EDITOR’S CORNER

These five short articles together reflect the diversity of the medical education community in Canada. From rural and remote medicine to self-directed basic science modules the articles in this issue cover a vast spectrum or topics. Many of you will notice that these articles were posters or podium presentations at the 2008 CCME in Montreal and their appearance in the CAME Newsletter may prompt you to take a second, longer or even first good look at them. They are worthwhile reads and sure to stimulate some fresh thinking!

If you have a short conference presentation or Graduate student paper in medical education please consider submitting it to the CAME Newsletter!

Marcel D’Eon, Editor
CAME Newsletter

RURAL & REMOTE MEDICINE CONFERENCE ENHANCES STUDENTS’ DESIRE TO PRACTICE RURAL MEDICINE
Jacqueline Wickett & Jay Orchard, Schulich School of Medicine & Dentistry and the University of Western Ontario

Introduction

The South Western Ontario Medical Education Network (SWOMEN) at Schulich aims to provide medical education outside the traditional Health Sciences Centre by exposing students to rural and regional Medicine. Since 1997, SWOMEN has had programs in place to ensure students graduate with the knowledge, skills and interest to choose a rural, regional practice. One such program SWOMEN offers is the opportunity to attend to Rural and Remote Medicine Conference (RRMC) held by the Society of Rural Physicians of Canada. This conference provides a venue for students, physicians and other health care providers working in rural and urban areas to discuss health care issues, present initiatives, learn practical information and develop skills for the treatment and management of clinical problems in rural areas.
Purpose

The Evaluation Studies Unit at Schulich developed a survey to learn about students objectives for the conference and the extent to which they were met by attending the conference. In addition, this survey was developed to determine the academic and professional value of attending the conference as well as its impact on students’ decision to choose rural, regional practice.

Methods and Participants

Since 2001, SWOMEN has provided funding for 79 Schulich medical students to attend the conference. Of the 79, 52 had current contact information and were sent an invitation to complete the survey through email. After 2 weeks, 28 students completed and returned the survey resulting in a 52% response rate. These students represent those who attended the conference in one of the years from 2002 to 2007.

Results

There were several common objectives motivating students to attend the conference. Students were interested in:

- Learning about rural medicine, particularly rural family medicine.
- The similarities and differences between rural and urban practice. What are the benefits and drawbacks of working in a smaller community?
- Learning about job opportunities in rural areas and the unique problems rural physicians face.
- Meeting other students interested in rural medicine and rural physicians that could act as mentors.
- Gaining hands on practical skills.

All 28 students met at least some of their objectives for attending the conference. Seventeen met them all and 11 met some. The objective most often unmet was the opportunity to meet other students and rural physicians. These students felt they missed the opportunity to network and meet potential mentors as they did not attend the social events.

The impact of the conference on students desire to practice rural medicine was tremendous. The majority of students had an enhanced desire to practice in an area designated rural, remote or under serviced. In particular, 14 students felt the conference “enhanced” their desire to practice rural medicine while 10 students felt the conference “somewhat enhanced” their desire to practice rural medicine. Only 4 students felt the conference had no impact on their desire to practice rural medicine. In addition, 14 students said in the future they planned to practice in a rural, regional or under serviced area, 12 were undecided and 2 said they did not plan to practice rural medicine.

The value of attending the conference was also huge. All students found the conference valuable both academically and professionally for themselves and for future learners who wish to pursue a career in rural medicine. In particular conference workshops provided a good overview of what rural practice is like, provided an opportunity to learn about the wide breadth of rural medicine opportunities and learn a great deal on topics ranging from practical skills to policy and politics of medicine. The conference also provided an opportunity to network with physicians and other students interested in rural practice. Students enjoyed hearing about the experiences of doctors who currently practice rural medicine which helped them get an overall sense of practicing in a rural area including the opportunities available, the benefits, drawbacks, challenges and rewards of such a career.
Half of the students (14) felt attending the conference in year 1 or 2 of medical school more valuable. Students felt the hands on skills they learned were good preparation for clerkship. The other half of the students felt attending the conference in year 3 or 4 of medical school more valuable after having had some practical training and acquired some clinical skills.

