WHERE HAS THE CANADIAN PUBLIC HEALTH SECTOR GONE?: THE OPTIMAL MIX OF PATIENT AND COMMUNITY ORIENTED HEALTH PROGRAMS AND POLICIES

by

Malcolm C. Brown

Working Paper Series 99-12



DEPARTMENT OF ECONOMICS
THE UNIVERSITY OF NEW BRUNSWICK
FREDERICTON, CANADA

WHERE HAS THE CANADIAN PUBLIC HEALTH SECTOR GONE?: THE OPTIMAL MIX OF PATIENT AND COMMUNITY ORIENTED HEALTH PROGRAMS AND POLICIES

Malcolm C. Brown
Professor of Economics
University of New Brunswick, Fredericton

November, 1999

ABSTRACT

WHERE HAS THE CANADIAN PUBLIC HEALTH SECTOR GONE?: THE OPTIMAL MIX OF PATIENT AND COMMUNITY ORIENTED HEALTH PROGRAMS AND POLICIES

In health terms, the post-war period in Canada has been noteworthy mainly for the introduction and maintenance of national health insurance (NHI); but the period has also been one of significant paradigm changes concerning public health. Before the introduction of NHI (roughly 1945-1970), public health was eclipsed by curative health objectives; with the objective of introducing medicare dominating all policy options designed to prevent diseases and injuries from occurring, or to promote healthy lifestyles and living environments. The decade following the introduction of medicare (the 1970s) was one of policy concern about health costs in the context of rapidly increasing prices. During this period, interest was rekindled in public health, not as a mechanism for promoting better health but as a mechanism for constraining curative health expenditures. By the beginning of the 1980s, this interest declined, and two new paradigms emerged. One was the paradigm of population health maximization via evidence based medicine - a paradigm in which containment of health sector expenditures remained the main objective of policy but reliance on public health ceased to be a primary cost containment tool. The other paradigm was health promotion, in which the idea of health policy was replaced by that of healthy public policy. Integral to both 1980s paradigms was recognition that public health was no longer appropriately defined as a sectoral concept, and no longer pertinent to health sector policies concerned mainly with the funding of curative services. Policy-makers and health analysts are currently struggling to find the best ways to define public health policy in a world where health and non-health goals are becoming increasingly comparable, and where non-health policies are as important as health ones in defining the standard of a health.

WHERE HAS THE CANADIAN PUBLIC HEALTH SECTOR GONE?: THE OPTIMAL MIX OF PATIENT AND COMMUNITY ORIENTED HEALTH PROGRAMS AND POLICIES

A fundamental policy issue in health economics has always been how to allocate resources between individual and community based health programs and policies. The issue has proved complex in part because allocation decisions between private (user fee financed) and public (tax financed) goods are always controversial, but resolving the matter has proved difficult for reasons other than this. Insofar as private health goods are curative, designed to resolve individual injuries and illnesses, while public health goods are designed to minimize the probability of injuries and illnesses occurring over a population, the health generated through private and public health goods are not the same qualitatively, and do not distribute health benefits among individuals in the same way. This means that allocation choices between private and public (i.e., collective) health goods means not only determining how to maximize output with the resources available but also deciding whose health is to be improved, and what kinds of health outcomes to promote.

If the problem of allocating resources between private and public health goods is intractable enough analytically, it is enhanced by the fact that the literature terminology classifying health goods has not remained constant. In pre-medicare days (1921 through 1971 in Canada), the basic distinction was between curative and public health care, with curative care identified as goods produced either by or through medical practitioners, and public care as everything else (*The medicare era in Canada is normally associated with the passing of the* ***Medical Care Act*** *in 1967, but the* ***Act*** *did not become*

operational until 1968, and it did not lead to national health insurance in all Canadian provinces until 1971.). Treating public care as a residual meant that it was not necessarily a public good conceptually or financially (*a good is public conceptually if it must be provided to a group of individuals if it is provided to anyone at all, and public financially if tax financed*).

Prior to medicare, public health goods de facto were a heterogeneous mix of services and activities, including (1) community based programs and policies reducing the probabilities of injuries and illnesses occurring, (2) health professional based activities detecting and curing health problems in early stages, and (3) "caring" activities alleviating disability, discomfort and pain from chronic ailments - types of services and activities respectively identified as primary, secondary, and tertiary preventive health care [Brown, 1991: 223-224]. After medicare, the latter classification system was relied on more extensively, and it ultimately undermined the logic of separating medical care from all other health goods - not all medical practitioner care is curative, and not all curative care originates with or through physicians.

In the 1980s, two new ideas came in vogue - "population health" and "health promotion." Both have occasionally been used to describe primary preventive health care, but are designed to identify something different from this. The former term emerged in the context of "evidence based medicine," a policy paradigm with the explicit goal of allocating all health sector resources (both curative and preventive) in order to maximize population health [Hurley et al., 1995: 3-11]. Under this paradigm, population health is often measured in terms of the number of quality adjusted life years (QALYs) generated from treatments and programs, although other measurement units, like

healthy life year equivalents (HYEs) exist.

The concept of "health promotion" emerged largely through World Health Organization (WHO) statements on health and health policy. During 1978-86, WHO redefined health, no longer considering it an absence of injury or disease but a state of complete physical, mental and social well-being [WHO, 1978]. WHO also shifted from emphasizing health policy to emphasizing healthy public policy, meaning that its policy statements shifted from a consideration of the health effects of resource allocation decisions within health sectors to the health effects from allocations in all economic sectors [De Leeuw et al., 1995: 331-338]. Good health was linked with policies fostering high communal standards of living, unpolluted physical environments, and stress reducing socio-economic arrangements. In the new WHO paradigm, all policy became "health" policy.

The objective is to consider how these changing perspectives have inter-related with and influenced health funding strategies and policies, a discussion designed to further understanding of optimal strategies for health policy formulation.

