Promoting public understanding of population health

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Introduction

This chapter addresses the need to apply the information and perspectives described in this volume to improve health. The basic premise of the book is that individual behaviours are less important for producing health than are structures that underlie inequalities in a society. This concept may be thought of as a scientific revolution or new paradigm in our thinking about health, and as with most paradigm shifts, is resisted by both scientists and the general population. Putting these ideas into action will require promoting a broader public understanding and acceptance of the basic determinants of health. The subject of this chapter provides a framework with which to proceed. Citizens of the US, being less healthy than those in other rich countries, are the target group.

What we know about population health

The concept of a socioeconomic gradient, or differences in various measures of hierarchy in a society, is a property of populations, not of individuals. That hierarchical relationships lead to health disparities may be debated, but there is strong evidence supporting that link (Wilkinson, 1996, 2005). The best ways to conceptualise and measure hierarchy and health are still under study, but current knowledge, if the goal is improving health, is adequate to justify action. In essentially all developed and middle-income countries today, societies with a greater hierarchy tend to be less healthy than those with a smaller gap between social and economic classes. Geoffrey Rose (1992, p 129) concluded his seminal monograph *The strategy of preventive medicine* with: 'The primary determinants of disease are mainly economic and social, and therefore its remedies must also be economic and social. Medicine and politics cannot and should not be kept apart'.

The societal factors that impact a population's health relate to how that population shares its resources, and to how that 'sharing' determines the 'caring' that goes on in that particular society. Where there is less economic disparity, there tends to be less social disparity and more support at many levels that benefit health

(Wilkinson and Pickett, 2006). A wide range of terminology is used to describe these social processes: social justice, equity, trust, social capital or, simply, fairness. However it is described, the effect of the social and economic environment on the health and well-being of persons living in that environment is profound, and not adequately recognised by either the lay public or the healthcare system in the US.

Paradigm shifts in public health

The material in this book describes a kind of scientific revolution as depicted by Thomas Kuhn (1962). Kuhn argued that science does not progress with a steady accumulation of knowledge, but instead undergoes periodic shifts. Such revolutions, or paradigm or worldview shifts, tend to be invisible and strongly resisted by those in the scientific community whose scholarship is threatened. Often in other scientific revolutions, such as the advent of quantum mechanics, one incident or breakthrough brings the phenomenon to public attention. History provides useful examples. The dropping of two atomic bombs by the US on Japan in 1945 presented an astounding visual image that had never been previously observed. The visual impact of those two events required a new understanding of the scope of 'scientific progress' than had existed prior to that point in time. Over the next few decades, the concept of atomic energy began to reach school curricula and popular parlance. Eventually, although few citizens grasped the details of quantum mechanics behind discovery of this form of energy, many understood that vast energy could be released from splitting and fusing atoms.

A similarly earth-shaking event was the launch of the first satellite, Sputnik, and then the first human into space by the Soviet Union. These remarkable accomplishments captured the attention of Americans, who had always portrayed the Soviet society after the Second World War as primitive and underdeveloped compared to their own. The launching of Sputnik invigorated the teaching of science and mathematics in the US in the 1950s and 1960s. Again, although most citizens were not rocket scientists and could not have built or launched a rocket, they understood that the world was entering a revolutionary era of space travel that previously had only been the subject of science fiction.

Medical and surgical care changes in the last half-century are sometimes considered another scientific revolution, with profound impacts that have affected our understanding of what is possible from medical care. Premature infants weighing one pound at birth can live and grow to adulthood; hearts, lungs and livers can be transplanted, and severed limbs reattached. Yet the argument can be made that this scientific revolution has been heavily oversold: dramatic efforts that save individual lives and limbs have yet to improve overall population health. Among the few studies of the impact of healthcare on the health of populations, none can unequivocally demonstrate benefits to whole societies (Jamrozik and Hobbs, 2002). In fact, most of the impacts of healthcare have been relatively minor, despite the popular desire to equate the terms 'health' and 'healthcare'.

Even the sacred cow of universal healthcare has not been demonstrated to improve population health or to decrease health disparities in countries where it has been studied (Roos et al, 2006). Yet population health concepts could have much broader impact on health than technological medical advances, if they were more broadly understood.