Future Considerations

It would be interesting to follow up with students once their training is complete to see how many decided to practice rural medicine. It would also be worthwhile to repeat this survey every year students attend the conference to determine whether it continues to be a valuable experience. Once enough data are compiled, trends over the years can be explored. As a knowledge sharing exercise, students should be asked to write a short report detailing their experience and the knowledge gained at the conference. This report could then be presented at an academic half day and be made available as a resource for students interested in rural medicine who did not have the opportunity to attend the conference.

THE DEVELOPMENT OF SELF-DIRECTED BASIC SCIENCE LEARNING MODULES FOR NEW MEDICAL STUDENTS

Jacqueline Carnegie, John Leddy, Christopher De Jesus, Josephine De Jesus, University of Ottawa; Melissa Crawford, Northern Ontario School of Medicine

Introduction

An emerging trend for Canadian medical schools is the acceptance of increasing numbers of registrants from a variety of educational backgrounds, including education, engineering, law and a variety of Arts disciplines. While all new medical students are academically excellent, subsets of students exist who lack strong preparation in such basic sciences as biology, biochemistry, cell biology, genetics and embryology despite passing the MCAT. The overall goal of this project is to develop a series of interactive self-learning modules that in-coming Anglophone and Francophone medical students can use to enrich their basic science knowledge before beginning medical school. Here we report the results of Phase One of the project completed during the summer of 2007 that addressed: biology, cell biology and biochemistry.

Methods

Phase One began with the analysis of survey data collected from 117 University of Ottawa undergraduate medical students and 13 faculty members who teach these students during the first few months of medical school. The student respondents were surveyed with 15 learning objectives pertaining to biology, cell biology and biochemistry. For each learning objective, they were asked to respond to the following two questions using a Likert scale:

1) “I had adequate knowledge of this topic prior to beginning medical school.”
2) “It would have been helpful to learn about this topic prior to beginning medical school.”

The faculty respondents were presented with the same 15 learning objectives, but were asked to rate their level of agreement with only one statement:

“All students should have some basic knowledge of this topic prior to beginning medical school.”
As guided by the survey data, 30 self-directed learning modules were developed during the summer of 2007 using Blackboard Vista. For each learning module, an online PowerPoint presentation was supplemented with audio, animations, interactive questions, case studies and/or links to additional learning opportunities so as to maximize active learning and maintain student engagement. PowerPoint tools were used to animate biological and biochemical pathways, develop interactive self-testing exercises and present content in a way that guided students, to link concepts as they constructed scaffolds of new knowledge in the absence of an instructor. Each theme also incorporated pre-and post-tests so that students could use their self-learning time wisely and assess their progress in learning.

These modules were presented as a pilot study to entry level medical students during the first two months of medical school. A focus group comprised of 8 students was then conducted to collect feedback that would identify the strengths and weaknesses of these learning modules and guide the completion of the product during the summer of 2008.

Results

Of the 117 student survey respondents, 116 indicated their level of prior education with regard to the basic sciences. Of these, two had taken no prior courses in biology, 16 had not taken any biochemistry courses and 20 had not studied cell biology at all during their undergraduate training. Interestingly, while this population was diverse in terms of its indicated prior basic science knowledge, the majority of students were very interested in having the opportunity to pursue additional self-directed learning before beginning medical school. The faculty respondents, as well, indicated a strong preference for students to have tackled these learning objectives before attending their lectures.

The PowerPoint tools were found to be extremely useful for the animation of a variety of biological and biochemical events including dehydration synthesis, the buffering of excess acid, and the basic metabolism of carbohydrates, lipids and proteins. PowerPoint also supported the development of interactive self-testing exercises within each presentation in which students identified true and/or false statements, carried out modified drag-and-drop exercises and selected the correct answers to matching or multiple-choice questions. Finally, the post-tests were developed in such a way that students were provided with feedback to both correct and incorrect answers and directed to further opportunities for learning if an incorrect answer was selected (Figure 1).

