transmission. Probably a combination of all these steps would have been required to bring the epidemic under control.

In practice none of these steps were approached with the foresight, vigour and urgency that were called for. The historic change achieved by liberation forces was not harnessed to confront the epidemic, and the prophetic words of Hani went unheeded. We must continue to campaign for the goal he put forward, for until we achieve it, the untold suffering of HIV/AIDS will continue in southern Africa.

References

From Susser’s causal paradigms to social justice in Australia?

Fiona Stanley

There are significant implications for epidemiology, public health and social justice from the recent critiques of modern risk factor epidemiology by Susser and others. The need to move away from a focus at the proximal end of causal pathways and from single risk factors in individuals to looking at populations and the social and environmental contexts in which risk factors arise, points us more towards the social antecedents of diseases and other poor outcomes. In this paper I argue that we must pursue this broader agenda if we are to address the increasing burden of social morbidity in our communities, particularly amongst children and youth.

Susser’s Critique of Modern Epidemiology

The need for a new era

The present era of epidemiology is coming to a close. The focus on risk factors at the individual level—the hallmark of this era—will no longer serve. We need to be concerned equally with causal pathways at the societal level and with pathogenesis and causality at the molecular level.

The recent criticisms of modern epidemiology stem from its focus on single risk factors in individuals and the tendency to ignore the social, behavioural and ecological contexts in which risk factors arise. Study after study describes the associations of many disease outcomes with social or economic factors and then proceeds to control for them in analyses that focus on more proximal risk factors in the causal pathway, some of which
could be thought of as early signs of the disease. ‘We have a myopic over-emphasis on proximal causes of disease and a concomitant neglect of upstream or distal factors that culminate in the final causal chain.’ This approach encourages a public health response which targets the individual to change behaviour, rather than targeting the societal situations which provide the environments in which risks arise.

Modern epidemiology also assumes that both risk factors and disease outcomes are static and dichotomous rather than evolving and distributed throughout the whole population. Many social risks operate across a continuum of intensity (‘dose’) as well as varying throughout life. Population interventions that seek to modify mean population exposure may result in far greater reductions in poor outcomes than those which target individuals. We use sophisticated mathematical modelling to seek the independent effect of single risk factors and control for confounding, which frequently results in the important distal factors, which may be important in the causal path, being rejected from the model.

Only recently have we started to realize that molecular and genetic science could be used to advantage to help elucidate these pathways, rather than be rejected as ‘basic science’ and nothing to do with proper epidemiology or public health. In fact the elucidation of the code for the human genome and the explosion of genetic and biomedical research should actually encourage collaboration with epidemiologists. Whilst promises relate mostly to new treatments, the most exciting research that should emerge from this new knowledge is to investigate how genetic risks are modified by the social and physical environments in which we live, which may open up many more roads to effective interventions to improve public health. If epidemiologists do not participate in this process, it may not deliver the benefits in terms of improving population health.

Developmental Health and Well-being in Australia

These issues in epidemiology and public health are not just academic arguments. They have enormous relevance to the response which we now urgently need to mount to counteract the effects of the rapidly changing social, biological and ecological environments in which we live. Over the last 30 years in Australia (and in many developed countries) we have observed increases in many major childhood disease categories and disabilities. These include mental health disorders, asthma and allergy, type 1 diabetes, neurological and developmental problems such as cerebral palsy, autism, and behavioural problems. (See ref. 16 for detailed references for each of these trends.) These increases are so substantial that the levels of morbidity can only really be tackled by preventive strategies as the health care and welfare systems cannot afford to meet the demand for treatments and services, and for many of these diseases there are no effective treatments.

Figure 1 shows the dramatic increases in young, particularly male, suicide rates in Australia—the rate for males has quadrupled and that for females has doubled over the last 30 years. The startling level of mental health morbidities in West Australian children is similar to that reported from Canada (Table 1)—one in five teenagers has a mental health morbidity which interferes with their daily life. The increasing rate of cerebral palsy in very low birthweight infants (Figure 2) as more and more of these tiny babies survive epitomizes the ‘peri-natal paradox’, our obsession with keeping small babies alive and our dismal failure to prevent preterm births and disability in the wider community. Trends in preterm births are increasing and much of low birthweight and preterm birth arises in social adversity. The major (and increasing) cause of post-neonatal cerebral palsy in Western Australia is now child abuse.
Those in social research disciplines are reporting similar increases in behavioural problems, child abuse and neglect, educational problems, drug and substance abuse and juvenile crime. Whilst the causal pathways to these problems are many and varied there are similar and common antecedents in many of them. If we can elucidate effective early interventions, we may influence a variety of outcomes not just health.