RESOURCE ALLOCATION DECISIONS: THE ECONOMIC THEORY BACKDROP

While the specification of health goals and strategies has shifted over time, the backdrop economic model defining the principles for optimal policy formulation has not. In this regard, the concept of opportunity cost, with its implication that having more of one program means having less of another, has impacted significantly on public policy. Equally important has been the concept of economic efficiency, with its welfare maximization requirement that the marginal social benefits from the last

dollar spent on all programs and activities be equal. But while policy-makers have been familiar with these economic principles, the understanding has been incomplete, making their contribution to policy formulation uncertain and variable.

In fairness to policy-makers, problems have arisen partly because empirically applying economic efficiency conditions can be difficult, and the recommended policies far from intuitive. Consider a funding choice where health maximization is articulated as the goal; and where the alternative programs are high-technology organ transplant programs in tertiary hospitals, and low-technology home-care programs for mentally and physically constrained seniors. The alternative benefits are different in numerous ways - organ transplants are more costly per treated individual than home care services, organ transplants help a younger demographic group than home care programs, organ transplants affect individual life expectancies more than home care, quality of life effects are more "medical" from organ transplants than home care services, and so on. Bringing the notion of competing marginal social benefits to a technical analysis of choice between heterogeneous goods is difficult. In the example, it involves choosing between benefits received by a few versus those received by many, and benefits affecting the quantity of life versus those affecting quality. Economic theory is largely silent on how such choices might be optimally made (*except in the libertarian tradition where all allocations are designed to meet the preferences of those able and willing to pay*).

An example where economic logic has been brought to bear on public policy in a sub-optimal way concerns the periodic recommendations for provincial governments to spend larger proportions of

their health budgets on public health [for example, *The Rainbow Report*, 1989]. The recommendation typically has been based on an empirical observation that less than 1% of provincial government budgets are allocated to public health, and on an economic deduction that the marginal social benefit from provincial government public health spending must be high on any item where there is currently little spending. The facts that "public health expenditure" is a grab-bag of government financed programs not included elsewhere, and that the economic deduction is not valid, have not promoted caution in regard to the recommendation.

Health and Welfare's classification of public health activities includes public sector expenditures on: (1) addiction services, (2) child health services, (3) communicable disease control, (4) community hygiene, (5) community mental health, (6) district health council activities, (7) family planning, (8) food protection, (9) health education, (10) maintenance activities with respect to health standard regulations, (11) public health laboratory services, (12) local health agency activities, (13) nutritional advice, (14) poison control, (15) preventive field-service activities, (16) public health nursing, (17) tuberculosis prevention, and (18) venereal disease control [Brown, 1991:224)

A second example where there has been insufficient caution in policy recommendations concerns interpretations placed on benefit-cost (B/C) ratios estimated for a large number of preventive health programs. Extremely high B/C ratios have typically been obtained for programs like fluoridation, mandatory seat-belt use in cars, venereal disease prevention, breast cancer screening, and so on [Brown, 1991: 227-229]. Despite the fact that most of the calculated ratios represent benefit-cost assessments for entire programs, and thus formally imply only that society is better off having the programs evaluated rather than no program at all, the ratios have often been inappropriately used to promote more public health expenditures within the program areas.

If the bad news is that economic arguments have often a part of the rhetoric used to promote and support resource allocations where the benefits may not support the costs, the good news is that these

arguments are not usually sufficient to dictate resource allocation decisions on their own. Generally, the economic arguments have to be coupled with favorable political conditions to gain acceptance.

RESOURCE ALLOCATION DECISIONS: PRE-MEDICARE STRATEGIES

The pre-medicare period, lasting from about 1945 to 1970, is the last half of the golden age of organized medicine - golden because it represented the heyday of belief in the efficacy of curative care coupled with a belief that this care was best provided through private markets [Brown, 1979; 304]. The beliefs allowed physicians to limit entry into their ranks, according to their own perceptions of how many practitioners were needed, and to press for social capital like hospitals that would increase medical incomes, without appearing to be in opposition to the public interest. From 1920 to 1958, for example, doctors used their licensing powers to limit their numbers to about one for every 900 people [Urquhart, 1983: B82-92], a policy leading to higher relative incomes for medical practitioners than ever achieved before [Brown, 1979: 302-303].

The belief in the efficacy of curative care that served physicians' economic interests so well, had a technological foundation. The discovery of the wonder drugs in the 1930s (penicillin and the sulfides) meant that doctors for the first time historically had something in their black bags that could resolve diseases in process. Patients rightly valued this care, but for a time remained committed to the view that private practice doctors unfettered by government funding or regulations would not withhold treatments from those in need.

The fact that doctors often betrayed this trust, and managed their affairs with professional rather than patient interests in mind meant that the golden age of organized medicine contained the seeds of its own destruction. The restrictions in medical practitioner numbers fostered the perception that more doctors would significantly improve health, a perception that by the late 1950s had become sufficiently widespread it became politically viable to promote national health insurance (NHI). But up to the point when implementation occurred, the practice of separating medical practitioner care from all other health services, and of giving it priority, continued.

The priority given to medical care does not mean to say that society at the time was oblivious to the role public health had historically played in raising health standards. Pasteur's work (on bacteria caused silkworm disease, and published in 1865), had been instrumental to a general appreciation of the germ theory of disease, and this had led to a heyday of public health policy (including the formation of public health government departments) in the first two decades of the 20th century.

While the heyday of public health for most developed countries including Canada was the first two decades of the 20th century, significant increases in life expectancy occurred not only during 1900-1920 but also during 1870-1900. The pre-1900 increases in life expectancy were assumed to be the result of people becoming more careful in avoiding behavior and environments conducive to the transmission of infectious diseases, as they became more knowledgeable about how to do this.

Despite appreciation for the historical contribution of public health programs, by the end of World War 2 the belief was emerging that these programs had done about all they could to improve

population life expectancy, and that further increases would be through curative care. It was in this context that NHI became identified as the next big "public" health development, and that political pressures arose to implement an NHI system in Canada.

