Oxford Course Report

Prevention strategies for non-communicable diseases (NCDs)

22-27 March 2015

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Contents

1 Setting the scene and overview

1.1 Context

The global burden of non-communicable diseases (NCDs) is rising in both developed and developing countries, including New Zealand. The Healthy Families New Zealand initiative aims to tackle the risk factors for NCDs. The Preventive Health and Chronic Diseases (PHCD) group in Regional Public Health (RPH) is reshaping its service delivery to more effectively tackle prevention of NCDs in the community. This course was ideally timed to bring international perspectives from developed and developing countries to bear on how New Zealand tackles NCDs.

1.2 Location

The course was run by the Nuffield Department of Population Health, University of Oxford, England, Department for Continuing Education over six days. Rewley House, Wellington Square, Oxford became the intensive focus of the group's existence for the six days.

Accommodation was at Exeter College, Turl Street, in the centre of Oxford. It is one of the oldest Oxford Colleges (and was where Inspector Morse ran out of the chapel and died in the quadrangle). I had a two roomed en suite apartment and ate at the College Dining Hall, a high ceilinged vaulted room with long refectory style tables and many portraits of previous Rectors looking down on us as we were served breakfast and dinner. Yes, served. Wait staff took your coat as you came in from the cold, served you your choice of meal and met your every need. The Porter was on duty 24/7 also to meet all needs. They even had their own brand of mineral water (still and sparkling) and after dinner mints. The Chapel had a lovely organ and amazing stained glass windows.

1.3 Social events

Oxford is steeped in history and was an amazing place to spend a week. The Literary Festival was on while I was there and I could hardly resist all the books on display. A new wing of the Bodleian Library (the Weston Wing) opened the weekend I arrived and had a great literary display. The library holds a copy at all books published and has stacks scattered around England. Blackwells Bookshop is legendary and has a good coffee shop. The Ashmolean museum has an overwhelming display of antiquities and art.

Welcome drinks were held in the Fellows Quad with the best view of the Radcliffe Observatory in Oxford. We had a walking tour of Oxford Colleges (including Christ Church College – where Harry Potter was filmed) by one of the students. The Course Dinner was held in the dining hall and we all had our certificates for course attendance awarded at that dinner. We then retired to the Junior Common Room for more socializing and a few bevvies. Just like in undergraduate days!

1.4 Participants

There were 24 delegates from 20 different countries selected from 70 applicants and 26 teaching staff sharing their wisdom with us.

1.5 Description

The aim of this short course was to improve the knowledge and skills of participants to strengthen prevention strategies for NCDs. The focus was on both developed and developing countries.

Target audience for the course: researchers, practitioners, policy makers, postgraduate students and other early career level professionals working in the field of NCDs.

1.6 Short course themes

Day	Date	Topic
Introduction	**Sunday 22 March**	Context: global; developed and developing countries
Day 1	**Monday 23 March**	Problem definition: burden of NCDs and risk factors
Day 2	**Tuesday 24 March**	Solution generation: NCD prevention strategies and their development
Day 3	**Wednesday 25 March**	Implementation and capacity building with individuals, communities and systems for NCD prevention
Day 4	**Thursday 26 March**	Evaluation and case studies (evidence)
Day 5	**Friday 27 March**	Policy development and implementation in low and middle income countries

1.7 Learning outcomes

At the end of the course participants are expected to have:

1. Increased their knowledge of the burden of NCDs, their determinants, risk factors and prevention by:
    - Discussing the current and future impact of the burden of NCDs
    - Understanding the social, cultural, political and economic determinants
    - Familiarising themselves with national and global prevention strategies
    - Analysing successful and unsuccessful case studies of programmes with the aim of preventing NCDs
    - Identifying how to strengthen healthcare and other systems to prevent NCDs
2. Developed specific skills in NCD prevention. They will have begun to learn how to:
    - Develop a national level prevention strategy
    - Develop a research proposal related to the prevention of NCDs
    - Evaluate a prevention programme
    - Set up a surveillance and monitoring system
    - Initiate a population level awareness campaign
3. Exchanged knowledge and experience with participants and faculty

1.8 Types of sessions

Lecture and discussion: A presentation from a member of the faculty or an outside speaker followed by a discussion.

Forum: Three or four experts were invited to share their knowledge and /or experience. Each of them will make a short presentation of 10 – 15 minutes. Then there will be an interactive session with comments and questions from the audience.

Group work: Participants were divided in to five groups. Each group was given a case scenario or a topic to discuss. Each group made a 5 minute presentation to share their conclusions with the wider group.

One to one session: Participants met with their personal tutors to finalise the aims, objectives and the format of their individual projects (assignment).

Meetings with individual speakers: The programme provided a unique opportunity for participants to meet speakers individually. Participants signed up daily to meet available speakers during the faculty consultation time period. This allowed for discussion on any ongoing projects, clarifying any issues in their fields of expertise or getting advice, comments and support for new project ideas.

Course Handbook: Not available for distribution. Anyone interested in viewing the Course Handbook can contact Dr Ruth Richards at ruth.richards@huttvalleydhb.org.nz.

1.9 Individual project

For the individual projects participants are asked to present a plan for one of the following:

a. A national level prevention strategy (either a general strategy or one limited to an individual risk factor)
b. A research project related to the prevention of NCDs (i.e. the outline of a research proposal)
c. Evaluating a prevention programme (again this could be general or specific)
d. Setting up a surveillance and monitoring system (for NCDs and/or their risk factors)
e. Initiating a population level awareness campaign (about some aspect of NCDs)

Participants were asked to reflect upon their current work and select a project that would be relevant to their career and/or institution. I selected monitoring and surveillance of the Healthy Families New Zealand Lower Hutt Initiative. My personal tutor was Nick Townsend, an Oxford academic, who had previously visited New Zealand and had lived on Great Barrier Island for several months. He was ideally placed to tutor my project.

Monday to Thursday, 1.30pm to 3.00pm, is a session when participants can meet speakers or personal tutors or work on their individual projects on their own. Online library facilities and internet access will be available.

