

This section looks back to some ground-breaking contributions to public health, reproducing them in their original form and adding a commentary on their significance from a modern-day perspective. To complement the debate on global population ageing and its implications for all societies, Alexandre Kalache, Isabella Aboderin, & Irene Hoskins review the 1980 paper by James F. Fries on the compression of morbidity. The original paper is reproduced by permission of *The New England Journal of Medicine*.

# Compression of morbidity and active ageing: key priorities for public health policy in the 21st century

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The main goal of the Second UN World Assembly on Ageing, to be held in April 2002 in Madrid, Spain, will be to adopt an international strategy for action on ageing in response to the opportunities and challenges of individual and population ageing in the 21st century. At this critical juncture, much can be gained from revisiting James Fries's seminal arguments on the compression of morbidity (1) which, put forward more than two decades ago, continue to be central to this debate. Reflecting on his original arguments helps us to assess the progress made over the last twenty years and to bring into sharper focus the key challenges and priorities for the immediate future.

Fries started from the marked increases in life expectancy that resulted in a rectangularization of survival curves in industrialized countries during the 20th century. In these countries, by the 1970s, the successful elimination of infectious illness had already led to the emergence of noncommunicable diseases (NCDs) at older ages as the major causes of death. Basing his hypothesis on the assumption of a naturally fixed life span and on the incipient evidence of the effectiveness of primary and secondary prevention on NCDs, Fries predicted that the compression of mortality towards older ages could be followed by a "compression of morbidity" — i.e. a rectangularization also of the morbidity curve. Specifically, Fries postulated that NCDs and markers of ageing (such as raised blood pressure and cholesterol levels as well as lowered vital capacity) could be postponed through changes in lifestyle, thus raising the age of first disability or major infirmity to very near the end of life, which he set at an average maximum length of 85 years.

The essence of Fries's tenets, that chronic diseases and physical decline "originate in early life, develop insidiously" and can be prevented, as well as his vision — rejecting conventional predictions of an ever more feeble older populace — now lie at the heart of today's approach to NCDs, ageing and health with its focus on the life course, health promotion, and "active ageing" (2).

However, it is increasingly clear that the implications of this hypothesis are larger in scale than Fries envisaged, and that they must be applied within a broader perspective if the challenges for public health in the 21st century are to be fully met. The larger scale is indicated by current demographic trends which show, contrary to Fries's assumption of no increase in the number of very old people, that it is precisely the very old age groups that are growing the fastest worldwide, with a consequently greater challenge of compressing morbidity. The number of older people aged 90–99 is expected to rise from just over 8 million today to 60 million in 2050, a sevenfold increase. Respective figures for centenarians are even more impressive: from the current 190 000 to 2.5 million, a thirteenfold increase — and this does not take into account possible medical or technological advances in the near future.

Above all, a global perspective is needed. Fries spoke for the industrialized world. What is necessary today is a focus specially on the developing world, where the major impact of population ageing and burden of NCDs will be. By 2025, 70% of the world's older people will live in developing countries, and similar proportions of most deaths from NCDs will occur there. At the same time many of these countries will continue to face the problems of persisting infectious diseases, thus experiencing a double burden.

In the industrialized world where, as Fries puts it, the task of eliminating premature death is largely accomplished (though early death due to violence and injuries is a growing concern), recent trends suggest that a compression of morbidity is now well under way. Markedly declining disability rates (3–5), falls in NCD prevalence (6), and improvements in self-perceived health (7, 8) in several countries, as well as general declines in cardiovascular disease mortality rates, strongly suggest it.

A closer look suggests that these trends reflect both a postponement or prevention altogether of the onset of chronic diseases as Fries envisaged it, as well as growing success in managing these diseases, thus halting or reducing their impact

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Ref. No. 02-0046

on well-being and functional capacity. The factors thought to underpin this “compression of disability” — advanced pharmaceutical or surgical treatments on the one hand (3, 9, 10) and basic factors such as enhanced maternal nutrition, less exposure to childhood infections, and education and financial resources throughout life on the other (3) — indicate the crucial influences of socioeconomic advancement and expanding health care provision and expenditure (11).

Though denoting progress, these trends, combined with rises in obesity, physical inactivity and tobacco use among youth, underscore the need for expanding prevention efforts in industrialized countries drawing on experiences gained so far (12), in view of future disease rates as well as health care costs. The emphasis must be on early, life-long prevention addressing the main established risk behaviours: physical inactivity, unhealthy diet, and tobacco use, as they are paramount in determining chronic disease morbidity and mortality (13). Broader approaches to promote quality of life must additionally focus on the multiple determinants of mental well-being as well as on environmental factors.

In the developing world there is so far little hope of a compression of disability or morbidity. Though virtually no firm data on trends exist, indications are to the contrary (14). Chronic diseases occur at earlier ages in developing countries. The majority of people with diabetes, for example, are in their productive years, i.e. aged 45–64 years (15). Routine secondary prevention or treatments such as hypertension control or eye surgery, let alone more advanced therapies, are unavailable or unaffordable to all but a few. Moreover, those basic socioeconomic and health resources throughout life, which in industrialized countries are major contributors to the fall in disability among older people, were not and are not available for those now ageing in developing countries. Thus, they arrive at old age in poorer shape with fewer reserves (16). Many countries face declining economic conditions, failing health and education provision, and infectious diseases, in addition to a growing influence of the tobacco and fast-food industries. Comprehensive primordial and primary prevention strategies responsive to the developing world context are thus particularly urgently required.

The challenge for developing countries is twofold: to put in place comprehensive policies to improve health and functional capacity among today’s ageing individuals (50 years and over); and to promote healthier life trajectories and healthy ageing for future elderly cohorts. This approach requires relinquishing the widespread dichotomous view which sees investments in older people’s health as robbing precious resources from younger generations. On the contrary, improving the health of older people in developing countries — and thus ensuring the continuation of their necessary contribution to their families and communities — frees

resources for the welfare of the young and the development of societies as a whole.

A final requirement for policy in industrialized and developing countries alike, as Fries foresaw, is research. “At the top of the list of ... health research subjects must be the ability to postpone chronic illness, to maintain vigor, and to slow social and psychologic involution. We must know for certain whether change is possible and how to accomplish it best.” This applies as much today as it did in 1980. ■

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