Lifecourse Epidemiology, Longitudinal Studies and Knowledge Translation

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NHMRC Australia Fellow
Life at 5

http://www.abc.net.au/tv/life/about_the_series/life_at_5.htm
Lifecourse Epidemiology
The childhood shows the man,
As the morning shows the day.

Milton “Paradise Lost” (1667)
lines 220–21
Evidence for “critical periods” of “biological programming”

Widdowson and McCance (1963) showed that rat pups with limited nutrition during the 3 weeks of lactation put on weight more slowly over their entire lifetimes, even though they had unlimited food post-weaning.

In contrast, in another groups of rats, the same duration of limited nutrition at 9-12 weeks of age had only short term effects on their weight.
Rediscovering Lifecourse

Early Life Origins

ARTICLES

BIOLOGICAL FREUDIANISM
Lasting Effects of Early Environmental Influences

René Dubos, Ph.D. (M.D. Hon.), Dwayne Savage, Ph.D., and Russell Schaadler, M.D.
The Rockefeller University, New York

the childhood shews the man
As morning shews the day . . .

John Milton
Paradise Regained

SOCIAL DETERMINANTS OF GROWTH
AND HEALTH

As commonly used, the phrase “early influences” denotes the conditioning of girls; and by the earlier age of the first menstrual period. In England for example, the menarchal age was 15% for the well-off townspeople in 1820, whereas it had fallen to 13 in 1960.¹

Needless to say, the trend towards earlier maturation cannot be extrapolated far back in time. In fact there is evidence that the menarchal age was 14 in Shakespeare’s time,

Atherosclerosis, most frequently manifested as coronary heart disease, is the major health concern in the United States. This disease of adulthood has its origins in infancy and childhood.

Kannel WB, Dawber TR. Atherosclerosis as a pediatric problem.

*Journal of Pediatrics* 1972: 80; 544-554
Living conditions in childhood and subsequent development of risk factors for arteriosclerotic heart disease

The cardiovascular survey in Finnmark 1974-75

A. FORSDAHL

From the Institute of Community Medicine, University of Tromsø, Norway

**Fig. 1** Correlation coefficients between infant mortality 1921-35 and age-adjusted means of serum cholesterol among men aged 35-49, who in 1974-75 were living in their municipalities of birth.

**Fig. 2** Correlation coefficients between infant mortality 1921-35 and age-adjusted means of serum cholesterol among women aged 35-49, who in 1974-75 were living in their municipalities of birth.
How the first nine months shape the rest of your life

The New Science of Fetal Origins
The Barker Hypothesis

The “Developmental Origins” Hypothesis

http://www.barker.org/
## Rate Ratios for CHD in Relation to Birthweight

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<th>Birthweight</th>
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<th>Women</th>
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<td>1.0</td>
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<tr>
<td>6 -</td>
<td>0.81</td>
<td>0.87</td>
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<tr>
<td>7 -</td>
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<td>9 -</td>
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<td>10 +</td>
<td>0.65</td>
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<tr>
<td>19 -</td>
<td>0.79</td>
<td>0.59</td>
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<td>21 -</td>
<td>0.81</td>
<td>0.75</td>
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<td>23 -</td>
<td>0.62</td>
<td>0.52</td>
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<td>0.84</td>
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<tr>
<td>27 +</td>
<td>0.40</td>
<td>0.84</td>
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Trajectories of Growth Among Children Who Have Coronary Events as Adults

3 “critical” phases:
Lower birthweight ➔ Sub-optimal growth to age 2 ➔ Catch up growth to adolescence

Barker et al. NEJM (2005)
Di Kuh and Yoav Ben Shlomo (2004)
Developmental Plasticity and Human Health

- In-utero responsiveness to their mothers’ condition before birth may generally prepare individuals so that they are best suited to the environment forecast by cues available in early life.

- Rapid improvements in nutrition and other environmental conditions may have damaging effects on the health of those people whose parents and grandparents lived in impoverished conditions.

- A fuller understanding of patterns of human plasticity in response to early nutrition and other environmental factors will have implications for the administration of public health.

JE Harding

The nutritional basis of the fetal origins of adult disease


Gluckman and Hanson
Association of blood pressure in late adolescence with subsequent mortality: cohort study of Swedish male conscripts

Fig 2 | Relations of systolic (top left), diastolic (top right), mean arterial (bottom left), and pulse (bottom right) pressures to cardiovascular mortality. Solid line represents hazard of cardiovascular mortality and dashed lines are 95% confidence interval limits, from multivariable regression spline Cox proportional hazards C models (adjusted for age, conscription date, conscription centre, socioeconomic position, body mass index, elbow flexion, hand grip, and knee extension strength). Y scale is logarithmic.

