THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

Division of Behavioral, Social Sciences and Education
Committee on Population

Mailing Address:
500 Fifth Street, NW
Washington, DC 20001

December 22, 2006

Professor Sir Michael G. Marmot, Chair
Commission on the Social Determinants of Health
Department of Epidemiology and Public Health
University College London
Gower Street
London WC1E 6BT
United Kingdom

Dear Professor Marmot:

At the request of the National Institute of Aging and following discussions between you and Dr. Richard Suzman, director of the Division of the Behavioral and Social Research Program at the National Institute on Aging, the U.S. National Research Council's Committee on Population convened a panel of leading social and behavioral researchers with expertise in population aging and adult health to review the initial analytical and strategic documents of the Commission's nine "knowledge networks." (See Attachment A for the list of panel members.) The panel was specifically asked to identify additional recent studies on adult health at older ages that might bear on the Commission's deliberations and identify potential areas of interventions aimed at moderating the effects of the social determinants of health among older people. To ensure the widest possible input for our deliberations, the panel held an open meeting on July 12-13, 2006, at which participants discussed the goals of the Commission and research relevant to those goals. (See Attachment B for the meeting agenda and Attachment C for a complete list of materials received by the panel.) After the open meeting, the panel members deliberated privately about the presentations and other ideas to assist the Commission. The panel was also asked to help identify potential areas of interventions aimed at moderating the effects of the social determinants of health among older persons. This letter represents the panel's considered judgment of our charge.

As you know, the Commission's ambitious goals are made all the more challenging by global population dynamics. In 2005, the United Nation's population division estimated that the world's population would increase from around 6.5 billion in 2005 to between 7.7 and 10.6 billion by 2050. In addition, the world's population is expected to experience a continued trend in aging due to improved survival, reduced fertility, and, in some countries, the gradual movement through the age distribution of a particularly large birth cohort born shortly after World War II. Global life expectancy is expected to continue to increase in both the developed and developing worlds so that the percentage of the population over age 65 is predicted to increase from 7.4 percent in 2005 to between 13.7 and 19.1 percent in 2050.

Most of the projected growth in the number of older people is expected to occur in less developed countries, although with substantial regional variation. In general,

improvements in life expectancy have occurred much more rapidly in the developing world than was the case historically in Western Europe and North America. China, for example, had a life expectancy of 45 years in 1950 but today has a life expectancy of more than 72 years. In contrast, it took a century and a half for longevity to increase by that much in Western Europe and North America. Even in sub-Saharan Africa and Eastern Europe, where life expectancy at birth is declining in some countries, regional populations are expected to age over the next 25 years.

It is important to note that the greatest gains in life expectancy at birth in the past few decades have occurred because of increasing life expectancy above age 40 (Preston, 2005). Even countries with the highest life expectancy, such as Japan, are seeing rapid declines in mortality at the oldest ages (Kannisto et al., 1994). These major demographic trends raise important questions for policy makers concerned with reducing health inequalities: How will relatively larger number of older people affect the demand for health care services? How will having relatively fewer working adults affect a country's ability to provide adequate health care and social security systems? Population aging also implies that the potential returns on efforts to reduce social disparities in health in later life may be greater than ever before. Furthermore, the spectacular increase in global per capita income and advances in scientific knowledge and technology provide new capabilities to address problems both old and new (Goldman et al., 2005).

Over the past 5-10 years, there has been considerable social science research on issues related to adult health and disability. Although this research is not the central focus of any of the Commission's nine knowledge networks, it is nonetheless extremely important and can inform and strengthen the work of the Commission. For example, the Commission has not established a knowledge network that is focused specifically on the role of education as a determinant of health: yet the developing world has achieved dramatic progress in both school participation and attainment over the last several decades and studies on the determinants of social and economic differences in health and disability in later life have stressed the importance of compositional changes in older peoples' educational attainment for explaining disability and mortality trends and differentials in later life (Elo and Preston, 1996; Freedman and Martin, 1999; Mirowsky and Ross, 2003; Minkler, Fuller-Thompson, and Guralnik, 2006). Although the exact pathway by which greater educational attainment produces better health and survivorship is unclear, the relationship has been observed persistently over time (Preston and Taubman, 1994).

More broadly, we recommend that the Commission consider population aging and elder issues in its work for several reasons. First, as we describe above, global population aging is an important factor that is shaping the ever-changing context in which the Commission must do its work. Second, at the societal level, social inequalities hinder the achievement of optimal longevity. Third, older people are often an invisible and vulnerable population that is missed by interventions to eliminate poverty or improve health. Finally, older people can be an underappreciated source of non-market contributions to family welfare, providing child care or other services that serve to prevent even greater health disparities than those that are currently observed.

