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INNOVATIONS IN EDUCATION FOR PUBLIC HEALTH

A NEVIS CONSULTING GROUP STUDY

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CHAPTER I: INTRODUCTION

Very few years ago it would have seemed at least counter-intuitive that innovation would become a serious factor in the teaching of public health disciplines in schools and universities around the world. Moreover, if one had scanned row on row of attentive student faces in the raked auditorium of a traditional lecture hall from the vantage point of the black board, it might have been hard to imagine any way in which the process could be improved. It is good to be able to report therefore that research associated with this study has uncovered fundamental changes taking place in the way public health programs are taught and delivered at both the undergraduate and graduate levels. At the same time, we have encountered well-proven public health courses still running successfully, impervious to the temptation of innovation for its own sake.

Innovations in the teaching of public health - as with public health practice itself - are very often the consequence of outside events. Provided the demand for public health skills or for practitioners on the front line remains stable, one might think that very little attention need be paid to the way students are trained at universities or schools of public health in Europe, North America or Australia. After all, creating and implementing new types of degrees, novel teaching methods or means of delivering course material absorbs time and resources that would be better spent on research. Leading edge research can in turn attract generous funding from government and industry. It adds to the prestige of the institution concerned and tends to attract top rank researchers. It is also the natural activity of leading academics. Teaching, even outstanding teaching, rarely contributes to a university's trajectory and momentum to anything like the same degree as well-endowed research. But times are changing and today's student intake contains many more public health (PH) practitioners who want to acquire job-related skills and who have little time to spare for traditional research projects on the way to higher degrees.

Moreover, the events of 9/11, the risk of bioterrorism and the possibility of serious communicable disease outbreaks have encouraged governments to provide substantial additional funding to boost the readiness of public health agencies to respond to these threats. Universities in the US and elsewhere have also received unusually large sums to help produce more graduates skilled and ready to meet with the challenges presented by terrorism. Educational institutions have dedicated much of the funding directly towards the war on terror (WoT), but some have shrewdly pointed out that the best national defence against bioterrorism is a well-functioning public health system staffed by well-trained people across the board. So it is gratifying that at least part of the WoT cash windfall has found its way into the teaching of public health as a whole and has served to provide much of the stimulus for innovations that are now appearing in the process.

Other trends are influencing the situation too. Although most governments have only limited knowledge of how many people work in their public health systems¹, it is apparent that serious and disturbing trends are visible in the workforce. Some recent US figures illustrate the problem²:

¹ The Nevis Report, February 2004.

² Workforce Policy Fact Sheet relating to the proposed "Public Health Preparedness Workforce Development Act of 2005". Association of State and Territorial Health Officials - March 2005

There are 11 microbiologists over the age of 40 for every 1 under the age of 40 at CDC - and this statistic mirrors the conditions in state public health agencies.

Currently, only 20% of the 7,000 graduates from U.S. schools of public health each year go to work in governmental public health (partly because the pay is poor and also because the work can be made stultifyingly boring by excessive bureaucracy and the time required for political process).

The average age of public health nurses, the largest professional group in the public health workforce, is 49.5 years.

State governments could lose more than 30% of their health workforce to retirements by 2006 according to the National Association of State Personnel Executives. The rates for some health departments are as high as 46%.

Although there is a lack of good data in Canada, there is evidence that about 10% of medical officers of health plan to retire in the next 5 years, and 30% in 5 to 10 years. The average age of medical officers of health in a recent survey was 49 years.

These data underline the real and present need to educate larger numbers of PH practitioners than has been the case in recent years. The much increased allocation of government funds to public health must indeed be reflected in expenditure on PH education and by the creative innovations introduced by universities and schools in order to deliver well-qualified individuals able to tackle the challenges ahead.

This study will examine innovations in the teaching of public health that are taking place at various levels within universities and colleges in Canada, the UK, the US and Australia - since these activities seem to be little discussed and even less disseminated. It will focus on the teaching of MPH (and similar postgraduate public health degrees) as this is the most important graduate public health qualification currently offered in the four target countries.

Major trends in innovation are identified from interviews with leading authorities and methods used by universities establish PH course content are explored - examining whether it is driven by internal interests, outside factors or both. The delivery and packaging of MPH programs is reviewed, looking at innovation in joint degrees, distance learning methods, combined degrees, etc. We also find out how some graduates use their MPHs when they get them.

Undergraduate public health programs are considered briefly and are found to offer an important contribution to the future of PH education both here and in the US. DrPH programs are also examined to establish if they remain mainly research orientated or if universities are now offering more innovative PhDs for experienced PH practitioners, designed to help them tackle the challenges faced by senior management in an uncertain world.

The future role and identity of the proposed schools of public health in Canada are reviewed and the merits of teaching PH independently are compared with the advantages and disadvantages of operating a PH department within a medical school. Schools of nursing are also addressed for evidence of innovation in graduate programs for PH nurses.

The study goes on to provide an overall view of how joined-up academic people seem to be with those that are actually providing services and those trying to work out the necessary competencies required to deliver effective public health.

A summary of creative and commendable innovations identified during the study is provided to show the scope of initiatives that have either been adopted already in Canada or which may be valuable to PH teaching here in the future.

This study is not intended to provide a comprehensive inventory of all PH teaching innovations that are taking place or are planned for the future in the countries under consideration. It has looked instead at a sample of universities and schools of public health in each country to obtain a representative picture of the important trends and challenges involved. It should also be noted that the consideration of teaching innovation in Continuous Professional Development lies outside the scope of this study.

CHAPTER II: HIGH DEGREES OF INNOVATION

Numerous universities in Canada, the US, the UK and Australia have been interviewed in the course of this study. Many are active at present in developing new graduate programs in public health that may well represent notable departures from the existing situation in their schools and departments. This chapter, however, will seek to identify innovations in the teaching of public health that are either unique, or at least are appearing for the first time in the country or region in question. The factors at work to bring about change and innovation are also discussed. The MPH degree is generally used as an example in this chapter, but may be taken to include similar postgraduate degrees in public health such as MPHSc, MHSc, etc.

2.1 DEGREE PLANNING

"At the moment, we are casting around to find the cash to really scope out the MPH needs out there and to define the market opportunities with some care."

A Canadian university interviewed for this study

The content of graduate degree programs in public health has been decided traditionally by a university's faculty, based on their views of what a well-qualified researcher or practitioner in the field should know and on the academic strengths of the department. Also, there has normally been a curriculum committee keeping an eye on content and teaching standards, as well as evaluation by employers of the graduates produced. Interviews for this study confirm that this is still the case, but that there are now other factors at work that can shake things up and may stimulate innovation. This is a particularly good time to examine how Canadian universities are addressing these challenges, as most of those that offer graduate degrees in PH are actively formulating or starting to teach new MPH degrees to be inaugurated in September 2005 or 2006. Some have even more ambitious plans in mind.

1. STUDENT POWER: Student demand is a strong influence today. Fewer PH people want to do a classic research degree these days, unless they are aiming for an academic career. They want to take on board knowledge and skills that are in demand in PH practice. In any case, research can be too time consuming for most students, many of whom continue to work in public health while studying for their MPHs.

For 20 years or more, US schools of public health have been in the research mode, even though actual PH practice needs real tools to do the job - especially management and risk assessment. The big PH names in the US, like Harvard, Yale and Johns Hopkins will admit that are not really practical - much of their prestige still comes from research programs and the funding that they bring. Johns Hopkins wants to remain the top school of PH in the US, but it is now faced by a new type of student who is a mid-career PH practitioner and who is confident that he/she needs case-based or problem-based courses rather than regular lectures or text-based learning. Very few are MDs these days and they are looking for specific tools/skills, such as biostatistics, epidemiological surveillance - nearly all driven by the day-to-day needs of PH practice. This means, as we shall see, that schools and universities have been introducing numerous innovative degree options and flexible delivery methods to accommodate the needs and preferences of today's research averse students.

2. EXTERNAL INFLUENCES: Anti-terrorism measures and the threat of global outbreaks of communicable disease are driving a growing tendency for applied PH courses to get a larger share of funding from the federal government and from state agencies. In the US, the accreditation criteria of the **Council on Education for Public Health** (CEPH) are also stimulating innovation at schools by obliging them to become more hands-on in outlook.

The establishment of **core competencies** to be achieved by PH graduates in a given country and the development of competency lists for some specific degrees or degree types are bound to influence program content to some extent. The same goes for examinations run by professional registration and licensing bodies. Some universities, such as La Trobe in Australia, have little confidence in their current competency set-up. Others like Johns Hopkins seem supportive of the US competencies, more politely finding the core PH functions "relevant and important guidance for those putting new PH courses together". Other US universities are finding it hard to measure if their students have actually met the standards, while some get their input more traditionally by asking local public health people what they want. In any event, target competencies are reported to be usually broad and easy to hit with sensible course content. This allows ample room for course innovation in most cases and has resulted in acceptance so far of at least the core competencies of public health by many universities and employers. The impact of these standards is discussed in rather more detail in **COMPETENCIES**, below.

3. COMPETITION: Graduate education in PH is becoming more competitive (for universities). This means that universities planning to introduce a new MPH or similar degree are researching carefully what rival schools are doing at home and abroad. Wise faculties are also discussing degree content with employers and finding out what they actually want and need. Alumni are reported to be useful sources of guidance and intelligence also. The end result is often innovation resulting from the need to offer a well-structured product to increasingly well-informed prospective students.

As an example, it seems that the **University of Waterloo** has been doing a thorough job of planning their MPH, which is due to welcome its first students in September 2005. They first carried out a horizon scan to see what other universities, colleges, schools were doing in their MPH programs, looking at the US, UK, Australia and NZ, as well as at Canadian universities. They then studied their own strengths and weaknesses and compared their proposed program with the leading courses outside. A needs survey was also undertaken that included discussions with the relevant federal, provincial, municipal and regional government officials, as well as with PH practitioners. It was decided early on that their MPH would feature *sociobehavioural sciences* and *environmental health sciences* streams - two PH areas where Waterloo is especially strong in both teaching & research.

Simon Fraser University (SFU) has also been active, hiring a consultant to carry out a needs assessment across the country, to interview suitable informants and to establish the right shaped niche for SFU in PH teaching and research. Apparently a good deal of interest was expressed in an up-to-date program aimed at today's PH needs and the future skills required by both PH management and front line practitioners. The study also identified demand for on-going PH training within the workforce, that could be met with diploma programs associated with each of the new Master's degrees to be offered by the recently established Faculty of Health Sciences at SFU.

The **University of Toronto** (UofT) looked at other universities/schools in North America (mainly) for ideas on syllabus, as well as securing input from the Association of Public Health Epidemiologists in Ontario (APHEO). They drew on Toronto's PH faculty of 250 and its established expertise - especially in statistics, epidemiology, research methodology and evidence-based PH. Planners also

looked to their alumni at Health Canada, PHAC and in provincial health departments for feedback, as well as to PH units that have been hosting University of Toronto students for their practica.

Lakehead University examined existing MPH courses in North America as well and modelled their MPH program on what they found. It seems that there has been no formal consultation with federal, provincial, or municipal bodies (or PH practitioners) about Lakehead courses or their content and funding - so far. It is understood that funding comes mainly from student fees, plus possibly some support from general university funding.

4. SPECIAL STRENGTHS: The **University of Saskatchewan** (UofS) is able to boast that both the Canadian Centre for Health & Safety in Agriculture and the Western College of Veterinary Medicine (about 250 students) are based in Saskatoon and are very closely linked with the university. UofS is also home to the Vaccine and Infectious Disease Organization - VIDO that was created in 1975 to develop vaccines for the protection of livestock against serious and economically devastating diseases. VIDO now has a staff of 125 and facilities that include modern virology, immunology, bacteriology and biochemistry labs and a 160-acre research station. Its annual budget is in the region of \$10 million, including funding from both federal and provincial governments. All three organizations assist the university in introducing specialist graduate degrees, including an MPH-Vet currently in preparation.

In warmer climes, the **University of Hawaii** has a mission to deliver education both within the local islands and across the Pacific. In recent years, innovations in their MPH programs have been driven by the PH challenges within the Asia-Pacific region - which are noticeably different from those in Saskatoon. Their Epidemiology MPH, for example, has developed a strong infectious disease content (dengue, malaria, etc), while their Behavioural Science MPH looks at chronic diseases especially those that are common in that part of the world - notably obesity, tobacco control (cancer) and sun safety (skin cancer). About 50% of MPH students are actually Hawaiians - many of whom have done their undergraduate courses on the mainland and have then returned to the islands to finish their education and to serve their communities. In addition, the university is increasingly committed to Asia-Pacific students, many of whom attend Hawaii U. on Ford Foundation Fellowships. ³

They teach PH students two essential things at University of Hawaii - critical thinking and leadership skills⁴. In their view, graduates that have mastered these two capabilities, will be equipped to handle whatever comes along in their future careers.

5. RETENTION OF MPH GRADS IN PH: The universities interviewed were all keen to see their students continue their careers in public health on graduation and to find novel ways of encouraging them to do so. **Hawaii U.** is particularly active identifying and not accepting applicants that want to pass a pleasant year or so doing an MPH in Hawaii while waiting for a seat to become available at the medical school of their choice on the mainland. About 75% of their MPH grads go into PH; so 25% don't. Of these, some do go on to medical school in spite of the screening, while others choose research, become professional surfers, etc.

This year's MPH intake (2004/05) at **Johns Hopkins** totalled 230 students of which they claim at least 80% will go into PH in some way, but only 8% or so will practice PH in a traditional sense.

³ Rural origins, developing countries, get intensive English language training and come out with an MPH. Graduates must go back home and use the skills they have learned for an agreed period of time.

⁴ Two essential management attributes, along with an ability to delegate and a sense of humour.

Many join the federal government, the FDA, the NIH and other academic institutions - even large pharmaceutical corporations. Physicians make up 20% of the class and most of them are keen on PH careers, because they perceive that clinical practice is much less attractive in the US these days. About 10% will elect to go on to academic careers. Note: At least 50% of the PH leadership in US will retire in next 5/8 years - another good reason for staying in PH after graduation.

UofT reports that the whole thing is driven by the market. It depends on who's looking for PH graduates at any given time. It used to be Health Canada, now they receive more help wanted notices from CIHI. Roughly two thirds of their graduates go into PH, one third into research. **Lakehead** sees slightly higher retention because 30% of their MPH students are nurses, 80% of whom are already in public health. The remaining MPH students come from other disciplines - 40% health related, the rest not.

Wastage of MPH graduates does not seem to be much of a problem in Australia. Most MPHs go into government supported PH jobs - many having come from them in the first place. Similarly, the **London School⁵** finds that at least 90% of their graduates use their degrees in the practice of public health in the UK or in their home countries.

The situation in the contiguous 48 states of the US is that most of the US PH workforce has received no training and that only 10% to 15% of the 4,000 plus MPH graduates each year from their schools of public health actually go into PH. Portland State U. confirms that their MPH intake consists of early career people - 60/70% of whom are women. A maximum of 15% of their MPH graduates go into traditional government-organized PH. Most choose consulting, managed care, not for profit organizations, etc. Observers believe there is ample scope for innovation in bridging the gap between the academic training that leads to an MPH and the practice of public health in the US.

⁵ London School of Hygiene and Tropical Medicine

2.2 COURSE STRUCTURE

1. HOW LONG? Just as MPH programs can differ considerably in content⁶, so they are being structured these days to deliver course material over various periods of time. This is mainly because innovation has resulted in numerous options being offered to accommodate student availability and needs. The London School's full-time MScPH⁷ for example takes only a year and is highly focused on the core PH disciplines, such as statistics, epidemiology, health economics and social research. No time is allocated for program management, time management and other MBA type topics, although their Managing Health Services modules do include some general management content. The Johns Hopkins MPH takes five quarters and this is regarded by some internally as pretty short for the amount of material that needs to be covered. Actually, the norm is now one year for a full-time MPH in the US, although it is true that some schools run two year full-time programs.