Birth weight and Cognitive Function

↑ BW = ↑ Cognitive Function @ ages 8, 11, 15, 26


| Table 2 Mean differences (95% confidence intervals) in standardised cognitive score for each birthweight category compared with middle birthweight category for tests at ages 8, 11, 15, and 26 years |
|---|---|---|---|---|
| Birth weight (kg) | No (%) of participants | Adjusted* | Conditional on previous test score† | P value‡ |
| **Age 8 years (n=3773):** | | | | |
| 0-2.50 | 174 (4.6) | −0.25 (−0.40 to −0.12) | — | <0.001 |
| 2.51-3.00 | 618 (16.4) | −0.06 (−0.15 to 0.02) | | |
| 3.01-3.50 | 1319 (35.0) | 0 | | |
| 3.51-4.00 | 1242 (32.9) | 0.16 (0.09 to 0.23) | | |
| 4.01-5.00 | 420 (11.1) | 0.18 (0.08 to 0.28) | | |
| **Age 11 years (n=3527):** | | | | |
| 0-2.50 | 155 (4.4) | −0.21 (−0.36 to −0.07) | −0.02 (−0.12 to 0.07) | 0.51 |
| 2.51-3.00 | 586 (16.6) | −0.09 (−0.17 to 0.00) | −0.04 (−0.09 to 0.02) | |
| 3.01-3.50 | 1233 (35.0) | 0 | 0 | |
| 3.51-4.00 | 1159 (32.9) | 0.11 (0.04 to 0.18) | −0.01 (−0.05 to 0.04) | |
| 4.01-5.00 | 394 (11.2) | 0.08 (−0.02 to 0.18) | −0.04 (−0.11 to 0.02) | |
| **Age 15 years (n=3383):** | | | | |
| 0-2.50 | 151 (4.5) | −0.24 (−0.39 to −0.10) | −0.06 (−0.14 to 0.02) | 0.14 |
| 2.51-3.00 | 564 (16.7) | −0.12 (−0.20 to −0.03) | −0.04 (−0.09 to 0.00) | |
| 3.01-3.50 | 1174 (34.7) | 0 | 0 | |
| 3.51-4.00 | 1117 (33.0) | 0.06 (−0.01 to 0.13) | −0.03 (−0.07 to 0.00) | |
| 4.01-5.00 | 377 (11.1) | 0.08 (−0.02 to 0.18) | 0.00 (−0.05 to 0.05) | |
| **Age 26 years (n=2888):** | | | | |
| 0-2.50 | 135 (4.7) | −0.24 (−0.40 to −0.08) | −0.01 (−0.12 to 0.09) | 0.96 |
| 2.51-3.00 | 471 (16.3) | −0.09 (−0.18 to 0.01) | 0.01 (−0.06 to 0.07) | |
| 3.01-3.50 | 1006 (34.8) | 0 | 0 | |
| 3.51-4.00 | 966 (33.5) | 0.06 (−0.02, 0.14) | 0.02 (−0.04, 0.07) | |
| 4.01-5.00 | 310 (10.7) | 0.09 (−0.03 to 0.20) | 0.02 (−0.05 to 0.10) | |

*For sex, father’s social class, mother’s education, birth order, and mother’s age.
†Adjusted for all factors listed above, as well as for cognitive score at the previous age.
‡P value for test for heterogeneity across birthweight groups for conditional analysis.
Survival at ages 12-76 years by IQ score at age 11 in UK

Female

Male

Whalley & Deary, BMJ 2001
Early Life Conditions

Economic Resources

Educational Experiences

Adult Socioeconomic Position

Adult Exposures

Exposures in-utero and childhood

Biological Processes

→ “Health Capital”

Health in Adulthood

Kuh, Power, Blane, Bartley. (2005)
Invited Commentary: Association between Restricted Fetal Growth and Adult Chronic Disease: Is It Causal? Is It Important?

Michael S. Kramer

• 1 kg difference in birthweight $\rightarrow$ 4mm Hg difference in systolic BP
• Difference in BW between smoking/non-smoking mothers $\sim$ 200 gm
• Protein supplementation among under-nourished women $\rightarrow$ 50 gm increase BW
• More realistic change is 100 gm BW improvement $\rightarrow$ 0.4 mmHg
“Indeed, for most of the epidemiological associations described to date, the extent to which interventions that are intended to modify risk can improve long-term health is not yet clear.”