There are many reasons for the dearth of attention to population health issues by the medical care system and its academic establishment. Achieving success in academia results from asking narrowly directed questions that can be answered in the confines of a grant funding cycle. The published results generally conclude by asking that more research be done on a similarly narrow topic. That ritual leads to a never-ending cycle of narrow research results and academic promotions that continue until the professor retires. Increasing specialisation within academic departments occurs because 'knowing more about less' commands more respect than attempting to understand broader questions of causality. Issues of advocacy or even disseminating findings beyond scientific meetings are considered outside the values of the ivory tower (Bezruchka, 2008).

Because of the medical emphasis on the epidemiology of specific conditions and individual 'risk factors' for illness, most people in the US think of health as determined by the usual do's and don'ts promoted by the conventional healthcare system: eat right, don't smoke, exercise, just say no, and see your doctor. These precepts are taught at all levels of society, and increasingly throughout the world – and at the individual level they are reasonable admonitions. But scholarship over the last few decades has demonstrated that the context in which these behaviours take place is an important modifier of their effects on health (Lantz et al, 1998). Smoking, for example, in a highly hierarchical society (such as the US) appears to be far more detrimental to the health of smokers than when it takes place in a society with a smaller hierarchical gradient, such as Japan (Bezruchka et al, 2008). Herein lies part of our problem in improving general understanding of the determinants of health. We must recognise that correcting this cognitive simplicity in people's minds, that healthcare and 'healthy' individual behaviours equal health, will lead to profound cognitive dissonance – yet this dissonance will be required if the public is to understand health as a product primarily of socioeconomic forces, and not medical care.

Teaching the ecological or population-level factors that influence health is rarely a part of the educational programme in US schools at any level, kindergarten through university. Neither are these factors typically considered by public health departments in their discussion of policy options, nor in clinical training for medical doctors, nurses, pharmacists or other health practitioners. The American concept of 'public health' is in the main defined by interventions that address the physical environment, such as pure water, sanitation and control of specific disease conditions, as well as access to health services and 'health education' to improve individual behaviours. That the social environment could be a critical element in the production of health is not well understood, not acknowledged or is considered to be outside the purview of public health practice.

Public health research similarly tends to focus on various approaches to improving health services or on risk factors associated with health, in which social and economic variables are typically controlled for but not examined. Academics occasionally document steps that could be taken to turn research findings into policy, but they rarely get to the point of recommending how that might be done in practical terms. There is often also an implicit assumption that policy makers, when presented with research findings, will act benevolently (Earle et al, 2006). Even dramatic or highly significant findings typically are not presented in terms of how they might be used to shape policy, nor about the difficulty of creating understanding of such new ideas. Research findings rarely change dysfunctional social systems (Kingdon, 1995).

What, then, will be needed if we are to achieve the goal of public awareness and public concern about the social and economic determinants of health? Many of us in the health field may have to unlearn many assumptions of the old paradigm, and learn the new. Medical practitioners have had to undergo this process regularly over the years, such as when learning new surgical techniques or medical regimens. The challenge at hand for population health may be more like the process by which the germ theory of disease was accepted – which took perhaps a century. Since we have had at least a century and a half of evidence for the critical importance of social and economic factors on health, the time for a broader acceptance of those concepts may be at hand.

Public dissemination of the new science on health

Dissemination of scientific revolutions or paradigms and their adoption by society runs no predetermined course. Logically, however, one might assume that after a few key leaders in the field are convinced of the key elements of the new paradigm, a subsequent challenge would be to convince influential sectors of the general public of the need to consider these new ideas, and to become convinced of their importance. Part of that process might be to point out a few examples where commonly held assumptions are starkly contradicted by 'the facts' – for example, to point out that the US is less healthy as a nation than nearly all the other rich countries. This kind of simple fact is remarkably little understood, and will often lead to a series of questions as a response. Asking difficult questions in public venues can begin the process. While it would be useful to have this happen in high-profile settings – perhaps by the US President in the annual State of the Union address – smaller public venues are more realistic.

Creating public awareness is the challenging task. From an economic perspective, there is no product to sell, no magic potion, pill, weight-loss machine or life-saving medical procedure. There is no mushroom cloud, or real-time moon-landing show. There is only information that, if presented effectively, will challenge most people's perceptions of reality. To affect deeply held belief systems often takes a generation or two, so it will be important to get population health concepts into the public's eye with exposure at earlier and earlier ages. From this perspective,

promoting the population health concept is similar to movements such as women's suffrage or the abolition of slavery. These were based on deeply held beliefs that were promoted from a wide range of social groups and individuals, and are still in fact in the process of completion. Some argue for the need to continue to purge racist ideas throughout the lifespan, and such efforts may be needed for understanding population health.

