be utilized in the context of the Objective Structured Clinical Examination (OSCE) or incorporated into standardized patient encounters to serve as novel assessment tools (Bradley, 1999, Frohna, Gruppen, Fliegel, & Mangrulkar, 2006). Assessment instruments can be administered to students in the form of written exams, computer-based tests or as standardized patient encounters. The most common formats employed are questionnaire or survey, and student responses are scored either by EBP content experts directly or using a rubric developed by EBP content experts (Ghali, Morris, McCluskey, Johnston, & Bradley, 2005; Davis, Smith & Taylor, 2007). Assessment instruments reported in the literature were not always evaluated for reliability and validity or they varied greatly in the extent and methods used for determining instrument reliability and validity.

Two systematic reviews of EBP assessment instruments have been recently published (Shaneyfelt et al., 2006; Flores-Mateo, 2007). The review published in 2006 by Shaneyfelt et al identified at least 104 distinct instruments after a comprehensive survey of both the literature and of EBP websites. In 2007, a second systematic review by Flores-Mateo et al reviewed 24 published studies describing 22 distinct assessment methods for EBP skills, knowledge, behaviors and attitudes of post-graduate healthcare workers (Flores-Mateo, 2007). The authors found that although the teaching methods were very well described in each of the studies, assessment instruments were not analyzed beyond validity and standardized effect size. In general, although these instruments vary greatly in validity there is a reduction in their applicability to different teaching modalities or to different curricula in the health professions.

**Conclusion**

A comprehensive survey of the literature on best practices for assessing EBP identified a wide variety of teaching methods and instruments that have been developed and are currently used in health professions education. Subsequently, it is unlikely that a single teaching method and assessment tool can be used to measure educational effectiveness in EBP across all the colleges at Western University.

**Panel Research Planning and Organization**

The mission of the EBP panel was to assess Western University colleges’ and programs’ effectiveness in teaching students to be Evidence-Based Practice practitioners. Evidence Based Practice was chosen to describe panel research instead of Evidence Based Medicine because panel members felt EBP encompasses all programs in at Western University. Panel members believed Evidence-Based Medicine could be seen as excluding those programs that create para-medical professionals (e.g. Physical Therapy and Pharmacy) and Veterinary Medicine, who address medical concerns in animals rather than humans. For purposes of this report, the term Evidence Based Practice will be used.

The EBP panel originally consisted of 10 members; however, two panel members withdrew early in the process and were not replaced. The Chair is from the Physical Therapy program, which is a program located in the College of Allied Health Professions.
One other panel member was also from CAHP as a representative of the Physician’s Assistant program. Additional panel members included one from the College of Osteopathic Medicine (basic science department), two from the College of Veterinary Medicine, two from the College of Pharmacy, and the Director of the Pumerantz Library.

The EBP panel process began with an extensive review of the literature. The review set out to accomplish the following: obtain a working definition of Evidence-Based Practice (EBP), define aspects that may represent and/or measure attitudes, knowledge and skills as well as the specific steps to practicing EBP, and finally, to seek both quantitative and qualitative methods to assess how well our students are prepared to practice EBP when they emerge into clinical practice.

The panel set out to obtain data from multiple sources while also considering workload and timeframe issues. In an effort to address both needs, panel members selected both general data points from a representative sample of all populations of the University (faculty and alumni surveys) as well as more focused and objective measures from two pilot programs on campus: College of Veterinary Medicine (CVM) and the Doctor of Physical Therapy program (DPT). CVM and DPT were chosen because panel investigations identified EBP currently being taught in both programs. Secondly, there was active participation and strong interest from members on the panel from both programs. These members served as liaisons between the Dean/Chair of their respective programs further providing support from both CVM and DPT’s inclusion in the assessment process.

The Higher Education Research Institute (HERI) survey, administered through University of California, Los Angeles, served as the faculty survey instrument investigating Western University faculty practices and beliefs in relation to EBP. An original survey instrument was developed by the panel to be issued to Western University graduates from 2000 until present time. The year 2000 was chosen because this year represents the time when the concept of EPB was beginning to be taught at Western University. The alumni survey items addressed EBP steps and knowledge, attitudes and skills, as well as how much is it used and access or barriers to access are out in the clinical environment.

