Approaches to population health care: The emerging context!

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This paper provides a review of recent developments in population-based approaches to community health and explores the origins of the population health concept and its implications for the operation of health service management. There is a growing perception among health professionals that the key to improving health outcomes will be the implementation of integrated and preventive population-based resource management rather than investment in systems that respond to crises and health problems at the acute end of the service provision spectrum only. That is, we will need increasingly to skew our community health and welfare investments towards preventive care, education, lifestyle change, self-management and environmental improvement if we are to reduce the rate of growth in the incidence of chronic disease and mitigate the impact of these diseases upon the acute health care system. While resources will still need to be devoted to the treatment and management of physical trauma, infectious diseases, inherited illness and chronic conditions, it is suggested we could reduce the rate at which demand for these services is increasing at present by managing our environment and communities better, and through the implementation of more effective early intervention programs across particular population groups. Such approaches are known generally as population health management, as opposed to individual or illness-based health management—or even public health—and suggest that health systems might productively focus in the future on population level causation and not just upon disease-specific problems or illness management after the fact. Population health approaches attempt to broaden our understanding of causation and manage health through an emphasis on the health of whole populations and by building healthy communities rather than seeing “health care” as predominantly about illness management or responses to health crises. The concept also presupposes the existence of cleaner and healthier environments, clean water and food, and the existence of vibrant social contexts in which individuals are able to work for the overall good of communities and, ultimately, of each other.

Key words: Prevention, Early intervention, Social determinants of health, Ideology, Systems change

Population health – a definition

The idea of population health encompasses the concept that individual and community wellbeing is grounded in access to social and economic resources in society. Access or lack of access to these fundamental components of life has a direct impact on the health of individuals, therefore the notion of population health is based on the ideology that through the improvement of the total living environment of communities and individuals we can achieve improved health outcomes for all (Raphael, 2000).

This idea runs counter to the prevailing ideology of health care, which focuses on illness in terms of the individual and assumes that individuals are in control of and responsible for many of the factors that determine their health status. This may not always be the case, at least not to the extent that they can be held totally responsible for their overall health status. There are other more powerful social forces at work in this arena!

Consistent with this ideology of the need to consider wider causation in population health approaches, a central premise of the paper is that traditional scientific and logical positivist approaches to outcome measures in the health care system may be measuring the wrong things in an attempt to define the overall wellbeing of the communities they serve. That is, they measure life expectancy or disability adjusted life years, or admissions to hospital or access to services and avenues of care as surrogates for the overall health and wellbeing of the community: “Biomedical researchers (for example) ignore community and societal factors in their studies and discount evidence related to these issues” (Raphael, 2000, p. 362).
In addition to the above parameters it is argued that we need to be measuring different elements of our systems if we are to apprehend the components of being in the world that contribute to health rather than illness (Mechanic, 2001, p. 462). Therefore, by defining the parameters of healthy societies, and hence the antecedents or determinants of healthy individuals, we might be able to extend the option of healthy living to larger numbers of individuals in our population. In the process we could also reduce the currently increasing rates of illness, chronic disease and institutional dependency across communities as our populations age and, in the process, compress morbidity into fewer years of illness and sickness to expand our years of high quality or illness-free life (Fries & McShane, 1998, p.72). This might reduce demand for and expenditure on acute care services provided to people who are currently suffering from essentially preventable conditions, provided the compression of morbidity thesis is substantiated over time (Fries, 2000). In turn it would then be possible to free more resources (assuming the proportion of GDP devoted to health remains relatively constant) for building healthier, more informed and participatory communities with a reduced dependency on acute care systems.

This cycle of prevention and health management takes account of a wide range of factors that contribute to wellbeing and, conversely, of the equally extensive range of factors that contribute directly to ill health. Environmental factors, social factors, educational factors, lifestyle factors, work and leisure conditions all contribute, along with genetic factors, to the individual’s potential to live a healthy fulfilled life (Rosenberg & Wilson, 2000, p.277). Although total freedom from illness and disease may be “but a dream”, it is clear that the way we manage our interaction with our environment and our changing lifestyle factors will determine the degree to which we are able to maintain and improve our overall health status as a community (Dingle, 1973; Scott, 2001, p.7).