RESOURCE ALLOCATION DECISIONS: THE POST-MEDICARE DECADE

Implementation of NHI in Canada meant that no individual any longer had to go without physician or hospital care because of an inability to pay, and that the health care system (measured by the numbers of doctors and hospital beds) was large enough to cope with projected demand. After the fact, implementing NHI appeared to constrain health care costs in Canada, but had little effect on the standard of population health. In regard to costs, consider that Canadian health expenditures as a proportion of gross domestic product (GDP) increased continually in the post-war period up to 1970 when NHI was implemented (the ratio increased from 5.5 % in 1960 to 7.2% in 1970; but stabilized in the succeeding decade (the ratio was 7.3% in 1980). By way of comparison, the American ratio of health expenditures to GDP was 5.3% in 1960, 7.6% in 1970, and 9.5% in 1980, a pattern of continued increase making the American system 30% more expensive than the Canadian by 1980 [OECD, 1985: 12].

On the other hand, the implementation of NHI in Canada did not seem to change Canada's standard of population health compared to the United States (which did not introduce an NHI system). The ratio of Canadian to American female life expectancies at birth was 1.01 in 1960, 1.02 in 1970, and

1.03 in 1980; the respective ratios for males was 1.02, 1.03 and 1.02 [OECD, 1985: 131]. The Canadian infant mortality ratio (deaths as a proportion of live births) was 5% higher than the respective American ratio in 1960, 6% lower in 1970, and 18% lower in 1980 [OECD, 1985: 131] - a pattern of continual decline both before and after Canadian NHI, which makes it difficult to impute the improvement to the medicare financing arrangements.

The lack of easily detected population health benefits under NHI, and the significantly higher public sector funding burden, fostered more critical assessments of the health impacts of medical practitioner services than had previously existed. The 1970s was the decade in which Thomas coined the phrase of "half-way technologies," to describe medical procedures and therapies that alleviated some of the incapacitating and painful effects of diseases, but did little to modify their natural progression [Thomas, 1977]. It was also the decade in which Illich coined the phrase of clinical iatrogenesis, to describe medical interventions with the potential for causing as well as curing illness [Illich, 1975]. Finally, it was the decade when Evans introduced the idea of doctor induced demand, to explain situations where doctors knowingly provided treatments and therapies which could not help patients, and which might harm them [Evans, 1974].

Evan's supply induced demand (SID) model implied that doctor induced unnecessary treatments were particularly likely in situations where high practitioner to population ratios made it difficult for each practitioner to generate a full workload providing only necessary care. The impact of this implication on policy strategy was phenomenal. In the 1960s Canada had been convinced that it had a major shortage of doctors, and as a consequence passed the **Health Resources Fund Act**, 1965

designed to provide federal financial support for the creation and augmentation of medical training facilities; by 1974 it was convinced it had too many, and introduced policies designed to limit both the immigration of foreign doctors and the output of Canadian medical schools [Brown, 1988:5-7].

The abrupt reversal in Canadian medical manpower policies within a decade raised an interesting question. Did Canada really have a shortage of doctors in the late 1960s followed by a surplus in the 1970s, or was the reversal the consequence of assessing medical manpower markets differently? The former possibility is suggested by the facts that the doctor to population ratio in Canada was significantly higher in 1975 than it had been in 1965 (171 per 100,000 population versus 130), and that epidemiological studies identifying medical interventions with few or no observed health effects were becoming more common in the 1970s than they had been previously; the latter by the facts that the number of doctors in 1977 was not excessive in relation to the 1965 policy objectives, and interventions without observable health effects were not a new phenomenon related only to the NHI period [Brown, 1988: 5-7]. Doctors had always provided a mix of necessary and unnecessary services; it was just that after NHI the mix was provided to the entire population, and not just those rich enough to afford it [Brown, 1979: 301].

In essence, most empirical evaluations before medicare were based on an implicit premise that all individuals would be healthier receiving periodic attention from a doctor than without. The resulting policy issues related to how many more doctors were needed to treat everyone, and to how the increase could be achieved. After medicare, the doctor shortage was resolved, and empirical evaluations moved on to a new set of issues, related largely to fact NHI was not delivering the health

outcomes initially anticipated. Once one started to look, medical provision practices based on tradition and orthodoxy, rather than on clinical evidence of health effects, were not hard to find.

The declining infatuation with doctor provided curative care in the 1970s was coupled with a renewed interest in public health. The 1974 Lalonde White Paper (***A New Perspective on the Health of Canadians)*** showed that the most serious mortality and morbidity threats to the health of Canadians related to unhealthy lifestyles and environments. McKeown's 1979 book (***The Role of Medicine: Dream, Mirage, or Nemesis***) analyzed the determinants of improved population health experienced in the United Kingdom from the late 1870s to the beginning of World War 1 more formally than they had been before. McKeown rejected the conventional wisdom that the pre-1900 increases in life expectancy had been the result of better personal health measures, hypothesizing instead that increases in life expectancy had been caused mainly by improvements in the standard of living.

Neither the Lalonde nor the McKeown analyses offered any direct insights concerning the optimal size of the curative health sector; but they nevertheless became a part of a policy paradigm in which it was considered that the health delivery system had grown too large, and should be reduced in size.

RESOURCE ALLOCATION DECISIONS: MAXIMIZING POPULATION HEALTH

The political pressure to constrain health sector costs that commenced in the 1970s increased in both the 1980s and the 1990s. Much of the increase was unrelated to developments within the health

sector itself. In Canada, as in many of the developed countries, the secular trend after 1970 was for the overall economic growth rate to decline, so that by the early 1990s the economy was virtually at a stand-still. Tax rate increases were avoidable only if the growth rates in the costs of the major social programs - health (NHI), education, social welfare (the Canada Assistance Plan), and public sector pensions (the Canada Pension/Quebec Pension Plans) could be constrained to that of GDP (gross domestic product). Since most of these programs were universal, and open-ended in terms of commitments to eligible beneficiaries, arbitrarily constraining costs to target growth rates was generally not possible without eliminating program benefits.

