Lifecourse approach to ageing: Implications for public health policy

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International Federation on Ageing Conference,
May 3-5, 2010, Melbourne
Lifecourse approach to ageing


- Lifecourse begins with conception and ends with death.
- Considers factors during development that influence late-life disease
- Fetal environment, family environment, social environment considered
- Identifies critical periods when an individual is at increased risk from exposures
- Exposures are not necessarily independent – they may be interlinked or chains of events
  - eg. Education level influences health behaviors
Critical periods vs gradual accumulations

- Extreme example: Events during critical period cause irreversible damage eg. Thalidomide during pregnancy
- Distinction between structure and function ie poor intra-uterine development may lead to reduction in number of muscle cells but not function of cells – deficit only unmasked at older ages
- Risk factors for disease or factors promoting health may gradually accumulate over the life course but have bigger impact in late life (eg. Brain aging)
Figure 2 Relative importance of exposures acting across different life course time windows in terms of the natural history of lung function

modified from Strachan D. (1997)

A = normal development and decline; B = exposure in early life reducing lung function potential; C = exposure acting in mid to later life accelerating age-related decline
Lifecourse and cognitive health

- Increasing awareness of the need to promote wellbeing
- Wellbeing is associated with reduced risk of disease

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**The mental wealth of nations**

Countries must learn how to capitalize on their citizens’ cognitive resources if they are to prosper, both economically and socially. Early interventions will be key.

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*John Beddington, Cary L. Cooper, John Field, Usha Goswami, Felicia A. Huppert, Rachel Jenkins, Hannah S. Jones, Tom B. L. Kirkwood, Barbara J. Sahakian and Sandy M. Thomas*

State-of-the-art scientific and other evidence to investigate the challenges and opportunities that lie ahead in the next 20 years. The report provides an independent assessment that is intended to inform policy-makers both in the United Kingdom and around the world.

during the development of mental capital in childhood and adolescence. Early learning in children can increase their resilience to stress and common mental disorders. Later in life, this resilience helps to engender well-being at work and into old age. And older individu-
Cognitive reserve hypothesis (cf Stern, Morris, Skarmeas and others)

- Individuals have a ‘pool’ of cognitive reserve that is built up through education, occupational attainment, optimal nutrition and brain growth during early development.

- Individual differences in reserve capacity explain individual differences in transition to cognitive impairment; i.e., within an individual, a threshold is reached whereby they can no longer compensate for neurological damage and brain function is affected. Some individuals may have greater brain atrophy, but still function better due to cognitive reserve.
Examples of how experiences over the life course affect outcomes in late life
1. Alameda County Study

Kaplan et al, 2007, Int J Epidemiology

- 6928 adults studied for 30 years
- Socio-economic, behavioral, demographic and psychosocial factors influence the progression of disease and disability

- These factors also influence trajectories of health and ageing over decades –
  - considerable variation in trajectories
  - low income and physical inactivity strongest risk factors for unremitting decline and earlier death
  - overweight BMI survived longest!
2. Helsinki Birth Cohort

*Pesonen et al. 2007, Am J Epidemiology*

1658 members of Helsinki Birth Cohort
410 Evacuated to foster care during World War II
More than 60 years later, those evacuated had higher levels of depressive symptoms

Explanations:

a) Evacuation permanently heightened stress-reactivity responsivity
b) Separation from parents disrupted parental attachment
Learnings from Life-Course approach

An individual’s position in a distribution is the end product of a trajectory since birth. Moving the distribution of a risk factor/profile/condition requires changing the trajectories of the individuals who make up the distribution.
FIGURE 1—Hypothetical homogenous effect of a population-approach intervention on the distribution of risk in a population.

Note. Arrows indicate where the lines of the distribution would be after a population-level approach.
Problems with Simplistic Population Approach to Prevention

- Does not address mechanisms leading to different distributions of risk
- Assumes intervention affects everyone equally
- May lead to increased social inequality
- In practice, people with more social resources better placed to benefit from interventions: demonstrated in cases of cervical cancer screening
Implications for Public Health Policy related to ageing

1. It is never too late to intervene to improve health – older adults have benefited from strength training, learning new languages and social participation

2. Holistic interventions address development in multiple domains and therefore more beneficial (Experience Corps)

3. Promoting health in younger adults and mid-life is essential for producing a healthy older cohort

4. Population approaches to shifting risk for chronic disease need to be tailored to reduce inequalities in health which may require targeting vulnerable groups, identifying structural and environmental factors that ‘cause’ risk
Acknowledgements

Kaarin Anstey is funded by a NHMRC Senior Research Fellowship.