On Thursday afternoon each participant made a short 10 minute presentation of their plan with no more than five power-point slides covering:

- A title
- The background to the plan
- The aims of the plan
- A brief outline of the plan
- A discussion or conclusion

1.10 Further information on the course contents

This report aims to give a snapshot of what the course included and how it progressed over the week. The important lessons learned are summarised in the next section. Summaries of all of the talks are then presented chronologically organised day by day. Inevitably there are some overlaps in the contents but that is what happens when a number of experts are presenting on their own topic. The slides presented with each talk are available on the RPH website www.rph.org.nz. Use the non-communicable diseases tab on the left hand navigation bar to get to the presentations. Again they are organised by day. For RPH staff the documents are filed here: G:\ServiceG:\ServiceWide\Resource Library\Non Communicable Diseases 2015\Oxford Prevention NCD course. There is a hard copy folder of all the presentations in my office that you are welcome to peruse.

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The best way to get what you are looking for in this report is to read the ***highlights and daily summaries on pp 8-9 of this report*** then look for the talks that cover your interest area. Having said that, reading through the 40 odd pages is not a difficult read and gives a rich context for the non-communicable diseases work. Enjoy!

2 Highlights and Daily Summaries

Highlights

"He is a better physician that keeps diseases off us, than he that cures them being sick on us; prevention is so much better than healing because it saves the labour of being sick." Thomas Adams, 1618.

"… Despite rhetoric and resolutions, chronic NCDs remain the least recognised group of conditions that threaten the future of human health and wellbeing. There is almost a taboo about substantively engaging with this most pressing of health predicaments. So where are the global conferences on NCDs, the research meetings, the task forces, the grand challenges created by funders and foundations? ***They don't exist****."* Richard Horton, Editor Lancet.

- There are lots of data on NCDs but little action. The problem, burden, risk factors and measures have all been identified. Now we need to:
  - Take Action
  - Develop the workforce – build capacity
  - Acknowledge that some things are difficult to measure but do your best
- Data is used differently by different players – ministries, practitioners, researchers, non government organisations and commercial players (pro and anti health)
- Prevention is not the same as promoting health
- Tap Turners (prevention) or Floor Moppers (treatment)? They go hand in hand. Upstream (build bridges) downstream (pull individuals out of the river)
- Economic activity and major corporations impact on health – goal of corporations is profit
- Evaluation is a political activity - results depend on questions asked and who commissions it
- Death in old age is inevitable, death before old age is not. Most of us will die before 100 years.

Day 1: Problem definition, burden of NCDs and Risk Factors

- In 2012, 16 million deaths from communicable diseases and 38 million from NCDs
- BUT communicable diseases get more funding (government and international aid) than NCDs, particularly in Low and Middle Income Countries (LMICs).
- Economic activity impacts on health. Is it healthy trade or trading health (selling mutton flaps)
- Marketing by stealth (school system is where you buy brand loyalty)
- Surveillance and screening are different – surveillance is anonymous, screening informs the individual
- Global Strategy for Prevention and Control of Non Communicable Diseases has three main objectives: surveillance; prevention by reducing risk factors; improved access to essential health care
- World Health Organisation (WHO) aims to reduce NCD mortality by 25% by 2025
- Cancer burden: consider incidence, survival, prevalence and mortality
- Effective NCD prevention needs policies which have a sustainable impact and a pathway for change. Effective policy is hard to develop. it is hard to change people, the environment, systems and political perception of the problem.

Day 2: Solution generation

- Elements of a strategy include consideration of what the aim is, the local context, philosophy, logic & evidence and values

- Determinants of NCDs include *causes* (risk factors - tobacco, alcohol, diet, physical activity), *causes of the causes* (social conditions), and *causes of causes of causes* (economics, trade liberalization, privatization and deregulation and changes in economic growth)
- Have a framework for action
- At a local level, prioritize issues and solutions with the community
- Do research to find out if your solution is working.

Day 3: Implementation and capacity building

- Disease modeling to explain decreasing Coronary Heart Disease (CHD) mortality in UK, USA, NZ, Finland and increasing in China helps address policy options – modeling shows evidence based therapies account for 25-50% impact and risk factor reduction accounts for 50-75% impact
- National Institute for Health and Clinical Excellence Guidelines (NICE) sets out evidence and policy options
- Ten corporations control almost everything we buy: Coca Cola; Unilever; Danone; Mars; Mondelez; Associated British Foods plc; Kellogg's; Nestle; General Mills; Pepsico.
- Industrial corporations prioritize profit, not public health
- The NCD epidemic strikes people of lower social positions disproportionately
- NCDs are becoming a problem in Low and Middle Income Countries (LMIC)
- For communicable diseases the intervention points are direct and linear. For NCDs many are outside, non linear factors
- WHO definition of Health Systems: A health system consists of all organisations, people and actions whose primary aim is to promote, restore or maintain health
- Capacity is the ability of individuals, institutions and societies to perform functions, solve problems and achieve objectives in a sustainable manner – build and develop this for health systems
- For experiments need to engage at community level to determine what to do

Day 4: Evaluation and case studies

- Evaluation is a political activity
- Purpose of evaluation is defined by what the commissioning organization values
- Consider the difference between monitoring, evaluation and research.
- Evaluation is a formal and systematic activity where assessment is linked to original intentions and is fed back into the planning process
- Evaluation is always incomplete, usually complex, consumes resources, needs its own clear aims and should use varied and appropriate measures
- Prevention strategies may focus on individuals, communities and populations.
- WHO has set out nine voluntary targets for NCD reduction
- Failure to prevent NCDs is a political, not technical, failure
- Action is inadequate and leadership is necessary
- The legacy of Archie Cochrane
- The implementation gap – doing gimmicky things not effective things and failing to apply scientific knowledge on human behavior

Day 5: Policy Development in Low and Middle Income Countries

- WHO Global Action Plan 2013 – 2020
- Read all about it in the papers!

