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The implications for training of embracing

A Life Course Approach to Health

ILC INTERNATIONAL LONGEVITY CENTRE-UK

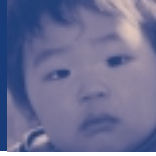
World Health Organization

Background

This brochure was produced as the result of a workshop organised jointly by the World Health Organization and the International Longevity Centre-UK, on the initiative of WHO. The brochure aims to stimulate consideration of the **importance** and – in practical terms – the **effective realisation** of a **life-course perspective** in the **training of health-care professionals.** With the establishment in 1995 of the Ageing and Health Programme (AHE), WHO firmly embraced the 'life course' as one of its key perspectives on ageing, as reflected in its programme activities. In late 1999, AHE proposed that ILC-UK conduct this joint workshop and invite not only ILC representatives but also some of the leading life course researchers. We gratefully acknowledge a grant from the Japanese government to WHO which enabled its realisation.

Population ageing and increasing longevity are necessitating an examination of the skills and training needs of our health care professionals and the capacity of our health care services and systems. The meeting organisers believe that the adoption of the 'life course' as a conceptual framework will assist in developing **efficient and equitable responses** to this challenge.

The brochure is being disseminated to stimulate wider **consideration** of the issues and ideas discussed. We are looking to readers – educators and students, – to engage and **feedback** with **thoughts and ideas** on taking forward a life course approach – we want to hear from **you.**



Why promote the life course?

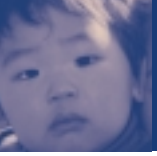
The importance of the life course as a **framework** is often downplayed as 'common sense' and its promotion 'needless'. In reality however, acceptance of this principle has enormous implications on the way an individual's health is considered, for the training of health care professionals and for the way health systems are developed to cater for individuals' health care needs. Epidemiological research is beginning, and will continue, to enhance our understanding of the relative importance of different stages in the life course in relation to health capital and specific disease processes. Findings will enable the development and fine-tuning of life course models with specific implications for health and social policy interventions. In the meantime, as will be shown, there is value to be gained in **acknowledging** the importance of adopting a life course approach to health, exploring the issues raised and **addressing** the challenges that result.

In the education and training of health-care professionals, a life course approach offers the potential to enhance the **integration** of teaching and to **prepare** students, across both the developed and developing worlds, for carrying out their responsibilities in the twenty-first century.

Population of regions of the world

Population (in billions)	2000	2025	2050
Total	6.055	7.824	8.909
More developed countries	1.188	1.215	1.155
Less developed countries	4.867	6.609	7.754
Age >65 years			
Total	0.419	0.817	1.458
More developed countries	0.171	0.254	0.299
Less developed countries	0.248	0.563	1.159

Source: United Nations. World Population Prospects: The 1998 Revision. (Medium Variant Projections)



A life course approach to health

A life course approach emphasises a **temporal and social perspective,** looking back across an individual's or a cohort's life experiences or across generations for clues to current patterns of health and disease, whilst recognising that both past and present experiences are shaped by the wider social, economic and cultural context. In epidemiology, a life course approach is being used to study the physical and social hazards during **gestation, childhood, adolescence, young adulthood and midlife** that affect chronic disease risk and health outcomes in later life. It aims to identify the underlying **biological, behavioural and psychosocial** processes that operate **across the life span** (Kuh and Ben-Shlomo, 1997).

A life course approach incorporates, but is broader than, 'the fetal origins hypothesis' (programming) which links conditions in the intrauterine environment to the later development of adult chronic disease (Barker, 1998). Growing evidence suggests that there are **critical periods** of growth and development, not just in utero and early infancy but also during childhood and adolescence, when environmental exposures do more damage to health and long-term health potential than they would at other times. There is also evidence of **sensitive developmental stages** in childhood and adolescence when social and cognitive skills, habits, coping strategies, attitudes and values are more easily acquired than at later ages. These abilities and skills strongly influence life course trajectories with implications for health in later life. Additionally, a life course approach considers the long term health consequences of biological and social experiences in early and mid adulthood, and whether these factors simply add additional risk or act interactively with early life biological and social factors, to attenuate or exacerbate long term risks to health.