We as public health researchers and practitioners must take the lead in creating public awareness. To influence opinion we can create one-liners that grab the attention of the listener, and back them up with substantial statements. It is useful to keep a list of quotes and statistics with sources for this purpose, for example 'Do you want health or healthcare?', 'We must organise or die'. Developing the message is a matter of trial and much error. It is important in this process to recognise that even one insignificant factual error can and usually will be used to discredit our main message – so accuracy is paramount.

A major difficulty in promoting ideas that reflect social responsibility in the US is that 'rugged individualism' is in effect our first language. But the language of community deserves attention, and messages must be crafted using America's other language – one based on the traditions of knowing and caring for one another (Wallack, 2003; Wallack and Lawrence, 2005). We need to adapt this language for various audiences, so that what is said to a group of homeless people will be quite different from the messages for a meeting of labour union members. The carefully focused framing of concepts has emerged as a very useful device employed by those who shape public opinion through the commercial media (Lakoff, 2006). Our role is to use similar techniques to present ideas about what makes a population healthy.

Disseminating through public presentations

At a personal level, I first came to see the increased hierarchy–poorer health relationship as being important in the early 1990s, at the same time that I came to recognise the limitations of medical care in producing health. My first attempts to talk about this in public began at conferences of medical doctors in 1995. It took me a few more years of efforts to recognise that doctors had little interest in health, especially from the perspective I was presenting. The concepts had no clinical relevance to them and were rarely discussed in the professional medical setting. I continue to include doctors in talks, conferences, publications and the increasingly rare opportunity to teach medical students about population health, but I also understand that there are major limitations of this approach. Similarly, academic meetings and conferences of public health officials and workers offer important venues for presenting contributed papers, taking part in discussion panels and other formats. Public health workers are, in theory, more open to considering socioeconomic aspects of health than are clinicians. However, I still expect resistance to getting on the programme if my abstract does not address topics congruent with the conventional wisdom of the group.

Many different kinds of organisations outside the medical sphere, such as church groups, parent–teacher associations, service organisations, professional organisations and community councils, present opportunities to speak to the members on some aspect of the population health topic. I have, for example, recently addressed senior citizens groups, a conference on ageing, gatherings of public health officials, Unitarian Church meetings and labour unions. Such small meetings represent wonderful opportunities to craft specific messages in effective ways and to stimulate further discussion. There is no better way to gain competence in presenting ideas of population health than to engage smaller groups where interaction can occur. For example, the PBS (Public Broadcasting Service) series, 'Unnatural Causes: Is Inequality Making Us Sick?' that aired in the US in 2008 provides an opportunity to screen segments for audiences and to facilitate a discussion on the concepts. The website provides a community action toolkit and much useful material (www.unnaturalcauses.org).

A host of community service television programmes with access to various individuals and groups can be used to present new ideas. We can access the many radio programmes in cities that host citizen groups to discuss important issues, often with listener call-ins. Most talk shows present an opportunity to mention key concepts, but the editorial process typically allows for little depth of discussion. Some progressive radio stations also feature interview or talk shows that are open to discussing the topic. Once we develop a suitable framework and focus for presenting population health ideas, it is not difficult to adapt the messages to different topics. Every exposure has the potential for making useful contacts that lead to more opportunities for dissemination.

Community events with public demonstrations or marches can present a ready-made venue, including tables at conferences and meetings where flyers, posters and readings can be made available. Those with artistic skills can craft signs for demonstrations that attract attention to gain broader media exposure. Newspapers and television stations want catchy visuals and radio reporters want actualities (statements from the demonstrators) for their reports. For example, my carrying a placard stating 'WTO is bad for your health' at the 1999 Seattle demonstrations resulted in my getting interviews with the local media.

Once on a programme, with a stationary audience, the standard principles of effective presentations are useful. For many groups, going 'powerpointless' may be best. Face-to-face audience engagement is easier with less visual distraction if we can command attention verbally. Telling stories is often the most effective way to communicate with non-professional audiences – as noted by the Scottish patriot, Andrew Fletcher (1653–1716), 'whoever tells the stories of a nation need not care who makes its laws' (http://www.main.nc.us/cml/new_citizen/summer95.html). An effective story tends to involve individuals, require a hazard, danger or threat, a victim, an attacker, a means of doing harm, a protector and means of protection. The challenge is telling a story that deals with both individuals and populations, linking the two.