The incompatibility of constraining tax rates and maintaining universal social welfare programs created the backdrop for the general shift to the "fiscal right" observed both in Canada, and in many other countries. Faced with declining growth rates in real incomes, the middle-income class became increasingly enamored with a "new right" economic argument that dismantling social programs was a policy instrument for restoring growth. The logic behind the argument was that income transferring programs like social welfare and unemployment insurance had allowed the poor and the unemployed to become lazy, and had thus impinged on society's aggregate standard of living. A policy of dismantling such programs would offset these trends, by forcing people to look harder for jobs, and to work harder when they got them. But even if the policy failed to restore growth, it would still constrain tax rate increases for a group whose real incomes were no longer increasing. *(For a while, Canadian governments tried to maintain the universal social programs and constrain tax rates. The result was ballooning deficits, resulting in the public debt problems of the 1990s.)*

The fact that medicare was not perceived as a "rich to poor" income transferring program protected it somewhat from the dismantling pressures emanating from fiscal conservatism. But medicare was Canada's largest social program, absorbing 30% or more of provincial government budgets; and size alone made it vulnerable to down-sizing strategies. In proposing health expenditure cut-backs, there was no notion of what an optimal sized health sector would be, only a view that reducing size was both inevitable and desirable.

It was in the context of down-sizing NHI that the idea of maximizing population health through evidence based health care found its niche. In this regard, it is important to understand that 'evidence-based medicine" did not cause down-sizing - by the beginning of the 1980s, Canada was already significantly constraining health care costs, on the financial side through global budgeting strategies, and on the physical side by limiting the numbers of doctors and hospital beds (Glennerster discusses this matter in detail, albeit in a British rather than Canadian context [Glennerster, 1985]). But down-sizing exposed governments to the criticism that they were achieving financial economies by forcing people to go without needed care. Evidence-based medicine allowed governments to counter this criticism, by suggesting that expenditure reductions were eliminating unnecessary rather than useful treatments and services.

Technically, evidence based medicine describes a policy framework where all medical care is subjected to effectiveness and efficiency evaluations (*an effectiveness evaluation is one that measures the physical health benefits of providing a procedure or treatment to all patients with a specified health problem, and an efficiency evaluation is one that considers whether the physical*

benefits generated are worth the financial costs incurred). When effectiveness and efficiency evaluations have been conducted using QALYs as the unit of health output, effectiveness analysis has measured the number of QALYs generated by treating a group of patients, and efficiency analysis has measured the cost per QALY generated [Drummond et al., 1987: 112-138]. The cost data are then grouped to form a league table (*i.e., a list of costs per QALY for alternative medical treatments, addressing different health problems, and provided to different groups of patients).* The league table is used for priority setting, funding the lowest cost treatment first, the second lowest cost next, and so on, up to the point where the budget is exhausted.

The extent to which the above priority setting procedure promotes population health maximization is difficult to ascertain - partly because it is unclear how well QALY figures accurately measure and value health effects, and partly because the cost per QALY figures usually identify average rather than marginal costs. However, since the number of cost utility analyses (CUA) done to this point remains tiny relative to the number of treatments that could be evaluated, these conceptual critiques have detracted little from the public relations value of "evidence based medicine" as a way of justifying budgetary cut-backs in the health sector.

The population health maximizing strategy has to date been more popular in the United Kingdom and New Zealand than it has in Canada. Why this has been so is not completely clear, although it is undoubtedly linked with cross-country differences in the political need to address consumer health care preferences. The concept of population health remains popular with electorates in Canada only as long as it is interpreted in ways consistent with individual health maximization; and planning-

style policies limiting care to the old, or to any other group on the basis that the health benefits are limited in relation to costs incurred, are difficult to promote.

This is not to imply that the notions of population health maximization and evidence based medicine have not made inroads into the Canadian health policy process. The success of McMaster University medical school in developing programs based on promoting population health maximization in an evidence based context bears testimony to this. If there is continued political satisfaction with "evidence based medicine" strategies in Europe and Australasia, it may become a more influential force in Canada in the future.

While population health maximization in principle relates to both curative and preventive care, in practice public policy has been concerned almost exclusively with achieving financial economies in the health delivery system. The emphasis is not surprising because most preventive health programs are not expensive, and not burdensome on government budgets.

Preventive health advocates have implicitly understood their role in the public budgetary process when they have tried to make the case for more preventive health care as a way of reducing curative expenditures. It is a message that has been only half-heard. Governments have been happy to constrain curative expenditures, but have been reluctant to divert savings generated to preventive health activities.

While the argument of substitutability between curative and preventive services has not impressed

government policy-makers to date, whether the substitutability actually exists is an analytically important issue. Around the turn of the century, when improvements in preventive health increased the numbers of people surviving from childhood dependency to young adult productivity, the expansions in public health programs may indeed have both reduced curative care costs, and made existing health expenditures more easy to finance by reducing the population dependency ratio (*the dependency ratio is the proportion of the population not in the employed labor force because of youth, age, infirmity, disability, etc.*) Currently, the prognosis must be more pessimistic. Any current preventive health program designed to significantly increase population life expectancy must do so by increasing the proportion of middle-aged individuals surviving to be old, since there are no longer significant numbers of life years to be generated from preventing young people from dying prematurely. Increasing life expectancies beyond retirement ages implies an increase in the proportion of the population consuming without producing, and finding expensive ways to die - outcomes increasing both the amount and the burden of curative health care costs.

The pessimistic prognosis on the current capacity of preventive health to lower curative health expenditures notwithstanding, the empirical relationships between public and curative health resources allocations have not to date received much evaluation.