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3 Opening day: Sunday 22 March
Context: Developed and developing countries

3.1 Conceptual framework for NCD prevention (1)

Dr Charlie Foster, Deputy Director, British Health Foundation Centre on Population Approaches for NCD Prevention, Nuffield Department of Public Health, Oxford University

NCD Prevention is important globally to reduce the burden of disease. World Health Organisation (WHO) aims to see a 25% reduction in mortality from NCDs by 2025. The problem, burden, risk factors and measures have been identified. Now need to build capacity to act. Organisations presenting on this course include: British Heart Foundation; WHO Collaborating Centre; London School of Hygiene and Tropical Medicine (LSHTM); Nuffield Centre University of Oxford.

http://globalncds.lshtm.ac.uk/

3.2 Conceptual framework for NCD prevention (2)

Prof Mike Rayner, Director British Heart Foundation Centre on Population Approaches for NCD Prevention, Nuffield Department of Public Health, Oxford University

United Nations High Level Political Declaration September 2011 determines the big four NCDs (cancer, cardiovascular disease, respiratory diseases and diabetes) but also includes mental/neurological conditions (including Alzheimer's dementia) and renal, oral and eye diseases.

There are four common risk factors for these diseases: tobacco; alcohol; diet; and physical inactivity.

Prevention is not the same as promotion of health. The 1948 WHO definition of health is: "Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity". It is important to promote health as well as preventing NCDs. Death is inevitable!

3.3 Non communicable diseases and development

Report back from group work

The course participants split into four groups and discussed NCDs in the developed and developing worlds, differences and similarities. Common themes:

- Cyclical nature of societal development
- Development is fundamental to NCD prevention (as well as its cause)
- Framework for sustainable development: social; economic; environmental
- Affluence increases inequality (many types)
- Metric for development: Human Development Index and Inequality
- Who you bring together to work on NCD prevention needs to be country specific

- Development increases access to technology
- Mortality from NCDs higher in Low and Middle Income Countries (LMIC) (developing)
- Millennium development Goals did not include non communicable diseases
- AIDS, TB and Malaria get funding – NCDs don't
- Developed countries both market 'risk factors' to LMIC and dump food etc.
- Education important for both knowledge and the ability to learn (and work)

4 Day 1: Monday 23 March
Problem definition - burden of NCDs and risk factors

4.1 Burden of NCD risk factors

Dr Temo Waqanivalu, Program Officer, Surveillance and Population-based Prevention Unit, Dept of Prevention of Non Communicable Diseases, World Health Organisation, Geneva.

Risk factors

- Behavioural: tobacco; alcohol; diet (including salt intake); and physical activity
- Environmental: Sociocultural; economic / trade; physical
- Non modifiable: age; sex; genes
- Intermediate: blood pressure; blood lipids; blood sugar; obesity

End points: Cardiovascular disease; diabetes; cancer; chronic respiratory diseases.

Aim is to reduce NCD related premature death and disability. Consider quality of life as well as premature death (before 70 years) and disability.

Burden of risk factors

In 2012, 38 million deaths from NCDs, compared to about 16 million from communicable diseases (CDs). But money goes to CDs e.g. HIV AIDS as the linear connection is easily demonstrated.

There are lots of data on NCDs and risk factors but little action:

- Raised blood pressure prevalence globally 22%. Higher in Africa
- Global prevalence of obesity in adult males 11% and females 15%; 6.3% in children – which may co-exist with micronutrient deficiency
- Salt intake in adults average 10g/day
- Tobacco smoking global prevalence in adults 22%
- Global insufficient physical activity: 81% adolescents; 23% adults
- Average alcohol intake 15 years+ is 6.2 litres/person

The story of a physician trying to explain the dilemmas of modern medical practice

"You know," he said "sometimes it feels like this. There I am standing by the shore of a swiftly flowing river and I hear the cry of a drowning man. So I jump into the river, put my arms around him, pull him to the shore and apply artificial respiration and then just as he begins to breathe, another cry for help.

So back into the river again, reaching, pulling, applying, breathing then another yell. Again and again without end, goes the sequence.

You know, I am so busy jumping in, pulling them to shore, applying artificial respiration, that I have no time to see who the hell is upstream pushing them in".
Irving Zola 1970

Causes of the causes / determinants

Development:

- 5,000 years ago 0.1g/day of salt to preserve food
- Development of refrigeration and chemical preservatives – now salt intake is 9-12g/day!!!

Healthy trade or trading health?

- Samoa to end ban on importing fatty poultry scraps and impose importation tax instead – good news for US turkey farmers. Health compromised for the sake of trade and development. US say it's the consumers right to determine what food they wish to consume *(Bloomberg Business Week 2011)*
- *"*We only sell 5% of mutton flaps to the Pacific, most goes to China (*NZ Meat Industry)*

Marketing by stealth

- "The school system is where you buy brand loyalty*" (Coca Cola).* Advertising influences children's food choices, purchase requests and consumption patterns

Cultural values and practices

- Initiation ceremony of manhood uses tobacco in some and food in most
- "You are the salt of the earth"

Guidelines (WHO)

"What suits your busy schedule better, exercising one hour a day or being dead 24 hours a day?"

- Salt: Adults 5g/day. Children less than that; all to use iodised salt
- Sugar:
    - Reduced intake of free sugars throughout the life course
    - Reduce to less than 10% total energy intake
    - Moving towards less than 5% total energy intake

- Physical activity
    - Children and youth 60 minutes aerobic / vigorous exercise
    - Adults: 150 mins moderate PA / week or 75 mins vigorous PA / week; or a combination in at least 10 minute bouts
    - Older adults: same as adults but add in balance and muscle strengthening

Solutions and approaches

Tap turners or floor moppers??

