

An Environmental Scan of

Best Practices in Public Health Undergraduate Medical Education

REPORT 3:

Interviews with Canadian Medical School Representatives

MARCH 2009

*Prepared by the Nevis Consulting Group for the
Association of Faculties of Medicine of Canada (AFMC)
Public Health Task Group*



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**REPORT 3: INTERVIEWS WITH CANADIAN MEDICAL SCHOOL REPRESENTATIVES -
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The term "public health" or "PH" will be used as the generic descriptor here, despite the myriad terms used by the various programs, which include population health, community health, preventive medicine, and epidemiology. It conforms fairly well to the territory covered by the AFMC-PHEN core learning objectives.

1. METHODS

Telephone interviews were held with representatives designated by all of Canada's 17 medical schools. An outline of the topics to be discussed, revised based on input from members of the Public Health Education Network, was sent to the respondents in advance. Most respondents were the coordinators of undergraduate medical education in their schools, and all were heavily involved in that activity.

Two interviews featured two respondents each, and two were conducted in French. A total of four interviewers conducted the interviews, most of which lasted just over one hour. Interviewers took notes during the interviews, and prepared reports (averaging 5 pages in length) very soon after completion of the interviews. This report is based on those written reports. With a few striking exceptions, the statements of the respondents are not treated as quotations, but rather as summaries of their responses.

In general, the interviewers "followed the money" instead of rigorously following the interview outline. When it was later decided to set the stage with an overview of teaching and evaluation methods, several respondents were contacted to fill gaps in our information base.

Attribution of opinions expressed in this report to either schools or individuals has not been provided on the grounds that this mild cloaking allows us to quote as liberally as possible from our highly supportive informants across the country. This gain comes at a slight cost in that readers may be obliged to research a little to uncover the authorship of some of the useful insights and activities that have been discussed. For convenience, however the results of the successful teaching methods investigation are presented on a school by school basis.

2. THE RESULTS

2.1 BACKGROUND

General

There is tremendous variation in hours, timing in curriculum, content and methods. Thirteen schools start public health (PH) teaching in first year, 2 in second year, and 1 each in third and fourth year. Thirteen schools teach public health in both year 1 and year 2, 4 in year 3, and 7 (possibly 8) in year 4. Four schools teach in only one year, eight teach in two years (one of these may soon teach in three), and two (or possibly three) teach in three years. Only three schools teach in all years, although many more would like to do so (and two of those that do teach in all years provide only a MCC exam review in fourth year). The total hours of PH instruction at the 10 schools for which data were recorded ranged from 28 to 316, with a mean of 142 hours and median of 123 hours. The big picture is shown at Annex 1.

Student Attitudes towards Public Health

Regardless of the curriculum pattern, public health was frequently reported to be severely criticized by the students as not very important, mainly because it was not relevant to clinical practice. But the situation is reported to be improving at the majority of schools. Comments from respondents included:

Students used to be highly critical of the PH program. Asked about its value, they would offer strong and rude criticism that was consistent across all PH topics – ethics, PH, epidemiology, statistics, everything. Respondent thought these criticisms were mostly warranted at the time. Now things are much better.

About a fifth hate it, about a third are highly committed, the rest are so-so. Ratings seem to be improving.

Traditionally, students felt PH had little content and did not take it seriously.

Negative attitude on PH from undergraduate medical students has been a perennial problem. The situation is now much improved.

Most student feedback is reasonably positive, but there is always a minority of students who don't like the touchy-feely stuff (like impact of illness on the family). But even these people tend to see the relevance of public health, more narrowly defined. Some disagree with the way that the course is evaluated, while others argue that it should not be evaluated at all. A fair number argue that it is not well integrated with the main curriculum (which they perceive to be the PBLs).

Students dislike the subject, but tend to like the teachers (“you did a good job of making a dry subject tolerable”), partly because it comes too early in the curriculum, when they do not appreciate its relevance.

But things are not all bad (both these comments are from schools that do extensive evaluation of student satisfaction):

- The students are generally very satisfied
- In general 85% of the students are satisfied with their rotation

2.2 TEACHING METHODS

Overview

Public health in most schools is taught in either an independent course(s) or a broader course (often coordinated by the “department of public health”) that includes public health and its basic sciences, occupational/environmental health, health care organization, clinical epidemiology and evidence-based medicine, behavioural science, sometimes a little humanities, and often ethics and professionalism. Some public health topics are often taught elsewhere in the curriculum, e.g., immunization. Details of methods in use at all schools is shown in Annex 1 to this report. One school has no PH courses.

In the school with no courses, public health teaching is entirely integrated with the remainder of the curriculum, while at least seven schools have some integration. At least eight have no integration, but four of these achieve some coordination, e.g., by covering public health aspects of topics at the same time that they are being covered in the mainstream curriculum (Systems Blocks, PBLs). Integration is intended to increase the relevance of public health, but can also make it invisible.

For the 14 schools for which data are available, the average proportion of teaching time devoted to various teaching methods is approximately as follows:

Lectures	40%
Small group teaching	18%
Problem-based learning	14%
Community visits	9%
Projects	8%
Exercises	4%
Self-learning	4%
Case-based learning	1%
Computer-assisted learning	1%
Other and unspecified	<u>1%</u>
Total	100

REPORT 3: INTERVIEWS WITH CANADIAN MEDICAL SCHOOL REPRESENTATIVES - MARCH 2009**Most Successful Teaching Methods:**

The questions on how the favoured teaching methods are evaluated conflated evaluation of students and evaluation *by* student, with some respondents answering one and some the other. But in the great majority of cases, it appeared that there was neither type of evaluation specific to the favoured method, *viz.*, that it was evaluated as part of the larger course. Therefore, evaluation is listed only when it was singled out specifically. All respondents cited student satisfaction as their basis for identifying a teaching method as successful.

The number of effective teaching methods listed presumably varies with the interest and time allocated by the interviewer, as well as their actual success. Some respondents, especially those who used only a few methods, listed all of their methods as effective. Ten schools listed one method, 4 listed two methods, 2 listed three, and one listed 4, for a total of 28 methods. Methods in use were as shown below:

Plenary sessions	7 (unqualified 1, interactive 2, tag-team 1, with patients/agencies 1, panels 1, with buzz groups 1)
Small-group teaching	7 (unqualified 2, critical appraisal 2, Epi & Stats 1, debates 1, exercise 1)
Combination plenary-small group	4
Community visits, projects	3 (2 with related tutorial)
Web-based tutorials	2
Problem-Based Learning	2
Case-Based Learning	2
Short courses	1

The most successful methods listed by each school are shown below. Methods that struck the authors of this report as particularly promising are flagged by stars^{***} 1

1 Nevis arbitrary scale: * Good, ** Very good, *** Outstanding

An Impressive First Year Public Health Course ***

The Community Health people at the University of Alberta have worked hard to get this course away from didactic teaching and to introduce small groups and alternative teaching techniques (student driven, interactive, debates, etc). The teaching methods used include:

1) **Small group learning and discussion.** Public health and EBM blocks (5 and 6 sessions respectively). In the EBM block use a mix of students reporting on recent trial summaries, researching clinical questions and simplified appraisals of papers.

2) **Large group presentations** also take place. They use a game show format for enhanced interaction (twice a year).

3) Students participate in **small group instruction without faculty** in which a selected student leads the group through:

Archival news clips of health care issues (rural shortages, doctor strikes, private health care, etc). The class then discusses their findings.

Alternatively, students review a simulated health care budget and each group (acting as the representatives of a group like nurses or hospital staff or home care providers) advocate to another group ("treasury board"). Two more groups report on these outcomes acting as the newspaper media. From here students learn about how budgets are formed (and how need does not always direct funding). Has debate elements (when media or Treasury Board cross-examine each other).

4) The class watches the **movie** "*And the band played on*" for public health learning points. Students are given a list of what to watch out for and they take notes. A brief class discussion follows.

5) **Field Experience:** Students are sent in groups of 10 to different sites with a public health theme (water quality, homeless shelters, harm reduction, Edmonton police forces, food safety, etc). They do multiple trips and present to the class on their findings. The top two groups are awarded \$200 or \$100 dollars to donate to a worthy cause. The visit spans 4 sessions - one session for presentation, one for preparation and then two 2 more sessions to actually get through all 14 presentations.