Cumulative effects on later health may occur not only across an individual's life but also across **generations** (Lumey 1998; Davey Smith 2000). Many animal studies have highlighted the perpetuation of both size at birth and subsequent growth across generations; this may have important nutritional implications especially in the developing world. Further research will assist assessment of how and when to optimally target interventions to cost-effectively improve health.

Socio-economic conditions throughout the life course shape adult health and disease risk. This is because health-damaging exposures or health-enhancing opportunities are socially patterned, and because an individual's response, which may modify their impact or alter the risk of future exposures, will be powerfully affected by their social and economic experience (Kuh et al, 1997). The strength of the relationships between adult disease and socio-economic circumstances at different life stages can thus provide clues to the underlying aetiological processes (Davey Smith et al, 1998). A life course approach is being used in research on social inequalities in health, to investigate how experiences

and exposures at different life stages accumulate and create the social inequalities in morbidity and mortality observed in middle and old age (Davey Smith, 2000; Leon, 2000).

A life course approach to adult health is not a new concept – the idea that experiences in earlier life shape adult health, was the prevailing model of public health in the first half of the twentieth century. In the post war period the dominance of the adult life style model for adult chronic disease was due to the early success of cohort studies in confirming, for example, smoking as a major risk factor for lung cancer, coronary heart disease and respiratory disease, and hypertension as important for stroke and IHD. However, conventional risk factors are limited in predicting individual risk and only partially explain the striking social and geographical inequalities in the distribution of chronic disease. Since the 1980s, there has been a revival of interest in life course epidemiology in response to growing empirical evidence from the maturing birth cohort studies and the revitalisation of historical cohorts.

Conceptual models of the life course

The simplest classification groups conceptual models of the life course under 4 headings:

1. A critical period model
2. A critical period model with later effect modifiers
3. Accumulation of risk with independent and uncorrelated insults
4. Accumulation of risk with correlated insults (clustering, chains or pathways of risk)

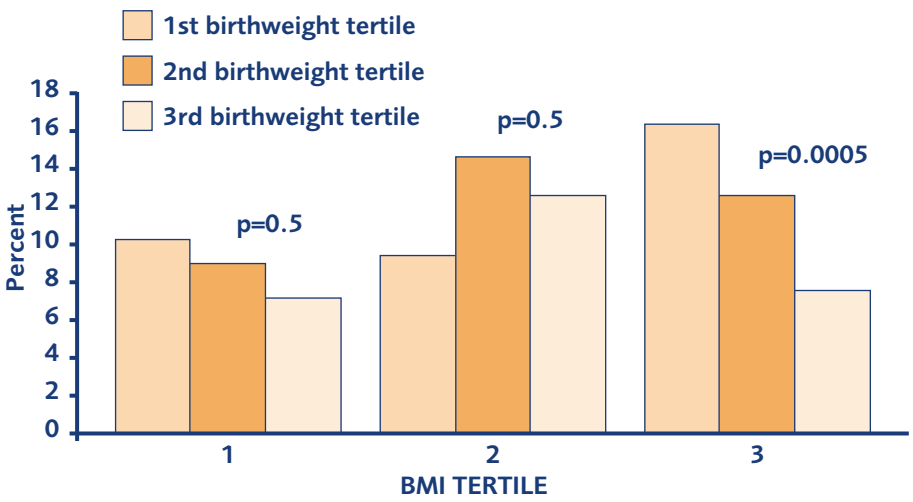
There is evidence for all four models. A critical period model is when an insult during a specific period of development has lasting or lifelong effects on the structure or function of organs, tissues and body systems. Evidence suggests that later life factors may modify this early risk *(model 2)*. For example, studies have shown that the relationships of coronary heart disease, high blood pressure and insulin resistance with low birth weight are particularly strong for those who are overweight (*see figure)* (Frankel et al, 1996; Lithell et al 1996; Leon et al, 1996).