(Population health practitioners or clinical service providers) Take both high risk and population based approaches

Best Buy interventions

- Tobacco: tax increases; smoke free workplaces and public places; health information and warnings; ban on advertising promotion and sponsorship
- Alcohol harm: tax increases; restricted access to retail alcohol; ban on advertising
- Diet and Physical Activity: reduced salt in food; replace trans fats with momo/polyunsaturated fats; public awareness campaigns
- Cardiovascular disease and diabetes: counselling and multidrug therapy for those with diseases; treatment of heart attacks with aspirin
- Cancer: hepatitis B immunisation; cervical screening

Set of 9 voluntary reduction targets by 2025:

- Overall reduce premature mortality by 25% by 20125
- Risk Factors, reduce: harmful use of alcohol 10%; physical inactivity 10%; sodium intake 30%; tobacco use 30%; raised blood pressure 25%; diabetes / obesity no increase
- Health care: counselling & drug therapy 50% coverage; essential NCD medicines and technologies 80% coverage

4.2 Role of modeling in estimating the burden of NCDs and in preparing strategies

Peter Scarborough, Research Lecturer, British Heart Foundation Centre on Population Approaches for NCD Prevention, University of Oxford

This talk covered:

- The burden of NCD by risk factor
- How are the estimates produced?
- What are the limitations associated with the estimated?
- How are the estimates used by different stakeholders to influence policy

Useful website: www.healthmetricsandevaluation.org/sites/default/files/countryprofiles

The data needed to do this include:

- Current burden of disease in the population
- The relationship between the disease and the risk factor (epidemiological data)
- Current prevalence of the risk factor in the population (see examples below)
- Theoretical minimum risk distribution

Physical activity example of some of the measurement issues

- What is meant by physical activity
    - Total physical activity
    - Leisure time physical activity
    - Occupational activity
    - Sedentary behaviour
    - Active travel
    - Fitness?
- How to measure physical activity
    - Self-reported
    - Objective measurement tools (accelerometers, pedometers, GPS tracker)
    - Doubly labelled water

Dietary example of measurement issues

- Weighed food diary
    - Intrusive
    - May alter food intake patterns
- Food frequency questionnaire
    - Difficult to recall average diet
- Food purchases
    - Do not account for waste
- Biomarkers
    - Urinary analyses – expensive and need cooperation

Theoretical minimum risk distributions

- Require set of goals / levels in short medium and longer term

Use in policy making

- WHO Global burden of disease 2010: Useful for setting health agenda
- But ministries, practitioners, researchers and lobbyists pro and anti the food industry agendas will all use the information differently

4.3 Screening and surveillance

Nick Townsend, Researcher, British Heart Foundation cardiovascular disease epidemiology research program.

Surveillance

- Refers to monitoring of a given condition
- Principal aims: quantify prevalence; analyse trends over time
- Data are anonymised
- Does not include feedback of individual results or formal link to treatment

Screening

- Includes intention to treat
- Aim: identify a condition prior to onset
- Allows for: complete prevention; earlier treatment; delayed progression
- Feedback of individual results typically provided

Remember the Wilson and Junger (1968) ten principles of screening**:**

1. The condition been screened for should be an important health problem
2. The natural history of the condition should be well understood
3. There should be a detectable early stage
4. Treatment at an early stage should be of more benefit than at a later stage
5. A suitable test should be devised for the early stage
6. The test should be acceptable
7. Intervals for repeating the test should be determined
8. Adequate health service provision should be made for the extra clinical workload resulting from screening
9. The risks should be less than the benefits
10. The costs should be balanced against the benefits

Screening has side effects and can be harmful

- Maybe treat a lot of tumours not needing intervention
- Review of breast screening in UK
- NHS Screening Inquiry – is extension of screening e.g. for prostate cancer, lung cancer and postnatal depression based on solid evidence
- Review of screening in Canada – no link between screening and improved outcomes
- Men die *with* prostate cancer not necessarily *of* prostate cancer
- Dementia screening – difficult to diagnose, often incorrect diagnosis, takes money away from treatment

Surveillance is seen as an essential function of a public health system. Three essential components of NCD surveillance are: monitoring exposures (risk factors); monitoring outcomes (morbidity and mortality); health system responses. They need to be established and strengthened and integrated into existing national health information systems, especially in Low and Middle Income Countries (LMICs).

Public health surveillance is the continuous, systematic collection, analysis and interpretation of health related data needed for the planning, implementation and evaluation of public health practice. Surveillance data have been critical in establishing health priorities. It can be active (employing staff to seek information about health conditions) or passive (receiving reports based on routinely collected data). Major gaps are between production of data, ability to convert it into usable information and initiation of appropriate public health action.

Surveillance is usually done in developed countries. In developing countries challenged by: economic limitations; weak public health infrastructure; and challenges of poverty and disease. Often designed to meet donors short term needs, may weaken government systems and may not be sustainable after the external (research) funding ends.

WHO STEPS instrument helps to answer some basic epidemiological questions: who, when, where and what. Provide valid, timely information.

4.4 Global cancer burden and cancer survival worldwide: Health policy implication

Dr Michael Coleman Professor of Epidemiology and vital Statistics at London School of Hygiene and Tropical Medicine.

What's it all about?

The War Against Cancer

President Nixon signs the National Cancer Act and declares war on cancer, 23 December 1971

"We are losing the war against cancer'
John Ballar, 1986, 1984

"We are clearly winning the war."
Sir Richard Doll, 1989

Cancer – at war with man?

"Cancerous growths are revolutionary, anarchistic, Bolshevistic, … directing a civil war against the body. Cancer cells are 'a state within the state'.
KH Zinck, Offent Gesundhelt 1942

"We have not slain our enemy, the cancer cell … We have seen our monster more clearly … The cancer cell (is) a distorted version of our normal selves."
H Varmus, Nobel Prize address, Stockholm 1989.

From the war to cancer control

"We've changed the metaphor. It's inaccurate to think of a war on cancer as though cancer were a single, individual enemy, nor is the metaphor of war exactly right. … Cancer is an outgrowth of some fundamental principles of biology, … how different genes can influence the initiation and progression of cancer … "
Harold Varmus, Director, US National Cancer Institute, December 2011

Making progress against cancer

- Discover the causes of cancer
- Implement preventive strategies
- Trends in incidence, survival and mortality
- Future projections
- Set priorities, manage costs
- Evaluate effectiveness of control strategies

Definition of cancer control: To reduce the incidence and mortality of cancer, and to prolong and enhance the quality of life of those affected by cancer, through an integrated and coordinated approach directed to:

- Primary prevention
- Early detection
- Treatment
- Rehabilitation
- Palliation

WHO Global Strategy for Prevention and Control – objectives:

- Surveillance of NCDs
- Prevention by reducing risk factors
- Improved access to essential health care