RESOURCE ALLOCATION DECISIONS: MOVING TOWARDS HEALTH PROMOTION

In public health, the major interest since 1980 has not been in analyzing the relationship between curative and public health resource allocations, but in extending the domain of public health to all

dimensions of economic activity. In historical context, the shift to "healthy public policy" is to a degree explainable. Historically, programs and policies with health promotion effects have usually been considered to be public health initiatives only as long as they have not been adequately implemented. To illustrate, the earliest public health initiatives in the developed countries, of hygienic water supplies, effective garbage removal, and milk pasteurization, remained public health initiatives only as long as the adverse health ramifications of not doing more were obvious. Once these programs reached acceptable standards, their existence continued to do much to protect the communal standard of health, but they were no longer financed as health initiatives, nor referred to as public health policies. Public health professionals have experienced a long tradition of having their roles decline or disappear after implementation of advocated programs, and a way of offsetting this would be by defining a post-implementation role.

Another possible explanation for the shift to a healthy public policy perspective has been the increasing importance of environmentally and socially promoted disease and injury versus those transmitted via bacteria and viruses. Public health analysis has become increasingly concerned with the relationships between ill health and factors like (1) nutrition, (2) personal habits like smoking, drinking, over-eating, not exercising, etc., (3) home and work environments conducive to injuries, (4) family and work environments conducive to stress, (5) inadequate and poor educational policies, (6) unemployment, (6) firearm ownership and use regulations, (7) pollution, (8) social class arrangements, (9) social and economic mobility, and (10) income (both absolute and relative) [Marmor et al. 1994; McLellan et al., 1999; Martikainen et al., 1999; De Mheen et al., 1999; Wood et al., 1999; Kuped et al., 1999;Wadswoorth et al., 1999; Reading et al., 1999; Norredam et al, 1999;

Hemmingsson et al.; Molinari et al., 1998; Hart et al, 1998; Kahn et al., 1998; Kennedy et al., 1998; Jerrett et al., 1998; Hallqvist et al., 1998; and Kaplan et al., 1998]. Most of these factors are difficult to analyze within a paradigm that separates health from other aspects of people's lives.

Healthy public policy, like most other public health strategies that have evolved historically, has had a tenuous relationship with economic thought concerning optimal policy formulation. In particular, advocates of healthy public policy have been attracted to the idea that all resource allocations should be carried out with health effects dominating non-health benefits in making choices. Thus, if a non-health good can be produced in a way that involves health harming pollution, or in another way that does not, the non-polluting production method should always be chosen. The argument is that, if health improving choices are made over all allocation decisions, the society will be as healthy as it can be. The argument is not economically sound, it being easy to construct examples where health maximizing micro-choices do not maximize health across the board. Intuitively, it is easy to understand that policies of building only four-lane highways, or specifying maximum speed limits of 30mph or less, on the basis that such policies reduce the number of traffic accidents, would be rejected by society whatever the evidence suggesting their technical validity. But what seems silly contextually often appears reasonable in the abstract.

The difficult part of the theory of economic policy for laymen to understand, however, does not involve situations where health promotion generates unacceptable results in relation to a specific policy, but situations where promoting health over all activities separately is not conducive to the highest standard of population health overall. This aspect of public policy, which admittedly is not

completely intuitive, can be partially "explained" through the following example. Suppose that improved health can be promoted by both higher incomes and reduced pollution, but pollution reductions can be obtained only by lowering incomes. Then population health maximization is not consistent with either income maximization or pollution minimization; although health maximization, income maximization, and pollution minimization all sound reasonable as policy goals when considered separately.

Whether or not policy prescriptions emanating from a health paradigm [*which defines a set of beliefs about what determines health, both individually and collectively*] are technically correct is not the critical determinant of their ability to influence public policy, however. To the extent that a paradigm becomes influential, it can affect policy even when wrong; and in this regard the role of healthy public policy in public policy determination is still evolving.

THE HEALTH-INCOME RELATIONSHIP

While a wide variety of issues have been to date examined under the health promotion paradigm, the issue that has set the paradigm apart is its consideration of the relationship between income per capita and the standard of health. There has always been some appreciation of the fact that rich people tend to be healthier than poor people - both comparisons between people in developed and undeveloped countries, and between rich and poor people within individual countries, bear this out. Indeed, the evidence that wealth produces health has been so definitive that the optimal strategy for

health promotion can seem extremely simple - promote economic growth wherever and however one can [Marmor et al., 1994].

The are two main problems with advocating economic growth promotion as the single objective of policy. First, growth promotion for the poor can appear akin to "pulling oneself up with ones own bootstraps." In other words, the objective is laudable but largely unattainable. The second corollary issue is that growth without a health promoting income distribution strategy may not be health promoting [Poland et al., 1998].

Up to the 1980s, the dominant view was that income fostered good health by enabling individuals to have proper diets, live in warm and safe homes, maintain bacteria and pollution free local communal environments, access adequate medical care, and so on. In other words, a minimum absolute level of income was necessary to ensure adequate health, with this income earned privately if possible but provided socially otherwise. McKeown's work [McKeown, 1979] on the determinants of increasing health standards in Britain prior to the beginning of the 20th century, reflected a view that higher absolute incomes were conducive to longer life expectancies.

Since McKeown did not consider income distribution, the issue of how income and power balances between rich and poor (*affected by trade-union policies, social welfare programs, housing regulations, and so on*) affect health was left open in his analysis. The oversight created concern that McKeown's conclusions might provide support for a fiscally conservative philosophy of minimizing the size of the public sector. In McKeown context, fiscal conservatives could

persuasively argue that dismantling many social programs could promote growth, without pushing anyone below an absolute poverty line.

Evidence was emerging, however, that "relative income" was important. In this regard, the UK Whitehall studies were particularly influential. An initial study considered four levels of male civil servants with office jobs in London; where all workers were employed in the same location, had office rather than manual jobs, had job security, and earned incomes significantly above poverty levels [Marmot et al., 1978]. The study found that workers in the top level (senior administration) had the lowest mortality ratios, those the next level down (professionals and executive personnel) had mid-level ratios, and those at the bottom (clerks, etc.) had a mortality ratio three and a half times higher than those at the top. The study established a link between position in the "pecking order" and health; but did not establish if the absolute income differentials associated with different positions in the pecking order played a role in defining mortality ratios.