University: University of British Columbia

Successful Teaching Technique: "*Doctor, Patient and Society*" course **

The whole of their Y1/Y2 "*Doctor, Patient and Society*" course - with heavy emphasis on critical thinking throughout. Consists of lectures & tutorials.

Lectures² (75 minutes most weeks) with guests - patients, representatives of disadvantaged groups and community agencies. Taught by MOHs/CMOH and one by a journalist. Core faculty rarely lecture - better leave it to PH practitioners.

Tutorials (90 minutes following lectures). Typically 24 groups of 8 discuss issues raised by the lecture in the light of learning objectives. Guests of similar background to those at the lecture attend every tutorial group(!). Students and tutors are provided with manuals containing objectives, discussion questions, etc. They are considering different formats for some sessions, e.g., doing the tutorial before the lecture.

In second year, about one-third of students can undertake a self-directed project instead of attending tutorials. They must present a good proposal, and cannot choose this option just to get out of tutorials. Two options: (1) Self-directed project, content-oriented, undertaken individually or in groups, and (2) Community service, usually in an agency. Upon completion, they must present a report to tutors and the first-year class. Near the end of the course, students prepare a report on the health of a community, following headings used in Chief MOH's report. They must find and interpret existing data. In future, they may have to develop a plan for reducing any health disparities that they have found.

Reasons for Success:

- Gearing the course to the core objectives for public health has allowed them to exclude many people's hobby-horses, making the course tighter, more focused and more credible.
- Students select topics for the last two sessions; they have chosen ecological topics for the last two years.

Problems Encountered:

- Coordination of so many groups and tutors. They now have a good administrative assistant, which helps tremendously.
- There is pressure from students and other advocates to introduce ethical subjects like right to life. The coordinator resists this, favouring evidence over belief systems.
- Their biggest problem is identifying students who are having problems of professionalism: faculty does not know how to assess it (but this is not a peculiarly public health problem).

² All video-conferenced to satellite campuses

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- One group this year hated its tutor, and became very vindictive—a big problem.
Taught By: - Community medicine residents, community medicine specialists, other physicians, other health professionals (including two naturopaths), one is a film producer. Most have public health training. They get paid about \$100 per session. - Each group works with same tutor for a whole year, but a different one the following year.
Special Teaching Resources Developed: Vignettes and discussion questions for tutorials, scenarios, notes.

University: University of Calgary
Successful Teaching Technique A: Small groups Last 1 to 2 hours each with groups of 14/15. Really too big, so they often form clusters within groups.
Reasons for Success: Everyone gets involved - even those who are not keen.
Problems Encountered: - Tremendous amount of work required to prepare exercises and tutor guides. - Space not yet a problem - due massive building renovation a few years ago. But will be as other health science faculties compete for space.
Taught By: Emergency physicians, family physicians (some of them former students), public health inspectors, infection control nurses (depending upon topic)—often working in teams.
Special Teaching Resources Developed: Exercises.
Successful Teaching Technique B: Interactive Lectures Two hours each. Especially popular are patient presentations, in which people living in poverty, injection drug users, etc. talk to the class about their lived experience. This year they will bring a transsexual into a new GLBTT session.

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<p>Reasons for Success:</p> <ul style="list-style-type: none">- These have been huge successes, because they are very much more real to the students than simply telling them about the issues for these populations.- Students get involved in the discussion.- They did a lot of training of lecturers, e.g., on drawing out clinical relevance and the program director reviews every lecturer's slides.
<p>Problems Encountered:</p> <p>Specialist lecturers had a tendency to present minutiae, as though they were teaching future specialists in their discipline; most of them have been replaced.</p>
<p>Taught By:</p> <p>Mostly tag teams (e.g., physician plus community health worker).</p>
<p>Special Teaching Resources Developed:</p> <p>Video(s) on aboriginal injury prevention (sadly, they cannot share them because of an agreement with the maker).</p>

<p>University: University of Alberta</p>
<p><u>Successful Teaching Technique: PBL plus post-session hand-outs</u></p>
<p>Reasons for Success:</p> <ul style="list-style-type: none">- Really engages students.- Similar to their medical teaching sessions.
<p>Problems Encountered:</p> <ul style="list-style-type: none">- Preparation and implementation are both labour-intensive.- Requires high quality instructional facilities (rooms for small groups).- Need well-trained PBL facilitators. They have found that those with the most knowledge on the subject being taught can be less effective, because they tend to steer students towards their own preferred solution to the problem in hand.
<p>Taught By:</p> <p>Part-time teachers due to limited full-time faculty resources in the department.</p>
<p>Special Teaching Resources Developed:</p> <p>PowerPoint hand-outs provided after PBL sessions to make sure students have not missed any of the key knowledge items covered in the session.</p>

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<p>University: University of Saskatchewan</p>
<p>Successful Teaching Technique A: Structured Controversy Debates ** Students are given different sets of assigned readings. Debates involve small groups: teams of 3 argue pro or con on an issue, then teams switch and argue the opposite viewpoint. Occurs jointly with Physical Therapy students. Students who have participated in Structured Controversy change their personal opinion on the topic more than those who were in Open Discussion groups. They also comment more often that being "forced" to explore both sides of the topic makes a difference to their learning.</p>
<p>Reasons for Success: - Gets students to seriously consider wider aspects of an argument/opinion - Helps promote a sustained change of opinion.</p>
<p>Problems Encountered: - Significant time and effort required to organize and carry out sessions. - Students may not see PH physicians as having a role in dealing with the problem.</p>
<p>Taught By: Facilitators.</p>
<p>Special Teaching Resources Developed: Suitable assigned reading lists.</p>
<p>Successful Teaching Technique B: Web-based epidemiology modules Students complete the web-based Basic Epidemiology modules of PHAC's Skills Enhancement series.</p>
<p>Reasons for Success: Web-based presentation makes a sometimes unpopular topic more interesting than it might be with conventional lectures. Students like the process and the way the material is covered quickly and efficiently.</p>
<p>Problems Encountered: Some students fail to apply themselves to learning these modules and tend to gloss over the process.</p>
<p>Taught By: N/A</p>
<p>Special Teaching Resources Developed: None</p>

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University: University of Manitoba
Successful Teaching Technique: Combined Short lecture-Assignment-Tutorial format
Reasons for Success: <ul style="list-style-type: none">- Students are more engaged in small group sessions as they are highly interactive.- Also due to the quality of material provided in pre-clerkship and teaching by committed faculty from the Department of Community Health Science.
Problems Encountered: <p>No serious difficulties.</p>
Taught By: <p>Faculty (full time, part time, nil appointments) in the Department of Community Sciences (includes public health physicians, other specialties, social and basic science professors). Curriculum also includes participation by community facilitators, public health units and guest presenters.</p>
Special Teaching Resources Developed: <p>None really, except possibly their Clinical Skills Sweat Lodge.</p>

University: Northern Ontario School of Medicine
Successful Teaching Technique: Case-Based Learning (CBL)
Reasons for Success: <ul style="list-style-type: none">- They show how patients will be impacted.- Discussions in small groups are usually very rewarding.
Problems Encountered: <ul style="list-style-type: none">- Some students are distracted by the volume of material they need to learn and do not appear to commit much time to preparing for Case-Based sessions.- Students' exploration of issues on their own time is likely limited.- Facilitators are not required to be content experts, so quality of PH information may vary from group to group.