Death Rates from CHD and Stroke, US, 1950-2002

Graph showing the trend of death rates from CHD and Stroke in the US from 1950 to 2002. The graph indicates a decrease in rates over the years.

Birthweight (grams)
Longitudinal Studies
“In 1926-1927 an experiment with 1500 children done by the Rowett Institute showed that the addition of milk made a definite improvement in the rate of growth and health in ordinary children ... milk made good the dietary deficiencies in their home diet which was worst in the poorest homes.”

Lord Boyd Orr
Study of a LIFETIME

In 1946, scientists started tracking thousands of British children born during one cold March week. On their 65th birthday, the study members find themselves more scientifically valuable than ever before.

LIFE'S PATTERN DECIDED-

AT THE AGE OF SEVEN

Cleverness ‘delays the menopause’

The doctor's son does better than a dustman’s

Nature March 2011
The first few decades of the twentieth century found Britain acutely concerned about its falling birth rate and stagnant infant mortality – “how are we going to maintain Britain and its empire?”

A Population Investigation Committee recommended a maternity survey to explore whether the social and economic costs of childbearing were discouraging prospective parents. James Douglas was appointed to head it.

Mike Wadsworth, a social epidemiologist joined Douglas’s team in 1968 – the study was just getting going. “I thought the changing pattern of health of these people would be interesting over life,” he says.
Di Kuh — who had trained in economics — wanted to build up the biomedical data that Wadsworth had been collecting. Until that time, all the examinations had been performed at the study members’ homes, but by this stage the nurses were staggering under all the equipment.

To really understand the participants’ physiology and biology, Kuh argued, the study needed to get them to a clinic. “People appreciate a free bone scan,” she said. By 2008 she had convinced the MRC to pay for every willing cohort member to visit one of a number of clinics around the country.
The UK Birth Cohorts

- 1946
- 1958
- 1970
- Millenium Cohort
- 2012 Cohort

1959 – Platt Comm. on Welfare of Children in Hospital
1966 – Finer Comm. On Single Parent Families
1967 – Plowden Comm. on Primary Education
1978 – Warnock Comm. On Special Needs
1981 – Black Report
1998 – Acheson Report on Social Inequality
1999 – Moser Comm. On Basic Skills

Perinatal death and health care
Infant feeding
Education and schooling transitions
Secular socioeconomic change – employment, family structure
Equity and geographic variation
Trajectories linking early life and later health
Original Hypotheses (1948)

1. CVD increases with age. It occurs earlier and more frequently in males.
2. Persons with hypertension develop CVD at a greater rate than those who are not hypertensive.
3. Elevated blood cholesterol level is associated with an increased risk of CVD.
4. Tobacco smoking is associated with an increased occurrence of CVD.
5. Habitual use of alcohol is associated with increased incidence of CVD.
6. Increased physical activity is associated with a decrease in the development of CVD.
7. An increase in thyroid function is associated with a decrease in the development of CVD.
8. A high blood hemoglobin are associated with an increased rate of the development of CVD.
9. An increase in body weight predisposes to CVD.
10. There is an increased rate of the development of CVD in people with diabetes mellitus.
11. There is a higher incidence of CVD in people with gout.
The study is focused on arteriosclerotic and hypertensive heart disease because these are the most important of the cardiovascular diseases and the least is known about their epidemiology.

As a working hypothesis it is assumed that these diseases do not each have a single cause (as is the case in most infectious diseases), but that they are the result of multiple causes which work slowly within the individual.
Longitudinal Studies with Roots in Social Science

Terman Lifecycle Study (1922-1986) began by comparing a group of children with high IQ (n=1470) with groups of children typical of the general population, to discover similarities and differences. Research was continued over 60 years.

Wisconsin Longitudinal Study (1957 - ) is a long-term study of a random sample of 10,317 men and women who graduated from Wisconsin high schools in 1957. The WLS provides an opportunity to study the life course, intergenerational transfers and relationships, family functioning, physical and mental health and well-being, and morbidity and mortality from late adolescence through 2008.

Panel Study of Income Dynamics (1968 - ) examines income, behaviour and demographic change of about 18,000 individuals in 4,800 families. Now includes inter-generational component.
New Zealand Longitudinal Studies

**Dunedin (1973 - )**

The Dunedin Multidisciplinary Health and Development Study involves 1037 babies born in Dunedin between April 1972 and March 1973 at the Queen Mary Maternity Hospital. Of those 1037 babies, 1014 of the original cohort are still alive today.