Finally, the panel chose to do more focused assessments in the two pilot programs of CVM and DPT. These assessments included one quantitative assessment, the Berlin Questionnaire and two qualitative assessments: one being assessment of student work assigned as part of coursework, and the other being development of tools to assess the students’ use of EBP in the clinical environment while out on rotations.

Major Findings

Faculty Survey

Western University was invited to participate in a multi-University survey administered by The Higher Education Research Institute (HERI), from the University of California at
Los Angeles. As participants in this process, each institution is allowed to add its own questions. We chose to utilize this instrument to survey our own faculty about Evidence-Based Practice. The HERI Faculty Survey was administered to Western University (WU) faculty, administrators, and researchers during the Spring of 2008. According to survey demographics, 56 respondents identified themselves as teachers; 7 respondents identified themselves as administrators, and 8 respondents identified themselves as researchers. Please refer to Appendix A for the actual questions asked and the detailed results. The current report highlights 5 structured items and 1 open-ended question related to Evidence-Based Practice/Medicine at Western University.

Key Findings:

Teachers at Western University (WU) discussed a variety of barriers to teaching Evidenced-Based Practice (EBP) in their course(s) (Table 1). Just under a third (29.6%) cited minimal expertise in the field, while 25.9% stated that other faculty members teach EBP in their course(s). Teachers also stated that EBP was not an objective in their course(s) (18.5%), as well as not having enough time to address EBP due to workload issues (25.9%). Teachers responding to the survey cited that students’ lack of literature search skills (30.9%) and lack of time (38.2%) were critical barriers to students’ learning EBP in a class/academic setting. Students’ lack of time (36.5%) was also discussed by Teachers as a critical barrier to learning EBP in a clinical setting. Overall, 38.2% of Teachers agreed that they can identify the 5 steps of EBP, while 20% of Teachers disagreed with that same statement. Other respondents, Teachers (25.2%), Administrators (28.6%), and Researchers (37.5 %) had a neutral response to this statement. Finally, 21.4 % of Teachers disagreed that EBP is “cook book” medicine that disregards clinical experience while 23.3% agreed. Interestingly, 50% of Researchers responding to this statement agreed that EBP is “cook book” medicine.

Alumni Survey

Surveys were administered via the internet to Western University’s alumni across all programs for those who graduated from 2000 through 2008. This timeframe was selected to reflect the estimated implementation of EBP principles and methods in the curricula at Western University. A total of 3365 alumni were invited to participate in the survey via email (response rate = 6.2%). Within the survey, demographic data, such as gender, ethnicity, degree program, current clinical practice setting, and year graduated, was collected. In addition to the demographic items, 18 items assessed the participant’s knowledge, opinions, and practice of EBP. A total of 210 alumni participated in the survey (see Appendix B).

Key Findings:

The majority of respondents (>70%) agreed with the positively worded items indicating knowledge, awareness, and acceptance of EBP. A minority of respondents (<10%) agreed with most of the negatively worded items indicating lack of knowledge, lack of
awareness, and lack of acceptance of EBP. The majority of respondents (>70%) indicated that they learned EBP from Western University’s didactic courses. Twenty seven point five percent (27.5%) of Osteopathic Medicine (DO) graduates, 18.6% of Physician Assistant (MSPA) graduates, 23.2% of Pharmacy Pharm D graduates, and 40% of Veterinary Medicine (DVM) graduates, indicated they do not know the 5 steps in Evidence-Based Practice. Thirty five point nine percent (35.9%) of Osteopathic Medicine (DO) graduates and 21.4% of Physician Assistant (MSPA) graduates indicated they believe past clinical experience is more important than Evidence-Based Practice. Finally, 28.3% of Osteopathic Medicine (DO) graduates, 21.8% of Physician Assistant (MSPA) graduates, and 24% of the Veterinary Medicine (DVM) indicated they believe the practice of Evidence-Based Practice has not changed the way they learn.

One limitation affecting the response rate is the online methodology used for data collection. The survey was sent to alumni via e-mail addresses provided to the Office of Institutional Research and Effectiveness (OIRE) by the Alumni Office. It is questionable whether or not these were current e-mail addresses, so this may have affected the response rate. In addition, those without internet access could not participate.