Changes in Australian Society—‘The Great Disruption’

Table 2 lists the indicators of social functioning in our society which have changed dramatically over the last 30 years in Australia; changes which have occurred in many countries. These profound changes in population risk add complexity and a sense of urgency to our work. Changes in these social patterns have the potential to impact adversely on developmental health and well-being and do so in complex and interacting ways.

Implications of Susser’s New Paradigms for Epidemiology and Public Health Response to the Challenges of Modern Society

Susser’s new epidemiological paradigms and these increasing social problems in our societies have profoundly important implications for our research and prevention agendas. Our own research in Western Australia, as well as that from elsewhere, has shown that the social, community, family, biological and economic influences identified for many complex disease pathways appear similarly important in a range of other educational, psycho-social, behavioural and criminal outcomes. Causal pathways thinking opens up the concept of multiple outcomes from single pathways and multiple pathways to single outcomes. Of course it also opens up new and more numerous preventive strategies, some of which, if acting early enough in the pathway, are far more effective and perhaps cheaper than those targeting later risk factors or early disease.

Figure 3 shows the traditional risk factor thinking in the cause of cerebral palsy. Focusing on this birth asphyxia pathway has damaged obstetric care, as obstetricians have been sued for not delivering the perfect baby following the availability of new tools supposedly able to detect ‘birth asphyxia’ and doing caesarean sections to reduce brain damage. As many have now shown, the causal pathways to the cerebral palsies are many, most commencing antenatally.

Modern epidemiologists would argue that there have been some successes with the individual risk factor approach to prevention. Whilst we have had considerable success in preventing cot deaths by changing infant care practices (particularly prone lying) and neural tube defects by population strategies to increase folic acid intake, Aboriginal rates for these are still high and overall birth defect rates are rising. Pearce and others suggest that the success of risk factor epidemiology has been of more temporary and more limited value than many claim. He suggests that the achievement of the public health movement on a global basis has been to shift the problems (such as smoking-related illnesses) from rich to poor within countries, or from rich to poor countries. This is a direct implication of an epidemiology based on individual factors (e.g. tobacco smoking) rather than on population factors (e.g. tobacco production, advertising and distribution, and socioeconomic influences on consumption).

Simplistic causal paradigms which ignore the multi-level and complex nature of pathways, and policies and interventions which focus on a limited number of risk factors at some point along these pathways, are not going to serve us well. Thus the implications for epidemiology are to acknowledge the complexity of causal pathways to a range of poor outcomes, investigate the social and ecological contexts in which causal pathways arise, develop better measures and analytical methodologies, create cross-disciplinary research collaborations with geneticists, psycho-social researchers, economists, sociologists
and others, expand and link large population data bases to better serve a causal pathways approach and plan longitudinal studies carefully to enable multiple and interacting pathways to be studied. Figure 4 shows the new scientific tools we now have to improve epidemiological methods to better serve public health in this new era.

The implications of this approach for public health include challenging the current focus of health promotion on single risk factors to change behaviour in individuals, and identifying effective ways of intervening early in causal pathways. We must also develop collaborations across governmental departments with those making policy in health, welfare, education and crime prevention.

Figure 5 shows the causal pathways to poor Indigenous health in Australia stemming originally from white colonization. The current risk factor approach focusing on individuals would be to target disempowered, marginalized, poorly educated and poor groups of mothers, to stop them smoking, to prevent low birthweight, ear disease and infections in their children. Such programmes fail, whereas those which attempt to strengthen the communities and the conditions in which they live tend to succeed. Success in preventing otitis media is extremely important in Indigenous communities as it is the beginning of another set of pathways to poor hearing, poor language and educational skills, low self-esteem, delinquency, substance abuse, unemployment, teen pregnancy and crime and thus poor adult social and physical health.

A New Research and Policy Paradigm—Towards Social Justice?

Research is currently done in silos, yet much research (methods, exposures, causal pathways and analysis) in these different disciplines is of enormous relevance to the causal pathways affecting outcomes of interest to those in other disciplines. Similarly policy and practice is developed in silos—health, education, welfare, employment, justice, housing and family services—and yet decisions made in each of these areas will have profound effects on the outcomes in development, health and well-being. Too few policies are evidence based, cost effective and for many of them we do not have the capacity to truly evaluate the impact of what we do. Australia is a small country (20 million people) with excellent well-funded public services and outstanding population data bases. We have established a major innovative ‘Partnership for Development, Health and Well Being’ which will embrace the Bronfenbrenner ecological model of child development (Figure 6). In this model, the important influences of the larger social structures and economic, political and cultural environments on health and other outcomes are recognized. The impact of the apartheid regime in South African on black children’s health, development and well-being is a powerful example of this.