Below we discuss five areas that the panel believe are promising for improving the health and quality of life of older persons through greater investment in interventions at the individual, community, or national level: (1) early life endowments; (2) social and

economic security; (3) health care systems and the management of chronic conditions; (4) health behaviors; and (5) the physical and social environment. Following the brief reviews of the literature in these areas, the last section of the letter provides suggestions for interventions aimed at reducing the social gradient in older people's health.

Early Life Endowments

A growing body of literature can be brought to bear in support of the Commission's emphasis on the importance of early childhood on the development and course of disease and disability throughout the life course, including at older ages. For example, parents' education and family arrangements have been shown to influence adult mortality (Hayward and Gorman, 2004; Preston, Hill, and Derevenstedt, 1998) while certain diseases such as osteoporosis and arteriosclerosis have been shown to have roots in early childhood nutrition and physical activity (Berenson, Srinivasan, and Nicklas, 1998; Osmond and Barker, 2000; Fewtrell, 2006; Martin et al., 2005). Recently it has been suggested that the secular decline in morbidity and mortality resulting from chronic conditions in old age can linked to decreased exposure to infectious agents and other sources of inflammation during early life (Finch and Crimmins, 2004).

Because of the growing evidence that early childhood attributes play a role in the development of disease and disability throughout the life course, interventions in early childhood are a natural target for the Commission's work. It is also possible to offset some of the disadvantages of early childhood with well-designed interventions at other points in the life cycle. The optimal combination of interventions throughout the life cycle to ensure successful aging is not yet known: there may also be considerable benefits to certain types of risk factor reduction in middle age for increasing survival in old age.

Social and Economic Security

Ensuring that individuals have adequate social and economic security in later life is a policy concern throughout the world, but the nature of the problem varies considerably. In industrialized countries, support for older people derives largely from public and private pension systems; in contrast, in most developing countries the responsibility for economic support for older people still rests almost entirely with their immediate and extended families. The latter approach may be threatened, however, due to changes in the global economy, combined with the demographic changes outlined above as well as the HIV/AIDS epidemic, which threaten to reduce traditional sources of economic security for older people in much of the developing world. These changes may generate higher rates of poverty among older adults and so undermine the Commission's good efforts. For example, development and modernization in Africa is associated with significant economic and social changes, including rural-urban migration, that combine to weaken social networks that traditionally provide care and support in later life (National Research Council, 2006a). The rise of formal education, in particular, is linked to greater independence and autonomy of action, weakening traditional social ties and obligations between generations. Furthermore, there is some evidence that globalization is associated with increasingly heterogeneous and volatile local and national labor markets,

in part because of their exposure to world markets, and rising levels of income inequality (National Research Council, 2003). These phenomena also have implications for the ability of one generation to support another. In some parts of the world, particularly in sub-Saharan Africa, these problems are being compounded by the loss of large numbers of prime-age working adults as a result of the HIV/AIDS epidemic.

For people at the bottom of the economic scale, labor earnings comprise the bulk of their total income. Hence, in both rich and poor countries, opportunities for employment are extremely important for reducing dependency and the risk of poverty in later life. Older people in poor countries are up to six times more likely to remain in the workforce than older people in rich countries, working mainly in agricultural or informal sectors (Barrientos, Gorman, and Helsop, 2003). Yet the capacity for physical work (reaction time, competitive performance, visual acuity) diminishes with age (National Research Council, 2004), which limits work and employment opportunities for older people. In addition, the constant demand for new skills and knowledge in the marketplace places older workers at a disadvantage as their training and skills become increasingly obsolete. Furthermore, negative stereotypes of older people are quite pervasive, leading to wage and employment discrimination against them in the labor market (International Labour Organization, 2001).

Although women typically live longer than men, older women have a higher probability of suffering economic hardship in late life. Income and expenditure studies typically find that women have lower incomes than men and that female-headed households are more prone to poverty than male-headed households (Barrientos, Gorman, and Heslop, 2003). In general, these findings underline the point that while general poverty reduction is essential for older people's social security, mechanisms for social support and employment are also important to protect their health and well-being, particularly such economically disadvantaged groups such as women and racial and ethnic minorities.

Phased retirement and flexible work schedules might offer partial solutions to income security concerns among older people in both rich and poor countries by allowing older workers to be productive and feel satisfied without the demands of a full-time work schedule (Penner, Perun, and Steuerle, 2003; Tossi, 2005). Tailoring work responsibilities to the physical abilities of older workers might encourage and allow more of them to remain in the labor force in later life, as well as reduce the risk of work-related disabilities (National Research Council, 2004). Furthermore, laws to secure employment and safety for older workers in the workplace will promote longer employment, potentially easing the burden on social support mechanisms as populations age (The International Longevity Center, 2006).