Cursory cross-country evaluations of health standards suggest that relative income differentials probably are a determinant of the population standard of health. Consider the relatively low population health standards achieved by the United States, despite its being the world's wealthiest economy with by far the most expensive health delivery system. Two relatively recent studies [Kaplan et al., 1996; and Kennedy et al., 1996] have suggested that the United States' poor showing is related to its unequal income distribution. Both studies, in comparing 50 states, showed that the gap between the rich and poor, whether measured in terms of income or wealth, or Gini coefficient, correlated significantly with most aggregate health measures (including age-adjusted death ratios,

low birth ratios, crime rates, incarceration rates, etc.), and was a far better predictor of population health status than average state income.

If the United States is not living up to the health potential implied by its affluence, Japan is at the other end of the spectrum. "Japan has increased its life expectancy by reducing the rates at which people die, in every age group and from every cause of death, so much in the last thirty years that it has now outdistanced every country in the world by an amount of life expectancy that it is almost impossible to catch up with. It has been said that the difference between Japan's life expectancy and the United Kingdom, although only a few years, could only be achieved by eliminating all deaths from cancer and heart disease - an impossible goal." (CBC, 1997: 3). Neither Japan's per capita income nor the size and quality of its health delivery system can explain its health achievement; on the other hand, Japan has a homogeneous population, and an extremely flat income distribution (Poland et al., 1998: 789).

Wilkonson (Wilkonson, 1992: 165-168) has effectively summarized the cross-country evidence by estimating a regression for nine developed countries, a regression in which average life expectancy is the dependent variable, and gross domestic product per capita and the proportion of income going to the lowest 70% of the population, the independent ones. The regression indicates that 10% of average life expectancy variation is attributable to per capita income differences, and 90% to differences in income distribution.

Currently, a lot of evidence suggesting a link between population health and income distribution in developed countries is being generated [Soobader et al., 1999; Ecob et al., 1999; and Lundberg et al., 1994]. The evidence to date has not established (1) whether income distribution is a determinant of population health in its own right, (2) whether income distribution is a proxy for some other causal variable (for example, countries with more egalitarian income distributions may be those with more effective social welfare nets, or more humane legal arrangements defining the powers of employers versus employees, etc.), or (3) whether the relationship between income distribution and health is one of correlation without causation. Because the evidence is inconclusive, the argument that unequal income distributions promote poor population health is controversial; a controversy exacerbated by the fact that the hypothesis is not ideologically neutral - liberals and social democrats find the argument that income distribution affects population health compatible with their social philosophies, while libertarians and fiscal conservatives do not.

LESSONS LEARNED FROM PAST STRATEGY ORIENTATIONS

Canada's approaches to health funding, with particular attention to the distribution of this funding between curative and public health activities, suggests a number of things. The first is that identified social problems are invariably those which society considers important. The phenomenon of unmet but needed medical practitioner care in conjunction with provided but unnecessary medical services existed both prior and subsequent to medicare. But before medicare, meeting unmet needed care was the identified social problem; after medicare, eliminating unnecessary care became so. Similarly,

a distinction between public health policy and healthy public policy has always existed, but before 1980 public health analysts did not think that they had many insights to offer in respect to the formulation of policies where health effects were no longer dominant.

A second observation is that policy perceptions involving health do not exist in isolation to those involving other economic sectors. The increasing ascendance of a perceived need for budgetary cutbacks in health after about 1970 was endemic to the funding problems caused by declining economic growth, and budgetary constraints would have been imposed no matter what the initial size and efficiency of the health delivery system. It has been only recently, in the late 1990s, that policy-makers have grudgingly admitted that the health delivery system may now be underfunded, an admission arising only because more rapid economic growth and the emergence of government budgetary surpluses, increases the political tractability of a new funding strategy. The admission notwithstanding, additional funding for health care must still compete politically with an objective of reducing tax rates, argued by fiscal conservatives to be necessary to ensure continued economic growth.

The above comment implicitly raises the question of the extent to which economic policy is ideologically rather than scientifically driven. In this regard, there can be no question that ideology is a major determinant of policy perspectives. This may in part be due to the importance of social philosophy in defining personal self-interest, but it is also facilitated by the fact that scientific knowledge is rarely sufficiently definitive to force acceptance of policy orientations with unacceptable ideological overtones. Consider the economic argument for designing health programs

to be efficient. Conceptually, this is almost a "motherhood" principle, to which everyone pays homage; but empirically the principle does not deter social democrats and fiscal conservatives from often taking diametrically opposite viewpoints concerning the desirability of additional spending in the health sector.

The above comments are not meant to imply that more attention to economic principles may not facilitate a somewhat better resource allocation process. But the expectations for improved decision-making from this orientation must be modest. The historical evidence is replete with situations where economic argument has been used as a tool for advocating inefficient and inequitable resource allocations - sometimes because the advocates did not understand the nuances of the principles they were trying to use, sometimes because the advocates appreciated the value of economic argument as a public relations tool, and sometimes because the advocates were trying to resolve an allocation decision more complex than their economic model was designed to address.

THE OPTIMAL SIZE OF A PUBLIC HEALTH SECTOR

At the beginning, it was noted that the optimal relative sizes of the curative and public health sectors has always been a policy issue. A common perception has been that resolving the optimal sizes involves a set of issues comparable to choosing between private and public urban transit arrangements. The perception has fostered sub-optimal policy deductions insofar as curative and preventive health activities involve the production of different goods, and not alternative ways of producing the same thing. For individuals already sick or injured, prevention is not pertinent; for

all other individuals there is a general trade-off between trying to prevent a health problem from arising, and developing an infrastructure for adequately addressing health problems as they arise. But it is not a trade-off normally pertinent to individual agent conscious decision-making. To the extent that collective and preventive health programs are perceived as alternatives to other tax financed activities, and curative services as alternatives to privately purchased goods and services, the economic interdependence between preventive and curative health care is weak (*in economic terms, preventive and curative services are independent economic goods rather than substitutes).*

On a technical level, more spending on preventive health has a variable impact on the quantity of curative services required, either in the short-run or in the long. Reducing the incidence and prevalence of diseases and injuries can have a direct impact of reducing the need for some curative services, of course - for example, a reduction in smoking rates reduces the incidence of lung cancer, and thus the number of lung resections. But all individuals must eventually die, and for many, the period before death involves debilitating, incapacitating, and painful health conditions that are expensive to address. In terms of the smoking example, the matter of how people saved from lung cancer eventually die is pertinent to any analysis of the cost ramifications of reducing the incidence of the disease. What we do know is that the "money costs" associated with dying generally increase with age of mortality.