Degree programs designed today for various types of distance learning or specially structured for professional students who may only be available at weekends or evenings will generally contain much the same course material as the full-time version. They will either cover the ground faster with a highly concentrated delivery or the whole process will be spread out over a number of years, usually with a stipulated "must complete by" date - typically five years.

For example, the Birmingham (UK) MPH was originally developed as a two-year part-time course. It is now available both full-time and part-time, with a flexible learning option now available of up to five years. Students can also study option courses from other degree programs offering relevant modules within the university.

Harvard School of Public Health (HSPH) has introduced an innovative format with its Management for PH degree structured for full-time PH professionals who wish they had had time to do an MBA when they were younger. The coursework is spread over two years alternating classroom sessions with projects designed for students to carry out while doing their regular jobs back home. They attend classes at HSPH for three weeks during each of the two summers and, during the rest of the year, the students attend school for five four-day weekends. It is said to be a pretty rugged experience. The inaugural class consisted of 21 US and Canadian students.

Some Canadian universities are inclined to think that Executive MBAs work well for senior public health managers on the front line, while an MPA (Public Administration) is sometimes a better bet for those working in senior federal or provincial government PH management positions. Waterloo shares the view of several other universities that feel that an MPH unavoidably includes sparse management training for any health management level, since it is typically a 12 month program with a lot of public health ground to cover.

2. RESEARCH/THESIS OR PRACTICA/PROFESSIONAL DEGREES: Research still tends to drive the funding, status and promotion continuum in the Departments of Epidemiology/Community Medicine or their equivalents at many universities. The increasing shift from research to professional degrees in PH, however, calls for creative funding solutions that will relieve some of the burden from the pockets of students - even if some government funding may be available to cover practica costs in some parts of the world. Successful marketing of PH degrees with a practical emphasis to international students that can be enrolled on-campus or signed up for distance learning degrees can

⁶ As we shall see in Section 2.3 on p.16

⁷ The research-based dissertation which used to be part of the MScPH program has been discontinued (a real innovation) - and has been replaced mainly by literature/net search investigations.

help compensate for lost research dollars. Curtin University in Perth, Australia is a successful exponent of this method with a total enrolment of over 11,000 offshore and onshore international students in all faculties.

Canadian universities are also going with the practice flow, like the University of Alberta where there has been surprise at how big a swing they have experienced from almost 100% thesis a few years back to 50/50 today. They now have an individual responsible for lining up practica placements, with financial support provided by the Alberta government for student travel and living costs. The upcoming Waterloo MPH is also distinguished by its wide range of 12-week applied practica, including NGOs, PHAC, Health Canada, Corrections Canada and international opportunities such as the Pan American Health Organization (PAHO). In a considerate move, they allow students with prior hands-on PH experience to do either a research practicum or an extra elective instead.

Other universities such as UofT have created a new MHSc in a bold move that offers both professional and research options. This reflects the demand they are finding for more hands-on PH graduates with strong methodology/documentation skills to handle today's evidence-based approach to health care, rather than a research outlook. The research stream remains for those who find a traditional thesis-based graduate degree better-suited to their career objectives.

The Faculty of Health Sciences at Simon Fraser are/will also be offering PH degrees that are practice orientated, but SFU has a well-established research tradition in public health related studies. This is expected to remain an important focus for the new faculty, especially in fields such as infectious diseases, environmental toxicology and mental health/addiction. At the same time, Simon Fraser believes strongly in maintaining close links between the university and local public health agencies. So much so that, in an innovative step, the new Faculty has agreed to pay half the salaries of three Regional Medical Officers of Health who will be seconded to the university as teachers for 50% of their time.

Right at the other end of the spectrum, the University of Hawaii's Behavioural Sciences MPH calls for no research, only practica. All students must do a practicum, either with the Hawaiian Department of Health or on attachment to the public health authority of a S.E. Asian country - Vietnam and Cambodia are recent examples.

Regular reorganization of the UK National Health Service over the years has resulted in the fragmentation of medical health services⁸. So, whereas 30 years ago it was quite simple for UK universities to find local public health physicians who could spare some time to help their students get a feel for practical PH, today it is much harder to do. Since the formation of Primary Care Trusts (PCTs) all over the country, it is not uncommon to find only one PH person at each trust who has little or no time to take on an undergraduate (or postgraduate) medical/PH student for some on the job experience. Apparently, it can also be that some of these standalone practitioners are relatively recently out of school themselves.

The schools of public health in Australia are largely autonomous organizations in universities that do not have a medical school. They tend to be more practice orientated and to have fewer MDs on the faculty. They also enrol more international students. Universities that do have medical schools, generally teach public health via an integral Department of Population Health. This department will usually have an MD-rich faculty and a strong focus on research. Teaching will generally concentrate on the more clinical aspects of public health.

⁸ See Nevis Consulting Group: *Public Health Workforce Development* - February, 2004 p. 10 et seq.

MPH studies in Australia are largely funded by the government's PHERP (Public Health Education and Research Program)⁹. The federal government uses PHERP as a lever to encourage Australian universities that teach PH to be more interactive with local health agencies - possibly resulting in increased innovation and "service sensitivity".

3. APPLIED PH RESEARCH IS STILL IMPORTANT: The emphasis on training for practice, should not obscure the need for continued development of the public health research workforce. There is rightly a concern to develop a "receptor capacity" - a cadre of public health professionals who, although not intending to be independent researchers, have sufficient understanding of research methods to be able to assess the results of studies and incorporate them into their practice. They may also participate in research studies lead by others. But there is also a need to develop a capacity to undertake applied research which addresses the priority needs of the public health system and to promote its translation into policy, practice and programs.

One such initiative is the **Transdisciplinary Training Program in Public and Population Health Research** in Quebec, lead by Dr. Gilles Paradis and funded in part by CIHR. This program aims to encourage students to pursue research careers in applied public health by creating a community of interest among researchers in this field and by offering students training laboratories in a public health setting. The program also seeks to enhance the ability of future researchers to carry out studies in partnership with a variety of interest groups and to open up more channels to share knowledge and research results with decision-makers. Partners include five universities, six Directions régionales de santé publique, the Quebec Ministry of Health and Social Services, l'institut nationale de santé publique de Québec (INSPQ), and other agencies. The program is linked to the Quebec Population Health Research Network which promotes alliances and partnerships amongst researchers in population health. The network provides mentors to the training program. Special attention is paid to ensuring that the research topics chosen by the doctoral students and post-doctoral interns correspond to public health priorities adopted by decision-makers and practitioners. The unique feature of the program is the requirement that trainees should be physically present in the chosen practice environment for a specified proportion of their time (about 70% - 80%).

4. MAJOR STRUCTURAL INNOVATION AT LSHTM: The London School used to offer no less than five separate MScPHs - such as Health Services Management, Health Promotion, etc - with about 25 students enrolled in each. Each program was largely modular - so it was possible for potential students who had been turned down for one MScPH course but accepted for another, to put together almost exactly the same modules as those in the program that had rejected them. In this way, they would finish up doing the same course, but receiving a different degree! So in September 2004, LSHTM merged the five degrees into **a single "multi-stream" MScPH** with about 120 students. Essentially the same set of modules is used for the distance learning version of their MScPH degree.

This new degree is not an MPH, so it is not intended to be as practical and it offers no linkages with local PH practice. However, the research-based dissertation that used to be part of the MScPH program has been discontinued (a real innovation) and has been replaced mainly by **literature/Internet search investigations**. Students can still register for an MScPH in Health Promotion, Environmental Health or Health Services Management, for example - however this can narrow their options on graduation. Most students were expected to take the generic MScPH course, so that they could be quicker on their feet when interviewing for worthwhile PH jobs - and that is exactly what they have done.

⁹ Run by the Department of Health & Ageing.

THE SPECIAL CASE OF INNOVATION AT UNBC

The University of Northern British Columbia is a new university - founded ten years ago on a green field site in Prince George, BC. It is Canada's most remote university - and possibly the most remote anywhere. It is eight-and-a-half hours from Edmonton and nine from Calgary by road. So self-sufficiency is a way of life, since partnership with other organizations, while highly desirable, is often hard to implement.

Unlike most other universities, it is responsible for a geographical area more than twice the size of France and for the higher education of its widespread population of 300,000 people. Many are aboriginal Canadians living in small communities, while others are located in larger towns that are generally supported by only one or two main employers, in often precarious resource-based industries. The topography ranges from Canada's highest mountains to extensive rain forests.

A high percentage of the aboriginal land claims in the area are not yet extinguished and progress towards durable settlements has been slow. This means that funding and other critical issues for the university become the subject of negotiation not only with federal and provincial governments, but also with First Nations.

While establishing its academic and research priorities, the university must be sensitive and responsive to its constituency. In looking at public health, it must take into account that the health status of some aboriginal communities is at the third world level, that recruiting and retaining of well-qualified health professionals is very hard to achieve and that most of the young people leave the area as soon as they can and head for the cities in the south.

PH is a matter of urgent concern. The town of Terrace - about six hours west of Prince George - is a typical northern BC town with a population of about 15-20,000 people. It used to be an important mill town specializing in utility and telephone poles (their tallest was 162 feet high and is still operational in New York City), but now the mill is closed. Today the economy is in decline with tourism as a mainstay and there is not much to attract an outside public health practitioner

So UNBC set up an MSc program in Community Health Science in 1997/98 with a leading cohort of 12 students from the Terrace region. The idea was to train PH professionals who already lived in the area and who would be mostly likely to practise there too.¹⁰ The course modules were taught according to a strict curriculum, such that when the epidemiology section of the course had been taught - that was it, no going back for that particular cohort. Some courses were taught by the UNBC faculty - often with interdisciplinary instruction - nurses teaching basic epidemiology and a statistician lecturing on advanced epidemiology, for example. Other modules would be provided by visiting experts from other parts of BC and beyond. Evenings and weekends became the focus for lectures in many cases.

Teleconferencing has been found useful. Video links were better, but often unreliable, as reported elsewhere. Face-to-face courses have always been preferred by the students. It has allowed them to form close-knit support networks and to develop into learning groups that have often been found to work better than classes alone in the long run. Retention of students has also been good with nine out of the 11 starting members of the first cohort completing the degree (the last one in 2002 - after five years on the course).

¹⁰ In accordance with the time-honoured US 70/70 rule that maintained that 70% of graduates from medical programs in the US go on to practice within 70 miles of their university or college.

Why does it work? The main reason is that students are trained in remote settings allowing them to gain confidence in their ability to practise successfully in that unique environment and to gather the special knowledge required. PH practitioners trained in big city PH find it very hard to adapt to living in the north, let alone delivering appropriate care to the local population. Similarly, of course, UNBC grads may not feel all that comfortable about PH practice in downtown Toronto or Montreal.

What are the snags? It is very cost inefficient. There are few students and a relatively large number of instructors - some of whom must be flown in from outside the region. One student dropping out creates a serious loss to the program. Also it is hard to do these courses. A very motivated faculty is needed who are willing to be emailed all the time and to bridge the gap for students who have very few educational facilities (like a library) in their remote communities. The net benefits are considerable, however.

UNBC used to have a 35% "Northern Allowance" from the BC government to help augment their per student funding - in recognition of the high costs involved. But there has been belt tightening and now the allowance is down to 15% and slated for cancellation in 2006/7. So the university is looking to find new partnerships and sponsors in innovation, as well as hoping to secure support from PHAC in the future.

2.3 COURSE CONTENT

The MPH is still something of an innovation in Canada, since there have been so few up until now.

1. WHAT IS AN MPH?: The degree offered by Birmingham University in the UK is typical of a generic MPH in that part of the world. Their program is "designed to provide a broad training in Public Health and Epidemiology for entrants with or without medical qualifications who are working in public health. It is aimed at individuals employed by health authorities, local authorities, NHS Trusts, as well as those wanting to carry out public health or epidemiological research".

Originally developed as a two-year part-time course, it is now available both full-time and part-time, with a flexible learning option now available that can spread the learning process out for up to five years. Students are able to accumulate modular credits towards three levels of qualification:

Postgraduate Certificate in Public Health & Epidemiology - 60 credits
Postgraduate Diploma in Public Health & Epidemiology - 120 credits
Master's in Public Health - 180 credits (of which 60 come from a research dissertation¹¹)

2. CANADA'S FIRST MPH: The University of Alberta's Master's in Public Health has evolved considerably since it was launched as Canada's first degree bearing the title MPH¹² in 1996 - but it is still hosted by the Department of Public Health Sciences in the Faculty of Medicine and Dentistry. This means that has retained much of its scientific and research outlook, despite of the changes that have taken place in the teaching of public health in the past 10 years.

The department still offers an MSc in a variety of research areas including clinical epidemiology, environmental health sciences and global health. The MSc program has recently absorbed a previous MPH thesis-based degree in health policy research (18 students admitted in 2004). The course-based MPH is now available in a number of streams including health policy and management, occupational and environmental health, global health, clinical epidemiology and health technology assessment [19 students were admitted in 2004 - most on the Health & Policy Management stream¹³].

Encouraged by PHAC, the universities established a guideline committee recently to discuss the future of MPH degrees in Canada. Nevis understands that initial discussions with the universities have lead to an agreement to collaborate on a set of broad guidelines for Canadian MPHs. Interviews carried out for this study have shown support for joint MPH degrees within provinces which are seen to be the natural boundaries for cooperation within Canada, just as states have been in the US and Australia. A national syllabus appears less attractive to the academic community than provincial MPHs with suitable program content and uniform teaching standards being maintained nationally through an external accreditation body.

¹¹ Research dissertations remain a common part of UK MPHs

¹² The University of Toronto, the University of Montreal and Memorial University of Newfoundland were offering similar degrees at this time - although they were not called MPHs.

¹³ Health policy & management - 10, Occupational & environmental health - 5, Global health - 3, Clinical epidemiology - 1.

3. MPH TRENDS: As noted earlier, today's part-time MPH students certainly do not want to do a thesis or dissertation¹⁴ - it takes up far too much time, especially as most of them have regular jobs. Nowadays, they can choose an alternative "culminating experience" instead. The nature and content of this experience can vary widely depending on the student's field of PH specialization. In some fields, the culminating experience may be a traditional written examination, in others an applied research project. In health services administration at Northwestern U., for example, students are required to carry out a written project, which may be in the form of policy analysis, or a detailed case analysis.

Calgary believes MPH graduates that have no medical training are well equipped for administrative posts in the public health system, but are unsuitable for front line jobs. They maintain that an MScPH with a research thesis is the only way to prepare graduates for real PH practice.

A challenging trend for US and Canadian universities/schools in putting together new MPHs (and other largely course-based graduate programs) is that the intake they receive each year is becoming more variegated. It may now include part-time students from federal and provincial PH agencies, medical graduates, statisticians, biologists, in fact almost anyone with a suitable degree in a relevant discipline - including graduates from the increasingly popular US BSPH programs and their less common Canadian equivalents. How do you teach an MPH program to this group without boring some and going over the heads of others all the time? Real innovation is required here. Solutions under consideration include adding pre-requisite courses and some initial streaming. The US Association of Teachers of Preventive Medicine (ATPM) has been looking at this issue recently as part of their regular sessions on the teaching of graduate programs.

4. SOME NOVEL MPHs (OR SIMILAR DEGREES):

Infection Control MPH. U of Hawaii received money last year from bioterrorism funding and hired David Birnbaum from UBC to prepare the curriculum for an Infection Control MPH to be taught by distance learning. Unlike most DL courses this one was not designed for online delivery. All students would get books/other hardcopy materials plus a list of international tutors that could be contacted in person during regular office hours, as well as at other times using email. Students would pay more than for regular degree courses because this MPH would be quicker and involve close contact with an international faculty. The program would include student-attracting face-to-face introductory lectures in Hawaii during the summer. Really an innovative package.