Disseminating through the print media

I endeavour to disseminate population health ideas through whatever public media I can access. One simple approach to getting into the print media is by writing letters to the editor in response to health and political issues. Following standard approaches to writing effective letters (keep them short, focused, timely) will increase the likelihood of getting published. Such letters are not major vehicles for supporting paradigm shifts, but occasionally a few readers want to become better informed, and request more information. It is important to develop a concise message in one sentence. What is the problem, what can be done about it? I even practise this technique with telephone solicitors, especially those where the call is 'being recorded for quality assurance purposes', since they are less likely to summarily hang up! Population health is almost entirely a political subject, so there is plenty of scope for those inclined to make use of these channels of dissemination.

One prime challenge to optimal use of the print media is the difficulty of getting articles into newspapers and magazines with significant circulation. Personal contacts may be helpful – I was able to get a one-page story in *Newsweek* as a result of serendipitous conversations with a *Newsweek* editor over dinner at a professional meeting (Bezruchka, 2001). Stories need to be crafted in relation to current events, and a gripping lead is required. A standard approach to enlisting the general reader's sympathy is a human interest story – which is a challenge to adapt to population issues. Most publications have strict word limitations, requiring careful writing that leaves much unsaid. However, success at being published in a major newspaper or magazine may well result in hundreds of responses via email or regular mail, as well as telephone calls and other communications. I believe that it is important for us to respond to as many of these communications as possible, in the interest of cultivating every possible advocate for population health.

Writing popular books has been a traditionally successful approach to challenging the public with new ideas and promoting scientific revolutions. Although several academic and politically focused publishers are now interested in the topic, to date the published books on population health in the US have not been in a format that is likely to be read by the general public from whom, in my estimation, the battering ram for change must come.

Disseminating through the internet

The internet represents the cutting edge of communication, but the extent to which it affects people's deeply held beliefs or understanding is unclear. The opportunities to participate in internet discussions are nearly endless. Newspaper articles and various other internet sites often have a web-commentary section for responses that can be viewed by anyone interested in the topic. Those of us who use this means of communication can spread the population health message. The responses can excoriate or support or constructively engage in a discussion,

but we can expect to be strongly criticised for views we present that go beyond individual agency as the chief means of health production. On the other hand, the internet is an accessible mechanism for people who want to be involved to make contact with and learn from like-minded others. We might eventually find this process making substantial inroads in getting our ideas greater exposure. Blogs represent another easily accessible way to craft arguments in written form.

A tremendous variety of other publishing means are available on the web. Podcasting allows voiced material to be disseminated widely, as do hosted discussions on the web with downloadable audio files. Our challenge is creating files that might be suitable for general listening, just like the music that can be downloaded. Many of us belong to listserves and we can use them to highlight news stories with our personal commentary. Using the web for information and constructive engagement may be akin to trying to slake thirst from a firehose – but we ignore it at our peril.

Dissemination through the educational system

The formal educational system, from elementary through university level, represents a largely untapped resource for broadening public understanding of the determinants of health. The opportunity for us to engage in formal teaching is immense. As health professionals of all types we can teach and write for specialty journals and conferences, as well as for institutions of advanced education. Community colleges, universities and the like have few courses dealing with the health of populations but a course title such as Global Health can get us in the door. There are endless opportunities – online education, for example, represents a relatively new one. Recognise that it may take a year or more to set up a teaching opportunity, given the individual contacts and relationships that must be built. Formal teaching allows the unique possibility of crafting course outputs that require students themselves to take responsibility for dissemination. I tend to let the students choose the methods they will use based on the principles described earlier, but give a list of various suggestions and possible venues, such as screening 'Unnatural Causes' in small groups. I continue to be surprised by the innovative and sometimes inspiring activities they carry out and find more interest among non-health career students, who tend to be less resistant to the concepts, than health career students.

Teachers at all levels are important influences on developing minds. Over the long term, promoting middle- and high-school curricula on population health may be the most effective strategy for bringing about a shift in public understanding of the socioeconomic determinants of health.

The need for curricular change

'Health education' in US schools, from elementary through high school, is based on traditional concepts of individual health production. Individual behaviours

are the main emphasis, and no attention is given to comparisons of health status for populations. There is certainly no mention of the relative decline of health in the US over the last 40 years. Medical care is usually overemphasised as an important factor producing health.