We are therefore moving, in our approach to health systems management, to a more complete understanding of the dynamics of causation in health and beyond our hitherto more confined notions of which might contribute to community and individual wellbeing. In the process we are seeking more meaningful measures of the health outcomes achieved through the deployment of our finite health care resources. As Bloom noted:

"At the heart of health reform everywhere is a search for a better answer to essentially the same questions: how is a health system best funded, how should provision be structured, how can equity be ensured and protected and how can quality be monitored and maintained." (Bloom, 2000, p.349)

We seek to know how to invest our finite resources to best effect in the community while maintaining standards within the existing illness management business, and at the same time attempting to expand the population interventions that support health and wellbeing in the community (Grey, 1998, p.941). In South Australia, for example, this quest, which is part of the Generational Health Review process, has led to an examination of population-based health funding models through which resources might be allocated to communities on the basis of need rather than on the basis of historical provision or utilisation of services (Health Reform South Australia, 2005). Indigenous and rural communities, under such formulae, might receive additional resources for community health programs based on need and not on past utilisation rates. At the same time, increased coordination of services is expected to reduce duplication, cost shifting and inefficiencies in the system. The draft paper outlines coordination as a key focus for the delivery of a population health model; a process tested during the recent COAG coordinated care trials: “We also encourage the development of innovative forms of funding such as Australian and State Government fund pooling, that reduce the problem of cost shifting and produce greater efficiencies and better outcomes for the community” (Department of Health and Aged Care [DHAC], 1999).

As we enter the era of systems integration and coordination for improved health outcomes we will therefore expect to see resources and services that have until now existed in virtual isolation from each other being linked together to support whole community programs to build healthier communities (DHAC, 1999). Such investments recognise that wellbeing is not about medicine or treatment or institutions in isolation, as much as it is about predating community health on the existence of more interactive and integrated environments and communities.

It also seems clear now that if health promotion and disease prevention, at present much
championed, are ever to achieve parity with acute-care medicine, we must be prepared to rethink today’s medical priorities to make the potential gains in health status efficacious. More generally, a serious transformation will require taking money away from the acute care sector, including research into the cure of many lethal diseases, and using it instead for prevention research and massive educational efforts designed to change health-related behaviour. (Callahan, 1998, p.19).

This concept also recognises that much illness and chronic disease in our community today is the direct result of the social, economic and material conditions of our existence; conditions that are amenable to change through which we may be able to effect significant reductions in the incidence of preventable disease and illness in our communities. Such ideology suggests that while humans are frail and cannot generally live well much beyond 80 years (Brown, Ritchie, & Rotem, 1992) there are many ways of ensuring that most of the years to 80 are lived relatively free from debilitating illness.

**Population health – the context**

It is clear, given the escalating cost of health care and our ageing populations, that strategies for reducing the incidence of illness at a population level will need to be developed urgently if we are to avoid the massive social, humanitarian and economic burdens associated with this growth in demand (Ferlie & Shortell, 2001; Callahan, 1999). In spite of a trend to privatisation and the reliance on markets to control demand, there is an emerging consciousness that social health programs are also quite resilient and effective strategies for delivering desired community health outcomes (Grey, 1998, p.925). In fact, even managed care programs were designed around universal access because of the need to reduce cost shifting and the exploitation of vulnerable groups by more powerful and financially well-off groups in the community (Light, 1999, p.689).

Koyama, writing about the serious health and economic problems associated with the burgeoning health service demand in Japan, suggests that:

*The challenge we face is to create a healthy and vigorous society for older people. This can only be achieved through an effective system of preventive medicine. I feel that this can only be attained if the nation makes a collective commitment to work together to improve primary health care; in other words, to improve lifestyle factors that impact on health.* (Koyama, 2000, p.230)

Eyles extends the concept of population health to include a need for inter-sectoral policy and action and for considering the salience and roles of different stakeholders (individuals, families, community and governments) in enhancing the health of populations (Eyles, 1999, p.32). Lewis observes, in relation to development in population health that the concept is a “we” notion in a “me” world and full of social and political contradictions while, at the same time, appealing to something fundamental to us all. It will certainly challenge many of our institutions if we suddenly begin rewarding people for preventing illness rather than treating it, or as Lewis suggests, “pay the person who prevents heart disease more than the cardiovascular surgeon” who repairs it. He summarises the paradox of population health in this way:

*Would that population health were as simple as a hernia repair. The more we know, the less anyone can do in isolation to effect meaningful improvement. All boats rise with the tide, but who shall harness the moon?* (Lewis, 1999, p66).

Butler-Jones refers to this phenomenon of including all things in the causal loop of health as “health imperialism” (Butler-Jones, 1999, p.63); its counter phenomenon being “health determinism” where such complex health determinants are seen as being beyond human control—a kind of Malthusian view (Galbraith, 1981) of human health and wellbeing.