Unfortunately, the bioterrorism funding dried up and it was not possible to actually launch the MPH. So they now have an Infection Control MPH in a box, ready to go and they are looking for another university to team up with them on the launch/implementation phases. David Birnbaum is looking too - maybe for a Canadian partner? Another snag is that the program is very hands-on. So it does not include the five core courses¹⁵ required by CEPH for certification and is therefore not much use to a US university at present.

Evidence-based MPHs: These look to be a really good innovation with plenty of market appeal - particularly to MDs, perhaps. Professor Dick Heller arrived at Manchester U. (UK) in September 2000 after 17 years at the University of Newcastle, Australia where he was Professor of Community

¹⁴ Of the Canadian type that can last one to two years after coursework is completed. UK theses/dissertations are normally much shorter.

¹⁵ Biostatistics, Epidemiology, Environmental Health Sciences, Health Services Administration and Social and Behavioural sciences.

Medicine and Clinical Epidemiology and Director of the Centre for Clinical Epidemiology and Biostatistics.

He was very keen to apply the evidence-based techniques that are used in clinical medicine to PH, having carried out evidence-based work at Newcastle before coming to Manchester. Manchester was more than willing to work with him to create a new Evidence for Population Health Unit and to launch an **innovative MPH degree underpinned by evidence-based techniques** - called an MPH¹⁶. As we shall see below, the program has other unusual characteristics¹⁷.

The program is aimed particularly at public health physicians and specialists, primary care workers, GPs and nursing staff. The main idea of the MPH is to help create a PH counterpart to evidence-based clinical medicine, that would give the PH community the tools to develop more effective data which would in turn allow realistic assessment of projects and other initiatives. There is currently a desperate need for the Public Health community to further develop its own evidence base. Many interventions in the field of Public Health are introduced without any hope of being evaluated, as the tools for this evaluation do not exist. This applies to the methods of introducing interventions, of assessing their outcomes and analyzing their impact.

Wide Range MPH: The University of Saskatchewan will introduce an innovative course-based MPH for about 20 students starting in Sept 2006. This will be a 39 credit program (33 coursework, 6 for the 4 month practicum) and will involve courses from all five of the university's PH colleges¹⁸. It will take 2 years full-time and up to 5 years flextime. The MPH is aimed at young students who have recently completed an undergraduate degree and at PH practitioners wishing to upgrade their skills. They expect to introduce a concentrated executive MPH that can be completed within one year (but may take longer). All the MPH faculty will be required to carry out research - including practical PH, in rather the same way as the PHRED program in Ontario.

DoHA's own postgraduate course: The Commonwealth Department of Health and Aged Care (DoHA) in Australia has its own postgraduate program in public health (not strictly an MPH) for employees of the department. Delivery is contracted out to a consortium of Australian universities (including La Trobe and Monash) and it has been in operation for at least six years. The number of DoHA people who attend is a hard to establish, as individuals come in and out, enrolling for 1-2 units per year. La Trobe estimates that around 200 have been in the program, so far.

Australian universities say that the department wants to pay less for this **Corporate Public Health Postgraduate Program** each year, even though it has numerous electives, but a shorter duration than its private sector equivalents. Government professional development managers want to see a program that is as generic as possible, but complain that students seem to keep graduating with overly specific skills. It seems that the program may be wound up soon, so perhaps this is not an example for Canada to follow.

5. THE FUTURE FOR WATERLOO MPH GRADS: Waterloo anticipate that a good many of their MPH candidates will come from NGOs, rather than from the PH frontlines. Waterloo is looking for people with a relevant undergraduate degree and at least one year of experience. It is expected that increasing demand for Master's-qualified managers in local health departments will readily absorb the Waterloo MPH output - when added to NGO professionals and MDs looking to broaden their professional knowledge at a time when PH is likely to become more important and better funded.

¹⁶ Master's in Population Health Evidence

¹⁷ See p. 27

¹⁸ Nutrition, Veterinary Medicine, Kinesiology, Health & Safety in Agriculture and Toxicology.

6. NOT AN MPH - BUT PRETTY CLOSE: Simon Fraser started planning to introduce its new Faculty of Health Sciences (FHS) before SARS, avian 'flu, etc - so funding is largely internal. The FHS will introduce its first graduate degree in September 2005 - an MSc in Population & Public Health. As noted above, students may take the degree in the thesis or practicum stream. FHS received 75 applicants for cohort #1 and has offered places to 30. This will be followed by a Master's in Global Health degree in September 2006, which will be a two semester 10-course program for health professionals planning to work overseas in low and middle income countries. An SFU joint MBA/MScPH may not be far behind.

Why not offer an MPH?

Toronto believes its MHSc has brand value and sees no compelling reason to throw that away. Also they have been leery of many the MPHs out there - one year only, rather general, often weak on evidence-based teaching, practica and so on. They would rather their degree was considered in a different category. Even so, a self-funding made in Toronto part-time MPH is reported to be under consideration at the moment.

7. HOW ABOUT DRPH INNOVATION? Johns Hopkins has introduced a part-time DrPH, with an MPH pre-requisite. A dissertation is required, but this involves applied PH problem solving and is not hypothesis-driven. This is a big change for JH, who say that they are not especially well equipped with teachers having recent hands-on expertise. So outside experts are being brought in, who work with selected internal professors to structure the course. These faculty members then participate as "translators" for the outsiders during the program, since they in turn may be unaccustomed to current university teaching technique. The regular JH faculty finds war stories are great, but only in moderation.

The **London School** has also launched quite a novel DrPH for "leaders and future leaders in public health practice". It recognizes that these people need to develop advanced skills in public health policy and practice rather than becoming more accomplished researchers. Candidates need the same entry qualifications as for a PhD, but they must also have relevant experience in public health management/leadership. This DrPH can be taken in all the LSHTM's departments. The program comes in three parts:

- Taught Element** - Public health policy, leadership, management & development
- Professional Attachment** - With a public health organization + report
- Research Project** - 50,000 words

Taken full-time this DrPH should take a minimum of three years and a maximum of five. Mixed DL and London-based training options are available.

Flinders University in Adelaide has a DrPH along similar lines, recognizing the merits of a professional doctorate for practitioners and leaders in public health as an alternative to a PhD. The full-time course also takes three years - two years coursework and one year for a dissertation. The first year of coursework can be taken by DL, but residence is required for intensive courses in year two. A dissertation topic can normally be assigned that is in line with a candidate's regular work activities, as well as meeting the Australian DPH's priority areas for research. Entry requirements seem quite flexible.

In Canada, the **University of Montreal** has been working to introduce a flextime DrPH lately to meet demand from active health practitioners in Quebec and overseas who want to upgrade their qualifications. Unfortunately, this innovation was rejected by the Conference of Presidents of

Universities in Quebec because the proposed degree was a doctorate without the requirement for research/thesis.

So, it is understood that the Department of Community and Preventive Medicine at UofM is planning to include the degree as the sixth option on their five option multidisciplinary PhD *en santé publique* that has been running since 1978 and welcoming both MDs and non-MDs. The other five options are conventional research/thesis PhDs. Their current intake is 25/30 students a year from Canada and overseas - including France, Switzerland, Spain, Brazil and parts of Africa, plus a number of anglophone students (mainly Canadian).

Toronto has also considered adding a DrPH degree, but reportedly needs to conserve its resources at present - especially as the department is involved in major changes to its Master's programs. However, there is said to be real enthusiasm at UofT to start a **select enrolment DrPH program for highly experienced senior government people** as soon as they can, featuring exposure to a good deal of research methodology to help graduates accommodate an evidence-based future.

8. PH EDUCATION FOR NOTHING - OPENCOURSEWARE FOR ALL: Johns Hopkins has been a leader in providing access to its most popular PH courses free of charge on the web with OpenCourseWare (OCW). The idea is for their School of Public Health to make available eventually all the course materials used in the teaching of undergraduate and graduate subjects to any user, anywhere in the world at no cost. The original university principle of lectures being available to all, now projected globally on the Internet. This generous process differs from distance learning in that there is no direct interaction between students and faculty and also because OCW students cannot earn JH degrees or diplomas.

Other US universities are actively supporting OCW initiatives including MIT (who started the whole thing), Carnegie Mellon, Tufts and Utah State. There are also six Japanese universities with OCW projects working in partnership with MIT, where the courses are offered in both Japanese and English.

9. GRADUATE DEGREES IN PH NURSING: A number of universities around the world are now offering various graduate degrees in public health nursing. It is clearly not possible for this study to review them all for innovation, but here are some examples of what is happening.

The School of Public Health at the **University of Illinois-Chicago** participates with their College of Nursing in offering an MS Nursing/MPH joint degree program. The joint degree involves no comprehensive examination, but requires either a thesis or a project. Students are allocated two advisors, one from the public health nursing faculty in the College of Nursing, and one from the community health sciences program in the School of Public Health. Considerately, students may withdraw from the joint program and transfer to one of the two degree programs with departmental approval.

The **University of South Carolina's** College of Nursing and School of Public Health offers a similar joint MSN/MPH degree. The MSN degree program is approved by the State Board of Nursing for South Carolina and is accredited by the Commission on Collegiate Nursing Education. The School of Public Health is accredited by the CEPH. The curriculum is designed to prepare nurses for leadership and management positions in nursing and public health administration and includes over 300 hours of clinical practice. MSN/MPH degree course work is typically completed in 2 years for full-time students or 3 years for part-time ones.

Portland State University used to have a PH Nursing track, but they have found little demand today for Master's in PH nursing - MSc clinical or MPH with a management focus are generally thought to be more useful for senior nursing positions.

Nursing is the most numerous discipline in public health. Bachelor's-prepared nurses have been the backbone of Canada's public health workforce for many years. Clearly this will continue to be the case, although nurses quite frequently proceed to master's level studies (often interdisciplinary, such as MPH or MSc epidemiology). It is unrealistic and unnecessary to establish the master's degree as an entry-to-practice qualification. There is therefore an important question concerning the suitability of current curricula for the preparation of public health nurses. There are no clear answers at present and the issue is under review by the Canadian Association of Schools of Nursing.

10. A HELPFUL INNOVATION: McMaster School of Nursing has introduced an arrangement whereby undergraduate nursing students (mainly clinical¹⁹) help PH nursing graduate students with research and data collection for their thesis. In this way, a good number of nurses come to appreciate PH as an important part of delivering health care in Canada and, as a result, some may elect to take PH as their graduate concentration. This is quite an important move in view of the generally low PH content in clinical nursing courses at the undergraduate level.

11. RATHER SPECIAL FELLOWSHIPS: The chair of "Health Inequalities and Community Approaches" at UofM is concerned with the delivery of public health in the everyday life of disadvantaged communities. This requires a profound understanding of the societies concerned and how they work. So those that want to make a worthwhile contribution really need to be a social scientists with a really good understanding of public health.

Unfortunately, the social scientist in this case can become less up-to-date and less effective as a social scientist the longer he/she works in PH as a "most of the time" job. So what is needed are social scientists (psychologists, biostatisticians, GIS specialists, etc) with MPH degrees that move to and fro between PH and their original specialty - teaching, advising and learning.

To meet this need, UofM has initiated a **postdoctoral fellowship** that allows talented social scientists, political scientists and others to spend quality time examining specific public health issues. Melanie Rock - a medical anthropologist - was the first graduate of this program and is now at the University of Calgary. Her UofM thesis was on detecting, explaining and redressing health inequalities by looking at the conditions that entrench a lifestyle that is conducive to obesity, cardiovascular disease and type 2 diabetes across North America. It is understood that the status and impact of Kraft dinners on Quebec society were key factors in this research.

12. PH IN UNDERGRADUATE MEDICAL TEACHING: A recent UK study²⁰ reports that Epidemiology and Disease Prevention were taught in all UK medical schools surveyed, while Health Promotion and Health Inequalities checked in at 94 %, Critical Appraisal at 88 % and Statistics at 81 %. In about three-quarters of the medical schools, public health and clinical teaching were integrated to some extent, while 19 % of courses appeared to be fully integrated.

¹⁹ There are 80 nurses at present taking graduate degrees at **McMaster** of whom 15 are in PH.

²⁰ A. Bagade, S. Gillam: *The State of Undergraduate Medical Education in Public Health in UK Medical Schools* - Institute of Public Health, University of Cambridge, November 2004.

This looks quite encouraging, but the findings did not record how much time was allocated to these topics during the undergraduate medical program. Public Health has traditionally appeared all over the place in this vast curriculum, but it is said to be disappearing because "students don't like it and it has a bad reputation". One of the teaching leads at a UK medical school quoted the "law of threes", commenting that "one third (of his undergraduate medical students) become genuinely interested and have the opportunity here to study PH in more detail, one third get the point and subscribe to its importance without being especially fired up and one third are simply not interested".

The study recommended that undergraduate public health teaching in UK medical schools would be strengthened by:

- Shared consensus on what constitutes a public health syllabus at this level.
- Further evaluation of problem-based public health learning and attempts to integrate public health in clinical teaching.
- More sharing of teaching materials and experience.
- Ensuring epidemiology and public health are examined at Finals.
- Induction and continuing developmental support for [PH] teachers.
- Appropriate recognition and incentivisation of [PH] teaching activities within academic departments.

Students who have recently completed their studies at leading Canadian medical schools report that their programs included "a few lectures" on the Canadian health care system in the first year²¹. They observed that clinical epidemiology and evidence-based medicine were the main focus of their programs and that they rated public health as one of the most boring subjects on offer. This was combined with a general view on the part of these students that public health is not real medicine and that to go into PH having gathered all the necessary clinical knowledge to obtain their LMCC would be a real waste.

There has been considerable discussion about the structure and funding of universities and how this affects training in public health. As noted elsewhere in this report, recruitment, tenure and promotion tend to be dominated by research productivity with much of research being basic science. Many (but certainly not all) university departments of community health and epidemiology (or equivalent) have gradually become basic science departments, perhaps with a presence also in health services research and health policy, but often with only a minimal public health component. Public health practitioners are not particularly evident in schools of nursing either. The result is that students, particularly medical students, are not exposed sufficiently to public health and reportedly find - like the students quoted above - that the subject is "uninteresting" and "soft".

It seems clear that a higher standard of public health teaching in Canada's medical schools would be a useful step in stimulating more students to become public health physicians. It might also ensure that Canada is graduating doctors with a useful knowledge of what community medicine is about and an appreciation of the role that prevention plays in our health system.

²¹ Monica Hau, personal communication.

In fairness it should also be said that, according to the Naylor Report²², Canada's serious shortage of public health physicians is not only due to shortcomings in the education system, but to a failure to retain community medicine graduates by providing rewarding careers in public health.

It may be that in the future some of the currently listed vacancies for public health physicians in Canada could be filled effectively by an increasing number of graduates from BScPH/MPH or similar programs.

Johns Hopkins Bloomberg School of Public Health brought in a consultant recently to help them carry out a strategic review and to develop a new mission statement. The consultant was an expert in strategic planning, but had no knowledge of medicine or public health. He asked the assembled faculty what they believed to be the single most important thing that the School does. Most thought it was research. Nobody thought it was teaching. The facilitator was surprised. As he was walking to the blackboard to write this thing down, he said "You know, it's your place. You decide what is most important. But I have to tell you, it seems a little odd to me that you are the Johns Hopkins School of Public Health and you are the Johns Hopkins University, and education is not a more important issue than you seem to think it is". The final mission statement incorporated a commitment to excellence in both education and research.

Dr. Alfred Sommer

Dean, Johns Hopkins Bloomberg School of Public Health

Speaking at "The Future of Public Health". Part of a Millennium Symposium Series hosted by Harvard School of Public Health - April 11, 2002

²² *Learning from SARS - Renewal of Public Health in Canada* - A report of the National Advisory Committee on SARS and Public Health: October 2003, Chapter 7.