The babies were first followed up at the age of 3, and then at 5, 7, 9, 11, 13, 15, 18, 21, 26 and 32. Future assessments are scheduled for age 38 (2010-2012), 44 and on into the future as study members have their own families, age, and retire.

**Christchurch (1977 - )**

The Christchurch Health and Development Study began in 1977 and followed the health, education and life progress of a group of 1,265 children born in Christchurch. The data gathered over the course of the study now comprises some 50 million characters of information describing the life history of this cohort.

*Both these studies have achieved remarkable levels of follow-up of participants*

The National Longitudinal Survey of Children and Youth (NLSCY) was a long-term study of Canadian children that followed their development and well-being from birth to early adulthood.

The NLSCY began in 1994 with children aged 0-11 (n= ~16,900) and was jointly conducted by Statistics Canada and Human Resources Development Canada (HRDC). Cycle 8 was completed in 2009. Attrition rates are ~ 25-30%.

It is no longer active.

The study addresses a range of research questions about parenting, family relationships, childhood education, non-parental child care and health. The study will further understanding of child and adolescent development, inform social policy debate, and will be used to identify opportunities for early intervention and prevention strategies in policy areas concerning children and families.

LSAC involves data collected from two cohorts every two years. The first cohort of 5000 children was aged 0-1 years in 2003-2004, and the second cohort of 5000 children was aged 4-5 years in 2003-2004. Study informants include the child (when of an appropriate age) and parents (both resident and non-resident), carers and teachers.

Initial response rate 50-55%
National Children’s Study (USA)

The National Children’s Study is a multi-centre cohort that will attempt to recruit in pre-pregnancy and result in 100,000 live births. Planning began in 1999. It will examine the effects of the environment - broadly defined - air, water, diet, sound, family dynamics, community and cultural influences, and genetics on the growth, development, and health of children across the United States, following them from before birth until age 21 years.

Hundreds of scientists and representatives from community groups and professional organizations have contributed to the identification of key children’s environmental health questions for the Study.

The Study Design Working Group constituted in 1999 proposed the development of core hypotheses encompassing exposures and child health outcomes of great public health significance requiring long-term follow-up and which cannot be reasonably studied with fewer children or a different study design.
39 Birth Cohorts
We are very excited to release the first results from Growing Up in New Zealand, the 21st century longitudinal study of New Zealand children and their families. The information collected from families before their children are born clearly paints a picture of a changing New Zealand.

N = 6822 mothers and 4,404 partners
“... Growing Up in New Zealand is designed to give us a more complete picture of the pathways that lead to differential outcomes, and to provide much better evidence for the development of strategies to reduce inequalities and to improve outcomes for all children.”

1. What determines developmental trajectories across multiple levels of influence (political, social, cultural, intergenerational, familial, and individual) through the life course in the major domains of interest?

2. How are New Zealand children faring developmentally across multiple domains at discrete points in the lifecourse?

3. How are these developmental trajectories and outcomes associated with ethnicity across the lifecourse?

4. What factors and trajectories, particularly across multiple levels of influence, confer resilience and optimise development for New Zealand children?
Table 02. All identified ethnicities

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<th>Mother</th>
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<td>n (N=4158)</td>
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<tr>
<td>New Zealand European</td>
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<td>62.2 (61.0 - 63.3)</td>
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<td>Pacific Peoples</td>
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<td>16.9 (16.0 - 17.8)</td>
<td>548</td>
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<td>111</td>
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<td>Other</td>
<td>44</td>
<td>0.6 (0.5 - 0.8)</td>
<td>8</td>
<td>0.2</td>
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</table>
Figure 14. Household NZDep2006 categories
• 1 in 3 of our children is born to at least one parent who did not grow up in New Zealand

• for 1 in 10 children the relationship between their parents will change significantly between the beginning of the pregnancy and their birth

• increasingly our children are being born into varied family structures including mothers living with extended families (nearly 24% overall and more than half of all Pacific families), with non-kin (3% overall but greater than 10% for Asian mothers) or without other adults (3% overall but 7% for Māori mothers).