## Health Care Systems and the Management of Chronic Conditions

Access to high-quality and affordable health care is clearly an important component to maintaining health and preventing and treating disease. As populations age, health services need to adapt to new demands. Older persons' needs are not always considered in the planning of health care services and may often be neglected in the delivery of care (Commission for Healthcare and Audit Inspection, 2006). In developing countries, limited resources often mean that public health programs are far more

concerned with eradicating or at least controlling preventable childhood diseases, such as measles and diarrhea, than with treating chronic diseases or managing the health care needs of older people (National Research Council, 2006a). This is hardly surprising in parts of Africa, where one out of every six children still dies before her or his 5th birthday from diseases that are preventable with very low-cost interventions (Lopez et al., 2006).

Yet, given that some countries achieve substantially better population health outcomes than others on similar health budgets, there is at least the suspicion that a substantial proportion of health resources in some countries could be better programmed (Murray and Evans, 2003; Laxminarayan, Chow, and Shahid-Salles, 2006). Recent studies have revealed that elders seeking health services are often treated with a lack of respect and dignity (Bowling, 2005; McLafferty and Morrison, 2004; Wade, 1999). Ageism in health care can be compounded by poverty, low education, racism, and cultural insensitivity (Institute of Medicine, 2003, 2004; Trivedi et al., 2005).

Medical training and health care systems in many countries continue to focus on acute illnesses while many of the diseases of old age are chronic, requiring both health and supportive care to avoid medical crises and prevent comorbidities. Older people's health priorities are different from those of other groups: they are more vulnerable to infectious diseases than younger adults (e.g., Chan et al., 2004) and their risks of chronic diseases--such as ischemic heart disease, cancer, and diabetes--are greater. These differences need to be recognized in the design of health systems. Current health systems need to be reexamined in order to improve the allocation of resources, although to do so would probably require a greater understanding of the nature of health problems that different age groups face and how they are changing over time than is currently available. In the short term, it may be possible: (1) to promote geriatric training to all medical students (Wade, 1999) as well as generally educate all health professionals and the public on the risks for chronic conditions and preventive life-style, detection, and treatment strategies; (2) to expand the commitment to end-of-life and palliative care in health care systems (Byock, 2001; Crawley et al., 2000); and (3) to recognize that the chronic diseases of older people are usually not curable and therefore require long-term management rather than acute care.

## Health Behaviors

To some extent, the social gradient in health in later life reflects differences in group health behaviors, such as diet, exercise, tobacco use and alcohol consumption. Consequently, well-targeted public education programs aimed at reducing certain risk behaviors, such as smoking or alcohol consumption, or promoting beneficial behaviors, such as maintaining a balanced diet or exercising regularly, can be extremely important. New research from the Global Burden of Disease study highlights the cross-national distribution of behavioral risk factors for old-age diseases such as heart disease and cancer. Ezzati and colleagues (2003) show that the elimination of high blood pressure, high cholesterol, smoking, and alcohol abuse would reduce mortality from noncommunicable disease by 34 percent and save 168 million disability-adjusted life-years (DALYs) in developed countries. The proportional effect is smaller, but still substantial, in less developed countries, a 17-20 percent reduction in mortality and

approximately 500 million DALYs. A more recent study by Ezzati and colleagues (2005) indicates that people in low- and middle-income countries face an increasing risk of cardiovascular disease from tobacco use, high cholesterol, high blood pressure, and high body mass index.

It is never too late to introduce programs to improve people's lives, particularly where life expectancy has been increasing at older ages. Well-targeted education programs aimed at life-style changes to prevent disability or illness (Ezzati et al., 2005), the use of preventive medicine such as influenza vaccination (Lindley et al, 2006; O'Malley and Forrest, 2006), alerting older people about the dangers of self-medication (Pagan et al., 2006) or the need for proper treatment adherence (Goldman and Smith, 2001) would probably reduce inter-group differences in mortality and disability.

Physical and Social Environments

There is now substantial evidence that the social and built environments affect the mental and physical well-being of older adults (Phillips and Yeh, 1999; Wen, Hawley, and Cacioppo, 2006). For example, Bowling and colleagues (2006) have shown that poor neighborhood quality—as measured by levels of pollution and crime or by lack of social cohesion—can predict poor health among people over age 65. Older adults may be even more susceptible to the health effects of community context than younger adults **(**Robert and Li, 2001). Fear or mistrust of others can lead older people to isolate themselves and become lonely and depressed, while strong social ties can buffer perceptions of neighborhood disorganization (National Research Council, 2006b).