2.4 PROGRAM DELIVERY

It is vital to get out of the classroom - prisons are a much better teaching environment.
Dr. Stephen Gillam, School of Clinical Medicine, Cambridge University

1. OBSERVATIONS ON DISTANCE LEARNING (DL): Distance learning is a seductive activity. In principle, it offers the potential to make qualified people with Internet access anywhere in the world students at your university. It seems that once an online degree program has been prepared, a vast number of students may be enrolled, pay up and study the courses involved at minimal incremental cost to the host university. There are at least three drawbacks to this idealistic vision - four actually.

Firstly, the course material needs constant attention because mistakes will be found continually from day one, lecturers will change from time to time and no discipline lies so deeply fallow that teaching modules require no updating to keep up with technology and the march of advancing scholarship. Secondly, students need to talk to faculty about the program and its content - usually by email all the time, day and night. Thirdly, most degree programs require students to submit coursework and examinations regularly during the year - all of which must be read, marked, evaluated and returned without delay. Fourthly, computer systems and their associated communications networks are subject to random and sometimes catastrophic failure.

In spite of these factors, some universities are dipping their toes into the world-wide distance learning business and some of these are offering very good graduate degree programs in Public Health. This is an area where innovation is widespread and innovators earn their money.

AS WITH DATA MODEMS, SO WITH TEACHING

ASYNCHRONOUS LEARNING: Learning in which interaction between instructors and students occurs intermittently with a time delay. Examples are self-paced courses taken via the Internet or CD-ROM, Q&A mentoring, online discussion groups, and email.

SYNCHRONOUS LEARNING: A real-time, instructor-led online learning session in which all participants are logged on at the same time and communicate directly with each other. In this virtual classroom setting, the instructor maintains control of the class, with the ability to "call on" participants. In most platforms, students and teachers can use a whiteboard to see work in progress and share knowledge. Interaction may also occur via audio- or videoconferencing, Internet telephony, or two-way live broadcasts.

2. THE LONDON SCHOOL - A LEADING PLAYER IN DL: The LSHTM has been offering a Health Services Management course by DL since 1999. So far, more than 400 students have graduated from this course. In October (2005) they will offer their whole MScPH program (generic and all streams) on DL. Most of the modules are already available for student download.

The DL MScPH degree program will be supported by CD-ROMs, paper-based readings and subject guides published by McGraw-Hill - soft bound at £18.99 retail. Written and other DL material is provided by in-house people, augmented by modules from other universities. The DL degree costs £8,320 (pay in advance or pay as you go) and can take between two and five years to complete.

LSHTM believe there is a large market out there for DL in PH - especially from those who cannot afford to spend a year in London. The first MScPH course (2005/06) is now full (110 accepted from 200 applicants). They were quite surprised to find that about half of those accepted were British! Apparently this is because employers cannot afford to have their better people away for 12 months full-time.

The school expects that international enrolment will grow, but that UK numbers will fall off as more local MPHs crop up across Britain, allowing students to take courses part-time from home. It is worth noting that, although LSHTM believes there is a substantial global appetite for their postgraduate PH courses, they are carefully controlling enrolments at this stage. This underlines the fact that, although it seems technically simple to handle large numbers of students on a web-based degree course, as noted above - their work needs regular assessment, their questions need to be answered promptly, language/cultural difficulties can arise and cheating can become harder to detect due to the sheer volume of work submitted for evaluation. LSHTM's lowish velocity approach to the market seems wise for now.

This year LSHTM also introduced mixed-mode or **blended learning** for the first time²³. London-based Master's students are now able to select two advanced modules for distance learning, in place of in-house study units. This mode of study proved to be popular with students who for various reasons referred to work off campus and a larger trial will be carried out next year. In a related development, research degree students are now allowed to take a number of distance learning units instead of London-based teaching units.

LSHTM plans to explore another market area in Autumn 2006 when it will launch another mixed mode MScPH program featuring one term (5 weeks, say) face-to-face in London + DL for the rest, supported by the British Council offices around the world that can help with interviewing, checking that the students are preparing their own written papers and other administrative tasks.

3. THE ULTIMATE DL PROGRAM: Manchester University introduced the first online MPH in the UK during 2001. This was largely a DL version of their existing on-campus MPH. They have now gone a step further by offering their new evidence-based MPH program (MPHe) on an **all DL basis**. So there are no on-site students or physical facilities - all are distance learning candidates who have no obligation to visit Manchester, unless they really want to. Using WebCT, it reaches people from anywhere in the world who cannot get to universities for all sorts of reasons - provided they meet the program's intake qualifications. A group of consultants were brought on board to create the course modules - actually a quite low-tech task - and new staff were introduced, responsible for tutoring the MPHe units. The new degree still calls for a dissertation (10,000-15,000 words) - Manchester U. being rather traditional in this respect. Full-time students can complete the program in one year and up to five years are allowed for part-time study.

The MPHe degree is aimed at multidisciplinary staff working on population health - both specialists and non-specialists. Their brochure explains that "the program emphasizes a self-directed approach and encourages participation and discussion between students and tutors through discussion boards and collaborative exercises. Materials feature integrated self-assessment exercises".

Manchester's MPHe got started in September 2002 with high quality courses and the university has not limited class expansion. In spite of this, and the potential worldwide reach of the program, current enrolment is only 177. Not all students are taking the whole MPHe program either. Some just

²³ Already widely available in the US.

take modules to increase their subject knowledge²⁴. Like their colleagues at LSHTM, the staff of Manchester's Evidence for Population Health Unit (EPHU) are equally concerned about being overwhelmed by the task of servicing large numbers of mainly distant students.

Other issues may also be of concern at Manchester's EPHU. They have just announced (August 2005) that from 2006 the degree will change its name from Master's in Population Health evidence (MPHe) to **Master's in Public Health (MPH)**. In addition, the MPH will combine forces with the university's Division of Primary Care²⁵.

4. ENTHUSIASM FOR DL IS NOT UNIVERSAL: The School of Public Health at **La Trobe**, for example, doesn't care much for DL. They find that the technology can readily fall over, student participation is often poor and that online folk seldom check-in to discussion boards. Obliging DL students to work on the weekday evenings after a day's work has not been a good approach either, in their experience. They have found that in-person sessions on Friday work much better. Also face-to-face teaching gives social structure to the program. The **Deakin** DL school was on paper, but has now migrated to Web/CT. La Trobe's version is said to be more clumsy on CD ROM/ppt with voice-overs. It uses teleconferencing rather than online discussion boards - but it is more flexible. So, online is not the only DL approach. The bottom line is that "most teachers are used to face-to-face classes" and that not all university lecturers feel comfortable with web-based DL.

Johns Hopkins does have some DL as well - but the faculty think its not all that its cracked up to be. JH has run into technical (and time) problems converting courses to DL. In their experience, DL works best with courses that don't change very much with time such as Epidemiology Basics and the History of Public Health. Also JH is finding that enrolment on DL courses/programs is flat - exhibiting very little growth. Some staff just don't like DL teaching. They find DL a real bother - especially random student access. It is understood that DL may suit some mid-career teaching/courses, when the student really cannot get away from the job, but some feel it amounts to pretty poor instruction compared with real in your face teaching. The best compromise perhaps is a blend of DL with face-to-face summer courses in Baltimore.

Waterloo points out that it is particularly hard to assess distance learning students who spend two weeks on campus at the start - allowing staff to gather only an initial idea of their strengths and weaknesses. Then they are not seen again until they return for four weeks at end of their program to participate in projects that test collaboration and other team skills, as well as their subject knowledge.

It should also be noted that **Memorial University of Newfoundland (MUN)** has been a leader in the development of DL technology for more than 30 years. Their Distance Education and Learning Technologies group continues to provide advanced solutions in support of the delivery of individual courses²⁶ and complete degree programs to students around the world.

5. DL NOT SUCH A GREAT INNOVATION, THEN? Actually, keen observers of the PH scene in Washington tell Nevis that distance learning of PH is pretty static overall - although some individual courses are growing. For example, DL continuing education courses in the US for local PH unit employees are going well, at least partly because they include plenty of face-to-face work to build the cultural competencies that are really necessary for front line work these days.

Lakehead had no intention of offering any Distance Learning to start with. But as soon as their MPH was launched three years ago, there was a great outcry from the north for a DL MPH program.

²⁴ The MPHe degree costs about £3,700.

²⁵ Part of their School of Medicine

²⁶ Including courses in the MUN Nursing program.

Academic staff were really uncomfortable about DL at the beginning - as most liked to have a class to talk to in front of them. Now they find the DL experience varies from "marvellous to inconsistent". Lakehead was the first Canadian university into DL but there is no accreditation as yet.

McMaster School of Nursing had real trouble with DL technology to start with when a class dropped from ten students at the start to only two a few weeks later. They now arrange for all DL students to come to the university for a one day session of instruction at the outset on how to interact successfully with the course over the Internet. This has the added advantage that students get to meet each other face-to-face off the top. Participants have been found to be much more interactive after these start-up sessions.

It looks as if university teaching staff on the whole are not greatly in favour of DL, finding that it takes up too much time in preparation, support and maintenance. On the other hand, it can meet real offshore (and on-shore) student demand with minimal physical overheads. It could make quite a lot of money, too. **Perhaps specialist outsourcing companies will spring-up to take the main operational load off the universities and schools.**

6. FLEX TIME PROGRAMS: A Flex Time (part-time) program allows students to select a schedule for a mainly course-based program that addresses their need for flexibility, possibly as a result of their work schedule. Time may be arranged to suit students' requirements on a weekly basis and may also involve grouping course material together at weekends or in larger chunks during the summer. Most universities offer flex time options in association with their full-time degree programs.

UofT are planning to field a new part-time **Master of Applied Health Science** degree, drawing on the existing faculty to provide modules including health practitioner education and leadership training, wound prevention/care, and infection control. This hands-on flex time program would be delivered during 6 weeks in the spring and 6 weeks in the fall of each year.

Another projected UofT innovation is a **Global Health Summer Institute** due to start in 2006. The plan calls for continuing education short courses and certificates to be provided at the outset, to be joined by a flex time **MPH program**²⁷ for experienced public health practitioners in the summer of 2007 or 2008.

7. TEAM LEARNING: At **Lakehead**, some courses are 100% DL - that is to say that all the teaching material is presented as text, audio or video clips. In addition, most lectures involve webcasting (WebCT) using "Smart Classrooms". The physical classrooms at Lakehead are specially designed to allow an instructor to teach in front of an actual class, while allowing broadcast of everything that happens to distant students who can also participate by asking verbal questions or by typing observations on a "Chat Line" at the bottom of the display that shows the instructor.

Students are formed into teams for much of their DL participation. Lakehead has found that many students that have never met have nonetheless established close personal and professional relationships. Work is in hand to fix picture quality that can be poor at times and to increase the maximum number of DL participants at each session.

²⁷ Summer 1: Four courses in 4 week block, Fall/Winter: two courses/field practica via DL, Summer 2: four courses in 4 week block.

8. PROBLEM-BASED LEARNING (PBL): Back in the late 1960s, McMaster Medical School created a learning environment that involved small groups that were self-directed, interdependent, cooperative and self-assessing and were tasked with learning by solving problems. This approach was constructed to embody the latest techniques in learning, especially those thought to stimulate metacognitive²⁸ and deep learning. The basic principles of PBL have changed little since then, so it is not a recent innovation in itself. Today's PBL innovations come more from the ways in which small group (and larger group) PBL is used in practice.

For example, McMaster continues to use PBL widely, deploying simulations in PH programs - with patients played by actors programmed to illustrate family problems, etc. Simulations are also used for exams, known as "Objective Structure Clinical Exams" (OSCE) that are now quite extensively used elsewhere. The candidates go from one acted-out scenario to the next hopefully revealing their knowledge, expertise and problem solving skills. A bell rings to indicate when it's time to move on to the next problem.

Student buy-in seems to be a persistent problem with PBL²⁹ - especially at the undergraduate level. Although students tend to agree that they learn well with PBL, they are often uncomfortable with the way it works. The main reason for this discomfort seems to be the uncertainty they feel about how to do well in this new (to them) academic environment. They know how to succeed when the program content is presented before problems have to be solved. In PBL, however, they meet a problem-rich scenario first and are then required to work out the learning objectives and therefore the course content that will allow them to solve the problems involved. This is a particularly unsettling approach for students who like a more passive 'sit quietly, blend with the woodwork' learning technique. Experienced PBL teachers recommend gradual introduction of PBL units at the undergraduate level, followed by more frequent use of the method in graduate programs.

However, Simon Fraser is not over-enthusiastic about teaching courses using problem or case-based techniques. Other universities have used them successfully, but SFU has found them to be highly faculty intensive. They say it has proved very demanding to make numerous instructors available to run frequent problem-based scenarios, when the same knowledge could have been effectively delivered more quickly by a single instructor in more conventional ways.

Depending on the subjects being taught, Cambridge University believes that the jury is also out in the UK on whether these methods deliver the goods any better than conventional teaching. Maybe what was good enough for Oliver Cromwell, John Milton and Charles Darwin should be more than satisfactory for today's PH students.

On the other hand, the University of Delaware has been an enthusiastic PBL user since the 1990s. Their staff report³⁰ that "they've seldom felt as energized about their teaching and seldom seen their students so motivated and involved". John Cavanaugh, vice-provost for Academic Programs and Planning at Delaware maintains that "the Lone Ranger has gone - the way the world works now, it's about working together" and that's why PBL's time has come, in his view.

²⁸ The metacognitive process promotes learning by guiding students' thinking and by helping the learner follow a wise course of action as he or she thinks through a problem, makes decisions, or attempts to understand a situation or text.

²⁹ Learning & Teaching Centre - University of Victoria: *Currents*, Vol 2, No 2 - March 2005

³⁰ National Teaching & Learning Forum - December 1998/ Vol 8, No1.

9. TWO FACULTY INITIATIVES: In an innovative move at **Waterloo**, some "joint hires" have recently joined the MPH faculty. They will work part of the time delivering MPH courses, as well as teaching in other departments - such as math and statistics. Salary costs will be split accordingly.

Lakehead University in Thunder Bay and **Laurentian University** in Sudbury will jointly open the Northern Ontario School of Medicine in September 2005³¹. The new faculty is 100% supportive of the existing PH activities at both universities. All medical faculty members can also be associate members of the PH department, since a number of medical specialties are in PH disciplines.

³¹ The first new medical school to open in Ontario in 30 years.

2.5 INTER-UNIVERSITY COOPERATION

1. JOINT DEGREES: For the purposes of this study, joint degrees are single degree programs, like an MPH, delivered collectively by several universities - partly as a means of saving money in the face of government funding cut-backs and partly to allow students to receive the intellectual breadth and experience of more than one faculty for at least part of the program. This is already happening in the US state university system and in the states of Victoria and Queensland in Australia.

Victorian Consortium for Public Health (VCPH)

VCPH was first established in 1993 to deliver a single MPH degree in the state of Victoria. Students enrol through one of the four partners:

The Faculty of Health and Behavioural Sciences at Deakin University
The School of Public Health at La Trobe University
The School of Population Health at The University of Melbourne
The Department of Epidemiology and Preventive Medicine at Monash University

Each university contributes two subjects to Part 1 of the program which is taught at a common location. Students gain from exposure to teaching of a broad range of PH topics, as well as from the background and experience of their fellow-students during Part 1. Part 2 is carried out at their own university, where the courses are reflective of that school's research strengths and its faculty's experience. The total VCPH MPH enrolment was 435 in 2004.

This works well in the unusual situation where there are four universities in a single city, all teaching public health. A similar consortium might be possible in southern Ontario, although more travel would certainly be involved.

At least one Canadian university maintains that joint degrees in PH are fine as long as they do not stray outside a single province - ideally a single city. Too large an area reduces flexibility and places serious travel burdens on students and faculty alike. They too acknowledge the advantages of economies in faculty and the ability to deliver a wide range of strengths across the whole PH field - rather than just the specialties of a single university. They also point out, however, the challenges of organizing the whole structure in the first place and then keeping it going to a high standard. Moreover, accreditation of the program may be harder to achieve when several institutions and their managements are involved.