Another complicating factor in assessing the relationship between the amount of preventive health and the cost of curative care is that, as populations in affluent societies become older (partly a consequence of better public health programs), there is an increasing demand for health services that

offset the ravages of age - more demand for glasses, hearing aids, and other prosthetic devices; more demand for plastic surgery to eliminate wrinkles; more demand for drugs designed to alleviate chronic aches and disabilities; and so on. The public policy quandary is in deciding which health demands constitute needed health care.

In general, curative care promises to be a "growth industry" for the foreseeable future, regardless of what is done in the public health domain. In creating a steadily aging society, we have inadvertently become victims of our own success, by creating larger and larger proportions of our society that can benefit from curative services alleviating disabilities and pain. As far as preventive health is concerned, it is harder to predict what will happen. It will be increasingly understood that, while preventive health and health promotion may improve population health, they are not reliable policies for reducing curative health expenditures. How much interest there will be in improved population health for its own sake is difficult to say, particularly in contexts where improved population health is achievable only through reduced standards of living.

The empirical question remains, of course, of what an optimal amount of public health expenditures might be. On this matter, it must be recognized that there has not been an observable "public health sector" in Canada since the 1950s. The approximately one percent of provincial government budgets identified as public health have been a residual of health related activities not easily categorized elsewhere, and not a set of activities with a clearly defined conceptual goal (such as reducing the incidence and prevalence of diseases and injuries). When public health advocates moved to the health promotion paradigm, they were in an empirical sense simply recognizing the status quo.

Currently, many government programs and policies have a population health component, but few are sufficiently dominated by this component to make it insightful to define them as public health activities.

Historically, provincial government health departments were de facto public health departments before NHI; since NHI they have increasingly been becoming curative care funding agencies.

In essence, public health has ceased to be a sectoral concept - primary preventive health has become integral to most sectors of the economy, secondary preventive health services have been increasingly provided through curative care practitioners, and tertiary preventive health care is coupled with social programs and services. In the process, the notion of a public health sector has ceased to have relevance.

While WHO was correct in deducing that many policies have health effects, it was wrong in judging that the health impacts of all activities should become the over-riding consideration for policy formulation. It was wrong technically, because the policy prescription is not in fact population health maximizing; and wrong politically, because health goals do not dominate all other economic goals in all contexts.

The challenge ahead is to ascertain how health objectives may be inter-related with other economic objectives, recognizing that the quality of life generated from health and non-health goods is going to appear increasingly comparable over time, and that improving social welfare requires a detailed understanding of how the various components of the economic system inter-relate in their common objective of addressing peoples wants and needs.

REFERENCES

Alberta Premier's Commission of Future Health Care for Albertans (1989). *The Rainbow Report: Our Vision for Health*, Edmonton.

Brown, M. C. (1979). "The Health Care Crisis in Historical Perspective," *Canadian Journal of Public Health*, 70 (Sept./Oct.), 300-306.

Brown, M. C. (1988). "Are Health Care Costs Too High Because There Are Too Many Doctors?" in M. Watanabe (ed.) *Physician Manpower in Canada: Proceedings of the First and Second Annual ACMC Physician Manpower Conference*, Ottawa: Association of Canadian Medical Colleges.

Brown, M. C. (1991). *Health Economics and Policy: Problems and Prescriptions,* Toronto: McClelland & Stewart Inc.

Canadian Broadcasting Corporation (CBC)(1996). *The Health of Nations,* Toronto: CBC Ideas Transcripts, November 21.

De Leeuw, E., and Polman, L. (1995). "Health Policy Making: The Dutch Experience," *Social Science and Medicine*, 40 (3), 331-338.

De Mheen, M., Smith, D., and Hart, C. (1999). "The Health Impact of Smoking in Manual and Non-manual Social Class Men and Women: A Test of the Blaxter Hypothesis," *Social Science and Medicine,* 48 (12), 1851-1856.

Drummond, M., Stoddart, G., and Torrance, G. (1987). *Methods for the Economic Evaluation of Health Care Programmes*, Oxford; Oxford University Press.

Ecob, R. and Smith, D. (1999). "Income and Health: What is the Nature of the Relationship?" *Social Science and Medicine,* 48 (5),693-705.

Evans, R.G. (1974). "Supplier-Induced Demand: Some Empirical Evidence and Implications," in M. Perlman (ed.), *The Economics of Health and Medical Care*, London: MacMillan.

Glennerster, H. (1995). "Internal Markets: Context and Structure," in M. Forget, J. White, and J. Weiner (ed.), *Health Care Reform Through Internal Markets*, Montreal: The Institute for Research on Public Policy, 17-26.

Hallqvist, J., Diderichsen, F., Theorell, T., Reuterwall, C., and Ahlbom, A. (1998). "Is the Effect of Job Strain on Myocardial Infarction Risk due to Interaction Between High Psychological Demands and Low decision Latitude? Results from Stockholm Heart Epidemiology program," *Social Science and Medicine,* 46 (11), 1405-1415.

Hart, C., Smith, D., and Blane, D. (1998). "Social Mobility and 21year Mortality in a Cohort of Scottish Men," *Social Science and Medicine,* 47 (8), 1121-1130.