The rationale for this Partnership include the rising rates of poor childhood outcomes which are so costly and overwhelm current services, the similarity of complex pathways to poor outcomes, most outcomes being associated with adverse social environments, effective solutions coming from elucidating the complex pathways and how to interrupt them, and multidisciplinary collaborations suggesting important questions and
the best methodologies to address them. As well, in Australia we have many underused data bases which are immediately available and could be linked together to provide a rich national resource to both aid research and start to evaluate the impact of interventions. Between-State comparisons could be undertaken. Collectively we believe we could increase the capacity for research and government funding for interventions, and the best minds nationally could underpin planning for studies of Australian children with broader and better research agendas than presently. The concept of the Partnership is shown in Figure 7.

As Nelson Mandela said in 1997, ‘There can be no keener revelation of a society’s soul than the way it treats its children’. If we follow the leadership of Mervyn Susser and Zena Stein, two outstanding public health people whose lives we are celebrating in this symposium, the bringing of rigorous science to improve public health and social justice is how we must proceed.

References

Health rights for women in the age of AIDS

Ida Susser

Gender inequality continues to fuel the 20-year-old HIV/AIDS epidemic in many countries. Although in the US and Western Europe HIV/AIDS predominantly affects men, in 1999, worldwide, UNAIDS reports approximately the same figures for men and for women—i.e. 1.1 million deaths among men and 1.2 million among women. In sub-Saharan Africa, prevalence figures estimated by UNAIDS for the numbers of men and women infected with HIV are 10.1 million and 12.2 million, respectively. In addition, women are becoming infected with HIV/AIDS and dying at younger ages than men. Estimates for southern Africa suggest that 50% of children age 15 now will die of HIV/AIDS and that three times as many girls as boys in the age group 15–29 are already infected with the virus. However, we are still not able to offer women effective strategies for prevention and governments and non-governmental organizations (NGO) are struggling to develop appropriate counselling and treatment options. Under these dire circumstances, it becomes essential to continually re-consider our approaches.

Let me begin by recognizing the specific influence of Zena Stein on women’s health and women’s rights. Long before the advent of HIV/AIDS, Zena, always in co-operation with and supported by Mervyn Susser, had embarked on her many decades of research on reproduction and spontaneous abortion. However, soon after the HIV virus was identified, she turned her concerted attention towards the particular problems of women and AIDS.

In the early 1980s when HIV/AIDS was first noticed and later diagnosed medically among gay men, the emphasis was on the men. Almost immediately, poor women with the disease were also identified. However, they were swiftly classified according to other characteristics, as Haitians or as partners of drug users. They were not seen collectively as women. Some time later, transmission of the virus from HIV-positive mothers to one-third (in the US, and a greater proportion in sub-Saharan Africa) of their infants was discovered. However, these unfortunate mothers, seen in some contexts as guilty women producing innocent victims, often aroused scant concern for their own condition.

It has been well-documented that in the US women were long neglected in research and medical care with respect to HIV/AIDS, a neglect exemplified in diagnosis, pathogenesis, treatment and benefits. In Africa, neither men nor women benefited much from scientific advances in medical care and public health. The Multicenter AIDS Cohort Study, (MACS) a longitudinal cohort initiated in 1984 and funded by the National Institutes of Health, was confined to gay men in the US and provided much early knowledge of the pathogenesis and prognosis of the disease, and later of responses to treatment. This research provided the base for over 550 publications on HIV/AIDS. Although the knowledge gained from this work was crucial, it could not adequately document the way in which HIV/AIDS reflects the environment in which it is found: in the dominant modes of transmission and the social relations through which transmission is patterned; in the specificity of opportunistic diseases and the synergisms between them; and in the variable responses to treatment with respect to gender, nutrition and general health status.

As Zena and others pointed out, in line with its early spotlight on gay men in the US, research into sexuality and HIV/AIDS is much better developed among men than among women. Despite this climate, and before women sex workers were targeted as an at-risk population, Zena Stein and Robin Flam, then her student, extrapolating from what was known to what was likely, began to develop research on women sex workers.