To ask why our health education system avoids addressing social and economic determinants of health is to invite questioning of the broader purposes of the education system. Carol Bellamy, who was director of the United Nations Children's Fund (UNICEF) for several years, once said: 'The business community needs peace to see economic growth. They need kids to be educated to be consumers and workers' (quoted in the *New York Times*, 3 September 2000). I would suggest that if the purpose of an education is to create consumers and workers, then the system is working. However, if the purpose is to instil an understanding of the world and critical thinking skills, then much needs to be done. We might look elsewhere for guidance: scholars in Australia, for example, a much healthier country than the US, promote the concept of critical health literacy (St Leger, 2001). The three levels of health literacy that they describe involve functional elements such as factual information; interactive aspects that understand the nature of a supportive environment; and the critical element requiring civic engagement to impact social, political and economic forces that impact health. Teaching civic engagement as an element of health education is necessary if we recognise that youth represent the next generation to effect social change. Teaching young people the importance of social action, with accompanying skills, is empowering and increases self-efficacy. This framework would provide a simple yet comprehensive organising principle for a viable school health education curriculum that truly addresses health.

Practical strategies

I often begin a session with students by asking them to describe what they do to keep themselves healthy, and then to try to explain what they think makes people healthy in a larger community. In Seattle, classroom settings often have students from very diverse ethnic and national backgrounds. A wide range of responses from children who are African Americans, Hispanics or recent immigrants from Russia or Ethiopia illustrate the many social realities from which they come, and a sometimes profound understanding of the effects of those settings on their lives. A useful homework assignment is to ask the students to graph the top 25 or so countries in the 'Health Olympics', the ranking of countries by a mortality measure such as life expectancy. Engaged students will continue graphing beyond 25 countries to discover where the US stands. Another effective teaching tool is to present a coloured map of the US by county indicating life expectancy ranges and ask the students to explore possible reasons behind the geographical distribution of health that they see (Murray et al, 1998, 2006). Asking why such large disparities exist in the US prompts looking at basic concepts of population health. I then discuss with them the income distribution–mortality relationship among states.

Homework can include short essay questions, true–false choices and other formats that can lead to discussions about specific issues. Facts that can be brought in may relate to issues such as why the US has the highest child poverty rates of all the rich countries, and 10–20 times the teenage birth rates of other rich countries. We have almost endless opportunity here – in many cases the facts very nearly speak for themselves, when provided to ears that are willing to listen.

By comparing information on health-related outcomes for the US with other countries, we are forced to ask why the observed patterns occur. Why such high teenage birth rates? Or high youth homicide rates? Why so much child poverty? These data naturally lead students to discuss economic and political realities associated with the problems – without any need to explicitly mention partisan political issues.

Another teaching tool I have used, especially during a biennial Olympic year, is reader's theatre in which a 'Health Olympics finish' scenario takes place (Maher, 2006). Students take on country roles, there is a race announcer and scripts are handed out to study the day before. Often focusing on three contestants, Japan, Canada and the US, students race with flag-bearing t-shirts and additional information cards that are flashed to the rest of the class. The US crosses the finish line 4.6 years after the winner in the life expectancy race. This exercise makes use of active participation and entertainment while getting a memorable message across.

Teaching methods that focus on active discussion or other participation and that do not use too many visual materials seem to work best in elementary classrooms. If an audiovisual aid such as a video is used, be sure it is entertaining as well as informative. I like to show a 10-minute video segment of a British documentary, 'The Great Leveller' (part of a Channel 4 *Equinox* series screened in 1996). This fast-paced and cleverly narrated programme effectively presents some of the biology behind the hierarchy–health relationship through human, baboon and macaque monkey studies.

Promoting civic engagement

An important element of our curricular efforts is to help students to grasp the basic concept that political decisions about distributional economic issues are critical factors that affect the health of populations. A number of population health themes have been investigated for school use. A useful wealth distribution exercise is to divide the class into quintiles, and then 'give out' US household wealth as it is actually distributed, using trillion dollar notes. This visible depiction of reality often gets strong reactions from students of all ages – including 'but that's not fair!' – and can lead to civic engagement, the third part of critical health literacy. The links between relative poverty and environmental contamination can be presented in a class setting by dividing students in the class into quartiles or quintiles by wealth and instructing one group, the poorest, that, no matter what happens, they are to keep mute. A symbolic bucket of toxic waste is brought into the classroom

and the students have to discuss where it will go among the groups. Although the resulting decision has been quite unpredictable, it always leads to engagement and, I believe, a deeper understanding of relevant issues. A simple homework task is to talk about these ideas with friends, siblings and parents.