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Taught By: <ul style="list-style-type: none">- There is small-group facilitation, not “teaching” <i>per se</i>.- Mostly community professionals from various disciplines, including medicine (all branches), nutrition, epidemiology, university professors (various disciplines).
Special Teaching Resources Developed: <p>None noted.</p>

University: University of Western Ontario
Successful Teaching Technique A: Critical Appraisal Assignments <p>These assignments are interleaved with the lectures. Groups of 8 students evaluate published articles (6-8 articles in total) that are linked to the Systems block in progress. They use worksheets based on the JAMA articles. Students work as a group with no tutor and hand in a single report, which is marked.</p>
Reasons for Success: <p>They demonstrate the application of the principles presented in lectures.</p>
Problems Encountered: <p>Marking them is a huge task.</p>
Taught By: <p>Not applicable.</p>
Special Teaching Resources Developed: <p>None</p>
Successful Teaching Technique B: Lectures/Plenary Sessions *** <p>Sessions in Epidemiology are often given by a tag team (MD/PhD) to ensure both expertise and clinical relevance and are very popular (based on informal feedback), while those in Ecosystem Health often involve guest lecturers. Ethics sessions are highly interactive, incorporating theatre and role-playing; student response is polarized.</p>
Reasons for Success: <p>Lectures are efficient. Also there is reported to be amazing collaboration between clinicians and public health people in the teaching at Western. This suggests that the clinicians are very supportive.</p>

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<p>Problems Encountered: None reported.</p>
<p>Taught By:</p> <ul style="list-style-type: none"> - Epidemiology: epidemiologist and critical care physician. - Ecosystem Health: gastroenterologist, with some lectures from Associate MOH. - Ethics: obstetrician/gynaecologist. - Health Care System: anaesthetist. - Overall coordinator: cardiologist. - All are full-time faculty.
<p>Special Teaching Resources Developed: None</p>

<p>University: McMaster University</p>
<p>Successful Teaching Technique³: Lecture/Tutorial Package on a Special Topic Consist of a short lecture to set the stage, followed by focused discussion or a tutorial. A recent topic was user fees. Others have included watching Michael Moore's <i>Sicko</i>, followed by a debate on public/private medicine and a brief outline of determinants of health, followed by playing a board game called <i>The Last Straw!</i>⁴.</p>
<p>Reasons for Success: They engage the students.</p>
<p>Problems Encountered:</p> <ul style="list-style-type: none"> - It can be hard to find faculty to facilitate these sessions, especially when they do not have relevant expertise in the Department. - Because PBL is not good at transmitting knowledge, they find it necessary to provide cheat sheets.

3 Since McMaster gave PBL to the world of medical teaching, any other successful techniques used there are apt to seem anticlimactic. Also they have no courses at McMaster - all teaching is 100% PBL tutorials plus one lecture per week, so there is not much scope to slip in substantial new approaches.

4 The Last Straw! was originally developed for a health promotion class in 2004 at the University of Toronto. It went on to win several awards, including best paper in social science and health in 2004 in the Department of Public Health Sciences and best poster at the Public Health Sciences Research Day (2004). Kate Reeves, one of the inventors of the game is now a medical student at McMaster University.

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Taught By: See "problems" above.
Special Teaching Resources: An early user of <i>The Last Straw!</i>

University: University of Toronto
Successful Teaching Technique A: Community Visits ** In Y1, students make 3 separate sets of visits, in pairs: A visit to CCAC 5, to inner city schools (to observe children as a population group), and to community agencies (to observe their relationship with health promotion). These visits are prepared for by attending a lecture and followed by a debriefing tutorial.
Reasons for Success: - Students in Y1 like to feel like real doctors. They also really enjoy it when real patients are brought into lectures.
Problems Encountered: - Placements for more than 200 students could not be done without full-time administrative support to keep track of agencies, develop personal relationships and ensure positive experiences (e.g., Agency appreciation dinner held annually).
Taught By: Tutors are mainly family doctors, since they are community-based and there is a large pool.
Special Teaching Resources Developed: The community placement is based on a framework adopted from <i>Why Are Some People Healthy and Others Not?</i>
Successful Teaching Technique B: Web-based Modules for Epidemiology & Statistics courses ** Basic Epidemiology and Biostatistics are now on-line modules, followed by a lecture on how it is applied to HIV, to make the learning practical. This is definitely better received

5 Community Care Access Centres (CCACs) provide an access point to health and personal support services to help individuals live independently at home or assist them in making the transition to a long-term care home. Anyone can make a referral to a CCAC - a family member, caregiver, friend, physician or other health care professional.

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by students than the face-to-face lectures on epidemiology and biostatistics were.
Reasons for Success: It is hands-on. Students get to work with examples and solve a problem, interactively.
Problems Encountered: None identified.
Taught By: Not applicable.
<u>Successful Teaching Technique C: "Spiral Curriculum" **</u> Curriculum is structured to allow community health to be taught over all 4 years, so that concepts can be introduced theoretically at the beginning and then revisited in specific contexts throughout the students' medical education. For example, Canadian Health Care system structure is introduced in Y1, and built on in Y4 with sessions on physician payment and physician supply; Occupational health is introduced in Y1, while WSIB claims and return to work issues are covered in Y4.

University: Queen's University
<u>Successful Teaching Technique: Critical Appraisal Tutorials</u> Five sessions of 2 hours each. Medical Informatics teaches literature searching skills before the series begins. The tutorials use the JAMA text, but its checklists are too general for students, so Faculty has prepared more specific questions to help the students complete the checklists. They assign the clinical scenario and article to be evaluated (same for all groups); the Faculty requires them to assign topics of which students already have knowledge from their System blocks. They have found it useful to review the key messages at the end of each session.
Reasons for Success: Participatory and interactive nature. Students find epidemiology very dry and these sessions give it some life.

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Problems Encountered:

- Finding enough tutors.
- Tutors are unequal in quality, so some students feel short-changed.
- Course comes too early in the curriculum, which severely limits the choice of topics and examples that can be used.

Taught By:

- Tutors are physicians (specialists and family physicians) with training in epidemiology.
- They do not come from department of epidemiology.
- Same tutor for all sessions.

Special Teaching Resources Developed:

- The EBM modules, with their specific questions.
- Faculty website has relevant readings.

University: University of Ottawa

Successful Teaching Technique A: Plenary Sessions and Panels with Patients & Community Groups **

Reasons for Success:

Early exposure to patients makes students feel like doctors.

Problems Encountered:

- Coordination takes a lot of time.
- Participants can get stale after a few years, and are sometimes reluctant to be replaced; but a program needs periodic renewal.
- Used to be unable to pay them even their expenses. Can now offer expenses and honoraria, which has been a huge help.

Taught By:

- Practical sessions mostly by community professionals, advocates, agency representatives.
- Many sessions benefit enormously from being taught by MDs, who can relate issues to their own experience.

Special Teaching Resources Developed:

Community groups often produce paper handouts especially for students.

Successful Teaching Technique B: Team-Based Learning (TBL) **

Start with plenary sessions with periodic buzz groups of 6-8 students that discuss predefined questions and then vote. The lecture could outline the basic principles, and the discussion could explore the issue in more detail or involve a clinical application - often one for which there is no clearly right or wrong answer. Ideally students are randomly assigned to groups, to avoid having friends team up.

Reasons for Success:

- Students enjoy discussing issues in class, and getting instant feedback.
- Makes students think about the material much more than if they had merely listened to a lecturer.

Problems Encountered:

- Needs a lot of faculty training.
- The raked auditoriums are not ideal rooms for this purpose.

Taught By:

Basic sciences mostly by full-time faculty, practical sessions mostly by community professionals.

Successful Teaching Technique C: Tutorials on Epidemiological Methods

Cover disease control, EBM, etc. with groups of 8-12 students.

Reasons for Success:

- Less impersonal than plenary sessions.
- Some tutors are very popular: "they draw us out", pay individual attention to students, seem to care.

Problems Encountered:

- Coordination takes a lot of time.
- Space! There are not enough small rooms, which must often be booked more than a year in advance.
- Sometimes difficult to find enough tutors.

Taught By:

- Small groups tutored by all the above, as well as graduate students and former graduate students.
- Many sessions benefit enormously from being taught by an MD, who can relate issues to his/her own experience.

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Special Teaching Resources Developed:

A very comprehensive website exists for every session (entire medical school curriculum is computerized): offers notes, articles, glossary, references, links to other websites, PowerPoints of the presentations at most plenary sessions.

University: McGill University

Successful Teaching Technique A: Plenary Sessions

21 hours of lectures, attendance optional. There used to be a very broad-brush approach, but they have now added more specific public health content.

Reasons for Success:

- Specific public health content.
- Traditionally there was little or no examination of public health topics, so students regarded it as content-free, with little credibility. This year there was a written examination (MCQ, SAQ) on the PH component.
- Attendance has improved.

Problems Encountered:

None noted.

Taught By:

Course director, a full-time faculty member who is a public health physician.

Special Teaching Resources Developed:

None noted.

Successful Teaching Technique B: Small-group teaching:

2 half-days, attendance mandatory. One on outbreak investigation and one on immunization. Eleven groups of 12-15.

Reasons for Success:

Not recorded.

Problems Encountered:

Finding enough tutors.

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Taught By: Tutors are members of Department (most MDs) who have PH appointments, plus some outsiders (because there are not enough suitable persons in the Department).
Special Learning Resources: Exercises are available

Successful Teaching Technique C: Distance Learning Students must complete a CME module from the CDC website and hand in the post-test report.
Reasons for Success: Not recorded.
Problems Encountered: Not recorded.
Taught By: Not applicable.