Joint degrees are now starting to appear on the international scene. Participants include the newly minted PHS department at UofT looking to develop its **Four Seasons Institutes**³² in 2008 in cooperation with international partner universities in China (Shanghai) and the Middle East to start with, followed by expansion to include Indian, African and South American universities. Getting started a little earlier possibly, Simon Fraser University's new **Public Health Faculty** is planning to participate in the joint degree programs that SFU has already established in China with 50/50 program content and 50/50 exchange of students.

Portland State was unique in being the first cooperative academic health centre in the US, 11 years ago. The state health board said there would be only one MPH degree in Oregon and that it would be one that responded to the regional PH workforce needs. A regional offering turned out to be a great idea. It involved collaboration of three universities in the state - Oregon Health & Science

³² So called because they will provide similar programs and activities to the planned Toronto Summer Institute, but all the year round at international venues.

University, Oregon State University and Portland State University. The resulting MPH consists of broad PH training plus specialty tracks offered by the three universities involved. It got started in 1994, with CEPH accreditation, and it is coming up for renewal in 2005.

The introduction of a **national MPH program** is said to be under active consideration in Australia as an alternative to the current variety of degrees being offered across the country. These discussions follow on from a PHERP pilot project for national web-based delivery of core MPH components, in cooperation with academic partners that included the University of Sydney, Flinders University and the University of Newcastle.

2. COMBINED DEGREES: Combined degrees, such as an MPH/Law, can be put together within one university or as a cooperative venture between two (seldom more than two) institutions. PH practitioners find that they need to be increasingly savvy in a wider range of activities, so joint degrees may now couple an MPH with an MBA, or degrees in other relevant subjects like ethics, law, and health economics. Sometimes other topics can be accommodated as modules within the MPH. This may mean less depth provided in the subsidiary courses, but it can save time compared with taking two full-scale postgraduate degrees.

Combined degrees are certainly in favour at the University of Calgary. They are seen as an innovative response to the increasing demand for individuals within the public health system with graduate training in law or management, for example, while recognizing that these people will be much more effective if they also have a good understanding of public health. There can be some cost and time savings for the students as well, compared with doing two separate degrees at different times, especially if both the combined programs are provided by the same university.

La Trobe has introduced a novel combined PH/Law degree. They are sending legal interns to work with state PH agencies and on overseas assignments, such as working on HIV/AIDS legislation in Papua New Guinea. The Victorian Consortium also has special block-mode MPHs for aboriginal students, as well as an MPH focusing on community health for older people.

On the down side, the growth of combined degrees may be limited by the management challenges involved in making programs from dissimilar disciplines and organizations work together cohesively. The LSHTM, for example, discontinued their joint MSc in Health Policy Planning and Financing with the well-known London School of Economics, reportedly due to differences in teaching methods and course management styles. The degree was very popular with students though. Nevis believes LSE still offers courses on economics for community physicians and public health doctors.

Combined degrees presently on offer at Johns Hopkins are shown below as an example of well thought out innovation:

MPH/JD

The School of Public Health, in cooperation with the Georgetown University Law Center, offers a dual degree program in law and public health. Students in the program earn a Juris Doctor degree from Georgetown and a Master of Public Health degree from Johns Hopkins. The joint degree program takes a total of four years, including one summer.

MPH/MBA

The School of Public Health and the Johns Hopkins School of Professional Studies in Business and Education

(SPSBE) offer an 18-month full time dual Master of Public Health and Master of Business Administration degree.

MPH/MSN

The Johns Hopkins University School of Nursing and the School of Public Health offer a dual Master of Public Health/Master of Science in Nursing degree program. The 18-month program of full-time study is designed specifically for nurses seeking to link their clinical and managerial interests with public health.

MPH/MSW

The School of Public Health and the University of Maryland School of Social Work (UMSSW) offer a dual MPH/MSW program that provides students with the knowledge and skills that will enable them to be effective practitioners and leaders in health-related agencies and settings.

Edited from the JHSPH Prospectus 2005/06

Another popular degree that is widely available in the US is the combined MD/MPH, designed to train medical students to become future leaders in public health. A well-known example is the Stanford/UC Berkeley MD/MPH program in Community Health and Public Service, which also includes a two to five year longitudinal field project. The requirements for both degrees can be fulfilled within five years. A recent student says he took the MPH during medical school because "he felt starved for a broader view of health"³³.

3. TRANS-INSTITUTIONAL COOPERATION: LSHTM cooperates with other institutions (and within the University of London) to **exchange course modules** that help reinforce areas where LSHTM is not especially strong - such as social science, health law, statistics and so on.

The University of Hawaii would like to see more collaboration between universities on course materials, teaching modules and other resources. They are a small school, so cooperation would allow them to produce stronger MPH programs without greatly increasing their faculty. They are getting a lot of very young bright students these days, but with no PH training - unlike 10 years ago when most incoming students were more likely to be experienced mid-career PH practitioners.

A meeting was held in March 2004 between the Universities of Alberta, Manitoba and Saskatchewan to discuss sharing of PH training - movement of students, web-based courseware, etc - rather like the existing *Western Canadian Deans Agreement*³⁴. This group also had a recent meeting to discuss collaboration on a joint MPH. There has been no outcome to date as participants were said to be "going in different directions". They are also working with the not for profit Centre for Coastal Health run by Dr. Craig Stephen in Nanaimo, BC which specializes in the interactions of human, animal and environmental health. This interesting innovation is linked to the Western College of Veterinary Medicine.

³³ Matt Mendenhall - Stanford School of Medicine Class of 2006, MPH Berkeley, 2004.

³⁴ Participants are: Athabasca University, University of Alberta, Brandon University, University of British Columbia, University of Calgary, University of Lethbridge, University of Manitoba, University of Northern British Columbia, University of Regina, University of Saskatchewan, Simon Fraser University, University of Victoria.

PUBLIC HEALTH RESEARCH, EDUCATION AND DEVELOPMENT PROGRAM [PHRED]

When PHRED (called Teaching Health Unit (THU) until 1996) first appeared on the scene in the mid-1980s, it was a unique public health innovation in Canada and internationally. The staff in the program to this day are frequently consulted by provincial, national and international colleagues because the Ontario PHRED Program is recognized for its innovation and leadership. In 1983, the Ontario Ministry of Health approved, in principle, the creation of the provincial THU program. The program was created to better balance the health system by strengthening its prevention and public health services. The program required a formal affiliation between a university with a health sciences centre, a designated board of health and the Ontario Ministry of Health.³⁵

In 1985, the first two THUs were established in the Ottawa-Carleton and Hamilton-Wentworth public health units. Subsequently, six more THUs were established in Kingston, Frontenac and Lennox & Addington; Middlesex-London; Sudbury & District; East York; North York; and Toronto.

The THU program was designed to ultimately improve public health practice by providing practical training for future public health professionals and by encouraging, guiding and developing public health research.³⁶

Five PHREDs remain operational and engaged in the process of public health renewal. Current activities include participation in the Effective Public Health Practice Project, Core Competencies and the Rapid Risk Factor Surveillance System evaluation. The changed funding formula which requires municipal contribution has caused uncertainty and hampered development. The Toronto PHRED has closed down.

These PHREDs or teaching health units fulfill a similar purpose in public health to that of the teaching hospital in clinical medicine. They allow experienced public health professionals to teach and possibly carry out research at the university concerned, while enabling students to benefit from the direct experience of working in a regional or city public health unit. As the Naylor report commented: "This valuable concept should be embraced in every city where the 16 Canadian health science faculties are located. "Teaching health units" are critical if public health is to attract its share of exceptionally able physicians, nurses, epidemiologists, social scientists, and other public health workers"³⁷. It is understood that Calgary and Saskatoon are developing new teaching health units at present.

It should also be noted that the Departments de Santé Publique in Montreal, Quebec City and Montérégie have long been affiliated with university centres and have acted as training sites for community medicine residents, medical students and master's students.

4. A US VIEW OF CANADIAN PH EDUCATION: The School of Public Health at Johns Hopkins is keen to promote closer links with public health education in Canada. They say that some of their best faculty are Canadian and some of their best Health Policy students are too.

³⁵ http://www.phred-redsp.on.ca/about_phred/history.html

³⁶ http://www.phred-redsp.on.ca/about_phred/history.html

³⁷ Ibid: Section 7D, *A Public Health Human Resources Strategy*

They maintain that the PH infrastructure in Canada is still quite weak, in spite of the introduction a national public health agency - a view shared by a number of young Canadian students at the school, they say. They feel that stronger education is needed here to stimulate Canada's existing fledgling programs - rather as JH has been providing in Barcelona and Taiwan. **JH are looking for one or more Canadian universities to team up with.** They would like to offer short term (maybe summer) courses on PH Policy and Management - the biggest need in Canada's PH practice community - in their opinion.

5. OVERSEAS OUTLOOK:

Johns Hopkins is also seeing a drop in overseas students. Men are finding it very hard to get US student visas post 911 (a growing opportunity for Canadian universities?). JH are going overseas to run degree courses now, if the students are unable get to them. Meanwhile, JH MPH students are currently 70% women, 30% men.

As we have seen, overseas students have been welcome sources of additional revenue for universities in Canada, the US, Australia and the UK over the years. The threat of global terrorism and unwanted back-door immigration have resulted in more obstacles being placed in the way of foreign students wishing to attend school in the west. As these numbers dwindle, host universities offering graduate programs in public health and other specialties are reacting not only by fielding more DL courses, but also by setting up shop overseas and looking for effective partnerships.

Australian universities have been particularly active, with Monash opening campuses in Malaysia and South Africa while Adelaide University has formed major partnerships with the Sepang Institute of Technology near Kuala Lumpur and INTI College based near Port Dickson on the Straits of Malacca. Meanwhile in the UK, the University of Manchester has recently established two overseas partnerships to help support their MPH in the oil-rich Gulf region. In **Saudi Arabia** and **Qatar** they have teamed up with institutes that are able to help select and enrol students, while providing a local point of contact for students that also speaks Arabic. **Manchester say they would welcome a Canadian partner university to help expand their evidence-based PH activities into North America.**

International teaching and cooperation loom large at Simon Fraser. Very little is undertaken without an eye on overseas markets and being a west coast university this means that Asia-Pacific looms largest. As mentioned already, SFU has **joint degrees in China** with Chinese students coming to Vancouver, Canadians going to China for half their credits. Since the development of their PH faculty is a major investment at SFU, it will no doubt be an active participant in the university's international activities.

CHAPTER III: MAKING IT HAPPEN

3.1 COMPETENCIES

1. NOT A LOT OF INNOVATION: Public Health competencies have been around for some time now³⁸ and can hardly be considered an innovation in themselves. They started off as a standardized method to help define the core skills necessary in the health system to deliver an agreed range PH services to the population. This was followed by the development of more specific competency sets relating to nursing and to other specialties such as epidemiology, genomics and environmental health.

So, although the competencies themselves are not new, the fact that they are present and are being used quite widely now, may facilitate other innovations. For example, CDC say they are pleased to see that the use of competencies is growing as they present a good challenge to academics, making them think about what students really need to know. However, this is not sufficient to prepare people to become really capable in the field. Schools need to prepare students for practice work. At present, community-based graduate PH programs tend to be more practice orientated so there is a real opportunity for innovation at US schools of public health in closing the theory/practice gap and at the same time delivering a more consistent output. Competencies seem less important for the ongoing training of states PH employees - although Montana (and others) do all their training with competency-based performance reviews.

Actually, one of the main reasons why CDC is seeing increased use of competencies by US universities in developing their MPH programs is that they have little or no choice, as CEPH requires competencies to be used to show that programs meet standards. Unfortunately, there is some confusion now because the ASPH³⁹ is coming up with another set of PH practice competencies - including all kinds of clinical requirements, allegedly to discourage non-MD enrolment. Universities and other players interviewed for this study seemed reasonably confident that the proposed ASPH competencies would not be adopted.

2. MOST NORTH AMERICAN UNIVERSITIES ON BOARD NOW: The JHSPH faculty seem reasonably happy to use competencies. The core PH functions are found to be relevant and important guidance for those putting new PH courses together. It is also valuable to be able to see a glance what all PH students must know in the field. One teacher interviewed for this report believes his courses are popular at least partly because they are designed to deliver core competencies.

Canadian universities interviewed were also mainly supportive of core PH competencies agreed by both universities and employers, when they are used to guide the content of individual PH programs or courses. Waterloo mapped their MPH against the Joint Task Force draft set of core competencies during their recent program development process, but they believe there's a lot more to be done yet on that front.

³⁸ Used by CDC as part of their Public Health Work Force Strategy introduced in April 2000.

³⁹ Association of Schools of Public Health

3. COMPETENCY MEASUREMENT CALLS FOR INNOVATION: Waterloo points out that measurement is a real challenge. Given that a course teaches most of the teachable skills/competencies, universities must then construct tests, exams and other assessment tools to find out if the students have acquired the necessary competencies. This is not easy to do. It is pretty simple to write up a list of 50 or so competencies, but very often they are not written in "testable language". So proper evaluation of a student's competence is frequently quite a fuzzy process. Clearly no university can teach all the needed skills, neither is it possible to devise tests for them all. So there is merit in having an accreditation organization assess the university, teachers and review the MPH program (for example) and then provide or withhold accreditation on the basis of their findings in the same way as CEPH does.

In the US, they agree that it can be hard to measure student competencies - especially as some of the main MPH competencies are quite subjective. But happily, the National Board of PH Examiners (NBPHE)⁴⁰ is about to arrive on the scene and expects to register its first applicants in 2007 - certainly an innovation. They are said to be planning a largely practical assessment. The trouble is, the board does not yet enjoy buy-in from the whole PH community. State and local health departments are low on cash and can see that registered PH practitioners will cost a good deal more than the unregistered ones they have now. Also, they are not convinced that the MPHs coming out the end of the system will have the right competencies to practise frontline PH anyway. In addition, consulting firms and managed care operations are snapping up MPHs rapidly at higher salaries. Schools/accredited program folk support the introduction of the NBPHE, while CDC are sitting on the fence. If the states come on board, we understand that CDC will do so too.

Some US (and UK) competency systems involve self-assessment. People are naturally reluctant to show their weaknesses, also "they don't know what they don't know", do they? It is altogether too easy to present a false picture of one's skills/abilities. Supervisor feedback should really be a requirement.

Ron Bialek, Executive Director - Public Health Foundation, Washington, DC.

4. ROLL YOUR OWN PH COMPETENCIES: UofT has created two sets of home-brewed competencies. One covers Generic Public Health and one is specifically for Epidemiology. They have been sent to the Association of Public Health Epidemiologists in Ontario for review. Observers say the Epidemiology competencies will be pretty clear, but they have a strong Ontario slant. Public Health units in other parts of Canada may have only one epidemiologist - some have none at all, so the competencies specified will need some adjustment for use outside the main urban centres. Some academics believe that each discipline has the potential for turf battles over competencies as they come round for review and approval.

5. SOME RELUCTANCE IN CANADA: The University of Alberta is not very enthusiastic about competencies, although both they and the University of Saskatchewan find them helpful when putting together a syllabus and for identifying learning objectives.

The University of Montreal also finds competencies useful for constructing courses, but otherwise believes them to be unhelpful. The UofM MScCH is currently the only non-MPH accreditation by CEPH - although the degrees cover similar ground. UofM thinks it is a better degree than an MPH, claiming that it is more flexible since it offers three streams: research, professional for people who have worked in PH already and professional for those who have not.

The existing core competencies for Public Health Nursing in Canada are just coming up for their second update along with a similar set for Ontario. Nursing schools agree that these competencies

⁴⁰ Like the National Board of Medical Examiners

are easy to hit and useful for syllabus preparation. They also think it's a good idea to have certification of the PH specialty through the Canadian Nurses Association.