• our families are highly mobile with over half of all families moving more than twice in the last five years

• many parents in the most deprived areas were not aware of either Paid Parental Leave or Working for Families tax credits.
Designing Multidisciplinary Longitudinal Studies of Human Development: Analyzing Past Research to Inform Methodology
Boaz Shulruf, Susan Morton, Felicity Goodyear-Smith, Claire O’Loughlin and Robyn Dixon
Eval Health Prof 2007 30: 207
DOI: 10.1177/0163278707304030

Figure 1
Initial Response Rate by Year of Inception
Figure 3
Attrition Rates of Longitudinal Studies

Longitudinal Studies – Potential and Challenges
Effects of fully-established Sure Start Local Programmes on
3-year-old children and their families living in England:
a quasi-experimental observational study
Edward Melhuish, Jay Belsky, Alistair M Leyland, Jacqueline Barnes, and the National Evaluation of Sure Start Research Team*  
Lancet (2008)

The Fiscal Effects of Investing in High-Quality Preschool Programs
William T. Dickens and Charles Baschnagel

Early Childhood Interventions: Proven Programs and Promising Practices

The Story of David Olds and the Nurse Home Visiting Program

"... a social policy best buy"

The Economics of Early Childhood Policy
What the Dismal Science Has to Say About Investing in Children
M. Rebecca Kilburn, Lynn A. Karoly
“The record of achievement toward the goals of these public policy initiatives requires continuous replenishing of the evidence base from a new birth cohort as the circumstances of birth and infancy change.”

Longview Report for the ESRC. The scientific case for a new birth cohort (2007)
Figure 2.21: Inequality in early cognitive development of children in the 1970 British Cohort Study, at ages 22 months to 10 years

Age 5

Age 10

Based on Feinstein (2006)
Challenges: Policy and Practice Relevant

• Close relationships with policy/practice partners

• For researchers - framing policy relevant questions

• For policy makers - framing scientifically “answerable” questions

• Efficacy (RCTs) and effectiveness (pragmatic) trials – embedded in cohorts

• Asking questions that can help inform practice
Child and Family Health Service Framework

Self Manage
- Information on parenting skills & child health

Brief Response
- Refining parenting skills & improve child health

Family Home Visiting
- Improving parenting skills & child health

Integrated Services
(co work with other agencies)
- Improving parenting skills & child health
- Decreasing levels of adversity

Case Review (may be multidisciplinary)

Referral out to specialist service/s

CA Health
Young maternal age and poor child development outcomes by age 5: findings on predictive validity from a longitudinal birth cohort

Attrition and Missing Data

• Sample replenishment
• Complete case analysis?
• Multiple imputation

Combined Response Rates to Questionnaires and Clinics

ALSPAC (2011)
## Complex Patterns of Missing Data

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Aspirational Measurement and Measurement Error

- Desire to measure the dynamic complexity
- Measure some things poorly
- Measurement error may be the largest source of effect estimate uncertainty
- Inattention to confounding – poorer causal inference
- Richly phenotyped sub-groups - ALSPAC and asthma
- Biological data including genetics
- New measurement technologies – web, IT – iPhone apps, data linkage
Inter-disciplinarity

“It isn’t easy being inter-disciplinary”

Figure 1 Web of Science citations for multi-, inter- and transdisciplinary research, 1950–2006

Poorer children’s educational attainment: how important are attitudes and behaviour?

Edited by Alissa Goodman and Paul Gregg
**Figure 1.2: Educational outcomes by SEP quintile, across surveys and ages**

Notes: We use our data to divide the population of children into fifths, ranked according to a constructed measure of socio-economic position, which is based on their parents’ income, social class, housing tenure and a self-reported measure of financial difficulties. We then chart the average cognitive test scores of these children from the ages of 3 through to 16.

The dotted lines in the middle segment of Figure 1.2, covering ages 7 to 11, reflect that this sample is derived from ALSPAC data, which is a sample of children from the Avon area, rather than a national sample, and as such are not directly comparable to the other datasets used.
Productivity

Cumulative Annual Publications

Research using ALSPAC data has led to the publication of over 550 peer-reviewed journal publications. For a full list of ALSPAC publications by year please visit:

http://www.bris.ac.uk/alspac/sci-com/pubs/

Productivity – resourcing data collection + data management + use
Methodological Complexity and Causal Inference

• How do we fully exploit the rich data we collect over time?

• Time dependent confounding

• Complex causal structures

• Innovative statistical methods

• Longitudinal studies are not just repeated cross-sections
“Would more sophisticated statistical methods greatly clarify things? Somehow I doubt it; however we should clearly try and evaluate whether they would …

Much of lifecourse epidemiology is focused on trajectories of the lives of individuals, in which stochastic processes that we may never be able to measure or understand play an important role. Epidemiologists may be faced with a similar ‘gloomy prospect’ to the one identified by Eric Turkheimer in the context of the inability of behavioural genetic studies to identify important environmental factors shared between siblings within families.