University: University of Montreal
Successful Teaching Technique: Multi-format course Presentations with lectures/workshops assuring a balance between theoretical and practical field issues.
Reasons for Success: <ul style="list-style-type: none">- Content of teaching.- Pedagogical quality of teaching.- Student understands that he/she is learning and not wasting his/her time.
Problems Encountered: <ul style="list-style-type: none">- Everything takes organizational time. Good deal of effort is required to organize professor, tutors (one per student) for the mini-rotations.
Taught By: <ul style="list-style-type: none">- All types of teacher. The only full-time position is the course director.- Many tutors are community practitioners with no formal university affiliation.
Special Teaching Resources Developed: Textbook prepared to meet student needs.

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University: University of Sherbrooke
Successful Teaching Technique: Problem-Based Learning: Groups of 8-9 students in first year. Five cases based on clinical scenarios (infectious disease, environmental illness, substance abuse, occupational health, cancer prevention), one on vulnerable populations.
Reasons for Success: Students find public health cases more humane, less gruelling than mainstream cases.
Problems Encountered: Resistance from faculty members in other departments. Students tend to be fairly receptive to public health at first, but become less receptive over time. The physical layout is such that public health faculty cannot easily communicate with other faculty.
Taught By: Public health professionals (mostly physicians), interested clinicians (mostly family doctors), who are very successful.
Special Teaching Resources Developed: The PBL cases (permissions would have to be obtained before they could be exported).

University: Laval University
Successful Teaching Technique: Star courses are Medicine and Law, Violence and Masculinity and Coroner
Reasons for Success: - A teacher who is qualified, dynamic, and interactive. - Course content that is close to students' concerns, useful for future practice, and not previously encountered.
Problems Encountered: Essentially a question of time and support to do it.
Taught By: The whole gamut of teachers. Course director is a half-time professor; some teachers have research chairs.
Special Teaching Resources Developed: None

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University: Dalhousie University
Successful Teaching Technique: Integration of placements with tutorials: Integration of Community Service elements (20 hours) with health policy/ public health tutorials (15 hours).
Reasons for Success: <ul style="list-style-type: none">- Engaged students.- Strong linkage of tutorial work with field activities.- Marks awarded.
Problems Encountered: None noted.
Taught By: Faculty and community professionals.
Special Teaching Resources Developed: None noted.

University: Memorial University of Newfoundland
Successful Teaching Technique A: Case Studies with Small Group Role Playing *** For example, an introductory exercise based on a video of the 1918 influenza outbreak in Newfoundland, which decimated the local Inuit population. "The most successful courses are those that are taught by a practitioner"
Reasons for Success: <ul style="list-style-type: none">- Based on real life experiences in PH.
Problems Encountered: <ul style="list-style-type: none">- Faculty's computer-based learning resources need improvement- Have encountered scheduling conflicts between Community Health teaching that runs throughout the year and the block teaching of basic and clinical sciences that can frequently clash. Up until this year, if UG students have had an exam or something else in the clinical program that seems more interesting, they have chosen not to attend or not prepare for community health. This year for the first time students reported that community health and clinical skills were the two most important things that they study in first year.

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Taught By: <ul style="list-style-type: none">- The Introductory exercise includes full and part-time faculty.- Other exercises include practising faculty or relevant community health professionals.
Special Teaching Resources Developed: <p>Cases and the above exercise are available.</p>
Successful Teaching Technique B: Exercise on Emerging Diseases * <p>Students must analyze a situation and present to other students.</p>
Reasons for Success: <ul style="list-style-type: none">- Engages students.- Has marks associated with it.- Students learn useful skills in finding information (Internet, etc.).
Problems Encountered: <p>None noted.</p>
Taught By: <p>Tutors are members of Department (most MDs) who have PH appointments, plus some outsiders (because there are not enough suitable persons in the Department).</p>
Special Learning Resources: <p>Exercise is available.</p>

2.3 APPROACHES THAT SCHOOLS WOULD LIKE TO TRY, BUT CANNOT

Suggestions were many and varied, as were the reasons for not being able to use them. Only two or three respondents had no suggestions. Responses included:

More Common Desires

More PH input to the main medical curriculum (4 schools), but:

- Need to sort out PH courses before offering these inputs.
- Course directors have been discouraged from doing so because students do not perceive the relevance of the more social aspects of medicine.
- Proposal to merge the clerkship with that of Family Medicine was rejected because of scheduling problems and turf protection on both sides.

More community visits and attachments (5 schools, one of them specifying fourth year), but:

- Class size has become too large.
- Agencies tend to see students as a burden, and clinics (e.g., for refugees) are swamped with clerks and residents.
- Local Health Units cannot deal with the numbers (2) and a rather inflexible curriculum timetable.
- In one school, the department lacks the time and personnel to organize it.

More e-learning (3) for its efficiency and consistency (1), but:

- Small web modules on each section would be ideal (1)—but staff and students both believe that small-group in-person teaching is really the best (1).

More small-group sessions, break-out sessions, etc. (2).

- Currently limited by shortage of rooms (1) and tutors (2).

Other Desires

Dedicated block for PH, so would not have to compete with other disciplines for students' attention.

Full-time **faculty member point person** responsible for public health.

Offer an elective or experience in a **stimulating PH environment** with PH physicians.

Dispel the impression that PH is a **“paper & pencil” exercise**. Barriers include lack of sufficient field sites and supervisors.

Use stories in teaching, in the aboriginal tradition. Trying to tell stories in a certain way during PBL sessions, but story-telling can work better on its own.

Introduce more **general skills** (like force field analysis, rapid calculation, how to run brainstorming sessions), which would be useful in future jobs.

More common resources (among all 17 schools) – like the PH Primer and shared web-based learning.

Has considered **possibility of an interdisciplinary Year 1 in PH**, including nursing, dentistry and others, but the logistics proved too difficult.

New approaches like **short videos** (stimulated by PHEN meeting). Would like to get out of the lecture-with-PowerPoint mode of teaching.

Has begun **motivational interviews** where the simulated patients are actors. These are appreciated by the students.

2.4 SOME OF THE LEAST SUCCESSFUL TEACHING METHODS

Teaching methods arrive in this category mainly because students have put them there. So it is worth considering in each case whether the method still has merit in spite of negative views on the part of those being taught, who may sometimes prefer less demanding ways of taking medical skills and knowledge on board.

Lectures are widely reviled these days, especially those provided by a solo academic without practical experience. As one respondent indicated "One must identify dull courses and dull professors, and rethink them. Quite often we do not take back the same teacher the following year". On the other hand, well-informed respondents pointed out that at their school they have effective lecturers that are very successful. They extol the efficiency of this approach and the relative ease with which students can detect what they need to absorb.

Some schools have found that teaching **epidemiologic and biostatistical methods** by a PhD methodologist was a failure. Sometimes this was because the teacher aimed too high or in other cases because he/she appeared to be trying to recruit students into that specialty.

Schools have sometimes had **problems with an otherwise successful method** (small-group teaching for example) and then found that the problem was not in the method itself, but the fact that it was being introduced too early in the curriculum, when students lacked the background and perhaps the maturity to benefit from it.

One program had students prepare **individual written reports on their projects** the first time through. Marking so many papers proved to be a nightmare. Now they have students prepare a poster, all of which are evaluated at a final poster session.

Another school tried having students make **class presentations** on their Critical Appraisal assignments, but found that their students disliked the process intensely (at least partly because only the presenters showed up).

2.5 EVALUATION METHODS

A. Evaluation of Students

"Regarding exams, yes I have MCQs. I am not particularly proud of it but I feel it is a reality. Questions on calculating incidence rates are easy examples but questions on the health care system are more difficult. I would like to use SAQs and I do in year 4 when I have 40 students at a time. I use MCQs when I have to examine all the students, since I do not have the resources for markers.

Basically students do not study the material and read the readings until they are threatened with an exam. The notion here is that 'if you do not examine it, it is not important'. I insist on 'closed exams' and focus on questions that make them apply the principles."

A

Program Director

No schools administer "old style" big exams at any point during their UG PH courses.

Two schools have discontinued public health exams altogether. They now evaluate UGs' PH capabilities by marking reports and reflective journals in one case, and by considering their general performance at tutorials and at regular reasoning exercises in the other.