6. EVEN LESS VERVE IN AUSTRALIA: As noted earlier, La Trobe has little confidence in the current competency set-up in Australia, even as a guide for MPH course content. It is currently being driven, they say, by jobs needing less-qualified individuals (rather than those with MPHs) such as alcohol abuse, drugs, and aboriginal health. They believe that much broader population-based competencies are needed. Some sectors of the existing PH workforce may benefit from the present competency list, but it creates the danger that everyone is expected to be the same - not true in fact, nor desirable in front-line PH practice.

All Australian universities report against 50-odd MPH core competencies for training coverage. But, as in other parts of the world, there is no national exam for registration/ certification of PH graduates.

The bottom line on the development of a new university degree syllabus is that each university will teach what its faculty knows something about⁴¹. There is an on-board knowledge of what a student needs to know about the core course topics - which have usually been taught for some time. New courses will be tailored to fit in-house expertise, or new faculty will be hired to fill the gap. This is how the system operated before the arrival of competencies and how it operates now in other disciplines - such as engineering - where competencies are little used at present.

⁴¹ One of the reasons why a pan-Canadian MPH program may seem unattractive in some quarters?

3.2 ACCREDITATION AND REGISTRATION

1. INNOVATE BY MAKING NON-MDS PH PROFESSIONALS IN CANADA : In traditional terms, the only public health "professionals" in Canada today are those practitioners who have obtained a degree followed by professional accreditation/licensing - such as community health doctors and nurses. At present, we have neither a national body to provide accreditation of public health degrees awarded by Canadian universities nor a chartered organization to grant subsequent professional registration of public health graduates. However, there seems to be growing recognition in Canada, as there is in the UK, that accreditation and registration of non-medical public health practitioners would be a good thing. Delivery of public health today includes a wide range of specialties⁴² that can only be delivered by highly qualified individuals who would normally be recognized as professionals, if practising their skills in other fields of activity. Including these much-needed players as public health professionals on the same level as their medically qualified colleagues must be a step towards making public health a more attractive career destination than it is at the moment for many of these people.

In addition to the well-established system for registration of nurses, **sanitary inspectors** (or environmental health officers/professionals as they are called today) have been overseen by a statutory body in Canada since 1934, when the Canadian Institute of Sanitary Inspectors was incorporated under federal charter. There were no formal exams in those days and individuals could only become inspectors by serving an on-the-job apprenticeship, combined with diligent study of the "Manual for Sanitary Inspectors". A innovative postal correspondence training course came along later in 1942⁴³.

Today, Canadian public health inspectors and environmental health officers (PHI/EHO), collectively called environmental public health professionals, are represented by the Canadian Institute of Public Health Inspectors (CIPHI). CIPHI holds board of certification examinations twice a year, for candidates who have obtained the necessary academic qualifications and have served the required period of field training.

These are examined by currently practicing environmental public health professionals. This leads to some consistency in the competencies of those joining the profession and allows CIPHI to exert some control over entry to the field.

Undergraduate degrees for the field of environmental public health are available from (5) schools including: a Bachelor of Applied Science from Ryerson University, a Bachelor of Technology (Environmental Health) from the BC Institute of Technology, a Bachelor of Technology (Public Health) from University College of Cape Breton, a Bachelor of Applied Science in Environmental Health & Science from the First Nations University of Canada in Regina and a Bachelor of Environmental Health from Concordia University College in Alberta. The schools offer a variety of opinions for degree completion e.g. Co-op programs, fast-track options, distance education.

2. US ACCREDITATION IN CANADA - NOT AN INNOVATION?: Canadian PH degrees used to be accredited by the CEPH, but that stopped in the 1930s when Schools of PH in the US began to exist independently from Schools of Medicine. More recently, in the 1960s/70s, the Schools of Hygiene at McGill and UofM also chose CEPH accreditation. In what is certainly a present day innovation,

⁴² Such as GIS, statistics, risk analysis, dietetics, sociology and health management.

⁴³ And remained operational until it finally faded away in 1968.

UofM's MScCH was accredited by CEPH in June 2005⁴⁴, after two years of candidature and a "long, tedious process". The University of Saskatchewan will also be going for CEPH accreditation of their MPH in 3-5 years. Meanwhile, they are strong supporters of professional registration examinations for PH graduates after some time on the job.

3. BUT IS CEPH RIGHT FOR CANADA?: CEPH has different categories of accreditation depending on the type of teaching organization involved. **Schools of Public Health** must be independent entities⁴⁵ that teach all five CEPH PH domains and (since June, 2005) three doctorate degrees in PH. **Graduate PH Programs**, provided by non-independent Schools of Medicine, universities, etc need not teach all the domains. Doctorates are not required for certification by CEPH either. These programs are mainly taught on a flex-time basis, since many students come from PH agencies.

Both types of institution must state and defend the competencies they teach to secure accreditation. But they all meet the general competencies in different ways. So there is still no such thing as a "standard" MPH in the US. Universities will always teach what will work for them. If they are very active in International Health for example, their MPH courses will inevitably come out skewed in that direction.

This problem is at least being discussed in the US now. CDC reports that some guidelines have been prepared and passed around for review. Core competencies have also been recommended, derived from the core subjects likely being taught across the board. At the same time, they are working towards a national certification model involving Faculty exams. As noted above, all this must eventually "pass the market test" before it is universally accepted in the US and adopted.

4. UK REGISTERING PH SPECIALISTS: In the course of researching the public health workforce situation in the UK during the late 1990s, PHRU⁴⁶ staff were surprised to find that a number of senior front-line PH positions in National Health Service (NHS) had been filled by physicians with limited public health training. It was apparent that there was an urgent need to establish a registration system based on well-established competency-based guidelines.

The Tripartite Group⁴⁷ in the UK established a voluntary register of public health specialists designed to boost public confidence in public health practice at senior levels within the NHS by means of independent regulation. It is being pitched at the Director of Public Health (PCT)⁴⁸ level. It operates in a similar way to the General Medical Council (GMC), in that it will publish its register of competent specialists in public health, it will revalidate these individuals periodically to make sure they remain up-to-date and competent and it will attend those who fail to meet the necessary standards.

Although registration is voluntary at present, the objective is that it will eventually become a statutory register. The objective here is to make sure that multi-disciplinary specialists in public health are appropriately qualified and competent. So, after the transitional period of voluntary registration, it is expected that the NHS will normally employ only specialists in public health who are on the register.

⁴⁴ The Master of Science Program in Community Health at the University of Montreal's Department of Social and Preventive Medicine in the Faculty of Medicine.

⁴⁵ Separate from a School of Medicine with their own Dean, etc.

⁴⁶ Public Health Resource Unit

⁴⁷ The Multidisciplinary Public Health Forum, the Faculty of Public Health Medicine (FPHM) and the Royal Institute of Public Health

⁴⁸ Primary Care Trust

The register is open to specialists in all four UK countries. As of May 2005, a total of 50 specialists had been registered.

The basic idea is that although the non-medical specialists will come from a variety of backgrounds, they must share a common core of PH-relevant knowledge, skills and experience. So as part of the registration process, they must show competence across all ten key areas of public health⁴⁹ listed below by submitting a portfolio of their work for assessment:

- Surveillance and assessment of the population's health and well-being
- Promoting and protecting the population's health and well-being
- Developing quality and risk management within an evaluative culture
- Collaborative working for health
- Developing health programs and services and reducing inequalities
- Policy and strategy development and implementation
- Working with and for communities
- Strategic leadership for health
- Research and development
- Ethically managing self, people and resources

Non-medical people on this route are concerned at the high level of expectation of hands-on experience in health protection which is not very likely to have been acquired by senior health data analysis specialists, for example. Moreover, senior non-medical executives in the NHS report that they really have no time to carry out the courses necessary to fill these gaps. It might be possible to take a week off to do an epidemiology refresher course, but the months needed to acquire new competencies are out of the question for many.

5. WHAT DOES THIS MEAN FOR CANADA? In Canada, professional licensing is a provincial matter⁵⁰, but other professions have successfully arranged national registration standards, so it should be possible for public health to do the same.

For example, PHAC might wish to facilitate the development of a Canadian Faculty of Public Health Professionals (CFPHP), made up of 12 provincial and territorial associations, charged with both accreditation of university PH programs and the registration/licensing of graduates after an agreed period of practice in the field⁵¹.

Accreditation of PH teaching institutions and their programs could be carried out by a Public Health Accreditation Board (PHAB) established by CFPHP, that could also track the equivalency of Canada's system of accreditation with those used in other countries. In addition, PHAB could work closely with Canadian universities to ensure that graduates of accredited PH programs have the skills to become productive members of the profession. Arrangements could be made to grandfather the few CEPH accreditations already in place.

This would leave the challenges of how the accreditation of a school of public health might vary from that for a department teaching public/community health in a Canadian medical school and how the required PH knowledge of both medically qualified and non-MD practitioners seeking to join the

⁴⁹ Developed by the UK Faculty of Public Health

⁵⁰ Also the Public Health Acts require that all Medical Officers of Health are doctors.

⁵¹ Three years, say.

public health profession in this way would be evaluated and recognized. Drawing on UK experience to help solve the more demanding second issue, might well be helpful.

It is interesting to observe that the UK public health system is run mainly by highly qualified non-physicians, while there is concern in Canada that a growing number of our Medical Officer of Health positions are occupied by physicians with little or no training in public health. This is the same problem that led the UK to adopt their current PH professional registration system.

3.3 SCHOOLS OF PUBLIC HEALTH

BTW, WHAT IS A CANADIAN SCHOOL OF PUBLIC HEALTH?

No one knows for sure because at present there are none. In the US, schools of public health are usually standalone institutions dedicated to public health teaching and research within a larger university that often has a separate medical school - Harvard and Johns Hopkins being well-known examples. The schools of public health in Australia are largely autonomous organizations in universities that do not have a medical school. They tend to be more practice orientated and to have faculties that are MD light.

In the UK and in Canada, most public health teaching is carried out by departments within faculties of medicine and by schools of nursing.

1. SOPHS WILL BE A SUBSTANTIAL INNOVATION IN CANADA - WHEN THEY ARRIVE: An increasing number of Canadian universities are getting equipped with MPH programs and considering launching schools of public health in the years ahead. At present it is too early to tell which will be the first, but ample funding looks to be available, faculties are being assembled and buildings earmarked or foundations laid. Some of the candidates are reviewed below:

The **University of Calgary** has recently received a private donation of \$18 million to create an **Institute for Public Health** - although this funding is to be provided in stages against established milestones. In practice, the funds will allow Calgary to add six new chairs in public health to their existing faculty of 30 in the present Department of Community Health Sciences. This donation compares favourably with the \$20 million provided to establish the University of Ottawa Institute of Population Health⁵². Like other such organizations, the Calgary Institute is mainly dedicated to research. However, future planning apparently calls for all public health teaching - including nursing - to be brought together in the new Institute, so it may evolve into a school of public health in due course.

The **University of Alberta** had hoped to successfully establish an independent school of public health by the end of the 2005/06 academic year. It is understood, however, that the process is taking longer than expected, and that the new School may be delayed for an additional 12 months. Proponents agree that having a separate SoPH in a university with a medical school is an ideal arrangement.

The **University of Saskatchewan** will be moving its existing public health activities into new accommodation on the campus in September 2005. The faculty is being expanded to 40 over the coming 12 months, preparatory to becoming an independent school of public health within the University of Saskatchewan over a three year period. The school will specialize in Applied Population Health, Rural PH and Veterinary PH. Dr. Bill Albritton, Dean of Medicine, is reported to be a keen supporter of this plan.

Public Health Sciences at UofT would prefer to be a school of public health again, like they were when Johns Hopkins, Harvard and the UofT Schools of Hygiene were founded in the mid-1920s. Faculty and School have similar Canadian academic status - so to become a school of public health they would have to be set-up as a new faculty with a Dean, etc. The current plan, however, is that they should remain a department in the faculty of medicine which they first joined in 1975, so it seems unlikely that there will be an independent school of public health at UofT in the short-term.

⁵² See below

The **Faculty of Health Sciences** at **Simon Fraser University** has decided to wait and see on becoming a SoPH. They are keen to collaborate in the future on a Pan-Canadian network of universities involved with PH, possibly working together on a national MPH. The FHS believe the best posture for now is to work under a fairly broad banner, with a multi-disciplinary approach. They expect to train a good number of public health professionals over time, but not necessarily MDs. SFU's Institute for Health Research & Education has developed an international reputation for its work in the public health aspects of oncology, molecular biology, biostatistics and environmental health. These units will now become part of the FHS. SFU does not have a School of Medicine. Becoming a school of public health looks like a slow pitch waiting to be hit out of the ballpark. But possibly there are other factors involved.

For some time, the **University of Montreal's Department of Community and Preventive Medicine** has been seeking independence from the faculty of medicine through the establishment of a school of public health. The tide could now be turning in favour of this move, since the current Dean, Jean Rouleau - who was formerly at St. Margaret's Hospital in Toronto during the SARS outbreak - is said to be very supportive of PH activities. However, it seems that some Department of Community Health faculty believe they will actually enjoy more flexibility with things as they are, rather than becoming a more isolated school of public health.

The **Institute of Population Health at the University of Ottawa** is a recently formed research institute made up of a consortium of ten in-house faculties (Arts, Education, Graduate and Postdoctoral Studies, Health Sciences, Law, Science, Social Sciences, Medicine, Management and Engineering). The Institute is developing a widely-based research program in population health and policy development, including risk assessment, global health, intervention design, women's health and aboriginal health. There is said to be interest at the Institute in moving towards becoming a school of public health at some future time, when the Department of Epidemiology and Community Medicine might be a logical partner. Meanwhile, the focus is strongly on research, with teaching limited to an interdisciplinary PhD in Population Health and a certificate in health risk management.

McGill: Their new MPH degree will remain under the faculty of medicine and there is no apparent intention at present of launching an independent school of public health at McGill. The main consideration now is carrying out a detailed business evaluation for the new program.

Others: The University of Manitoba is said to be planning a school of public health and the University of British Columbia is considering its options.

The rate of introduction of schools of public health in Canada may be inhibited to some extent by the limited availability of well-qualified and affordable faculty on the supply side and by domestic MPH graduate market saturation on the demand side.

2. PLACING PUBLIC HEALTH IN THE ACADEMIC ENVIRONMENT: There are three basic options for building public health into universities at present:

- A public health department within an existing medical faculty
- An independent school of public health and medical faculty at the same university⁵³
- The school of public health and the medical faculty at different universities

⁵³ Possibly with some shared courses and faculty members.

Some observers feel that the first option is the least attractive because the interests and needs of a public health program can quite easily get lost when submerged in the teaching environment of a much larger medical faculty.

However, public health faculty members at Canadian universities interviewed for this study showed an appreciation of the benefits of having a medical faculty as part of the same university. These benefits were seen as bidirectional. On the one hand, having expertise in clinical medicine readily available could well strengthen some aspects of PH teaching and provide for increased flexibility in meeting unforeseen future developments in the teaching of PH practice. On the other, having access to in-house public health teaching skills should make it easier to add increased (and high quality) PH content to undergraduate medical courses, as may well be required in the years ahead.

3.4 GOVERNMENT INVOLVEMENT

1. RECOVER YOUR MONEY IN AUSTRALIA: Government encouragement of innovation in the teaching of PH has been particularly active in Australia under their PHERP Innovation Program. Funding for this program was created by retaining 20 per cent of the money normally provided by the federal government to universities. Universities were then encouraged to propose teaching innovation programs to get a chance of winning the money back. In many cases, the universities had to add some of their own money to make accepted innovations fly - a general condition of PHERP funding. A few recent examples are shown below:

DEVELOPMENT OF DISTANCE-BASED DELIVERY FOR ADVANCED EPIDEMIOLOGY COURSEWORK.