However complex the causal links in health, evidence now abounds as to the deleterious effects of certain lifestyle choices (smoking, physical inactivity and an inappropriate diet) on individual and population health outcomes (Koyama, 2000, p.231-232). Much of the burden of chronic illness can be avoided through changes to lifestyle and living practices and through education and self-management support, especially in developed countries where more and more people are living to old age as a result of improved infection and disease control (Mathers & Douglas, 1998, p.134).

Our task now is to implement programs that we know to be effective in minimising the adverse impact of environmental and lifestyle factors upon
our overall population wellbeing (Tarlov & St Peter, 1999, p.283) even though such work may inevitably raise many questions about our resource allocation priorities and about the fundamental economic ability of communities to afford, for example, access to a fresh food diet to avoid the regular consumption of processed and fast foods that, over time, can lead to poor health outcomes for individuals. Some initiatives in population health, like the case with tobacco reform, seatbelt use in automobiles and environmental protection, may need to be led through legislative changes in order to improve the social conditions through which health status can be influenced positively.

This is not to suggest that our ageing populations will avoid disease and ill health in future, but merely to argue that the overall impact of such illness and disease can be minimised through better population management initiatives. A whole-of-population approach suggests that appropriate lifestyle choices, cross-sector collaboration and support for potential and existing patients (such as a wide range of education and self-management strategies) can have a positive impact on health outcomes (Crawford et al., 2002) and cost of service provision (Vita, Hubert, & Fries, 1998): “The variable which had the greatest inhibitory effect on the growth of healthcare costs was the percentage of patients receiving guidance for improvement of lifestyle-related factors.” (Koyama, 2000, p.231).

Such approaches have the capability of reducing the demand for and cost of acute care services and to reduce therefore the overall burden of health care as our societies age. This view argues for a shift in priority from the un-coordinated management of end-point illness to a more coordinated and preventive, early intervention approach to managing overall population health service provision (Bloom, 2000). For example, Canada recently flagged its intention to embrace a new effort in primary and preventive health care as a way of managing demand and improving outcomes for the community, and highlighted key elements of population health along with the need to improve the wellbeing of whole communities rather than concentrating on individual illness alone:

> In general, population health is a concept in which the emphasis is on the health of the entire population, not the health of the individual. The accent, therefore, is on health improvement via health promotion, not by the provision of acute or individual care alone. Many doctors disagree with the concept, since they treat patients—and their problems—individually. (Sibbald, 1999, p.789)

Dunn and Hayes suggest:

> Population health refers to the health of a population as measured by health status indicators and as influenced by social, economic and physical environments, personal health practices, individual capacity and coping skills, human biology, early childhood development and health services. (Dunn & Hayes, 1996, p.7)

Nancy Edwards thinks of population health as an evolutionary stage from interventions targeting lifestyle change and health promotion as a solution to the burden of disease. She sees population health approaches as strategies to understand and redress inequities in health and wellbeing across communities through focusing on causal links between determinants of health rather than determinants of disease:

> Building on the experience and knowledge gained from lifestyle and health promotion efforts, population health focuses our attention to inequalities in health status and their determinants. As we enter the new millennium, a major challenge facing those who design, manage and implement public health programmes will be finding the means to effectively tackle determinants and their interactions. (Edwards, 1999, p.10)

Professor Bob Douglas summarised the trend towards larger population views of health and wellbeing when he wrote:

> Most of us in the medical profession derive our views of health and illness from the reductionist model in which we were trained, which views human beings as complex machines (ref Capra). Understand the operation of the machine at the biomolecular level, and you can best determine how to fix it when it goes wrong. Modern technology, pharmacology and vaccinology have enabled us to become more and more precise about which parts of the machine to oil or medicate —when and how.