About 80% of the schools responding to this topic evaluate students using exams based on MCQs and SAQs. One university also uses true/false questions, while another abandoned SAQs because of their subjectivity. They were also abandoned because they had been outlawed by the university as a whole and because of the burden of marking them.

Group and individual written project reports are widely assessed (around 70%) and also marked in most cases. The same goes for diaries and reflective journals.

A school that has no course examinations requires students to undergo a mock LMCC examination before the real thing. Students are not marked on their performance, but it can help both students and teachers to spot weaknesses (if any) in time to do something about them.

At least two universities include attendance at PH classes in their evaluation of their students. For example, at one school critical appraisal tutorials are Pass-Fail, based on attendance (which is mandatory) and on participation.

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At another school, students are evaluated by their peers when delivering oral presentations on their ethics projects.

It is worth noting that students at one university actually write separate exams on PH topics - as well as essays, assignments, projects and presentations.

B. Importance of Public Health Marks in the Degree Outcome

In the vast majority of schools, students must pass the Public Health exam in order to pass their year, and thus eventually to get their degree.

A few comments from the schools:

PH has never failed anyone, but may in the future - the respondent thought they should. Evaluation is becoming more numerical, whereas it used to be based only on attendance.

Used to fail 1-3 per year, who had to take supplemental exams. This was somewhat controversial, since some faculty oppose failing students on the course.

An overall mark is assigned to Public Health, and students must pass. But there is no such requirement for individual modules, so students can pass the overall course without even answering one question about a specific module. This affects all modules, not just Public Health.

Students perceive that the really important material is taught in the mornings, while the less important stuff is relegated to the afternoon. Our PH course is in the afternoon.

But some schools differ:

PH is seen as quite an important area, but not in the same league as the main line medical curriculum.

The real challenge is the course as a whole. There is no evaluation strategy or direct feedback for the students. Can only fail people on professional grounds⁶. No real teeth.

And a few are vague or worse:

PH is becoming more important.

PH is reported to have "an appropriate level of importance at this school".

Would not cause a student to fail - not even if he/she failed a significant component of the PH curriculum. The student would be warned and provided remedial assistance in the subject concerned as part of the graduate program.

⁶ Understand this means failure to attend compulsory classes, lack of participation in class activities, etc.

C. Student Evaluation of Teaching

Student evaluation of teaching happens in every school, although the amount and process are very variable. Usually it involves the completion of rating forms, with room for comments. Sometimes this occurs at the end of individual sessions, sometimes at the end of courses, sometimes at the end of the academic year. There is some consensus that sooner is better.

Localized and informal approaches seem more useful than formal ones operated by faculties or universities - "A faculty evaluation unit does a formal assessment at end of each year, but that is too late to be useful". Or again - "Focus groups and reporting meetings produce lots of qualitative feedback, which is more useful than the numerical scores provided by the formal process".

Low response rates are a chronic problem. "Web-based evaluation was not as successful due to a low response rate" (from a school that switched to classroom evaluation). Two schools will not admit students to an examination until they have submitted their course evaluation. But "Students get very tired of completing so many evaluations", so two schools have reduced the respondent burden by using sampling, one by randomly selecting students to rate all teaching each week and the other by assigning clinical groups in rotation.

D. Course/Faculty Evaluation

Results at this level are more mixed.

In some schools, there are well-established systems:

Annual meeting of course directors, which replaces lecturers as needed. Readings revised every year or two.

Evaluation forms naming the professors are submitted regularly to the department chair. The course director receives non-nominative evaluations.

Systematic and regular evaluation by questionnaires. The comments are taken into consideration.

Program director reviews each course within two months of its completion (emphasis on student and faculty feedback). There is a meeting each June to discuss student marks for each course module.

There are student representatives on the course committee, who are very helpful in interpreting the evaluation results.

Teachers watch for courses where the students seem not to have understood or seen the relevance to their future practice and adjustments are made.

Sometimes the process may be based mainly on student input:

Mainly by students—review at end of each course. Staff also look at topics likely to be examined at LMCC, seeking to assess what students really need to know and tailor courses accordingly. This is better than overloading them with excessive factual input. Students comment on course. Personal evaluation of faculty is not permitted.

Done by student course representative. One hour at end of course, summarizing students' views.

But some course directors go to great lengths:

Faculty Evaluation Office evaluates each course, but the course director does an informal evaluation as well, and writes to all the tutors after every session to obtain feedback.

In other cases the process is more perfunctory:

Faculty are evaluated once a year.

And in yet other schools, the course director is isolated:

Course director evaluates it; is a one-man band.

There was "a sort of a committee", but it almost never met.

There is a Public Health Course Committee, but it rarely meets.

E. Curriculum Evaluation, Internal to the Department

This refers to the entire program in public health, as distinct from individual courses or modules—although it is difficult to separate these concepts. In general, there appears to be less activity at this level.

Sometimes it happens:

PH curriculum reviewed every year by the Department

Internal evaluation occurs for year end report to curriculum committee.

Internally, by students mainly.

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Considerable work at present to achieve necessary integration with medical curriculum.

But often it does not:

No formal provisions. The undergraduate teaching program is a standard item on the agenda of the Departmental Assembly, but this is mostly for information.

Not really. Most department members do not care about the undergraduate program; they care about graduate programs and especially about research.

Has not happened for years: department focuses on research and graduate studies. A Department Curriculum Committee has just been reactivated.

None. Course director is a one-person show; other members are not very interested (Department became alienated from students some years ago, and never got over it). Department culture considers graduate students more important than medical students. Only as part of instructor's annual performance review. Respondent is rather a one-person show within the Department.

There is an Undergraduate Medical Education Committee with student representatives, but it rarely meets (scheduling difficulties) and students never attend (too busy learning anatomy, etc.).

Does not appear to happen:

- No structured internal evaluation.
- Evaluation by questionnaire (presumably referring to student ratings).

F. Curriculum Evaluation, External to the Department

Again the situation is variable, from well established:

PH curriculum reviewed every year by Faculty of Medicine.

Course directors report to Faculty Curriculum Committee each year, and Committee reviews each report.

...through uncertain:

Faculty Evaluation Committee met with the overall course coordinator recently, but respondent was rather vague on the content of the meeting.

Does not know.

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....to lacking:

Very little. Faculty evaluation officers are overwhelmed by greatly increased student numbers.

None (2 schools).

Some schools rely upon national assessments or examinations

Periodic accreditation visits (3 schools).

Recently passed external accreditation.

LMCC is regarded as the real measure of faculty performance.

External evaluation through LMCC performance.

Or on the internal soul-searching that often precedes or follows accreditation visits:

A very major overhaul of the entire curriculum is underway at present, and will be implemented in September 2008. This is highly integrated, involving many faculty members from preclinical and clinical departments.

They are in the midst of a major curriculum revision.

G. Student Involvement in Curriculum Evaluation

Nearly all schools reported at least some student involvement in curriculum planning or evaluation.

Usually this takes the form of student representatives on course committees:

Student participation has proved particularly useful in finding out what works and what does not - especially when new programs are introduced or when an existing curriculum is being re-assessed.

One school had a group of 14 student volunteers provide feedback on the first time through with a program. Many useful recommendations were made. The Faculty at another university hired two students to work on course curriculum development last summer. This also resulted in a good deal of useful informal information. The department has applied for similar funding for this coming summer.

Student representatives are to be found on program and curriculum committees at most Canadian schools. Respondents report the best feedback is received when student representatives conduct focus groups with other students. Usually occurs once a year, based on student identified issues or specific questions that course director would like answered.

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The nature of student input can also vary:

At some schools the chairman organizes a student focus group at the end of each term. An objective facilitator then leads volunteers through a semi-structured interview that is taped and transcribed. At others, the Faculty holds regular formal Curriculum Evaluation Seminars where students are nominated by the class to meet with faculty and provide feedback.

Student participation is said to be generally constructive, but their attendance at meetings is often erratic.

It is not unusual for individual students to approach the course director informally with specific comments and suggestions, or to send e-mails.

Students are not yet involved in curriculum evaluation at two schools.

H. Student-Initiated Changes to Public Health Teaching

Nearly all schools identified changes, often several and sometimes substantial:

New Topics Added:

Ecology (green hospital, climate change), infection control, more statistics, harm reduction.

Reductions/Removals:

Epidemiology/biostatistics methods reduced and folded into EBM, PH course reading list reduced, non-experiential material dropped, epidemiology presentations dropped.

