A Lifecourse Approach to Non-communicable Diseases (NCDs)

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PERCENT OF DALYS FROM NON-COMMUNICABLE DISEASES IN 2010

Source: Institute for Health Metrics and Evaluation (2013)
Developmental origins of adult disease

Death rates from coronary heart disease among 15,726 men and women in Hertfordshire according to birth weight

Programming
Persisting changes in structure and function caused by environmental stimuli acting at critical periods during early development

David Barker 1936-2013
Lifecourse determinants of health and disease

Developmental plastic responses
Epigenetic processes

Infant body composition & development
Weight gain and catch-up growth

Childhood body composition and development

Vulnerability to chronic disease in later life

Infant feeding and illnesses

Childhood diet, physical activity, lifestyle and education

Work, lifestyle and health behaviours in adulthood

Retirement and ageing

Young women’s diet, body composition, physical activity, education and lifestyle before and during pregnancy

Harvey N, Dennison E, Cooper C J Bone Miner Res 2014; 29: 1917-25
**Life course strategy for disease prevention**

**Chronic NCD risk**

**Early intervention**
- Improves functional capacity & responses to new challenges

**Late intervention**
- Impactful for vulnerable groups

**No intervention**

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**Mother & infant**

**Childhood**

**Adulthood**

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**Plasticity**

**Inadequate response to new challenges**

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*Harvey NC et al J BoneMiner Res 2014; 29: 1917-25*
Modifying maternal diet to improve offspring health
Educational attainment and dietary pattern in women of child-bearing age

% of women in lowest quarter of prudent diet score

Highest educational qualification

Robinson S et al  EJCN 2004; 58: 1174-78
Mother’s and infants diets

![Graph showing the relationship between mother's diet quality and infant diet quality. The x-axis represents mother's diet quality, ranging from less healthy to healthy, and the y-axis represents infant diet quality, ranging from less healthy to healthy. The graph includes data from Robinson SR et al. Br J Nutr 2007.](image-url)
Why do women of lower educational attainment tend to have a poorer quality diet than women of higher educational attainment?

Lawrence WT et al. Appetite 2011; 56: 46-52
Southampton Initiative for Health:
A complex intervention to improve food choice among women of child-bearing age

- Design – before and after non-randomised trial
- Study population – women attending Sure Start Children’s Centres, and their children

BEHAVIOUR CHANGE INTERVENTION:
- 3 x 3 hour sessions over 5 weeks
- 8 people per group with 2 facilitators
- Session 1: Thinking about change
- Session 2: Practising Healthy Conversations
- Session 3: Embedding lasting change
- Follow up: Ongoing contact with trained staff

PRINCIPLE FINDING: Improvement in control and self-efficacy

Barker M et al J Hlth Psychol 2011; 16: 178-91
The 2013 to 2020 Action Plan should ensure that a life course approach is taken to tackle NCDs. This includes maternal health for the unborn baby, avoiding exposure to tobacco and alcohol during pregnancy, breast feeding in infancy, healthy behaviours in childhood and adolescence and healthy ageing. The life course approach means incorporating NCD prevention and control alongside maternal and child health programmes and care of the elderly, in a range of settings (e.g. schools, work place).”

European Ministerial Conference
The Minsk Declaration (2015): Lifecourse approach in the context of Health 2020 and Sustainable Development Goals

http://www.who.int/nmh/events/2012/action_plan_20120726.pdf
MRC LEU: 2015-2020

Observations: Observational epidemiology
Determinants of health outcomes & health behaviours

Interventions: Pre-conception, during pregnancy and in adult life
Nutrition & lifestyle
Pharmaco-therapeutic
Organisational

Mechanisms: Systems biology
Health psychology

Lifecourse outcomes:
Musculoskeletal
Metabolic
All cause mortality

MRC LEU: 2015-2020
The Southampton Initiative for Health Team

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