> In medicine, we have always paid lip service to the view that humans are social beings and an integral part of a complex ecosystem that conforms to the principles of system theory and chaos theory. But it has been largely lip service, and the “man as the machine” paradigm still rules supreme in our medical psyche. Now, however, we are being forced to look more seriously at the social and environmental determinants of health, as increasingly we recognise that system factors set the thermostat for the operation...
of the machine. Social and environmental factors are all pervasive in their impact on health. They influence the entire spectrum of health and illness and although we are not sure of the causal pathways whereby they alter immunology and endocrine function, there are consistent patterns of health disadvantage that go with socioeconomic status, education, occupational prestige and the lived environment. Fixing a sick environment is probably more important in the long run for sick individuals than a focus on the sickness itself. Doctors are now beginning to understand this, and to recognise the need for population-wide strategies that can change the collective thermostat. But the craft is still in its infancy. (Douglas, 1999, p.13-17)

Further, “Ideally, there should be a way of bringing together different measures of health to form a composite index but this has not, as yet, been achieved” (Dunnell, 1995, p.12). Such a composite approach may even be counterproductive (WHO – Health Services Delivery, July 2000, [Levy, 1997], p.447). To be truly effective health outcome measures and indicators need to encompass more than illness factors or service utilisation trends; we need to develop indictors of health as well as illness (Mathers, Vos, & Stevenson, 1999, p.1) and pay attention to the social and spiritual dimensions of health (Sainsbury, 1999, p.122; Holman, 1997, p.360). Indications of the overall health and wellbeing of whole communities and populations can be derived from many factors in our social and community structures other than morbidity, and other end-point outcomes currently being collected and analysed for trends and meaning.

Edwards sees that the real challenge ahead for emerging approaches to population health is to determine how to use the evidence about determinants and their interactions to guide development of the next generation of public health programs (Edwards, 1990, p.11). That is, how to understand more subtly the cause and effect relationships involved in the creation of health and wellbeing and to use this information to redress some of the glaring inequities in outcomes of our systems at both the individual and population levels. Or, according to Levy, our focus should be on more detailed descriptive data about the material conditions of life upon which our overall wellbeing is predicated: “Data descriptive of housing conditions, diet, education and the quality of family, working and social life are thus probably the data which express the health level, or at least explain the health status, most effectively” (Levy, 1997, p.453).

What is needed is a multi-factorial model of outcome and wellbeing based on measures of wellbeing of the whole population (society and environment) as a determinant of individual wellbeing.

The vast majority of illnesses in humans are multi-factorial, a result of complex interactions between genetic constitution and such things as how individuals are nurtured, what they eat, whether they smoke and the way in which they live. (That is,) the determinants of most diseases are complex, highly interrelated, and embedded in a social context. (Baird, 2000, p. 408). Even though these broader views of population health present challenges for researchers, it is clear that many of the surrogates for health and wellbeing used currently are really of limited value, both as indicators of overall wellbeing or as predictors of health outcomes for populations now in their formative years. Such measures as morbidity or life expectancy bear no real resemblance to the changing contexts and parameters under which younger generations live currently. With reference to standard logical positivist health promotion, research and evaluation, there is growing concern that such approaches are no longer asking the right questions or finding the right answers for many of the new health promotion interventions (Raphael & Bryant, 2000, p.9). Our application of health outcome indicators is in a constant state of evolution, as we attempt to grapple with new concerns in the health arena (McDowell & Newell, 1996, p.11):

So, in reality, life expectancy tells us a lot about those who die, but tells us nothing about the living. And of course, the basic premise is false, because we will not experience the same life circumstances as those who are dying, on average, in their mid-70s today. (McDowell & Newell, 1996, p.69)

Also, Wolfson notes that:

*The most common health measures are actually based on death status—infant mortality and life expectancy. There is very little measurement of health status and function while people are alive (and) life expectancy estimates are insensitive to the health status of the population. They provide no indication of the quality of life, only the quantity.* (Wolfson, 1996, p.41)

So how do we arrive at a real measure of what is being achieved in terms of health outcomes
at the population level? Perhaps the challenge is too difficult, creating a state referred to as “macro avoidance” (Butler-Jones, 1999, p.63), a state that seems only marginally less destructive than “micro paralysis” when the generation of endless detail begins to obscure clarity of thought and limit action.

However, even though the task of defining and measuring wider population outcomes in health promoting environments is an extremely challenging one, Holman suggests it is important that we make the effort to develop systems to measure and analyse population health determinants just as we have done in more specific disease- and illness-based epidemiological research:

However, without a well-developed yardstick, without measures and measurements, the health-promoting environment is in danger of remaining what the skeptics will see as an ill-defined, nebulous, opinionated and perhaps even divisive concept, one that is long on rhetoric and short on fact. (Holman, 1997, p.364)

Fox also warns that vested interest groups concerned about the erosion of their resource base in medical practice and in academia will oppose the establishment of population health initiatives. Apart from a lack of evidence that such approaches achieve specific outcomes any better than existing systems of care, our pressing demand in the disease management areas, and the difficulties associated with diffused responsibility for health, he claims that people may not want to change voluntarily to population approaches to health at their own expense (Fox, 2001, p.7). Clearly, there are numerous obstacles to the uptake of wider strategies for population health, which suggests that small and local initiatives are more likely to be successful than wholesale system level change approaches (Harvey, 2001; Nutbeam, 1999, p.46).