Some other changes:

Tutorial-based teaching introduction delayed until Y2 7, practice exams on the Web, student-lead tutorial groups, critical appraisal teaching changed to small groups from plenary plus made pass/fail, students bid for placements, students record all lectures and make them available on the web as podcasts, new exam added

Note: Epidemiology/biostatistics seem to be hot buttons. Student comments/ suggestions appear to result in significant changes in the teaching of these modules quite often.

One respondent suggested that the curriculum has changed *too much*. And two schools reported few or no changes.

⁷ When students have a better appreciation of how PH fits into health care as a whole and when they are a year older

2.6 MEASURING THE SUCCESS OF UG PH CURRICULA

This report describes what Schools do, but how can one detect whether it works well or not? Student evaluation methods (if consistent) should show quite quickly if changes in curriculum, teaching methods or perhaps teachers are actually making any difference. Are marks going up, do students seem to have a better grasp of PH and its relationship to their clinical program? Do they now think time spent on PH is worthwhile? What about their electives now and specialty choices down the road (too early to see change maybe)? Is the move to a more integrated PH course causing lights to illuminate over some of their heads? Perhaps it does not matter much whether they are enjoying the course ... but are they stimulated and engaged by what they see, hear, touch and hopefully learn? It looks likely that some of those questions can be answered on the basis of Canadian and other interviews. It seems that a high level of program integration is one of the future directions of UG PH training. The attitude of the medical faculty towards PH - especially its senior members - is probably another key factor. Add cash to pay more PH teachers and there would be three levers in place that might help at least.

A. Specialty choice of Canadian medical graduates

One of the possible indicators of the success of undergraduate teaching in public health is the specialty choice of graduates. The website of the Canadian Residency Matching Service (CaRMS) provides data on specialty choices of graduates of Canadian medical schools for the years 2002-07. Of those graduates who participated in the match, the total number with Community Medicine as their first choice of specialty was 45 during this period (0.50% of all participants). These numbers do not include re-entry positions (i.e., physicians who graduated in earlier years).

The 45 graduates were distributed across the years as follows:

School	1st Choice CM	Total in Match	%
2002	2	1117	0.18%
2003	3	1231	0.24%
2004	6	1285	0.47%
2005	10	1405	0.71%
2006	17	1936	0.88%
2007	7	2000	0.35%
Total	45	8974	0.50%

The three Francophone Quebec schools fully participated in CaRMS for the first time in 2006, bringing 6 graduates whose first choice was community medicine with them. There was a steady increase in interest in the specialty from 2002 to 2006, with a setback in 2007.

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Broken down by medical school, the results were:

School	1st Choice CM	Total in Match	%
UBC	1	740	0.14%
Calgary	3	564	0.53%
Alberta	1	712	0.14%
Saskatchewan	1	342	0.29%
Manitoba	3	468	0.64%
Western Ontario	5	671	0.75%
McMaster	8	750	1.07%
Toronto	4	1098	0.36%
Queen's	4	512	0.78%
Ottawa	4	641	0.62%
McGill	2	612	0.33%
Montreal	2	424	0.47%
Sherbrooke	3	270	1.11%
Laval	2	346	0.58%
Dalhousie	1	506	0.20%
Memorial	1	318	0.50%
Total	45	8974	0.50%

Overall, community medicine was the first choice of 0.67% of graduates from the three Francophone schools, and of 0.48% of graduates from the other 13 schools.

B. Faculty Satisfaction

The vast majority of Canadian Schools carry out no assessment of faculty satisfaction with the PH curriculum. Three report informal meetings once or twice a year to discuss how well the curriculum is working and look for possible improvements. In most cases, the number of staff involved in full or part time teaching of PH is relatively small and individuals often provide their services on a volunteer, unpaid basis. So if people remain on board the program, it is generally indicative of satisfaction with the situation, otherwise as one respondent put it "they vote with their feet". A total of five respondents actually reported a high rate of teacher retention and felt this was a good indicator of their satisfaction with the course and the way in which it was being run.

About a third of the PH program directors interviewed indicated that they were personally satisfied with the PH content of the UG programs in their Schools while feeling that the rest of the faculty are not much exercised about it. On the other hand, in the case of at least two of the universities, they are now receiving strong support for the PH program from Deans of Medicine and the medical faculty as a whole. In addition, more than 50% of the PH teams



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believe that they have a decent curriculum to offer and the majority find this reflected in positive feedback from their students.

For balance, it should be recorded that three course directors expressed dissatisfaction on a number of grounds, including inadequate staffing, no teacher remuneration, low level of PH content in the UG program, poor student attendance and a general lack of interest on the part of the rest of the faculty.

Some additional thoughts from informants:

Teachers satisfied. No retention problems, which is pretty good considering that they are all volunteers.

Program director satisfied with PH content, but never satisfied with level of student satisfaction - although it is getting better.

Community Health is valued both by the Dean and the medical faculty as a whole. Was not always so - situation is improving all the time.

C. Student Performance on LMCC Examinations

Although this information would be very relevant to evaluation of public health teaching, it is confidential to the medical schools. A few of the respondents did offer rather general comments, but these were not specific or numerous enough to permit any meaningful analysis.

D. Proportion of Students Choosing PH electives

Rather over half of the schools interviewed reported essentially zero uptake on their PH elective offerings in the clinical years. Typical observations included "we have an elective PH rotation but it is rarely chosen", "approximately nil", "very low, near zero" and "we recognize the problem, but we close our eyes".

Elsewhere, the situation is less bleak. Two schools reported one or two students consistently choosing their PH elective, and four more universities successfully attract four or five students each year.

The remaining two schools have adopted novel approaches to their electives. In one case, attendance was zero three years ago but is said to be rising significantly today. They are now seeing 10 to 12 students signing up for **face-to-face two-week public health sessions** and as many as 25 for "**Students Pick the Topic**" weekends.

The other school offers a large "**Back to Basics**" course in Y4 that allows students to choose modules from a wide range of topics. These include occupational medicine (chosen by about 30 students/year), epidemiology (105 students), global health (48 plus waiting list of 5), gender and health (36), ecosystem health (60 in each of two sections), complementary medicine (enrolment unknown). These modules average 10-12 hours each.

2.7 SOME OTHER INTERESTING FACTORS

A. The Most Effective Teachers

Although some teachers are able to inspire their students whether they are dealing with the underlying science of PH (epidemiology, biostatistics, etc.) or teaching day-to-day practice, most respondents felt these areas were best taught by people with different backgrounds. At least partially, this seems to be because real expertise in biostatistics and epidemiology comes most commonly from a career in research rather than from hands-on health practice. Even within these two categories, some respondents felt that teachers with particular backgrounds were particularly good at delivering individual parts of the PH course in a way that engages today's medical students.

Most agreed that specialists are best for lectures because they can deliver principles and content that generalists do not have at their finger tips, while generalists work best teaching practice to small groups, so that they can see how it works in the real world.

Practicing public health physicians rate very highly when it comes to motivating students with their practical experiences from the front lines of PH - local PHAC people are also in demand. Moreover, they are also considered to be best-placed to sell PH as a career to students.

Other respondents swore by the ultimate combined teaching power of one person with a PhD for expertise in methodology plus another with an MD to provide credibility and real-life examples in a single lecture or tutorial. There was also solid support for Community Medicine residents as teachers since, as well as having an up-to-date knowledge of their subject, they are popular with students (similar age/outlook) and because they remember the demands of being a medical student.

Bottom Line

Basic PH science: Academics for expertise plus PH practitioners for hands-on credibility.
Population Health Applications: MOHs, other practicing CM physicians - credible and practical.
Clinical Applications: Sympathetic clinicians for both credibility and expertise.

B. How about Faculty Development?

Close on 80% of the Schools have some kind of faculty development program. They range from a single "thorough, interprofessional program" run by an Associate Dean of Faculty Development through to numerous training programs for the support of PBL/CBL tutors.

In between, one Faculty of Medicine offers a teaching improvement program mainly for post-graduate teachers, which faculty members believe should also be offered in the form of update courses for established teachers in the School. Another university has a broadly-based program of training directed at teaching competence. It takes place right at the start of the academic year in September and is open to all teachers and tutors. Attendance is said to be excellent.

Although most Schools offer Faculty Development Programs, they are not widely adopted by their faculties. Faculty members point out that there is no remuneration for taking part and that they have no spare time available to participate anyway.