The students involved in the focus group were, in general, very pleased with the ease of use of the learning modules, their ability to grab and maintain attention and the relevance and level of difficulty of content included in the modules themselves. They expressed an interest in the availability of even more biochemistry content, more opportunities to self-test and the inclusion of even more examples of clinical applications.

Discussion

Medical students, in general, are highly motivated to learn. Students accepted into medical school who come from non-science educational backgrounds should not be compromised in their ability to excel once they begin their studies. PowerPoint supports the development of a number of interactive self-learning and self-testing tools without the need to learn complicated software such as Dreamweaver® and Flash®. Self-directed learning modules created with Blackboard Vista have been very successful. The summer of 2008 will be used to complete two more sets of learning modules (genetics and embryology) and to finalize the interactive web site in response to guidance provided by the focus group. These learning tools will then be available for use by new entry-level medical
students so that they can strengthen their basic science comprehension during the summer before they begin their formal medical education and, as a result, enter medical school in the fall confident that they have the necessary knowledge to be successful.

Supported by the Human Anatomy and Physiology Society, the University of Ottawa Faculty of Medicine & the Centre for University Teaching.

**Figure 1.** Example of feedback given in response to the selection of an incorrect answer during the Biochemistry post-test.

THE SAFETY COMPETENCIES: ENHANCING PATIENT SAFETY ACROSS THE HEALTH PROFESSIONS

Jason R Frank, MD and Susan Brien, MD, The Safety Competencies Steering Committee, Royal College of Physicians and Surgeons Canada

**Introduction**

A culture of patient safety is an integral aspect of providing high-quality health care. It involves striving to reduce and mitigate unsafe acts within the health care system and fostering the use of evidence-based best practices that lead to optimal patient outcomes. What is needed is a new guide for health care professionals to incorporate patient safety skills and awareness explicitly and systematically into their daily work.

The Safety Competencies is intended to be that guide. It provides a framework for incorporating practices that promote patient safety into six core domains of abilities that are shared by all health care professionals. By contributing to the patient safety education of health care practitioners The Safety Competencies will hopefully contribute to the enhancement of patient care.
Methods

In 2006, as part of its patient safety mandate the CPSI determined via a review of the literature and of health profession education curricula in Canada that there was a need to develop an interprofessional patient safety competencies framework. The CPSI contracted The Royal College’s CanMEDS team to coordinate and develop the framework largely because of the experience and success the College has had in launching the CanMEDS Physician Competency Framework.

In January 2008, the CanMEDS team conducted a consensus conference for over 65 authors from across the health professions. Working in groups, the authors developed the core domains of patient safety competency and identified the essential abilities for each core domain. An interprofessional expert panel was chosen as the project’s steering committee, which proceeded to revise, edit and validate the core domains through multiple iterations of the framework.

Results

The consensus conference developed seven core domains of competencies. During the review and revision process, the committee determined that two of the initial domains were inherently linked; these two domains were combined to reinforce the content. The resultant six domains are:

Domain 1: Contribute to a Culture of Patient Safety
A commitment to applying core patient safety knowledge, skills and values to every day work.

Domain 2: Work in Teams for Patient Safety
Working within interprofessional teams to enhance both patient safety and quality of care.

Domain 3: Communicate Effectively for Patient Safety
Promoting patient safety through effective health care communication.

Domain 4: Manage Safety Risk
Anticipating, recognizing, and managing situations that place patients at risk.

Domain 5: Optimize Human and Environmental Factors
Managing the relationship between individual and environmental characteristics in order to optimize patient safety.

Domain 6: Recognize, Respond to & Report Adverse Events
Recognizing an adverse event occurrence and responding effectively to mitigate harm to the patient, ensuring disclosure and preventing recurrence.