In contrast, the gradual accumulation of risk models encourage researchers to study how risk factors at each life stage combine to raise disease risk. Do separate and independent insults gradually cause long-term damage to health *(model 3)?*

Risk factors tend to **cluster** in socially patterned ways, for example, those living in adverse childhood social circumstances are more likely to be of low birth weight, and be exposed to poor diet, childhood infections and passive smoking. These exposures may raise the risk of adult respiratory disease, perhaps through **chains of risk** or pathways over time where one adverse (or protective) experience will tend to lead to another adverse (protective) experience in a cumulative way *(model 4)*. As well as the biological chains of risk linked with programming, there are social chains of risk where, for

example, repeated respiratory disease in childhood may result in increased sick absence from school and lower educational attainment, which in turn leads to a greater likelihood of smoking in adulthood and a manual occupation with greater respiratory hazards.

CHD Incidence by Birthweight and BMI: The Caerphilly Study

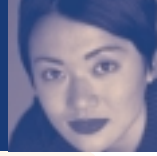


Source: Frankel et al (1996) Birth weight, Body Mass Index in middle age and incidence of coronary heart disease 348: 1478-80 © by The Lancet Ltd. 1996

Conclusion

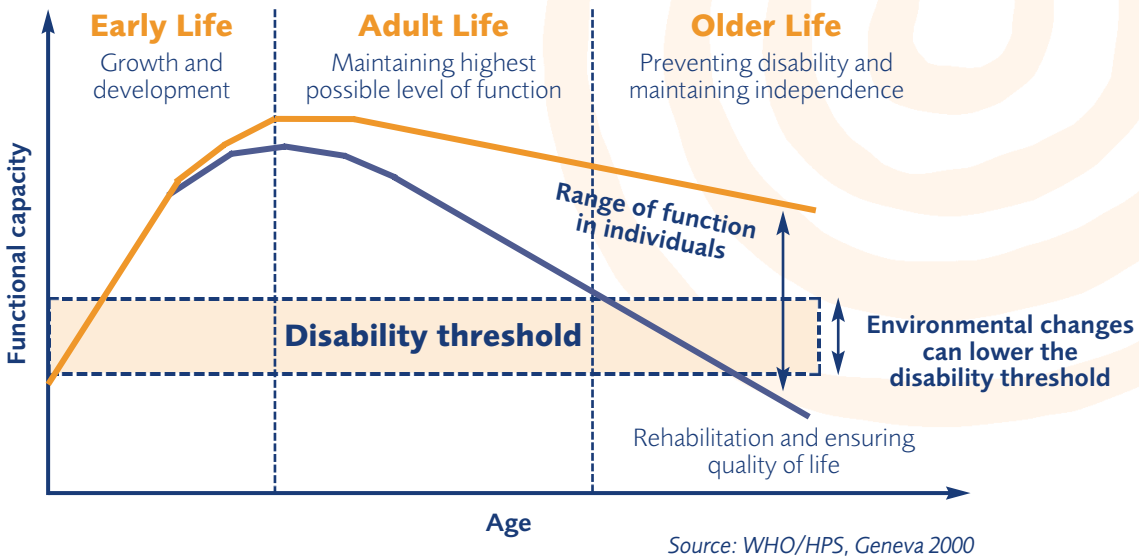
We are only starting to disentangle the influence of early life factors relative to genetic and later life factors on adult health and ageing: explanations may be cohort and disease specific; factors may be additive or interact synergistically. Caution is required in extrapolating from the past to the present and from one place to another. However, the questions being raised are fundamental. A life course approach provides an essentially **optimistic** approach to health and raises questions for policy. It helps identify **chains of risk** that can be broken and times of intervention that may be especially effective. Particularly during key life transitions, e.g. late adolescence to early adulthood, we need to provide not just safety nets but **springboards** (Bartley et al 1997), which can alter life course trajectories with implications for subsequent health.