European Code against Cancer 2014 (11 points)

1. Do not smoke; smoke free homes and work places
2. Take action to (maintain) a healthy body weight
3. Be physically active; limit the time spent sitting
4. Healthy diet (+ vegetables, - sugar, salt, fat and red meat
5. Moderate alcohol consumption
6. Avoid excessive sun exposure, especially children

7. Protect yourself against carcinogenic exposure
8. Take action to reduce high radon levels (in home)
9. Breastfeed your baby; limit use of HRT
10. Vaccinate newborns against HBV (hepatitis B) and HPV (human papillovirus) – girls
11. Take part in screening: bowel, breast and cervix

World Cancer declaration 2013: ambitious goals for 2025

1. Strengthen health systems
2. Establish cancer registries in all countries
3. Better prevention (tobacco, alcohol, obesity, diet…)
4. Universal vaccination for HBV and HPV
5. Dispel myths and misconception
6. Universal screening, early detection, awareness
7. Access to diagnosis, treatment, care, palliation
8. Effective pain control systems, universally available
9. Better training in cancer control, especially Low & Middle Income Countries

Measure of cancer burden - definition

Measure	Definition	Personal	Application
Incidence	New cases (rate/10^5person-years)	What's my risk?	Prevention, planning services
Survival	Probability alive at time 't'	What are my chances?	Effectiveness of health care
Prevalence	Proportion of survivors	How many of us are there?	Care (combines both)
Mortality	Deaths (rate /10^5person-years)	Those we have lost	Priorities (combines both)

Prevention is better than cure

"He is a better physician that keeps diseases off us, than he that cures them being on us; prevention is so much better than healing because it saves the labour of being sick."
Thomas Adams, 1618

4.5 Prevention strategies for NCDs

Dr Corrina Hawker, Research Fellow, Centre for Food Policy, City University, London

The challenge of implementing effective NCD prevention policy: a food policy perspective

What is NCD prevention policy?

- Policies which reduce the risk of people adopting or maintaining behaviours associated with NCD risk, at a population level

What is effective NCD prevention policy?

- Policies which have a sustainable impact on reducing the risk of people adopting or maintaining behaviours associated with NCD risk, at a population level, along with a pathway of change

Example: Food Policy: NOURISHING

Food environment	**N**	Nutrition label standards and regulations on the use of claims and implied claims on foods
	O	Offer healthy foods and set standards in public institutions and other specific settings
	U	Use economic tools to address food affordability and purchase incentives
	R	Restrict food advertising and other forms of commercial promotion
	I	Improve food quality of the whole foods supply
	S	Set incentives and rules to create a healthy retail
Food system	**H**	Harness supply chain and actions across sectors to ensure coherence with health
Behaviour change	**I**	Inform people about food and nutrition through public awareness
	N	Nutrition advice and counselling in health care settings
	G	Give nutrition education and skills

What is the problem?

- There is not enough policy
- Policies that are implemented are often not well designed
    - Because
        - Effective NCD policy is challenging to design and implement
    - Because:
        - it is hard to change:
            - People
            - Environments around people
            - Systems that underpin environments
            - Political perception of the problem

The people policy problem

- People have food preferences which can persist (food choice)
- People are constrained by income and resources (Price)
- Some policies may be ineffective, or work for some but not others

The environments policy problem

- Unhealthy food environments make profits – food industry lobby against policies

The systems policy problem

- The food system, and the policies which influence it, favour the production and consumption of non-healthy diets. See http://www.thelancet.com/series/obesity-2015

The political perception policy problem

- Policies make me unpopular with the public and with the food industry
- Policies don't work
- Policies have too many economic disadvantages
- Policies are too complicated

5 Day 2: Tuesday 24 March Solution generation - NCD prevention strategies and their development

5.1 NCD prevention strategies.

Prof Mike Rayner, Director British Health Foundation Centre on Population Approaches for NCD Prevention, Nuffield Department of Public Health, Oxford University

What is a strategy and what are the elements of a strategy?

Strategy: A plan of action designed to achieve a vision (Wikipedia).
Example: *WHO Global Action Plan for NCDs 2013 – 2020*

Elements of a strategy:

1. Aims
2. Context
3. Philosophy
4. Logic and evidence
5. Values

1. Elements of a strategy: Aims (using WHO Global Action Plan as example)

A world free from the avoidable burden of non-communicable diseases.

Goal: 'To reduce the preventable and avoidable burden of morbidity, mortality and disability due to non-communicable diseases by means of multi sector collaboration and cooperation at national, regional, and global levels, so that the population reaches the highest attainable standard of health and productivity at every age and those diseases are no longer a barrier to wellbeing or socioeconomic development'.

Targets need to be SMART: Specific; measurable; attainable; realistic; time specified.

NCD Global voluntary Targets (9)

Level	Issue	#	Overall
Overall	NCD mortality	1	25% relative reduction in the overall mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases
			Risk factors
Risk factors	Alcohol	2	At least 10% relative reduction in the harmful use of alcohol, as appropriate, within the national context
	Physical activity	3	A 10% relative reduction in prevalence of insufficient physical activity
	Salt	4	A 30% relative reduction in tmean population intake of salt/sodium
	Tobacco	5	A 30% relative reduction in prevalence of current tobacco use in persons aged 15+ years
	Blood pressure	6	A 25% relative reduction in the prevalence of raised blood pressure or contain the prevalence of raised blood pressure, according to national circumstances
	Diabetes and obesity	7	Halt the rise in diabetes and obesity
			Treatment and care
Treatment and care	Preventive pharmacology	8	At least 50% of eligible people receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes
	Treatment	9	An 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major non communicable diseases in both public and private facilities

In addition there are 25 indicators to measure these nine targets (see WHO Global Action Plan for Prevention of Non Communicable Diseases).

2. Elements of a strategy: Context

There are different possible solutions according to the level it is operating at and the people who will be implementing it:

- Levels:
  - Local
  - National
  - Global
- Strategy for whom:
  - Governments
  - Non Government Organisations (NGOs)
  - Commercial companies

3. Elements of a strategy: Philosophy

Population vs high risk approaches to risk factors and their determinants

- Focus on shifting the distribution of risk factors in the population rather than focusing on those at greatest risk
- Focus on distal rather than proximal causes of diseases

Look at causal webs e.g. Foresight Map of Obesity (very complex).