At two or more Schools, faculty development seems to be more an on-demand service - very targeted, very reactive. Teachers can apparently arrange small-group or one-on-one instruction on advanced instruction methods, PBL, etc. on quite short notice.

It seems, in summary, that the bulk of the faculty development effort is directed towards the training and up-dating of PBL and other tutors to help sustain the high level of small group interactive training across Canadian Schools of Medicine. This distribution of resources could be said to be supported by most faculty members, who otherwise appear quite unenthusiastic about the development programs offered to them at present.

C. What is the Best Time to Introduce PH into the UG Medical Curriculum?

As might be expected, there are divergent views at our universities as to the best time to expose UG medical students to the scientific underpinnings of PH and to its practice. Perhaps an equally important, or more important, issue is what happens after you have introduced PH into the curriculum. Is it enough for it to be taught for a year and then be gone? Or should elements of PH science and practice be introduced and taught throughout the UG curriculum? Again, opinions differ.

Most Schools (about 70% of those that responded to the question) want to introduce undergraduates to at least PH science "before they have opened their suitcases". The thinking behind this being to have the "prevention" domain present throughout the medical course. Furthermore, other disciplines that also use statistics can be assisted and topics can be introduced theoretically up front, that will be explored in various more practical contexts in later years.

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By definition, the remaining 30% believe that some other year in the curriculum is the optimum launching point for PH studies. Y2 was chosen by two schools and Y3/Y4 with one school each. The main reasons offered for the later introduction of PH was that students would be more mature by then, better able to appreciate the subtleties of PH and less likely to brand the topic as an unnecessary timewaster. One school starting out in Y4 added that there are benefits to introducing PH principles after students have gained some worthwhile clinical experience and because they are more likely to remember the PH content if it is presented at the end of their stay at medical school!

As already discussed, a number of schools are committed to continuous teaching of PH throughout the UG curriculum, but only one currently does so (not counting two that simply provide MCC exam reviews in the fourth year).

D. Undergraduate PH Teaching at Your School in 2012

If respondents have their way, it looks as if a high level of integration with the mainline clinical curriculum will be seen in the majority of schools over the next 5 years or so. In fact, over 70% are looking to achieve integration of PH as a key cross-cutting theme throughout the UG medical teaching program. As one respondent put it, "who will ever really care about PH until it becomes a decent, serious, essential part of the clinical curriculum – where it belongs?".

By 2012 one school would like to see PH science being taught mainly in small groups, while students learn PH practice in the community. They would also like to introduce community attachments throughout all four years - even into their postgraduate programs. Another respondent shares this vision on more small-group teaching, while looking for more PH hours in the curriculum (very limited now). He also hopes for the appointment of an Associate Medical Officer of Health whose job description will include teaching all UG PH lectures.

One respondent sees integration occurring across the board, in rather the same way as has happened with clinical epidemiology. They also expect to adopt conjoint PH/Clinical clerkships during this time period. Another school anticipates completing its move away from PBL (takes students too long to define learning objectives) to Case-Based Learning combined with fewer, shorter lectures. They feel this could be the start of a growing move away from PBL in Canadian schools.

One respondent envisions the introduction of Transparent Teaching (TT): an information system that will show which topics were covered, who taught them, how, when, which students were present, etc. They point out that this would allow all questions in exams to be validated as having been taught to the students sitting the exam and would provide helpful longitudinal data for evaluating both teachers and teaching methods.

3. CONCLUSIONS⁸

Although this study was not intended to demonstrate causal relationships, or even statistical correlations, we have the impression that there is little or no correlation at the school level between students' satisfaction with public health teaching and their performance in the MCC public health examination.

3.1 TEACHING

1. The authors were particularly impressed by the following teaching methods, nominated by the medical schools (35):

At the three-star-level ***

Alberta's first-year public health course
Memorial's Case Studies
Western's lectures/plenary sessions

At the two-star level **

Ottawa's varied Plenary Sessions (patients, agencies, panels, theatre, buzz groups, etc.)
Saskatchewan's Structured Controversy debates
Toronto's Spiral Curriculum
Toronto's Community Visits
Toronto's Web-based modules
UBC's "Doctor, Patient and Society" course

At the one-star level *

Memorial's exercise on emerging diseases

2. "Students hate anything that they do not see as clinically relevant." It is therefore essential to demonstrate the relevance of public health teaching to clinical practice, the eventual occupation of the vast majority of medical students. (36)

3. Integration with clinical teaching is one route to demonstrating this relevance, but its success is dependent upon the attitudes and performance of the [mainly clinical] tutors. (37)

4. Involving sympathetic clinicians in the teaching of public health sessions is desirable because they are highly credible and can better demonstrate the relevance of public health to clinical practice. (38)

⁸ The numbers in parentheses indicate the method's numbering in the Executive Synthesis Report.

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5. Topics more directly relevant to public health practice are best taught by practising public health personnel, especially physicians, who have relevant expertise and field experience, and can serve as role models for students interested in the specialty. (39)
6. Plenary sessions will continue to be needed because of their efficient use of teacher time and space. But heavy reliance on traditional lectures encourages student passivity and is rarely successful. Sessions must be enlivened by making them interactive, using team-teaching, buzz groups, inclusion of patients and their families, guest experts, community agencies, buzz groups, etc. Fortunately, this is happening in most Canadian medical schools. (40)
7. Small-group teaching and on-line tutorials are more successful than lectures for teaching epidemiologic and biostatistical methods. (41)
8. Small-group teaching is widely and successfully used for methods tutorials, critical appraisal, evidence-based medicine, etc. But tutors and sometimes even rooms are hard to come by, and the organizational burden is heavy. It is important to prepare detailed manuals and guides for tutors. (42)
9. One school successfully uses “Structured Controversy”, in which teams of students debate a controversial question, with all students taking a turn at each side of the question. They have found that students are more likely to change their opinions after such an experience than after unstructured discussions, suggesting that some deeper consideration has gone on. (43)
10. A combination plenary–small group format is used successfully by several schools, in which a short lecture conveys the main points and subsequent tutorial groups drive them home. The small-group portion can be discussion, debate, exercises, games, etc. (44)
11. Student projects can be great for involving students in an active fashion, but the resulting reports are a pain for students to write and faculty to mark; one school has successfully replaced them by posters, which can all be evaluated at a single session. Having students prepare a report on health status of a community, and what to do about it, can familiarize them with needs assessment and help them to develop a population perspective. (45)
12. Problem-Based Learning (PBL) and its variations are widespread in Canadian medical curricula, although less used than cases for public health. Where it is used, it is sometimes supplemented by handouts, because PBL does not transmit knowledge well. (46)
13. Introduction of public health topics into mainstream PBL problems has been tried in several schools, but the topics are suspected of being ignored by the tutors (despite efforts at briefing them). (47)

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14. There are many advantages to teaching PH in every year of the curriculum. Topics can be introduced at times that are appropriate to student development and concurrent curriculum content, teaching can be built on previously acquired knowledge (PH or clinical) and students' knowledge can be refreshed. And it should remind students that public health is an important topic. (48)

15. Placements in community agencies are valuable and popular, but increasingly difficult with increased enrolments and pressured agencies. They have sometimes been found unsuitable for first years, but more successful when students are more knowledgeable and more mature. There is a substantial administrative burden and a very heavy dependence upon volunteers and community agencies. (49)

16. It was striking that only two respondents mentioned that their program requires that students undertake personal reflection. (50)

17. Student-led initiatives show promise in several schools: community health projects, public health interest groups, recording and pod-cast of lectures, selection of new topics for teaching. (51)

18. Among them, Canadian medical schools have developed a considerable store of exercises, cases and other teaching aids. But there is no forum in which teachers can learn about these and ultimately share them. (52)

3.2 EVALUATION

Evaluation of Students

19. Most medical schools use fairly traditional methods for evaluating their students: MCQ and SAQ exams, tutor reports, and even attendance. A few schools evaluate project reports (written or poster), despite student resistance to having to produce them. One school includes peer evaluation of these reports, and one assesses reflective journals. (53)

20. We lack empirical evidence on which types of student evaluation work best in terms of predicting future performance. [If our professional organizations ever develop an adequate peer evaluation of clinical performance (that of the College of Family Physicians probably comes closest), it would be very interesting for medical schools to compare their students' performance on undergraduate evaluations with their eventual performance in practice. Although very difficult to control for factors like psychological make-up, post-graduate training and practice environment, this might well enable us to determine the criterion validity of various methods of evaluating students.] (54)