Since the spring of 2008, the domains have been circulated to over 1000 stakeholders across Canada for validation and were met with enthusiasm and anticipation for the framework. Throughout the development phase, the project has received a number of inquiries from individuals and groups from across Canada and internationally, including the World Health Organization (WHO), to receive more information about the project and identify potential synergies or opportunities for collaboration. The framework’s formal launch in September 2008 will likely be met with interest and excitement.

Discussion

The Safety Competencies will be the first interprofessional, competency-based, framework on patient safety in Canada. The competency-based approach means the framework will be a simple, flexible and powerful tool that can be applied across health care professions and settings. Because patient
safety is not being presented as the responsibility of any single health care profession, the competency based framework can be adapted and included in curricula for all health care professions. By enhancing health profession education, the framework will enhance patient safety.

INTERPROFESSIONAL OBSERVERSHIPS: MEDICAL STUDENT PERSPECTIVES

Marcel D'Eon, University of Saskatchewan

As part of a 220 hour course, first-year students at the University of Saskatchewan participate in a 40 hour module called Self-Directed Clinical Learning (SDCL). The main goal of the program is to encourage first-year medical students to explore clinical medicine through observations of the settings, problems, and practices within the healthcare system. Students arrange their own “shadowing” experiences with both MDs and non-MD health professionals. Their role while shadowing is to observe, ask questions, and learn as much as they can but there are no predetermined objectives. This opportunity is very much self-directed. Many students accumulate more hours than the minimum required (some upwards of 100 hours per year). The program has been quite well received (see below) as one student lamented, “I wished I had done more shadowing.”

In the spring of 2006, students were asked to evaluate various components of the course: “How satisfied (out of 10) were you that each of the following components of the Self-Directed Clinical Learning Module was worthwhile for you personally?” (Means out of 10 are reported):

<table>
<thead>
<tr>
<th>Component</th>
<th>Satisfaction (out of 10)</th>
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<tbody>
<tr>
<td>Shadowing MDs</td>
<td>9.27</td>
</tr>
<tr>
<td>Clinical clerks</td>
<td>8.38</td>
</tr>
<tr>
<td>non-MDs</td>
<td>7.90</td>
</tr>
</tbody>
</table>

The students find this learning experience one of the best parts of their first year.

Methods:

At the end of the year in 2007, students were asked via email to provide comments about shadowing non-MDs and to share suggestions regarding observerships. In the spring of 2008 the next first year class was asked to provide further comments and suggestions. In 2007 over 20 out of 60 students responded, but only 5 out of 68 in 2008. I reviewed the comments and extracted common themes.

Results:

Here are the key suggestions that the students made about shadowing non-MD health professionals based on their personal experiences:
- Be approachable, open, inviting, enthusiastic, and proud of your profession!
- Explain and answer questions about...
  - what you are doing and why.
  - what your training was like and what you learned to do.
  - the challenges and rewards of your profession.
- Let the students assist you and interact with the patients/clients (as much as possible).
- Ask them basic questions about anatomy, physiology, and clinical care and get them to look up what they do not know.
- **DON’T** complain about physicians (such as tell stories about negative encounters or incompetency) and **DON’T** lecture students about what not to do when they enter practice!
Discussion and Conclusion:

Students believe that working with non-MD health professionals is a valuable learning experience. The opinions of the medical students that responded to the request for comments about their shadowing and observing experiences with non-MDs converged tightly on several themes and suggestions, particularly what not to do. These seem to be reasonable expectations. What we do not know is how widespread and how strong these impressions might be. The next step is to create a more rigorous research program with either a short survey with Likert style questions to poll the entire class or focus groups or interviews (or all of the above and more).

We also do not know if these sentiments are shared by medical students at other schools (though it is highly likely) who might be involved in other forms of IPE with non-MD health professionals.

There are also opportunities to improve the program based on this preliminary research. Medical students could be trained on how to respond appropriately to awkward situations and non-MDs could be oriented to the needs and dislikes of the students before taking them for a shadowing experience.