Hemmingsson, T., Lundberg, I., Diderichsen, F. and Allebeck, P. (1998). "Explanations of Social Class in Alcoholism among Young Men," *Social Science and Medicine,* 47 (10), 1399-1405.

Hurley, H., Birch, S., and Eyles, J. (1995). "Geographically-Decentralized Planning and Management in Health Care: Some Informational Issues and their Implications for Efficiency," *Social Science and Medicine*, 41 (1), 3-11.

Illich, I. (1975). *Medical Nemesis*, Toronto: McClelland & Stewart.

Jerrett, M., Eyles, J., and Cole, D. (1998). "Socioeconomic and Environmental Covariates of Premature Mortality in Ontario," *Social Science and Medicine,* 47 (1), 33-49.

Kahn, H., Tatham, L., Pamuk, E., and Heath, C. (1998). "Are Geographic Regions with High Income Inequality Associated with Risk of Abdominal Weight Gain?" *Social Science and Medicine,* 47 (1), 1-6.

Kaplan, G., Pamuk, E., Lynch, E., Cohen, R.,, and Balfour, J.(1996). "Income Inequality and Mortality in the United States," *British Medical Journal*, 312, 999-1003.

Kaplan, M. and Geling, O. (1998). "Firearm Suicides and Homicides in the United States: regional variations and Patterns of Gun Ownership," *Social Science and Medicine,* 46 (9), 1227-1233.

Kennedy, B., Kawachi, I. , and Prothrow-Stith, D. (1996). "Income Distribution and Mortality: Cross Sectional Ecological Study of the Robin Hood Index in the United States," *British Medical Journal*, 312, 1004-1007.

Kennedy, B., Kawachi, I., Prothrow-Stith, D., Lochner, K., and Gupta, V. (1998). "Social Capital, Income inequality, and Firearm Violent Crime," *Social Science and Medicine,* 47 (1), 7-17.

Kupek, E., Dooley, M., Petrou, S., and Renton, A. (1999). "Demographic and Socio-economic Determinants of Community and Hospital Services Costs for People with HIV/AIDS in London," *Social Science and Medicine,* 48 (10), 1433-1440.

Lalonde, M. (1974). *A New Perspective on the Health of Canadians, A Working Document*, Ottawa: Health and Welfare Canada.

Lundberg, O. and Fritzell, J. (1994). "Income Distribution, Income Change and Health: On the Importance of Absolute and Relative Income for Health Status in Sweden," in L. Levin, L. McMahon and E. Ziglio (ed.) *Economic Change, Social Welfare and Health in Europe*, Copenhagen: World Health Organization.

Marmor, T., Barer, M., and Evans, R.G. (1994). " The Determinants of Population Health; What Can Be Done to Improve a Democratic Nations Health Status?," in R. G, Evans, M. Bayer, and T. Marmor (ed.), *Why are Some People Healthy and Others Not? The Determinants of Health of Populations,* New York: Aldine de Gruyter.

Marmot, M., Rose, G., Shipley, M., and Hamilton, P. (1978). "Employment Grade and Coronary Heart Disease in British Civil Servants," *Journal of Epidemiology and Community Health,* 32, 244-249.

Martikainen, P., Stansford, S., Hemingway, H., and Marmot, M. (1999). "Determinants of Socioeconomic Differences in Change in Physical and Mental Functioning, " *Social Science and Medicine,* 49 (4), 499-507.

McKeown, C. (1979). *The Role of Medicine: Dream, Mirage or Nemesis?*, Princeton: Princeton University Press.

McLellan, I., Rissel, C., Donnelly, N., and Bauman, A. (1999). "Health Behaviour and the School environment in New South Wales, Australia," *Social Science and Medicine,* 49 (5), 611-619.

Molinari, C., Ahern, M., and Hendryx, M. "The Relationship of Community Quality to the Health of Women and Men," *Social Science and Medicine,* 47 (8), 1113-1120.

Norredam, M., Groenvold, M., Petersen, J., and Krasnik, A. (1998). "Effect of Social Class on Tumour Size at Diagnosis and Surgical Treatment in Danish Women with Breast Cancer," *Social Science and Medicine,* 47 (11), 1659-1663.

Organization for Economic Co-operation and Development (OECD) (1984). *Measuring Health Care, 1960-1983: Expenditure, Costs and Performance*, Paris.

Poland, B., Coburn, D., Robertson, A., and Eakin, J. (1998). "Wealth, Equity and Health Care: A Critique of a "Population Health" Perspective of the Determinants of Health," *Social Science and Medicine,* 46 (7), 785-798.

Reading, R., Langford, I., Haynes, R., and Lovett, A. (1999). "Accidents to Preschool Children: Comparing Family and Neighbourhood Risk Factors," *Social Science and Medicine,* 48 (3),321-330.

Soobader, M. and LeClere, F. (1999). "Aggregation and the Measurement of Income Inequality: Effects on Morbidity," *Social Science and Medicine,* 48 (6),733-744.

Thomas, L. (1977). "On the Science and Technology of Medicine," *Daedalus*, 20 (Winter): 35-47.

Urquhart, M.C. (ed.) (1983). *Historical Statistics of Canada, Second Edition*, Ottawa: Statistics Canada.

Wadsworth, M. Montgomery, S. and Bartley, M. (1999). "The Persisting Effect of Unemployment on Health and Social Well-being in Men Early in Working Life," *Social Science and Medicine,* 48 (10), 1491-1499.

Wilkonson, R. G. (1992). "Income Distribution and Life Expectancy," *British Medical Journal*, 304 (Jan. 18), 165-168.

Wood, E., Slaar, A., Schechter, M., and Hogg. R. (1999). "Social Inequalities in Male Mortality Amenable to Medical Intervention in British Columbia," *Social Science and Medicine,* 48 (12), 1751-1758.

World Health Organization (1978). *Primary Health Care, Report of the International Conference on Primary Health Care*, Geneva: Alma-Alta, USSR, September 6-12.