21. Unmarked courses or assignments, or marks that do not count towards passing the year, lead students to dismiss the topics as irrelevant. (55)

Evaluation of Teaching, Courses, Curriculum

22. The vast majority of evaluation of teaching is done by students, and appropriately so. All schools use feedback forms, which seem to be most useful when designed by the Department and completed immediately after a teaching session. But focus groups, student course representatives and informal feedback from individual students seem to be more appreciated. (56)

23. Student popularity is not the only relevant criterion for evaluating teaching: the extent to which students have learned the material is equally important. (57)

24. Relatively few departments have systematic procedures for evaluation of their curricula: usually this is the job of the course director. (58)

3.3 FACILITATING FACTORS

25. Course directors show remarkable commitment, despite often being volunteers (and sometimes not receiving much credit for paid work). They are working hard at selling public health to the students, which can be a thankless job. (59)

26. The formation of the Public Health Agency of Canada (PHAC) and of several provincial public health agencies provides a strong focus for public health, with visible spokespersons. This can only elevate the status of public health among medical students and faculty, and increase its credibility. (60)

27. Formation of the Public Health Task Group and the Public Health Educators' Network, and support of this and other projects, suggest that AFMC (and presumably a majority of Deans) places a high priority on public health. (61)

28. The Public Health Educators' Network (PHEN) is already a great success in bringing educators together to share problems and solutions. It needs to be continued. (62)

29. The AFMC-PHEN learning objectives are immensely valuable for planning course content, resisting incursions from people with their personal hobby-horses, and defending it from criticism from competing disciplines. (63)

30. The Student Interest Groups promoted by PHAC have promise for increasing student awareness and enthusiasm for the discipline, although it is early days for most such programs. (64)

31. The introduction of Schools of Public Health may provide access to additional faculty and courses (but see #38, below). (65)

3.4 WHAT ARE THE PROBLEMS?

32. As noted above (#36) most students in most schools do not like most of public health. (66)

33. With rare exceptions, medical students do not select public health electives. This would seem to indicate that our teaching fails to interest them in public health. (67)

34. Several Faculties give the impression that public health is unimportant, by not evaluating public health or letting it contribute to overall grades, by degrading comments made by faculty in other disciplines, or by placing public health in low-priority spots in the building, the curriculum, or the week. (68)

35. A number of medical school departments of public health give low priority to undergraduate medical education—research and graduate teaching have much higher priority. Some departments lack an undergraduate medical education committee and some do not undertake regular evaluation of their undergraduate teaching.

Several coordinators of undergraduate medical education in public health feel isolated within their departments, and describe themselves as one-person bands. It is difficult to see how public health teaching can become respectable within the medical school when it is not even respectable within the department of public health. (69)

36. Perhaps related to the previous point, there are relatively few physicians in our departments, and even fewer physicians with public health experience. (70)

37. Public health practitioners are the most effective teachers, but they cannot be expected to do this on a voluntary basis. We need arrangements that make them available for teaching—part-time appointments, formal affiliations between public health agencies and medical schools, etc. (71)

38. The introduction of Schools of Public Health may provide challenges to the teaching of undergraduate medical students, by drawing away faculty members or other resources (but see #65, above). (72)

39. Finding sufficient tutors is a barrier to introducing more small-group teaching. Paying them helps tremendously. (73)

40. Every medical school should have a curriculum road-map that will show what is being taught, when and by whom. Some do not have it. (74)

41. Our discipline continues to suffer from lack of clarity in its definitions and boundaries. This causes confusion to students, other faculty members, and sometimes ourselves. (75)

42. Recent sharp increases in class size have produced significant shortages of space, tutors and placements for many schools. (76)

43. Recent and impending development of satellite schools has produced personnel shortages and accountability issues in some cases. (77)

44. External changes to the public health system can significantly influence the teaching in medical schools, e.g., amalgamations of health departments, changes in their administrative and geographic locations, changes in their level of funding. (78)



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ANNEX 1: TEACHING METHODS IN CANADIAN MEDICAL SCHOOLS

Teaching Methods in Canadian Medical Schools

	UBC	UC	UA	USa	Uma	NOS	UWO	McM	UT	QU	UO	UMo	McG	USh	Laval	Dal	MUN	re/Count
Class Size	260	155	145	69	101	56	148	164	226	102	152	262	172	193	209	94	61	2569
# years in which teach	3	1	1	1	4	2+	2	2	4	2	4	2	1	2	2	2	3	
Teaching Hours/year																		
Year 1	90	122	45	0	90	18++	72	36	136	23.5	146	0	0	120	0	48	125	13
Year 2	90	0	0	0	2	3++	52	6	136	10	146	36	0	140	+	48	60	13
Year 3	0	0	0	53	30	0	0	0	60	0	12	0	0	0	0	0	0	4
Year 4	3	N/A	0	0	5	TBD	0	N/A	40	0	12	140	28	0	+	0	0	7
Total Hours	183	122	45	53	127	?	124	42	372	33.5	316	176	28	260	?	96	185	144
Integration with clinical teaching	0, C	0, C	0	0	+	++	0, C	+++	0	0	0, C	0	0	+	?	+	+	
Teaching Methods (%)																		
Lectures	48	67	15	49	30	+	65	10	37	70	40	25	70	5	+	6	40	38.5%
Small group teaching	47	33	0	14	27	-	0	0	17	30	30	15	25	5	-	0	20	17.5%
Problem-based learning	0	0	55	0	0	-	0	80	0	0	10	0	0	45	-	0	0	12.7%
Case-based learning	0	0	0	0	0	++	0	5	0	0	3	0	0	0	+	0	10	1.2%
Exercises	0	0	0	0	0	-	10	0	1	0	0	0	0	0	+	40	0	3.4%
Computerized learning	0	0	0	14	0	+	0	1	0	0	0	10	0	0	-	0	5	2.0%
Community visits/attachments	5	0	10	12	15	+	0	4	37	0	5	15	0	0	+	30	25	10.5%
Distance learning	0	0	0	0	0	-	0	0	0	0	0	0	5	0	-	0	0	0.3%
Videos	0	0	0	0	0	-	0	0	+	0	0	5	0	0	-	0	0	0.4%
Self-directed learning	0	0	10	0	10	-	0	0	6	0	0	15	0	0	+	0	0	2.7%
Self-directed project/research	0	0	10	8	15	+	25	0	0	0	0	0	0	45	+	24	0	8.5%
Panels	0	0	0	0	3	-	0	0	0	0	10	0	0	0	-	0	0	0.9%
Theatre Group	0	0	0	0	0	-	0	0	0	0	2	0	0	0	-	0	0	0.1%
Debates	0	0	0	3	0	-	0	0	0	0	0	0	0	0	-	0	0	0.2%
Assigned readings	0	0	0	0	0	-	0	0	0	0	0	15	0	0	0	0	0	1.0%
Orientation	0	0	0	0	0	-	0	0	2	0	0	0	0	0	-	0	0	0.1%
Total %	100	100	100	100	100	-	100	100	100	100	100	100	100	100	-	100	100	100.0%
Evaluation of Students																		
Exam: MCQ		x	x	x	x	x	x		x	x	x	x	x	x	x	x		14
Exam: SAQ					x		x		x		x	x	x	x	x			8
Exam: OSCE														x				1
Assignment report							x		x		x	x						4
Clinical reasoning exercise								x				x						2
Written project reports	x			x	x		x		x			x	x		x		x	9
Oral project reports									x			x			x			3
Reflective paper						x									x			2
Journal/log												x						1
Tutor evaluation								x		x				x				3
Peer evaluation												x						1
Evaluation of Teaching																		
End of session	x				x	x		Sx		x						x		6
End of week											Sx							1
Middle of term				x														1
End of course/module	x	x	x	x	x	x	x		x	x		x	x	x		x	x	14
Report from small groups															x			1
Web-based																	x	1
Student rep on ctte						x											x	2
Focus group							x		x									2
Curriculum Evaluation Seminars						x												2
MCC objectives																x		1
Journal												x						1

Symbols:

- C Coordination of topics with clinical teaching
- S Sample of students who evaluate teaching, as distinct from the whole class
- X Yes, they use this method
- + to +++ Informal scale indicating: a little, a moderate amount, a lot