**Detailed Assessment of Pilot Programs: College of Veterinary Medicine and Department of Physical Therapy**

**Berlin Questionnaire**

The Berlin Questionnaire is a well-validated, reliable and objective tool that is frequently used for student outcome assessment in EBM/EBP (Akl, Izuchukwu et al. 2004; West and McDonald 2008). It has been previously used in both formative and summative evaluation and for the evaluation of individual courses/training modules as well as for programmatic review (Akl, Izuchukwu et al. 2004; West and McDonald 2008).

The Berlin Questionnaire measures two important educational outcomes in EBM/EBP: knowledge and skills. It was designed to assess knowledge and skills about interpreting research evidence, specifically the application of knowledge to clinical situations (Fritsche, Greenhalgh et al. 2002; Shaneyfelt, Baum et al. 2006). The test focuses on a subset of the skills required for the practice of EBM/EBP: a) formulating a clinical question (step 1: Ask), b) appraising the evidence, with an emphasis on study design (step 3: Appraise), and c) applying the evidence to solve specific patient problems, with a specific focus on the use of quantitative information from research (step 4: Apply) (Fritsche, Greenhalgh et al. 2002; Shaneyfelt, Baum et al. 2006).

The Berlin Questionnaire was administered to two different cohorts of students in each of two pilot programs: College of Veterinary Medicine (CVM) and Doctor of Physical Therapy (DPT). The groups of students were tested at entry and near completion of their respective programs. This strategy is an alternative to a longitudinal study and allows us to assess the overall curricular effectiveness of each program in EBP/EBM within a short time frame.
The main outcome measure used to determine educational effectiveness in EBM/EBP was the difference in mean scores between the two student cohorts (corresponding to the incoming and graduating students in each program). Specifically, mean scores of incoming and graduating students within each program were compared using a Paired-Samples t-test. This type of analysis has been previously used in similar studies that examining the Berlin Questionnaire to assess the effectiveness of different educational interventions in EBM/EBP (Fritsche, Greenhalgh et al. 2002). No comparisons were made between programs. A more detailed report can be reviewed in Appendix C.

In both programs, there was a small but significant improvement in the mean score for the graduating student cohort. Specifically, the DVM 2009 students ($\bar{X} = 6.04$) scored significantly higher than those in the DVM 2012 group ($\bar{X} = 5.09$; $p = 0.001$). Similarly, the DPT 2009 students ($\bar{X} = 5.41$) scored significantly higher than those in the DPT 2011 group ($\bar{X} = 4.46$; $p = 0.021$). Although the approximately one-point increase in mean scores may seem small, it should be noted that it corresponds to a roughly 20% difference between incoming and graduating students (see Table 1). Taken together, these results demonstrate that there is a small, but significant improvement in scores for graduating students in two degree-granting programs at Western University of Health Sciences. These results suggest that participation in these programs is associated with an increase in knowledge and skills in EBM/EBP for our students.

**Analysis of EBP Student Work**

While most Colleges are in the process of implementing EBP into their curriculum, the two Pilot programs were chosen for evaluation due to the history of teaching EBP. The DPT program first began teaching EBP to their students in the summer trimester in 2004. The EBP teaching was initially divided into 3 courses from Years 1-3, after students have completed the prerequisite research methods course in Year 1. It has now has been consolidated into 2 courses. EBP curriculum is presented via lectures, readings and course assignments including use of discussion board. The student assignment chosen to evaluate for this review was the Modified Educational Prescription form utilized in the Applied Research to Clinical Practice course in October 2007. Students in this course were assigned a patient case and were instructed to do the following: (1) create a PICO (acronym for Patient, Intervention, Comparison, Outcome); (2) create a clinical question; (3) conduct a search utilizing terms from clinical question, and (4) select and evaluate a clinical practice guideline from their search strategy.

The CVM problem-based learning (PBL) program teaches aspects of EBP throughout the 4-year curriculum; however, it is not taught in one dedicated class. In Years one and two, students learn to formulate specific questions and explore learning issues using the Educational Prescription format. They are taught to search primary literature using clinically focused data bases such as PubMed. In Years three and four, students learn and apply basic statistics and complete assignments requiring the use of EBP steps. The assignment chosen for analysis in CVM was given to all 105 first year students in November 2008, and a random sample of 30 students was chosen for analysis.
Using the Educational Prescription form, it required students to formulate a question based on a specific topic, identify keywords and limits and perform a PubMed search to identify relevant primary literature to answer the question.