Look at WHO model of the causes of NCDs.

WHO Model of causes of NCDs

Underlying socioeconomic, cultural, political and environmental determinants	**Common modifiable risk factors**	**Intermediate risk factors**	**Main chronic diseases**
Globalisation Urbanisation Population ageing	Unhealthy diet Physical inactivity Tobacco use Alcohol consumption **Non modifiable risk factors** Age Heredity	Raised blood pressure Raised blood glucose Abnormal blood lipids Overweight / obesity	Heart disease Stroke Cancer Chronic respiratory Diseases Diabetes

Classifying population based interventions: using the 4 Ps marketing theory provides.

Four P's of marketing theory

P	**Voluntary public health interventions**	**Public health regulation**
Product	Product reformulation	Compositional standards
***Promotion* (advertising)**	Front of pack labelling Health and nutrition claims	Front of pack labelling Health and nutrition claims
	Advertising to children	Advertising to children
Place **(availability)**	Place based e.g. at end of gondola rides, checkouts	Public meal provision Planning and licensing e.g. fast food outlets
Price	Price based promotions (e.g. buy one get one free)	Agricultural subsidies Health related taxes and subsidies.

4. Elements of a strategy: Logic and evidence

Consider the evidence for the burden of disease (eg in DALYs, in $$$) and the evidence for the effectiveness and cost-effectiveness.

Evidence may be

- Logic
- By analogy (tobacco, alcohol, salt)
- Observational studies of determinants
- Small scale experiments (canteens, virtual supermarkets)
- Evaluations of natural experiments
- Modelling

Consider population based intervention logic and evidence cross tabulated with the 4P's.

Evidence is hard to find. Consider: affordability; impact; technical constraints (e.g. defining breakfast cereal aimed at children); legal constraints (e.g. setting compositional standards); alignment amongst stakeholders; public acceptability; votes.

5. Elements of a strategy: Values

Consider the following when looking at values

- Life course approach
- National action
- Evidence based strategies
- Equity based approaches
- Universal health coverage
- Empowerment of people and communities
- Management of real, perceived or potential conflicts of interest
- International cooperation and solidarity
- Rights based approach

5.2 Social, economic, cultural and environmental determinants of the burden of NCDs

Aaron Reeves, Post Doctoral Research Associate, Dept of Sociology, University of Oxford and Research Fellow at Nuffield College.

Variation

- Life expectancy varies across countries e.g. Afghanistan less than 50 years; Japan more than 80 years
- Infant mortality varies across countries e.g. 77/1000 live births in Nepal; 19 in Sri Lanka
- Life expectancy varies within countries e.g. London Boroughs: 79 years Canning Town, 89 years Canary Wharf
- Social inequities in health are systematic differences in health status between different socio-economic groups. These inequities are socially produced (and therefore modifiable) and unfair

Causes, causes of causes, & causes of causes of causes

- Causes: risk factors (tobacco, alcohol, diet, physical inactivity)
- Causes of causes: 'Social conditions that give rise to high risk of NCD either through unhealthy behaviours or stressful lives' (Marmot)
- Causes of causes of causes:
    - Trade liberalisation
    - Privatisation and deregulation
    - Changes in economic growth
- Frameworks
    - Dahlgren and Whitehead (1991)
    - WHO Commission on Social Determinants of Health Report (CSDH) "Closing the Gap in a Generation"

Building a Framework for tackling Social Determinants of Health (CSDH Diagram)

First component: Socioeconomic and political context

- Governance
- Macroeconomic policy
- Social policies
- Public policies
- Culture and social values

Second Component: Social Hierarchy: social structure / social class

- Class
- Power
- Prestige
- Discrimination
- Socioeconomic position
    - Social class, gender and ethnicity
    - Education
    - Occupation
    - Income
- Pathways and mechanisms
    - Social selection perspective
        - Health determines socioeconomic position
    - Social causation perspective
        - Social position determines health through intermediary factors
    - Life course perspective
        - Recognises the importance of time and timing in understanding the causal links between exposure and outcomes within individual life course

Third Component: Individual factors

- Structural determinants operate through a series of intermediary factors

- Material circumstances- housing, clothing, food etc
- Psychosocial circumstances – job strain, high debt
- Behavioural and biological factors – smoking, diet, alcohol, physical activity
- Social cohesion / social capital – network – material distribution

5.3 Prioritizing interventions

Prof Steven Allender, NHMRC / Health Foundation Career Development Fellow and WHO Collaborating Centre for Obesity Prevention.

Steps common to all priority setting approaches:

- Problem identification and needs analysis
- Identification of potential solutions
- Assessment and prioritization of potential solutions
- Strategy development

Three priority setting approaches described in this talk

- The WHO Stepwise framework for preventing chronic diseases
- The Modified Problem/Solution Tree (mPAST) process
- The ANGELO (Analysis Grid for Elements Linked to Obesity) process

These all need pictures and diagrams to explain them. See the powerpoint presentation.

One example of a priority setting approach is that of systems thinking workshops for the prevention of non-communicable diseases. Working with the community requires that community views are taken into account alongside those of practitioners, professionals and managers before action is taken.

Professor Steven Allender and colleagues at Deakin University in Geelong, Melbourne have developed a system of identifying issues, proposed solutions and prioritized solutions working with professionals and the community. The system involves three workshops. The first and second are with community leaders and professionals (up to 12 people) and the third is with a wider group of community participants (up to 60 people), invited by the initial participants. The first two workshops are 90 minutes each and the third half a day.

5.4 Role of research in NCD prevention: Using formative research to improve an intervention approach around dietary change

Gill Cowburn, Registered Nutritionist, British Heart Foundation Centre on Population Approaches for NCD Prevention.

The FLICC study: Front-of-pack Food Labelling: Impact on Consumer Choice.