I have later found students who attended these classes who become active in the social justice movement – and who report that their classroom experience was what got them involved. Another element of civic engagement is to have students produce graphical materials for display. In a module entitled 'World Health and Art Activism', high school students were able to produce creative and effective posters that addressed issues such as student stress, the wealth gap, world hunger and teenage births. In another class, students drew up models displaying the hierarchy–health relationship. We can script role plays in which students learn to discuss the concepts with strangers and practise with each other or with friends and family.

One of the unexpected developments from presenting new and stimulating information is that parents can contact the classroom teacher if they want to know more about what their student has been learning. Teachers also use the lesson elements provided by guest instructors in future years so there is a stimulus for continuing population health education. After your first teaching experience at the pre-college level you may be 'hooked'. Use class evaluations to finetune future lessons.

Another opportunity that can offer an enrichment experience, particularly for students from more privileged schools, is actual travel to a poor country. We have worked with a school in which the students spend a month in Vietnam at the end of grade 8. Before they go we discuss issues of poverty and social factors at work in the Vietnam setting. Debriefing sessions on return are critical. One student, when asked about the 'big picture' in Vietnam as he saw it, replied: 'We went there and like you said, they were poor, but we also saw they were happy, and it wasn't a drug-induced kind of happiness'. The actual experience of the everyday realities of poor countries can have a transformative experience at any age.

Major global events provide other opportunities for teaching this material. The 10th anniversary of the Beijing women's conference was an appropriate time to discuss gender issues in health production. Discussions about our relations with Cuba highlight the finding that it is as healthy as the US despite economic sanctions placed on it by the US – which stretch over almost 50 years. Russia's rise to house the second largest number of billionaires in the world was coupled with an immense absolute health decline. Sri Lanka has health indicators close to those of the US despite the lack of economic growth and a protracted civil war. An impressive number of world events provide teaching material for health topics.

Teaching population health concepts have now been presented at social studies teacher conferences and to various teacher-training environments. Adoption has been limited because of the lack of sustained curriculum support as well as the lack of mainstream attention paid to our health as a society. We are in the process

of doing more curriculum development and dissemination (Just Health Action, www.justhealthaction.org/).

There are few standardised lesson plans for teaching this material available in the US. A sourcebook by World Hunger Year produced by Kids Can Make a Difference presents a variety of lesson plans (Kempf, 2005). One book in the Rethinking Schools series has relevant materials (Gutstein and Peterson, 2005), but none directly related to population health. Similarly, *Teaching economics as if people mattered* by United for a Fair Economy presents other engaging lesson material (Giecek, 2000). There are really novel teaching tools for global health available from www.gapminder.org/

College-level courses

It is remarkable how few college-level courses address the broad determinants of health – we can expect to break new ground by working in this area. Even more revolutionary are classes that require the student to apply the information in a useful way. As a part of the output of both my undergraduate and graduate courses covering population health at the University of Washington and at Seattle University, students carry out a dissemination exercise. I am impressed with the number of students who carry out teaching exercises in middle and high schools. They have gone to minority enrichment programmes, to history classes, to social studies classes, to health education classes, and discovered their own teaching styles. To help students grapple with the ideas, they are required to write a paper criticising these concepts. I am in contact with a few other university teachers in the US attempting to teach this material, largely in anthropology, sociology and social work departments. There is more opportunity for these ideas in countries other than the US (Bezruchka, 2006). The analogous course for physicians – 'social medicine' – is being taught in only a few medical schools in the US (Anderson et al, 2005). To my knowledge, few public health schools address this material, although there has recently been a growing interest in the 'social determinants of health' as an academic topic.

Conclusion: a call to action for public health professionals

We who work in traditional fields of public health in the US need to recognise that while our work may be important, health outcomes in the US suggest the need for a new approach to producing health. It is disgraceful that the wealthiest country in the world has allowed its health status to deteriorate to the present level. The way forward will require us to step out of our narrow academic and personal boundaries. We must build cohesive bridges among disciplines, social and economic classes, and between professionals and our education system.

This chapter suggests that the current scholarship around population health represents a scientific revolution in progress. There is strong resistance to new worldviews, and we in the US are no exception, particularly when it comes

to the topic of health. We are faced with relearning what produces health and choosing whether or not to teach what we have chosen to learn. Having healthy grandchildren and great-grandchildren will require concerted efforts by the current generations. There is pioneering work to do in disseminating the concepts of the population health revolution.

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