Lifecourse trajectory-influencing events may often be of chance or idiosyncratic origin, and thus not tractable by current methods.”

LIFE’S A DRAG
Winnie, 100
smokes for
93 YEARS
and she ain’t quitting now

By GARETH DORRIAN
DEFIANT smoker Winnie Langley celebrates reaching 100 yesterday — by lighting her 170,000th cigarette from a candle on her birthday cake.

She started having a puff in incredible 93 years ago aged seven — just after the First World War broke out in June 1914. She has got through five a day ever since.

Winnie has no plans to quit — even after the nationwide ban forcing smokers outside and reckon tobacco has never made her ill.

She gets her 100th birthday cake from the Queen after outliving a husband, Robert, and son, Donald, who died two years ago aged 72.

The former laundrette worker said she started smoking aged eight while at school. The assassination of Archduke Ferdinand in Sarajevo sparked the First World War.

Winnie, of Craydons, Bargoed, said: “I’ve always been steady the nerves” during two World Wars.

And the reason why Winnie has never suffered because of the habit? She said: “I never inhaled.”

STINK’S ON THE HOUSE

A PUB is sprucing up with cigarette-scented spray — after drinkers moaned the smoking ban had ruined the atmosphere.

Laundrylady Sarah Thornton, 73, below, found the spritz offensive. She said: “Fag Ash on the internet. She said at the Gra- ven Arms in Birmingham: “Putters love it. She said: “I never inhaled.”

Nerves

Heaven scent: Sarah with spray
“... an exhaustive causal investigation of any concrete phenomenon in its full reality is not only practically impossible - it is simply nonsense .... The more “general”, i.e., the more abstract the laws, the less they can contribute to the causal imputation of individual phenomena.”

Max Weber, 1904
UK Health Inequalities

Based on Feinstein (2006)

- Population average processes

Figure 2.21: Inequality in early cognitive development of children in the 1970 British Cohort Study, at ages 22 months to 10 years

Marmot Review (2009)
Knowledge Translation
My question is: “Are we making an impact?”
Treating wounds with boiling oil did more harm than good. Ligatures were more effective but 100 years before it was widely accepted.
• **Scurvy**
Known since the early 1600s, Lind showed in 1747 how oranges and lemons eliminated scurvy among sailors but 1864 before British Board of trade used citrus for all its sailors

• **Smoking**
In 1950 Doll showed smoking and lung cancer linked but advertizing not completely banned in UK (2002), US (2003), and Australia (1998)

• **Asbestos**
In 1955 Doll demonstrated relationship between asbestos and lung cancer but asbestos manufacture not banned in Australia until 1987

• **Childhood obesity**
The first data about increases in childhood obesity appeared in the 1960s, certainly by the 1980s but yet little systematic policy response to quell the ‘obesogenic environment’
“lifecourse” or “life course” in the title

Published Items in Each Year

- Publications
  - N=1523

Citations in Each Year

- Citations
  - N=18,217

H Index = 59
MAKING AN IMPACT

A Preferred Framework and Indicators to Measure Returns on Investment in Health Research

Report of the Panel on the Return on Investments in Health Research
January 2009
Research Production
Observational selection bias confounding measurement error

Experimental RCTs – not ethical, not practical, not externally valid, efficacy focus

Pragmatic Trials – effectiveness focus, but who’s question?

The Gap
Translation
Co-creation
Information Systems

Research Consumption
Policy
Implementation in Practice
Research Challenges

• Ask relevant research questions
• Best evidence from high quality observational studies
• Appropriate designs for valid / “good enough” evidence
• Funding – pragmatic trials unlikely to get perfect score on NHMRC criteria
• Reward structures – “of sausages and salami” (Konrad Jamrozik, MJA)
• Managed portfolios of ECD research vs Investigator driven

Policy and Practice Challenges

• “Health in all policies” implications for cross-sector integrated collaborations
• Integrated finance and management of inter-disciplinary teams
• Workforce training and workforce intransigence
• Openness to change
• A real desire to use information to inform practice
Fig. 1. Cartoonist’s depiction of the likely impact of the diet–heart link on farms around New Zealand.

“Life is to be understood backwards, but it is lived forwards”

Søren Kierkegaard 1813-1855