What is currently known about food choice:

- Nutrition consumption, particularly related to fat and energy, reflects food purchases measured on both till receipts and electronic sales data
- Supermarket food purchasing decisions are influenced e.g. by packaging, promotion, taste, usual behaviour, pricing and shelf space
- Providing point of purchase health information has been identified as a potentially useful mechanism for helping people chose healthier food purchases
- Point of purchase / choice prompt is "a tool or intervention designed to interrupt and influence habitual behaviour at the time of decision making
- Sweet biscuits, breakfast cereals. ready meals, carbonated soft drinks and yoghurts have Front of Pack (FOP) labelling in UK
- Consumers use nutrition labels variably:
    - Want nutrition information on new products / highly processed products
    - Women more likely to use than men, also those with health problems
    - Greater nutrition knowledge promotes use of labels
    - Greater education results in more label use
    - Label use declines with age
    - Label users are less price sensitive than non-users
    - Labels are found to be confusing
    - Interpretive text, (like high and low) and colour (traffic light) improves accuracy of label use

What we don't know about use of labels

- Self-reported studies give much higher estimate of label use than observational measures
- Transfer of knowledge from experimental setting to real life is not known

Question in the FLICC Study

1. How do people use FOP labelling in real life situations?
2. How do people combine the multiple sources of information into a single assessment of healthiness?
3. Can we use FOP labels as a tool to increase purchasing of healthy food?

Data collection

- Unprompted real life routine shopping situations
- Prompted to use FOP labels in routine shopping situation
- Photographs of some of purchased products
- Post shop questionnaire
- Post shop interview
- Images

Results and next steps

Rich data collected to guide the next steps.

- Keep it simple
- Create a website
- Create an App
- Posters explaining the labels in supermarkets
- Explanation to go on the fridge
- Reminders by the chiller counters
- Comparisons between similar products

FLICC Intervention Map produced.

5.5 Halving premature death

Professor Sir Richard Peto, epidemiologist and statistician, Professor in Nuffield Department of Public Health, University of Oxford

The article below is from the journal 'Science' (12 September 2014 Vol 345 No 6202 page 1272) which covers the material Sir Richard Peto covered in his keynote address to us. He is an amazingly talented and renowned epidemiologist and statistician.

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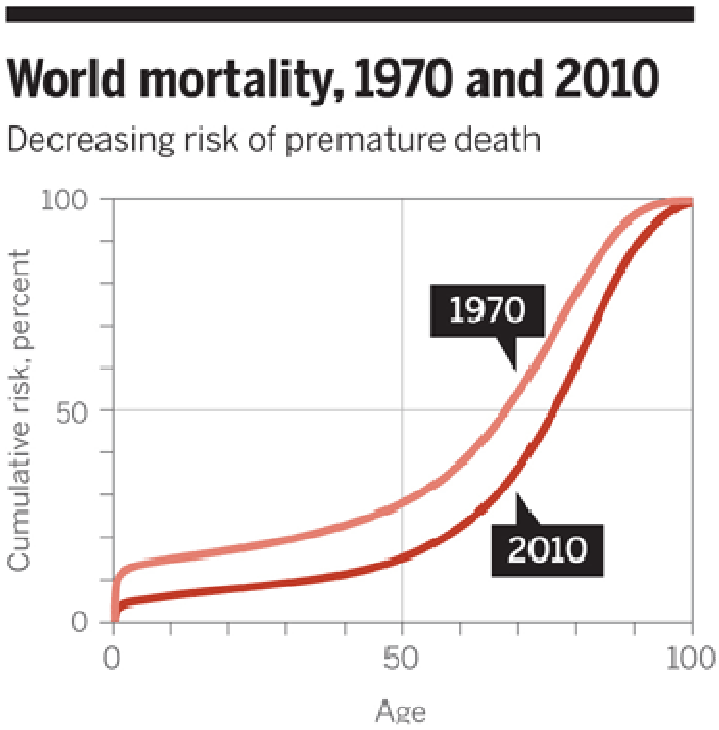
Death in old age is inevitable, but death before old age is not. Except where HIV or political disturbances predominated, mortality rates have been decreasing for decades, helped by sanitation, health care, and social changes. Even in low-income countries, at current death rates, three-quarters of newborn infants would survive to age 50, and half would survive to age 70. If disease control keeps progressing and economic development proceeds, then within the next few decades—except where disasters or new epidemics supervene—under-50 mortality should fall to less than half of today's 15% global risk, and under-70 mortality should be less than one in six.



“For many countries, halving their 2010 under-50 mortality rate by 2030 would be a feasible target…” CREDIT: UNITED NATIONS POPULATION DIVISION LIFE TABLES/HTTP://ESA.UN.ORG/WPP

World under-5 mortality decreased from 14% of all live births in 1970 to 5% in 2010. It could reach 2% by 2030, with continued attention to female education, perinatal care, vaccination, adequate nutrition, curative treatment, and other key child survival determinants. World under-50 mortality halved from 28% in 1970 to 15% in 2010 (5% under-5 plus 10% later), but varies 10-fold between countries, with further inequalities within countries. Its main causes, apart from maternal and perinatal mortality, include communicable diseases, under-nutrition, and fatal injuries (suicide, homicide, and, particularly, accidents). They also include alcohol, a major cause of injuries, and tobacco.

Non-communicable diseases (NCDs), such as cancer, stroke, heart disease, and emphysema, cause a quarter of all deaths before age 50, plus four-fifths of those at ages 50 to 69. The most important external factor is smoking, which still causes about a quarter of all cancer deaths in the European Union and a third of all cancer deaths in the United States, plus comparable numbers of deaths from other diseases. Smoking also causes many deaths in China, India, Russia, and worldwide (totaling about 5 million deaths a year, and rising). Fortunately, quitting works; smokers who stop before age 40 (and preferably well before 40) avoid over 90% of the risk. Each year, governments make US$300 billion directly or indirectly from tobacco, so at constant prices, a one-third reduction would lose governments $100 billion. But if tax increases double the current prices and thereby reduce smoking by one-third, this would save just as many lives and gain governments $100 billion a year.

The World Health Organization's recent resolution on NCDs calls for reducing smoking by a third by 2025, decreasing hazardous alcohol drinking, and halting the increase in obesity. It also supports the wide use of generic drugs such as statins and antihypertensives to prevent NCD recurrence.