Of particular concern in this regard is the speed and scale of the urban transformation of the developing world. Risks in their immediate and surrounding environment, to natural resources, to neighborhood conditions, to social cohesion, and to individual rights all can affect older people's health. More generally, there is concern over the rate of growth in the number of the older people living in slums, which are expected to grow rapidly over the next 10-20 years (Lloyd-Sherlock, 1999; National Research Council, 2003). Although one perceived benefit of living in an urban area is the greater availability of basic services, the costs of access to these services can be very high for poor people (Satterthwaite, 1997).

The projected growth in the proportion of the population over age 60, particularly the projected growth in the number of oldest old (80+), are also likely to have profound implications for families and kinship networks. Living arrangements and social support networks have repeatedly been shown to have an important effect on the disability and mortality of older people (Seeman and Crimmins, 2001). Hence, an important question for policy makers concerned about the health of older people in the developing world is how the anticipated changes in family structure will affect the social gradient in health.

When asked, older people define successful aging as having life satisfaction, social participation, financial security, community involvement, and health and physical functioning, among other things (Bowling and Dieppe, 2005). Psychosocial factors are thus very important to older people's perceptions of what it means to age well and studies have shown that greater social integration is associated with a lower risk of mortality in both middle- and old age and with a lower risk of physical and cognitive impairment among older adults. Social engagement, network building, and autonomy improve

mental health, self-perception, neighborhood perception, and physical health. For example, six months after an acute myocardial infarction, people who are more socially integration and have more emotional support have lower rates of depression even though there is no difference in survival between them and more isolated people (Berkman et al., 2003).

Promoting greater civic engagement can also result in a healthier and more robust older population (National Research Council, 2006b). For example, one program designed to increase levels of civic engagement for older people, the Experience Corps® in Baltimore, Maryland, has recently demonstrated improved physical, cognitive, and social activity among a predominantly low-income population aged 60-86 years old (Martinez et al., 2004).

Interventions

Over the past several decades, numerous interventions have been designed with the aim of helping people live longer and improving the quality of their later life. Thus, the panel considered various types of intervention that potentially could moderate the effects of social factors on adult health. We identified five broad types of intervention: (1) ***legal actions,*** such as anti-age discrimination laws; (2) ***public education and policy*** on the human valuation of aging, including the importance of including measures of health improvements in national income accounts; (3) ***economic interventions,*** specifically, to reduce poverty and open markets for poor countries or alter the economic costs associated with certain poor health behaviors such as smoking**;** (4) ***technological interventions*** such as home modifications or assistive devices; and (5) ***individual, community, and national-level behavioral health interventions*** designed to either reduce particular health risks, such as falling, reduce certain risk behaviors, such as smoking or drinking, or promote beneficial health behaviors, such as maintaining a balanced diet or exercising regularly.

Should it be of use to the Commission to have additional information and references on the topics outlined in this letter, the National Research Council is available and willing to identify terms of reference and potential authors to provide the Commission with papers that would further develop some of the points made above.

Please do not hesitate to contact us if we can be of further assistance.

Yours sincerely,

Robert Butler, *Chair*
Panel on Social Determinants
of Adult Health and Mortality

Barney Cohen, *Director*
Committee on Population

cc. Dr. Richard Suzman, National Institute of Aging

# ATTACHMENT A

## Panel on the Social Determinants of Adult Health and Mortality

**Robert N. Butler (*Chair*)**, President and CEO, International Longevity Center—USA, Ltd, New York, NY

**Susan M. Allen**, assistant professor, Department of Community Health and Sociology, and deputy director, Center for Gerontology and Health Care Research, Brown University

**George Alleyne**, director emeritus, Pan American Health Organization

**Robert W. Fogel**, director, Center for Population Economics, and professor, Graduate School of Business, University of Chicago

**Siddhivinayak Hirve**, director, KEM Hospital, Maharashatra State, India

**Barthelemy Kuate-Defo**, professor of demography and preventive medicine, Department of Demography, University of Montreal

**Philip Musgrove**, deputy editor, *Health Affairs*

**David R. Phillips**, Dean of Humanities and Social Sciences and professor of social policy, Department of Politics and Sociology, Lingnan University

**Samuel H. Preston**, Frederick J. Warren professor of demography, Population Studies Center and Department of Sociology, University of Pennsylvania

**Linda J. Waite**, Lucy Flower professor in urban sociology, Department of Sociology and Population Research Center, University of Chicago