University of Melbourne and Monash University.

CENTRE FOR PUBLIC HEALTH LAW.

La Trobe University and Flinders University of South Australia in partnership with international experts in law and public health.

EPIDEMIOLOGY OF AGEING: THE DEVELOPMENT AND DELIVERY OF A MODULAR COURSE ON AGEING AND POPULATION.

The University of Newcastle in partnership with the University of Sydney, the University of Queensland, the National Ageing Research Institute, the Benevolent Society, La Trobe University, the University of Western Sydney and Rakin Park Hospital in Newcastle, NSW.

PUBLIC HEALTH EDUCATION AND RESEARCH PROGRAM INNOVATIONS ON AN EDUCATION STRATEGY FOR INDIGENOUS PUBLIC HEALTH WORKFORCE DEVELOPMENT.

University of Queensland, the Faculty of Nursing at the Australian Catholic University and the Queensland Institute of Medical Research.

Funded innovation projects were required to satisfy the following principles:

National priority

New initiatives

Collaboration between disciplines

Arrangements for access and dissemination

Economies of scale

Availability of additional funds

Collaboration between institutions

High quality

Federal government support for MPH studies in Australia is also largely funded by PHERP, with \$45 million being allocated for Phase 3 of the program (2001-2005). An external review of PHERP was carried out at the end of 2004 and a report will be published during "the second half of 2005". Well-informed sources confirm that PHERP funding is not going to be discontinued, although there have been strong rumours to the contrary. The federal government meanwhile is using PHERP to encourage Australian some universities to become more interactive with regional public health centres - rather than focusing on their traditional preoccupation with research.

2. LEARNING ON THE JOB: An MPH is still the foundation qualification in Australia for PH professionals⁵⁴. The question is - are graduates service ready after as little as 12 months of training?

⁵⁴ A variety of MPH programs are available from Australian universities. These include a coursework only MPH from the University of NSW and an MPH from La Trobe University that may be taken in the Practice Mode (featuring action learning at a regional PH Centre) or in the Research Mode (requiring submission of a supervised thesis).

Some say all that is needed is a really good basic training followed by learning on the job like MDs do. Fortunately, the NSW Department of Health is ready to step into the breach with their innovative **Public Health Officer Training Program (PHOTP)**.

The NSW PHOTP was established in 1990, offering a three-year competency-based training program with supervised on-the-job experience for people who had completed postgraduate studies in public health (like an MPH) and who are committed to a career in public health. It is specially designed to bridge the gap between the completion of academic studies and the development of a professional public health practitioner. Training is provided primarily on-the-job through supervised work placements, supplemented by regular off-the-job training sessions. Successful completion of training leads to the award of a VETAB⁵⁵ accredited Graduate Diploma of Applied Epidemiology.

The Program is also recognized for the training of medical graduates towards Fellowship of the Australasian Faculty of Public Health Medicine of the Royal Australasian College of Physicians.

All 11 of Australia's PH core competencies are addressed during the training:

Professional Practice	Management
Epidemiology and Biostatistics	Information Management
Communication	Health Policy
Health Promotion	Health Care Evaluation
Infectious Diseases	Risk Assessment/Management
Health Economics	

During the three years of training, Public Health Officers rotate through a number of work placements, each linked to a well-qualified supervisor who provides a wide range of public health experiences, projects and resources. Placements are located within the NSW Department of Health, the NSW Area Health Services and a small number of other public health organizations. All officers are required to spend at least six months of their training in a rural placement where officers can experience how public health professionals work to address issues unique to rural communities.

A major benefit of this kind of training is that it is very service ready. Also training can be adapted rapidly to suit new developments on the front line - not so easy to do with academic programs where faculty may be unaware of important changes taking place out there.

3. DOHA'S OWN POSTGRADUATE COURSES: The Commonwealth Department of Health and Aged Care (DoHA) itself has a **Corporate Public Health Postgraduate Program** for employees of the department. Delivery is contracted out to a consortium of Australian universities (including La Trobe and Monash) and it has been in operation for at least six years. The number of DoHA people who attend is a hard to establish, as individuals come in and out, enrolling for 1-2 units per year. La Trobe estimates that around 200 have been in the program, so far.

The universities say that the department wants to pay less for this program each year, even though it has numerous electives, but a shorter duration than its private sector equivalents. Government professional development managers want to see a program that is as generic as possible, but complain that students seem to keep graduating with overly specific skills. It seems that the program may be wound up soon.

⁵⁵ Vocational Education and Training Accreditation Board

4. DEPARTMENT DE SANTÉ COMMUNITAIRE - DSC: Following reform of the health care system in Quebec at the beginning of the 1970s, DSCs were created in 32 acute care hospitals across the province. DSCs were staffed by multidisciplinary PH teams most of whom needed to have Master's level PH qualifications. This created a pipeline to take on board graduates from the UofM MSc Community Health program [and maybe a few francophone graduates from PH degree courses at other universities in Canada and abroad].

An additional benefit of having DSCs in hospitals is that the clinical side becomes more aware of PH issues and that if an epidemic breaks out, both areas of expertise are on hand to tackle it. People generally know one another better too.

5. GOVERNMENT FUNDING SUPPORT FOR PROFESSIONAL DEGREES: Now that a good part of the MHSc at UofT is a professional rather than a research program, it receives no scholarships and very limited private sector support. So fees have become quite high by Canadian standards - although still attractive to US students. Although it is possible to find funding to help keep students on practica alive - about \$5,000 to \$6,000 a year, overall financing for Canadian students is now a challenge. UofT points out the need for some innovative scholarship funding from government to help bridge the lack of outside dollars in the case of professional graduate programs. The University of Alberta has the same problem and claims that their province is not as generous to PH training as the oil-driven economy might indicate.

Given the present reality of university funding mechanisms and reward systems, external help is required to bridge the gap between the academic environment and the world of practice. Some promising efforts are noted in this report, but more needs to be done.

6. CDC CONTRIBUTIONS: More than a \$1.0 billion has been provided by CDC to the states to ramp up PH preparedness since 9/11. The idea has been to put in place a PH preparedness and response system on top of the existing PH infrastructure by developing programs to improve relevant competencies. Nineteen academic centres have been established in a cooperative venture between CDC and ASPH. Requirements include showing that enough people have relevant training (like in epidemiology) and have achieved specified levels of proficiency as tested by drills and exercises. About \$20 million has found its way to the 20+ Schools of PH and all have preparedness centres that are terror specific.

CDC also offers a number of fellowships aimed at providing hands-on experience for MPH graduates including the Epidemic Intelligence Service (60 to 80 people - usually physicians, nurses and vets) and the Public Health Informatics Fellowship Program (currently about seven fellows a year on the two-year program). These fellowships are not open to CDC employees - although capable fellows are often invited to continue at CDC as employees, fellows or contractors after they have completed their fellowships.

Pointing the way to possible future US government innovations, CDC staff interviewed for this study stress that it is not too hard to ensure that PH technology and properly trained PH practitioners get deployed in the field. They believe the real challenge is often the lack of management skills in front line PH practice.

7. STRONG US WORKFORCE TRAINING INNOVATIONS: The Federal Health Resources and Services Administration (HRSA) set up **Public Health Training Centers (PHTC)** in 2000 designed to deliver continuing education to the existing PH workforce across the US. This effort involves both face-to-face training and DL with well-prepared CD-ROM materials. PHTCs have been created in 42 states so far. Each state PHTC is based at an accredited school of public health

(eg JH, Harvard, Yale, etc) although some state health departments, such as Kentucky, run their own courses.

HRSA has also established **Centers for PH Preparedness (CPHPs)** to train the public health line staff and above to respond to health threats in the US from bioterrorism, infectious disease outbreaks such as SARS and other health emergencies. Training is competency-based and delivered either on-site or through distance learning. There are three types of CPHP:

Academic Centers for Public Health Preparedness (21) are based in schools of public health. They provide training for areas in which they are located and support national training by producing distance learning material.

Specialty Centers for Public Health Preparedness (13) focus on specific areas such as public health law, zoonotic disease, research or mental health.

Advanced Practice Centers for Public Health Preparedness (5) focus on operational readiness, communications and/or information technology and training applications.

NEGATIVE GOVERNMENT ASSISTANCE?

Australian universities are feeling serious financial pressure at present because of reduced government funding combined with falling enrolment of foreign students⁵⁶, mainly due to a stronger Australian dollar and student visa difficulties. This situation is especially difficult to handle since it has been foreign students that have helped insulate the universities from a succession of funding cut-backs.

Moreover, foreign students are mainly interested in business, IT and high-tech medical programs (such as genomics). This means that other disciplines such as social sciences, the humanities and public health are finding it hard to maintain standards and to sustain an academically strong faculty.

⁵⁶ Number of foreign students enrolled increased from 35,000 in 1994 to 230,000 in 2004, when they contributed \$A2.8 billion in fees. 2005 has seen an average drop of 9% (*Worrying drop in foreign student numbers*: Jeffrey Francis - Malaysian Star, August 7, 2005)

3.5 CLOSING THE LOOP AROUND WORKFORCE DEMAND

This study has shown that a good number of creative innovations have been introduced that will improve the content and delivery of PH teaching in the years ahead. Some are also designed to encourage more students to become PH practitioners and to enable existing members of the PH workforce to participate in lifelong learning in various ways. What seems to be largely absent are ways of anticipating workforce shortfalls and of adjusting the output of people from universities and schools with the necessary skills to meet this demand. What you might call evidence-based workforce planning.

CDC looks at national projections and may be able to see impending gaps coming up (such as those due to retirements - especially in nursing), but they have only a state-by-state strategy for dealing with it. CDC finds it to be a hard sell as a national issue - especially as it is not clear which agency is in charge and who should run with the ball. PH education in the US (and most other countries) is not well linked to front line public health workforce requirements.

The good news is that student interest in PH is high in the US (as it never was before) and that all undergraduate PH programs are full (a good pointer for Canadian universities and medical faculties). CDC would like to see all US liberal arts schools offering undergraduate PH programs in the future. If each graduated 25 students a year, say - this would have a big impact on public health workforce recruiting, since a significant portion of PH jobs require only bachelor level qualifications. It should also help stimulate MPH enrolment.

The Victorian Consortium for Public Health believe that their joint MPH "has been a successful program of collaborative delivery of a course which continues to strengthen the public health practice and research capacity in Victoria". Their future strategy includes making Melbourne better known around the world as the place to go for postgraduate public health education and working more closely with employers to develop workforce training curricula that deliver the right skills to handle daily public health practice.

Australia has been determined to make its workforce development efforts operate on a genuinely closed loop, competency-based system. They find its getting easier to establish a good picture of "how much of what" is being produced by the universities involved in undergraduate and postgraduate teaching of public health, as well as some idea of how those data may change over the short term if left alone. The main challenge to loop closing is arriving at a credible way of calculating demand for an effective national public health workforce. If you don't know how many postgraduate PH practitioners you will likely need in one or two year's time, for example, it may be counter-productive to encourage universities to create 10 or 15 new innovative MPH/MPHSc degree programs, each able to produce maybe 30-40 graduates a year - assuming sufficient candidates come forward in the first place. Around 500 new MPHs might be hard to deploy constructively in an unprepared PH organization.

Australia's National Public Health Partnership (NPHP) has been running a long term workforce management project⁵⁷ that includes development of a planning tool to help measure workforce demand. Pilot testing of the new tool was carried out early in 2004 in the south-west Sydney division of Population Health/NSW⁵⁸.

⁵⁷ Nevis Consulting Group Inc.: *Public Health Workforce Development - Australia, England and the United States* - February 2004, p47 et seq.

⁵⁸ Human Capital Alliance: *Calculating demand for an effective public health workforce - Final Report for the NPHP* - July 2004.

They point out that PH workforce planning can take place at the project, program and organization levels. The NSW test showed that "the service planning process(es) in PH organizations appear to be still evolving ... (and) are as yet insufficiently sophisticated (or without sufficient consensus) to support organization level ...planning". So the pilot test focused on a tool to tackle program level planning, looking mainly at immediate workforce needs. It seems that this did not break much new ground, but it allowed researchers to explore the challenges of modelling actual technical labour demand in competency/program matrices.

Future work will now look at how to collect and interpret the data that drive PH workforce demand at the program level. Then they plan to test this out in an actual frontline PH outfit - along with suitable amounts of stakeholder consultation.

All in all, there has been rather disappointing progress lately on an approach that looked to have real potential a year or so ago. Section 4 of the NPHP report lists as future objectives targets that some observers had hoped would have been tackled by this point, such as those shown below:

Further definition and agreement/consensus on the competencies of public health and their weights.

Design of tools that help organizations audit competencies held within their current labour supply.

Design of a tool that facilitates estimating work at the organization level and translating this into demand for specific competencies.

Research into the match between current public health work and population needs.

CHAPTER IV: COMMENDABLE INNOVATIONS

Innovate: make changes in something already existing, as by introducing new methods, ideas or products. *Concise Oxford Dictionary - 10th Edition*

Innovation Star Rating⁵⁹

*	Moderate
**	Significant
***	High
****	Outstanding

As promised at the outset, a number of worthwhile innovations in PH teaching and program delivery have been identified in Canada and overseas - thanks mainly to the people interviewed for this study who have generously given their time and shared their valuable experience for our benefit. It is now time to select those innovations that have the potential to make a positive contribution to Canada's public health workforce strategy and that can be incorporated into the Canadian PH system without serious disruption or excessive time being required for assimilation and activation. A possible means of dissemination of selected initiatives to those who may wish to adopt them is also addressed.

1. The UNBC MSc program in Community Health Science ****

Inaugurated in 1997/98 with a leading cohort of 12 students drawn from the region, this program launched an important innovation in Canadian public health. The idea was to train PH professionals who already lived in the north, with the objective that they would mostly likely practise there also. And they did so. The benefits of public health services being delivered to First Nations communities by their own people must be considerable⁶⁰.

2. University of Toronto's morphed MHSc *

In response to demand for more hands-on PH graduates with strong methodology/documentation skills to handle today's approach to public health, UofT discontinued its thesis-based MSc degree and merged it with the existing MHSc to create an MHSc that offers both professional and research options.

3. DrPH for senior PH practitioners **

Johns Hopkins has introduced a part-time mainly course-based DrPH, with an MPH pre-requisite. A dissertation is required, but this involves applied PH problem solving and is not hypothesis-driven. This is a big change for JH, who admit that they are not especially well equipped with teachers having recent field experience⁶¹. Flinders University in Adelaide has a DrPH along similar lines.

4. A constructive innovation at McMaster **

McMaster School of Nursing has introduced an arrangement whereby undergraduate nursing students (mainly medical) help PH nursing graduate students with research and data collection for their thesis. In this way, a good number of nurses come to appreciate PH as an important part of delivering population health in Canada and some may even elect to do PH as their graduate

⁵⁹ A subjective Nevis assessment of the novelty of each innovation and its possible impact on the teaching of PH in Canada.

⁶⁰ This program also successfully introduced team learning into the training process

⁶¹ They are importing outside experts.

concentration. This move is quite important in view of the relatively low PH content in the clinical nursing courses at the undergraduate level.

5. LSHTM forging ahead with Distance Learning **

The London School believes there is a large market out there for DL in PH. So in a major innovation, they are now offering their full MScPH program on-line. The first course (2005/06) is now full (110 accepted from 200 applicants). Like most DL providers in PH, they are being careful how fast they ramp up their enrolments, lest the faculty becomes overwhelmed by the workload.

6. PHERP drives teaching innovation ***

Government encouragement of innovation in the teaching of PH has been particularly active in Australia under their PHERP Innovation Program. Well worth consideration in Canada, possibly with more encouraging financial arrangements.

7. Lakehead uses Team Learning **

Lakehead students are formed into teams for much of their DL participation. Many students that have never met have nonetheless established close personal and professional relationships. This team participation is particularly valuable when students are spread over a wide geographical area - as is the case with Lakehead's DL MPH program.