The advantages of using a life course model to study adult health is that it is **interdisciplinary** and integrates **social** and **biological** explanations. It also allows **synthesis of other models** of health and chronic disease such as the foetal origins and adult lifestyle models.



Functional capacity and the life course

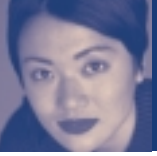
A life course perspective for maintenance of the highest possible level of functional capacity



Source: WHO/HPS, Geneva 2000

Ageing is a life-long process – the above conceptual framework has been developed by WHO to capture this. Functional capacity (such as ventilatory capacity, muscular strength, cardio-vascular output) increases in childhood and peaks in early adulthood, eventually followed by a decline. The rate of decline, however, is largely determined by factors related to adult life style – such as smoking, alcohol consumption, levels of physical activity and diet. The gradient of decline may become so steep as to result in premature disability. However, the acceleration in decline may be reversible at any age and can be influenced at any age through individual as well as policy measures. Smoking cessation and small increases in the level of physical fitness, for example, reduce the risk of developing coronary heart disease. Conditioning by social class also affects functional capacity. Poor education, poverty, and harmful living and working conditions all make reduced functional capacity more likely in later life.

For those who become disabled, provision of rehabilitation, adaptations of the physical environment and specific interventions e.g. cataract surgery, can greatly reduce the level of disability – the disability threshold can be lowered. Quality of life should be a major consideration throughout the life course; changes in living environment can vastly improve quality of life. Gains are obtained by



acting on the 'care unit' – in most case the family and close friends. Through appropriate environmental changes such as adequate public transport in urban environments, lifts, ramps, and adaptations in the home – the disability threshold can be lowered. Such changes can ensure a more independent life well into very old age.

Implications for training

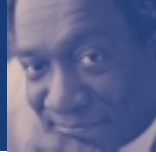
The following issues were raised and ideas put forward at the workshop. If you have contributions to make to the debate or practical suggestions on taking forward a life course approach – we want to hear from you – visit www.ilcuk.org.uk or e-mail us at lifecourse@ilcuk.org.uk

In the experience of participants, the life course is not 'explicitly' and rarely implicitly used as a framework within education. In addition, the teaching of geriatrics in some schools in developed as well as in developing countries, is limited, resulting in an incomplete presentation of the life course. Given the reality of our ageing populations, it is clear this situation is untenable. We would stress the relevance of the following to the training of health care professionals in general.

What does a 'life course' approach offer?

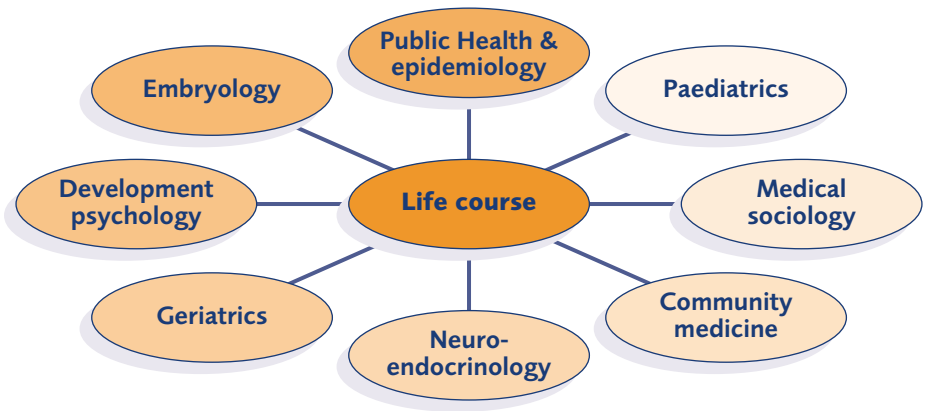
A **curriculum framework** which:

- Stresses the importance of **all ages and stages of life** and acknowledges the **intergenerational context** within which individuals exist.
- Recognises the **temporal dimension** of health and ageing, rather than just distinct episodes of illness; personalises and humanises ill health as part of a life process.
- Offers the opportunity to **focus on 'health'** as well as specific disease processes; in terms of disease, it emphasises health promotion, disease prevention and cure and disease management throughout life (can assist in ensuring a **balance in teaching**).
- Emphasises **primary interventions** in addition to cure or palliation.
- Is **interdisciplinary** – offering the potential to **link** together current 'islands' of teaching, particularly in social and psychosocial topics.
- **Integrates** the progression from cellular to organ-based to organism and population level information.
- Requires a multidisciplinary approach from staff that should improve overall **co-ordination of teaching.**
- Is **'novel'** – it represents an exciting area of current research and may promote an **enquiry based learning** approach.



- Reflects the already **existing model** of primary health care; it offers a framework for the **geriatric training of GPs** (especially relevant to developing countries) and other specialists.
- Offers **inspiration** to developing countries which are 'ageing in poverty' as a force for change – sets goals of investment in health capital through health promotion and prevention.

Cobweb of life course in medical education



What are the challenges facing its adoption?

- The clinical imperative to 'save lives' and in many instances, act in the short term.
- The constraints of the health system into which trainees are 'delivered'.
- The complexity of health and disease highlighted by the life course perspective.
- The current division into pre-clinical and clinical courses and teaching and the adoption by most schools of a curriculum with a modular structure, which may lack meaningful horizontal-vertical integration.
- School curricula are 'over-full' and time is limited; there will inevitably be logistical and attitudinal resistance to change – from both staff and students.
- The inter- and intra-national diversity in school philosophies, teaching methodologies, and curricula, often independently set.

How can these challenges be addressed?

Those promoting a life course approach need to:

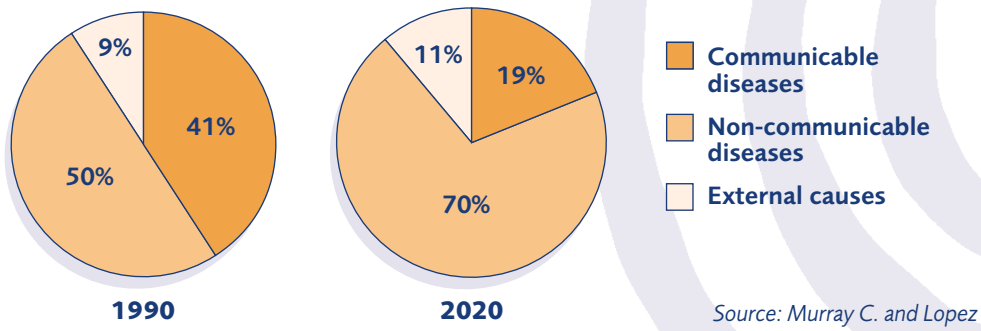
- Emphasise that a life course approach changes the **process of curriculum delivery,** rather than the content.
- Develop **examples, pilot models and educational resources** to assist conceptualisation and ease implementation – 'market' the approach; ensure adaptability and sensitivity to different teaching methodologies and cultures.

Clinical domains & the life course

- Aetiology – clues to mechanisms; links the social to the biological and vice-versa.
- Diagnosis – modes of presentation and lay epidemiology.
- Prognosis – functional reserve and response to disease
- Treatment – limited impact for tertiary prevention as mainly primary prevention; may be important in understanding non-compliance.