PREDICTING ACADEMIC PERFORMANCE IN MEDICAL SCHOOL FROM SUBJECT-DIFFERENTIATED PREMEDICAL GRADES AND CREDIT

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College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada

Introduction

Undergraduate grades in science and non-science classes are positively associated with preclinical and clinical performance, respectively (Jones and Thomae-Forgues, 1984). To our knowledge, little has been published describing the relationship between undergraduate and medical school grades when science and non-science classes are differentiated further. Therefore, the purpose of this study is to explore the relationships between subject-differentiated premedical grades and credit units and academic performance in medical school.

Methods

Ethics approval for this study was granted by the Behavioural Research Ethics Board at the University of Saskatchewan in June 2007. Participants were medical students from the classes of 2007 and 2008 (n = 115). All undergraduate and medical transcripts were obtained for each student. Undergraduate grades and credit units were classified into one of nine subject categories: (1) Applied Science, (2) Biological/Biomedical Science, (3) Physical Science, (4) Social Science, (5) Humanities, (6) Commerce, (7) Education, (8) Psychology, and (9) Unknown. Grades are defined as the percentage values achieved in the classes. Where percentage values were not available, admissions conversion charts were consulted to convert non-percentage values. Mean grades and summed credit units were calculated for each student by subject.
Results

### Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>R Square Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
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<tr>
<td>1</td>
<td>.421</td>
<td>.177</td>
<td>.145</td>
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<td>.177</td>
<td>5.488</td>
<td>4</td>
<td>102</td>
<td>.000</td>
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a. Predictors: (Constant), Physical Science Average, Physical Science Credit Units, Biological and Biomedical Science Credit Units, Biological and Biomedical Science Average

### ANOVA

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<td></td>
<td>Residual</td>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>102</td>
<td>2789.292</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Physical Science Average, Physical Science Credit Units, Biological and Biomedical Science Credit Units, Biological and Biomedical Science Average

b. Dependent Variable: Second Year Science Average

### Coefficients

<table>
<thead>
<tr>
<th>Model</th>
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<th>Standardized Coefficients</th>
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<th>Sig.</th>
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</thead>
<tbody>
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<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Physical Science Credit Units</td>
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<td>.077</td>
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<tr>
<td></td>
<td>Biological and Biomedical Science Credit Units</td>
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<td>.085</td>
</tr>
<tr>
<td></td>
<td>Biological and Biomedical Science Average</td>
<td></td>
<td>.089</td>
<td>.072</td>
</tr>
<tr>
<td></td>
<td>Physical Science Average</td>
<td></td>
<td>.138</td>
<td>.076</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Second Year Science Average

Non-science premedical grades and credit units (humanities, social science) did not significantly predict clinical means for first-, second-, or third-year in medical school. Science premedical grades and credit units (biological/biomedical science, physical science) did significantly predict science means for all three years when using simultaneous multiple regression. First-year model: \( F(4, 106) = 5.25, p = .001 \). The adjusted \( R^2 = .138 \). Second-year model: \( F(4, 106) = 5.49, p < .001 \). The adjusted \( R^2 = .145 \). Third-year model: \( F(4, 106) = 4.33, p = .003 \). The adjusted \( R^2 = .118 \). For all three models, biological/biomedical grades and credit units were significant predictors when physical science grades and credit units were also included in the models.

Discussion

For the prediction of science means in first-, second-, and third-year of medical school, the simultaneous multiple regression models were significant with the second-year model explaining the most variance: \( F(4, 107) = 5.49, p < .001 \). The adjusted \( R^2 = .145 \), which is a medium effect according to Cohen (1988). Biological/biomedical grades and credit units significantly predicted the science means (physical science grades and credit units were also included in the models).

In medical school where attrition rates are low, it can be argued that the screening process is the most important evaluation exercise (Eva et al., 2004). The challenge centers on selecting a small number of students from a large number of qualified applicants (Dore et al., 2006). To the extent that biological/biomedical science grades and credit units are predictors of science-related academic performance in medical school, they may be useful to medical school selection committees at the admissions level.
References