Thirty DPT and 30 CVM student EBP assignments were evaluated according to a rubric developed by EBP panel members (See Appendix D). The rubric assessed student work at the novice, apprentice or competent (non-expert) level for practicing identified EBP steps. The steps assessed included developing a good clinical question and conducting an efficient literature search.

Findings show the majority of students from both programs can be considered competent (non-expert) in developing PICO questions. In particular, 76.6% of DPT students achieved this skill level, while 80% of CVM students can be considered competent (non-expert). Further, 11.7% of DPT students and 13.3% of CVM students achieved apprentice level, while 11.7% of DPT students and 6.7% of CVM students achieved the novice skill level for development of a PICO question.

In general, the subcommittee chose to assess student work based on the developed rubric reflecting best practices of a literature search process. A limitation of the literature search analysis is the rubric was developed after the assignments were issued and the assignments were slightly different thereby decreasing the possibility of students from both programs achieving a competent (non-expert) skill level. Overall, the majority of students in both programs were assessed at the apprentice skill level, or higher, in conducting a literature searches.

Clinical Rotations Evaluations

For both of the selected pilot programs, Veterinary Medicine and Physical Therapy, the panel also implemented methods to perform a qualitative assessment of how well Western University students practice components of EBP in their clinical rotations.

Veterinary medicine faculty have revised a written evaluation form to include two new questions related to EBP: one assesses student’s ability to search and utilize the literature and another assesses the students’ skills in critical appraisal of the literature. Both questions are asked of the clinical instructor at completion of a one month rotation. The updated form was put into use in September of 2008; the committee does not yet have data from the program.

Physical Therapy revised questionnaires completed by the academic faculty via interview with both the student and the clinical instructor (CI). This interview is conducted at approximate mid-point of a 12 week clinical rotation. There were four questions added to the previous form. These questions are asked of both the students (self assessment) and CI’s independent of one another. The questions address the following: utilization of EBP steps by student and the CI; mentoring of EBP process by CI; and access to resources in the clinical setting to allow EBP practice. This new form was implemented in rotations evaluated in February, 2009. Data is not yet available.
For both programs, these evaluation forms are additional tools that will now be in place as an additional data point to be used for the future evaluation of the knowledge and skills for practice of EBP in their respective programs and in ongoing program review. We have not collected data to this point from either program. We may have data available at the time of the onsite visit.

**Discussion**

The summary of the HERI (Faculty) Survey revealed the following outcomes: (1) Faculty reported that the main barriers to teaching EBP were minimal expertise in the content, that the topic was not assigned to them or was not a course objective and that their workload does not allow inclusion. The Faculty’s perception of student barriers to conducting EBP in the academic setting are lack of time and that they lack the skills to conduct efficient and effective literature searches. In the clinical setting, the faculty projected that lack of time was the most common barrier.

The Alumni survey results were favorable in that most alumni (approx. 71%) felt that they knew the steps of EBP and that they learned it from courses taken here at Western University. A primary limitation of this data is the small sample size and method of collection via e-mail. We did not have confirmation that the e-mail addresses used were current, or if these alumni still utilize their Western U e-mail accounts.

Our findings with the Berlin Questionnaire given to our two pilot groups of students in the DPT and CVM programs revealed to us that this test may not be the best tool for our purposes. This tool was originally meant to be used as an assessment immediately before and after taking a course in EBP while we used it to assess knowledge at the beginning and end of their respective programs. We chose to conduct it this way as the learning of EBP is integrated and practiced throughout the curricula, rather than all learned in one specific course. This may also reflect differences in how the content of EBP has evolved and changed since it was initially taught. We found a tool that would likely be a better fit for us in the Fresno test, but rejected this test due to a higher degree of subjectivity in the scoring and due to being a very time-intensive test to grade.

For evaluation of student work, the development of the rubric that was created was helpful to define best practice for steps 1 and 2 of EBP; developing a clinical question and search strategies. This tool can be used in the respective departments and shared with other colleges and programs in the university for assessment of these EBP steps.