8. An innovative move at Waterloo **

A number of "joint hires" have recently joined Waterloo's MPH faculty. They will work part of the time delivering MPH courses, as well as teaching in other departments - such as math and statistics. Salary costs will be split accordingly. Must happen elsewhere informally, but "joint hire" seems worth establishing as a regular way of operating.

9. Evidence-based MPHs look to be a really useful innovation ****

In a field where the absence of evidence is a continuing source of frustration, the arrival of evidence-based MPHs should have plenty of market appeal. Also an opportunity exists for a Canadian university to link up with Manchester, UK which already offers an evidence-based MPH degree. McMaster is said to be actively teaching evidence-based PH nursing, which has been included in their programs for about a year now.

10. Case-based and problem-based learning on the upswing **

First introduced at McMaster, a number of medical and public health schools have adopted case/problem-based teaching. At some institutions, this approach has been in use for many years - such as at McMaster itself and at the University of Delaware. Other schools are now joining in, in response to student demand for more modern teaching methods.

11. A novel transdisciplinary research training program in Quebec **

Dr. Gilles Paradis from McGill heads up the Montreal-based Transdisciplinary Training Program in Public and Population Health Research, which is funded in part by CIHR. It combines practical training with a doctoral or post-doctoral fellowship program for students wishing research contemporary public health topics. An innovative feature of the program is that students join public health teams throughout their training and that they are required to spend approximately 75% of their time in this environment.

SOME EMBRYONIC INNOVATIONS

1. Provide more undergraduate PH programs ***

Undergraduate PH degree programs in the US are common and they are full. More Canadian universities should introduce these. Degrees like Waterloo's four-year BSc in Health Studies and Gerontology provide an all PH (non-clinical) path for students looking to secure an MPH and practise PH in due course. This puts them on the same level at MPH entry as those with undergraduate degrees in PH-related specialties such as social science and nursing. Moreover, the bachelor qualification in itself opens a wide range of public health career options.

2. Joint Degrees in Canada⁶² **

Joint degrees are becoming quite common in the US state university system and in Australia. This type of cooperation between universities is often driven by a need to save money in the face of external funding cut-backs or by increased competition. On the plus side, joint degrees also allow students to benefit from areas of specialist expertise from outside their own school or university.

Interviews carried out for this study have shown support from Canadian universities for joint MPH degrees within provinces, which are seen to be the natural boundaries for cooperation here, just as states have been in the US and Australia. A national syllabus appears less attractive to the academic community than provincial MPHs with uniform program content and teaching standards maintained through external accreditation.

3. Mixed Mode DL ***

LSHTM plans to explore another market area in Autumn 2006 when it will launch a new mixed mode MScPH program featuring one term (5 weeks, say) face-to-face in London followed by DL for the rest. In an innovative step they have arranged support from British Council offices around the world that can help with attracting local students, interviewing candidates and other administrative tasks. Effectively this provides the LSHTM with marketing offices in major cities in 110 countries across the developing world - staffed by capable people with good local support.

4. Global Health MPH in the Summer **

Another projected UofT innovation is a Global Health Summer Institute due to start in 2006. The plan calls for continuing education short courses and certificates to be provided at the outset, to be joined by a block taught/flex time MPH program⁶³ for experienced public health practitioners in the summer of 2007 or 2008.

5. Johns Hopkins would like to team up with one or more Canadian universities ***

JH would like to offer short term (maybe summer) courses on PH Policy and Management - the greatest need in the Canadian PH practice community, in their opinion. Some observers have pointed out that in business generally, capable management is almost always more valuable than innovation alone⁶⁴.

6. National PH registration examinations **

All Australian universities report against 50-odd MPH core competencies for training coverage. But, as in Canada, there is no national examination for registration/ certification of graduates.

⁶² Single degree program (like MPH) with courses delivered by a number of universities.

⁶³ Summer 1: Four courses in 4 week block, Fall/Winter: two courses/field practica via DL, Summer 2: four courses in 4 week block.

⁶⁴ Steven Jobs' Apple Computer Inc. is often cited as an example. For example, see Fast Company: *If He's So Smart ... Steven Jobs, Apple and the limits of innovation* p. 68, Issue 78 - January 2004

Course/program accreditation will still be needed, but professional registration of graduates against consistent standards after some years of practice should be mandatory.

7. A future DL Innovation? ***

A majority of university teaching staff interviewed were not much in favour of DL. It takes up too much time in preparation, support and maintenance. On the other hand, it has the potential to make quite a lot of money for universities. Perhaps specialist outsourcing companies will spring-up innovatively to take the main technical and operational load off the universities and schools.

FACTORS MOST LIKELY TO OBSTRUCT INNOVATION IN PH TEACHING⁶⁵

Low esteem of teaching and learning, compared with research

Lack of recognition and interest by colleagues and people in authority

Institutional or other policies and action plans laying down firm directions that preclude individual, alternative initiatives

Excessively bureaucratic procedures for approval, support and resources

Quality assessment procedures that inhibit risk taking

WIDESPREAD INNOVATIONS

1. Non-thesis (professional) Master's

The non-thesis master's is the sine qua non of a school of public health. For many years this option was offered only by the University of Toronto and the University of Montreal and many public health practitioners seeking masters level qualifications undertook research-oriented masters programs which were not fully suited to their needs. In the last few years, however, there has been a developing interest in the non-thesis master's option and currently no fewer than 17 Canadian universities have or are planning such programs, with a potential intake of more than 400 students. This makes the field very competitive, and there may be, in the long run, a risk of having too many graduates.

An effective MPH program requires universities to develop relationships with institutions and professionals able to provide and supervise practicum placements. The range of specializations that might be offered within the master's program also needs careful consideration. It needs to fit faculty expertise as well as addressing gaps in the market. Toronto, for example, offers streams in public health and epidemiology, health promotion, community nutrition, and occupational/environmental health.

⁶⁵ Prof. A. Hannan et al: *Innovations in Teaching and Learning in Higher Education* - University of Plymouth, September, 1999

2. Flexibility

As we have seen, the practical options available to students taking graduate degrees in public health have changed radically in recent years. This has been driven mainly by demand from public health practitioners to return to university in order to upgrade or update their qualifications, while continuing their day-to-day jobs. The MPH degree has been the most popular target for these students and it is now offered with a high degree of flexibility. Most universities offer a one year full time MPH, but it is widely available as a part-time program spread over five years, or as a high intensity professional program accomplished within a year, but at weekends with a summer school.

Flexibility is a particularly important factor in enabling the education system to respond relatively quickly to PH workforce demand, because it allows upgrading of existing staff rather than having to wait for increased enrolment at the front-end of universities to make its way through the system.

3. Distance Learning

There is no doubt that distance learning is attractive to numerous universities as a way of enrolling more students without having to provide additional teaching or residential accommodation. Although the availability of PH degrees by DL is becoming increasingly widespread, even the largest schools and universities are limiting enrolment in their initial programs, lest the faculty become overwhelmed by the workload of dealing with a massive local and international clientele. It appears from this study that distance learning is not all that popular with faculty, many of whom much prefer face-to-face teaching and dislike random student access by email. CDC reports that growth in PH teaching by DL in the US is essentially stagnant at present.

4. Schools of Public Health

The arrival of schools of public health in Canada will be a major innovation, since there are none at present. Some will be born out of the existing medical faculties, others will be green field enterprises. Most will be steps in the right direction, since they will allow the teaching and funding of public health to develop without the traditional struggle for resources within a medical school environment that is mainly focused on training doctors to treat the individual. Collocating a Canadian SoPH on the same campus as the university's medical school seems to be a practical move that should enable valuable synergies to be realized.

5. Competencies

Competencies, especially core competencies, are becoming rather more widely accepted across the international PH teaching community. Although they are inherently bureaucratic and time consuming, they are being used not only because CEPH has made them compulsory, but because they have been found to be useful when drawing up learning objectives and constructing new degree programs. It is said to be much harder to measure if students have actually acquired the necessary competencies.

It could well be that competencies will outlive their usefulness at some point. As competency deconstruction moves on from core PH competencies to more specific skill areas, the time taken to arrive at consensus will inevitably grow. PHAC may wish to examine the cost-benefit ratios involved. Some Canadian observers believe that PH core competencies are a pretty elementary shopping list prepared by excessive committee activity. They suggest that Canada focus more on accreditation than on generating more complex competency lists.

HOW TO DISSEMINATE INNOVATIONS?

1. Make PHAC an active part of the process that stimulates innovation by offering competitive **funding for creative public health teaching innovations** proposed by Canadian institutions.
2. Innovations in PH teaching are unlikely to become so complex and abstruse that they require lengthy peer-reviewed papers to describe them and their associated benefits. Set-up a **moderated PH Innovation in Teaching website** that would feature a number of forums to cater for the introduction and discussion of the diverse innovation interests of the participants. The site could be operated and moderated by a host university, with rotation of the hosting from time to time. This arrangement would allow rapid dissemination of new ideas and the discussion of a variety of topics relating to the interaction of teaching and the practice of public health in Canada in near real time. Membership and access should probably be controlled to allow really good ideas to be circulated fairly securely in advance of their international release.
3. Arrange an **annual meeting** of website participants at a different university each year. Focus on fostering the type of personal contacts that will result in regular exchange of information on successful innovations. Close interaction of this kind may also help create schools of public health in this country that are uniquely Canadian in character, rather than copies of those south of the border. Present a prestigious award annually to the university or school voted to have introduced the most outstanding innovation in the teaching of public health during the previous 12 months. Issue discrete lapel pins to denote previous winners. Invite guest speakers from outside Canada to talk about their latest innovations in the field.
4. Carry out **regular scans** at PHAC of international PH teaching innovations, looking for successful as well as unrewarding ventures. Disseminate results to Canadian universities and schools involved in public health through regular and stimulating e-bulletins.

ANNEX A: PEOPLE INTERVIEWED FOR THIS STUDY

INTERVIEW LIST

AUSTRALIA

- Dr. Vivian Lin Professor, Public Health
Faculty of Health Sciences,
La Trobe University
Victoria
- Dr. Lynne Madden Manager, Centre for Epidemiology and Research, NSW
Department of Health
New South Wales
- John Moss Senior Lecturer
Dept. Public Health
University of Adelaide
South Australia
- Dr. Kathryn Sauer Director Academic Programs
School of Public Health
Curtin University, Perth
Western Australia

UNITED KINGDOM

- Dr. Nick Black Professor, Health Services Research
London School of Hygiene & Tropical Medicine
- Dr. Stephen Gillam Public Health Strand Coordinator
School of Clinical Medicine
University of Cambridge
- Dr. Dick Heller Professor, Public Health
Evidence for Population Health Unit
School of Medicine
University of Manchester
- Dr. Sarah Walters Director MPH
Dept. PH & Epidemiology
Birmingham University

UNITED STATES

- Ron Bialek Executive Director
Public Health Foundation
Washington, DC
- Dr. Tom Burke Codirector, Risk Sciences & Public Policy Institute
Johns Hopkins Bloomberg School of Public Health
Baltimore, MD

Dr. Joan Cioffi	Director Strategic Workforce Activity CDC Atlanta, GA	
Dr. Sherril Gelmon	Professor, Public Health Mark O. Hatfield School of Government Portland State University Portland, OR	
Stacia Hall	Assoc. of Teachers of Preventive Medicine Council of Graduate Programs Washington, DC	
Dr. Jay Maddock	Assoc. Professor Dept. Public Health Sciences University of Hawaii Honolulu, HI	
CANADA		
Dr. Max Blouw	VP Research University of Northern BC, Prince George, BC	
Dr. Nicola Cherry	Chair, Dept. of Public Health Sciences University of Alberta, Edmonton, AB	
Dr. Donna Ciliska	Professor, Evidence-based Nursing School of Nursing McMaster University Hamilton, ON	
Dr. Rebecca Fuhrer	Chair, Epidemiology, Biostatistics & Occupational Health Faculty of Medicine McGill University Montreal, QC	
Dr. John Jamieson	Professor PH, Health Psychology Lakehead University Thunder Bay, ON	
Dr. Ian Johnson of Medicine	Dir, MHSc program in Community Health and Epidemiology University of Toronto, ON	Faculty
Dr. Don Langille	Professor, Community Health and Epidemiology Dalhousie University Halifax, NS	
Dr. David MacLean	Dean, Faculty of Health Sciences Simon Fraser University	

Vancouver, BC

- Dr. Christina Mills MPH Program Leader
Dept. Health Studies & Gerontology
University of Waterloo, ON
- Dr. Tom Noseworthy Director, Department of Community Health Sciences
Faculty of Medicine
University of Calgary, AB
- Dr. Louise Potvin Professor, Dept. of Community & Preventive Medicine
University of Montreal
Montreal, QC
- Dr. Bruce Reeder Head, Dept. of Community Health and Epidemiology
College of Medicine
University of Saskatchewan
Saskatoon, SK
- Dr. Harvey Skinner Chair, Dept. of Public Health Sciences
University of Toronto, ON
- Jane Underwood Associate Clinical Professor/Public Health Consultant
Investigator, Nursing Health Services Research Unit Investigator
School of Nursing
McMaster University
Hamilton, ON
- Dr. Elinor Wilson CEO, Canadian Public Health Association
Ottawa, ON

**ANNEX B: UNIVERSITIES & SCHOOLS OF PUBLIC
HEALTH ACCREDITED BY CEPH
TOGETHER WITH ASSOCIATE MEMBERS**

ACCREDITED SCHOOLS

[Boston University School of Public Health](#)
[Columbia University Mailman School of Public Health](#)
[Drexel University School of Public Health](#)
[Emory University Rollins School of Public Health](#)
[George Washington University School of Public Health and Health Services](#)
[Harvard School of Public Health](#)
[Johns Hopkins Bloomberg School of Public Health](#)
[Loma Linda University School of Public Health](#)
[Mel and Enid Zuckerman Arizona College of Public Health](#)
[New York Medical College School of Public Health](#)
[Ohio State University School of Public Health](#)
[Saint Louis University School of Public Health](#)
[San Diego State University Graduate School of Public Health](#)
[Texas A&M School of Rural Public Health](#)
[Tulane University School of Public Health and Tropical Medicine](#)
[University at Albany SUNY School of Public Health](#)
[University of Alabama at Birmingham School of Public Health](#)
[University of Arkansas for Medical Sciences Dr. Fay W. Boozman College of Public Health](#)
[University of California at Berkeley School of Public Health](#)
[University of California at Los Angeles School of Public Health](#)
[University of Illinois at Chicago School of Public Health](#)
[University of Iowa College of Public Health](#)
[University of Kentucky College of Public Health](#)
[University of Massachusetts School of Public Health and Health Sciences](#)
[University of Medicine and Dentistry of New Jersey-School of Public Health](#)
[University of Michigan School of Public Health](#)
[University of Minnesota School of Public Health](#)
[University of North Carolina at Chapel Hill School of Public Health](#)
[University of North Texas Health Science Center School of Public Health](#)
[University of Oklahoma College of Public Health](#)
[University of Pittsburgh Graduate School of Public Health](#)
[University of Puerto Rico Graduate School of Public Health](#)
[University of South Carolina Arnold School of Public Health](#)
[University of South Florida, College of Public Health](#)
[University of Texas School of Public Health](#)
[University of Washington School of Public Health and Community Medicine](#)
[Yale University School of Public Health](#)

ASSOCIATE MEMBERS [INSTITUTIONS WAITING TO BE ACCREDITED]

[Florida International University Stempel School of Public Health](#)
[Louisiana State University Health Sciences Center School of Public Health](#)
[National Institute for Public Health \(Instituto Nacional de Salud Pública\)](#)
[University of Connecticut Graduate Program in Public Health](#)
[University of Florida College of Public Health and Health Professions](#)
[University of Louisville School of Public Health and Information Sciences](#)