Why population health care now?
Following work with the coordinated care process (DHAC, 1999, p.44-46) and attempts to manage chronic illness by shifting resources from the acute sector to the primary care sector, it has become apparent that much of this work dealt with acute intervention for patients already suffering the effects of chronic illness. We realised that certain clinical and social approaches to specific illnesses could reduce the impact of those illnesses and diseases and improve life options for sufferers as well as change the balance of funding between acute and primary care systems (DHAC, 2001, Chapter 2).

However, this work still really only dealt with specific illness groups and failed to address whole population health from a perspective of building health and measuring wellbeing. A population health management process is necessary if the total resource pool for a community, state or country is to be managed effectively to improve health outcomes for all while controlling the escalation of episodes of acute intervention. One simple and now self-evident approach to early intervention and prevention, for example, would be improving the level and quality of family support for young people (Marmot, 1999). As Lewis also points out: “As it turns out, intervening very early in life with good nutrition, nurturing and stimulation is immensely more cost-effective than rehabilitating the lives of those with imperfectly connected neurons who were socialised early into a culture of failure” (Lewis, 1999, p.66).

The task is increasingly becoming one of behaviour change and behaviour management through which whole communities can be encouraged to adopt the approaches to life that we know support health rather than living in ways that create illness. It is time to conduct research that is more about learning how to engage communities and encourage “health-related” behaviour rather than health constraining behaviour at a population level (Mills & Harvey, 2003); time to research how to create health on a large scale rather than study the effects of ill health at a micro-level. We need now to know how to influence, change and sustain health creating attitudes and behaviours at a whole population level because today we know that such attitudes to good health are not only “good” for the individual, but also good for business!

Conclusion
The underlying ideology in the preceding discussion is that much of what manifests within the health system as illness and health crises can be prevented, avoided, mitigated or reduced through social and community interventions such as education and primary health care programs. To date, the missing element in our understanding of the principles of population health—a situation compounded by recent trends in economic
rationalist models—has been cognisance of the fact that at the root of our health system lie social and economic determinants of community health and wellbeing that we, as a community, have the power to influence and change for the better.

Of course we will always have acute needs, accidents, and systemic failure and environmentally induced illness to some extent, but the point is to reduce the impact of these factors through recognition of economic and environmental factors in the health and wellbeing equation. What we need to be able to show is that a social structure freed from the checks and balances of social and economic inequity can produce better health and community wellbeing outcomes than our current reactive health care system. Is a system that even out the differences between social classes and economic wealth capable of delivering better population health and wellbeing for the whole community? Baum suggests that this thesis is already well explicated as evidence exists that communities characterised by great disparities in wealth and access to resources have poorer health outcomes generally (Baum, 1998, p.420). There is also much evidence to suggest that a significant proportion of the disease burden in society can be directly attributed to socioeconomic disadvantage (Mathers et al., p.78).

Ultimately, if the environmental and social precursors of poor health are not controlled and managed for major improvement, we could experience in human health care the equivalent of the current disease and health problems in the animal industry. That is, poorly managed environmental and economic elements of human social existence will begin to produce a new era of infectious disease and lifestyle-related disease (Koyama, 2000, p.229) that will burden our communities even further. If the social, economic and environmental factors are managed for sustainable and healthy communities, the impact of these potentially catastrophic outbreaks could be reduced for the benefit of all. Alternatively, if such intervention and management is not pursued, the cost of maintaining healthy communities will escalate further and action will remain perpetually in the reactionary arena with all of our resources being committed to managing outbreaks of environmentally and socially induced ill health.

Population health care is a sound and long-overdue idea through which communities and individuals generally could achieve major advances in health and wellbeing. An important consideration in the development of population health strategies and outcome indicators therefore must be the level of support that will be provided in the transition to a new model of health care to ensure such approaches are effective in all areas, including small and isolated communities as well as in larger communities and population centres.

Inevitably such approaches will require resource allocations to be skewed to support at-risk communities or communities where the usual efficiencies due to economies of scale do not apply.

If these costs are not met, from a population health perspective, life in rural and other high-risk communities could continue to contribute to higher than acceptable incidences of preventable diseases and lifestyle-related illness.

References