Finally, in both pilot programs, evaluation forms for use in assessing student performance in the clinics have been modified to incorporate questions of clinical faculty to assess whether or not the students are utilizing EBP in the clinic and if so, how well they do so. In the case of the DPT students, they are also asked to address these questions as a self-assessment of their own skills and to comment on knowledge and behaviors of EBP and any mentoring they get from their clinical instructors.
Recommendations and Continuing Challenges

To address the results from faculty’s feelings about teaching EBP from the HERI survey, some possible solutions are to continue to offer courses to faculty in the steps of and teaching strategies for EBP and to encourage more faculty members to incorporate EBP skills into their course objectives, even if they are not the primary instructor of the content. This may only need to include one or two of the five steps per assignment or case. As discovered in other aspects of our study, conducting searches seems to be the area most in need for additional practice. The same solutions may be helpful to address what the faculty perceives the students barriers to be. This will require more time and effort among the faculty to work together to coordinate threading this content throughout multiple courses in their respective programs.

Please note that the Western University’s Center for Academic and Professional Enhancement (CAPE) department has hosted educational content for faculty on EBP in the past, and continues to offer this topic on an ongoing basis. The university library offers courses to student and faculty on database and search strategies. In addition, the practice and methods for teaching EBP may be integrated with the intensive “Academic Boot Camp” program that is offered through CAPE and intended for new faculty. A prime opportunity exists to address faculty and student issues across all programs, faculty and students in the upcoming Inter-Professional Education (IPE) course that will begin in fall of 2009. Students who work together on patient cases can be asked to create clinical questions and conduct literature searches as part of this program.

Data collected from the Alumni survey can, in general, be considered very positive. Many of the respondents indicate the knowledge, skills, and overall positive attitude toward EBP. The majority of respondents also indicate they learned EBP while at Western University. A future challenge regarding future studies that choose to elicit alumni response has only to do with the method of data collection and alumni communication and low response rates. One suggestion is to create a new type of e-mail account for alumni. Upon graduation, they could be “rolled over” into a new account with limited announcements and communications. Access to this account could be shared by a central department in the University and the colleges or programs that the alumnus graduated from. Alternative solutions include creating a list-serve type of system or to create a mechanism within the Alumni office to keep current personal e-mail accounts up to date.

E-mail communication is fast, efficient, cost-effective, environmentally-sound and is likely the preferred method of communication for most alumni. We need to explore and implement a method for obtaining an e-mail account that alumni will access without excessive time on their part. This may have other valuable positive effects among the University and programs such as recruitment of faculty, creating research partners in clinical practice, seeking assistance for applicant interviews or practical exams (clinical faculty), and seeking University donations or announcing University accomplishments and events. This may also be a more effective way for colleges, programs, or the Alumni office to conduct standard surveys of practice patterns among our alumni which are used for program review and accreditation purposes.
The Berlin Questionnaire provided key information about the program and college in the pilot study; however, it may not be the most appropriate tool for use at Western University. The questionnaire may prove to be a better tool if it is administered in a pre-post course assessment or workshop series rather than at the beginning and end of a student’s academic experience. If the exam is to be used, course instructors may choose to evaluate the questions to determine if the exam fits the current method of instruction. Other solutions include modifying another EBP skills assessment test (i.e. the Fresno exam) or create a new test that is more reflective of how EBP is taught in particular the health programs, universities and/or professions.

Assessment of student work suggests that students need more practice in the steps of EBP and most of this need is in the area of conducting literature searches. As it was suggested earlier, faculty should consider expanding their objectives to include at least some components of EBP in their courses.

Although we do not yet have data collected on assessment of EBP in the clinics, assessment of student ability to utilize and apply EBP in the clinical setting should be integrated in clinical assessment tools in all programs. This is important in all health care programs, as part of the education process extends into the clinical environment. As part of this assessment, programs may also wish to inquire about any barriers to practice in the clinical environment and the role modeling and mentoring they get or may not get while in the clinic. This is important since the concept and teaching of the steps of EBP was begun only in the past several years. Clinicians who have been out in practice for many years may not have kept current in this methodology and therefore may not reinforce in the clinic what the students are learning in their didactic education.
REFERENCES