- Encourage the early development and integration of a life course perspective into the teaching of **public health.**
- Promote the life course approach **beyond** the undergraduate curriculum to advanced training and the clinical environment.
- Recommend a life course approach be adopted in the training of **all health care workers.**
- Encourage lessons to be drawn from **existing** holistic/ interdisciplinary approaches utilised in geriatric training and also encourage geriatric programmes to adopt a 'reverse' life course approach, focusing on healthy ageing as well as specific disease processes.
- Note the critical importance of **staff recruitment and on-going development** in implementing this approach.
- Develop steps and **strategies for implementation** that involve national bodies, school boards, political influencers and general public awareness; 'lead by example' and 'sell' the approach through facilitating top-down acceptance.
- Encourage the **review of admission criteria** for medical schools to consider the social context of health; allow greater opportunity for older individuals with more personal life course experience to train in medicine (also recognising increasing life-expectancy and later retirement patterns).

Cause of death in developing countries



Source: Murray C. and Lopez A. The Global Burden of Disease, 1996: OUP

Taking forward a life course approach

Workshop participants agreed to explore different ways of taking forward this approach, liasing both with local partners and internationally to generate resources and momentum. Suggested initiatives include the development of adaptable curriculum and course materials, considering issues of curriculum integration, impact and change; production of publications on the life course perspective focusing on implications for specific health or medical areas; using national and international conferences as platforms for dissemination of life course ideas; lobbying to improve the positioning of population ageing and health on the development agenda – international aid agencies, donors and NGOs are still overwhelmingly focused on children; encouraging the development of 'community friendly' or 'life course friendly' i.e. 'people friendly!' health centres, especially relevant to developing countries. We are committed to working with professional and health care networks to maximise dissemination of information, initiatives and ideas. Concrete recommendations on realising a life course approach to health will be developed to feed into the World Assembly on Ageing in 2002.

Do **you** have practical suggestions for taking forward the ideas expressed? Have you **been inspired** by the use of a life course framework during your education? Have you **utilised** the life course as a framework in your teaching? **Would you** promote a life course approach?

Share your ideas – visit **www.ilcuk.org.uk** or email us at **lifecourse@ilcuk.org.uk**

To those of you for whom this approach does **not** 'feel' new – we are looking to learn from your experience and **practical ideas** on how to make it more explicit. To others who feel this approach is missing – we need to hear this **expressed!** The web-site will be developed to incorporate your thoughts and link to and promote new initiatives as they emerge. **Make it YOURS!** We look forward to hearing from you.

Limited copies of the brochure and an A2 poster publicising the web-site **www.ilcuk.org.uk** (contains an electronic copy of the brochure, also in French and Spanish) are available – contact activeageing@who.int for copies. All text references in full, further information and links are also available on the web-site.

Resources

A Life-course Approach to Chronic Disease Epidemiology eds. Diana Kuh and Yoav Ben-Shlomo (Oxford University Press, 1997) ISBN 0 19 2627821.

A life-course perspective of maintaining independence in older age (WHO, 1999) WHO/HSC/AHE/99.2; contact activeageing@who.int for copies.

Participants – life course working group

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Appreciation is expressed to all workshop participants for their contributions, particularly to Dr. Yoav Ben-Shlomo and Dr. Diana Kuh.

The ILC-UK believes that population ageing and the longevity revolution necessitate dramatic changes in attitudes and approaches to the life course, at both societal and individual levels. The organisation is part of a multinational consortium of International Longevity Centres whose mission is to help societies address longevity and population aging in positive and productive ways. For further information contact:

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The WHO Ageing and Health Programme was established in 1995, building on the achievements of its predecessor, the Programme on Health of the Elderly. This change in title acknowledged the importance of a life-course perspective; life as a continuum, 'ageing' rather than 'the elderly'. In March 2000 a major restructuring took place in WHO, leading to the establishment of a new Department (Health Promotion/Non-communicable Diseases Prevention and Surveillance) in which 'Ageing and Health' is mainstreamed through its four units: Life Course and Health; Legislative and Economic Policies; Community-Based Prevention Approaches; and Risk Factor Surveillance.

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