# ATTACHMENT B

## Open Meeting of the Panel on the

## Social Determinants of Adult Health and Mortality

National Academy of Sciences
National Research Council
500 Fifth Street, NW
KECK Building, Room 204
Washington, DC 20001

*July 12-13, 2006*

## AGENDA

**Wednesday, July 12, 2006**

**OPEN SESSION**

| | |
|---|---|
| 9:30 am | **CONTINENTAL BREAKFAST** (provided in meeting room) |
| 10:00 | **Welcome and Introduction**<br>Barney Cohen, *Study Director*<br>Michael Feuer, *Executive Officer DBASSE*<br>Robert Butler, *Chair* |
| 10:15 | **Sponsor's Perspective**<br>Richard Suzman, National Institute on Aging |
| 10:30 | **Statement of Task and Discussion of Charge and Schedule**<br>Robert Butler and Barney Cohen |
| 11:15 | **Overview of Commission on Social Determinants of Health and Timeline**<br>Sebastian Taylor, University College of London |
| 11:30 | **General Discussion: The CSDH and the Knowledge Networks: Ways that Research on Aging Is Currently Being Incorporated** |
| 12:30 pm | ***LUNCH*** |
| 1:00 | **Group Discussion: Ways that Current Research on Aging Intersects with the CSDH's Knowledge Networks** |

- Early Child Development
- Globalization
- Health Systems
- Urban Settings
- Measurement and Evidence
- Women and Gender Equity
- Social Exclusion
- Employment Conditions
- Priority Public Health Conditions

To what extent can recent work in aging help strengthen the mission of the Commission?

3:30 ***BREAK***

4:00 **Group Discussion: Recent Evidence on Social and Economic Differences in Adult Health and Mortality**

- What do we know about the relationship between SES and health and mortality?
- What do we know about the relationship between SES and disability?
- To what extent can we identify interventions?
- What more do we need to know?
- To what extent can this body of work inform the existing knowledge networks or the Commission itself?

5:30 ***ADJOURN***

6:30 ***GROUP DINNER***

## Thursday, July 13, 2006

8:00 am **CONTINENTAL BREAKFAST** (provided in meeting room)

**OPEN SESSION**

8:30 **Overview of Previous Day**
Robert Butler, *Chair*

8:45 **Reactions**
Michael Marmot, University College London

9:00 **General Discussion: How the Panel Might Be Able to Support the Work of the Knowledge Networks and the Commission**

- Preparation of interim letter report to the Commission
- Presentation to the Commissioners by the chair of the panel on the work of this group
- Organization of a one-day workshop. (Proceedings from that workshop to be presented to the Commission for their use in preparation of their final report.)

10: 00 ***BREAK***

10:30 **Continued Discussion**

12:00 pm ***LUNCH***

**EXECUTIVE SESSION- Panel Members Only**

1:00 **Balance and Bias Discussion**

**OPEN SESSION**

2:00 **Panel Discussion**

- Outline of interim letter report
- Ideas of main themes
- Suggestions for recommendations

3:00 ***BREAK***

3:15 **Next Steps**

- Drafting interim letter report
- Planning the workshop

5:00 ***ADJOURN***

# ATTACHMENT C

## Documents Received by the Panel on the Social Determinants of Adult Health and Mortality

### Correspondence

Letter from Michael G. Marmot, Director of the Commission on Social Determinants of Health.

### Presentations

Taylor, Sebastian, Commission on Social Determinants of Health: Introduction and Overview. Presentation to the Panel on the Social Determinants of Adult Health and Mortality. July 13, 2006.

### Analytic Reports

NOTE: The reports listed here were prepared by the knowledge networks and the Commission on Social Determinants of Health

*Early Child Development Analytic and Strategic Review Paper: International Perspectives on Early Child Development*

*Knowledge Network for Early Child Development: Interim Report*

*Globalization and Social Determinants of Health: Analytic and Strategic Review Paper*

*First Interim Report – Globalization Knowledge Network Commission on Social Determinants of Health*

*Health Systems Knowledge Network Discussion Document No. 1: Proposed Areas on Investigation for the KN: An Initial Scoping of the Literature*

*Health Systems Knowledge Network Interim Report*

*A Billion Voices: Listening and Responding to the Health Needs of Slum Dwellers and Informal Settlers in New Urban Settings. An Analytic and Strategic Review Paper for the Knowledge Network on Urban Settings.*

*Interim Report: Knowledge Network on Urban Settings*

*Commission on Social Determinants of Health Measurement and Evidence Knowledge Network: First Interim Report*

*First Meeting of the Women and Gender Equity Knowledge Network: Report*

# ATTACHMENT D

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