If 2010 mortality rates continue unchanged (which they will not, as death rates are already falling), then in 2030 there would be about 20 million deaths before age 50, and 20 million more at ages 50 to 69. For many countries, halving their 2010 under-50 mortality rate by 2030 would be a feasible target; worldwide, it would avoid 10 million of the 20 million deaths projected above for 2030. Adoption of this target would reinforce current successful efforts to reduce maternal and child mortality and death from HIV, tuberculosis, malaria, and other communicable diseases, but would also require serious and successful efforts to substantially reduce accidents and NCD mortality.

Changes in mortality at ages 50 to 69 are dominated by NCD mortality, where some important control measures may take decades to have their full effects. Although reductions of about one-quarter or one-third could well be seen by 2030, halving global mortality in this age range will take longer. But even if the ultimate goal is to substantially reduce under-70 mortality, halving under-50 mortality would be a more immediate target and could be achieved worldwide by 2030 (or in the 2030s). With additional gains in later middle age, some 40% of all premature deaths would be avoided.

Public health and medicine do not offer eternal life, but do offer a more comfortable life and an increasingly good chance of avoiding premature death. Still, however, almost all of us will die before 100.

6 Day 3: Wednesday 25 March Implementation and capacity building with individuals, communities and systems for NCD prevention

6.1 From disease modelling to effective NCD prevention strategies

Prof Simon Capewell, Dept of Public Health, University of Liverpool

Outline of talk

1. Cardiovascular (CVD) trends, risk factors and treatments
2. Modelling to explain CVD trends in high and low income countries
3. Four major risk factors for NCDs and CVD
4. Population wide prevention policies are powerful
5. Politics and vested interests
6. Public health successes, past and future

IMPACT Coronary Heart Disease Model

Aim: to explain

- falls in coronary heart disease (CHD) Mortality in recent decades: UK; USA; NZ; Finland; and

- rises in China

Subsequent aims

- to predict future trends in CVD mortality; and
- compare policy options for reducing CVD

Main components

Risk factors

- Cholesterol
- Smoking
- Blood pressure
- Age & sex
- BMI and diabetes
- Physical activity

Patient groups

- Acute Myocardial Infarction (AMI)
- Angina
- Heart failure
- Secondary prevention

Treatments

- Medical
- Surgical

Outcomes

- Death
- Survival

Explaining the fall in CHD deaths in USA: 1980 – 2000 = 341,745 fewer deaths

- Risk factors worse +17%: increase in obesity (+7%) & diabetes (+10%)
- Risk factors better - 61%: population blood pressure fall (- 20%); smoking (-12%); Cholesterol (diet) (- 24%); Physical Activity (-5%)
- Treatments - 47%: AMI (-10%); Secondary prevention (-11%); Heart failure (-9%); Angina CABG & PTCA (-5%); Hypertension therapies (-7%); statins (primary prevention) (-5%)
- Unexplained – (-9%)

Impact model used in other countries with good effect.

Using IMPACT model to address policy question. Consider what if treatment uptakes increased or what if risk factors reduced further. Big falls in USA, UK and elsewhere.

- 25 – 50% due to "evidence based" therapies
- 50 – 75% due to risk factor reductions
    - Small reductions in risk factors could halve CHD deaths
    - Healthy diet and tobacco control top the list

National Institute for Health and Clinical Excellence (NICE) guidelines set out policy options for Cardiovascular Disease Prevention. Some options are more feasible than others.

Population wide prevention policies are powerful. Two thirds of CHD mortality decreases are due to risk factor reduction.

Upstream and Downstream prevention

- Downstream = save the individual
- Upstream = build a bridge

From disease modelling to effective NCD Prevention Strategies:

Effectiveness increases from downstream to upstream. Prevention can work fast.

Politics and vested interests

- Opposition from powerful vested interests
    - Inevitable
    - Surmountable?
- These 10 corporations control almost everything we buy
    - Nestle
    - Coca Cola
    - Unilever
    - Danone
    - Mars
    - Mondelez
    - Associated British foods plc
    - Kellogg's
    - General Mills
    - Pepsico
- Industrial corporations prioritize profit, not public health

6.2 Disadvantaged groups: Key stakeholders in effective responses to NCDs

Dr Emma Plugge, Senior Clinical Research Fellow, Centre for Tropical Medicine and Global Health, University of Oxford.

The importance of tackling NCDs in disadvantaged populations

- Who are disadvantaged groups
    - Multiple
- The burden of disease and risk factors
    - NCD epidemic strikes disproportionately among people of lower social positions
        - E.g. prisoners in UK: physical inactivity
        - E.g. the poor in Peru
    - Problem of junk food, physical inactivity, obesity
- Silent or silenced stakeholders

6.3 Multi-sectoral approach and health policy change in combating NCDs in low and middle income countries (LMICs)

Dr Prasad Katulanda Senior Lecturer, Department of Clinical Medicine, University of Colombo

Aims of the presentation

- To illustrate changing demographics and epidemiology especially in LMICs
- To illustrate the need for a multi-sectoral approach in NCDs
- To discuss functions of health systems and definitions
- Show the Sri Lankan health system as a model that is changing to face the NCD epidemic

Context

- NCDs are becoming a problem in LMICs
- In 2008 80% of all deaths from NCDs occurred in LMICs
- For communicable diseases the intervention points are direct and linear
- For NCDs there are many outside, non-linear factors

What do health systems do?

- Treat illness (curative)
- Prevent illness (preventive)
- Promote health (health promotion)
- Rehabilitate and help the disabled (rehabilitation)
- Monitor illness (surveillance)
- Monitor treatment and evaluation (evaluation)

- Find effective (efficacy and cost effectiveness) and practical solutions (research)

WHO definition: 'A health system consists of all organisations, people and actions whose primary intent is to promote, restore or maintain health.'

Sri Lankan Government policy objective for NCDs: To reduce premature mortality due to chronic NCDs by 2% annually over the next ten years through the expansion of evidence based curative services, and empower the individual and community to reduce risk factors by using health promotion measures.

Much of this work is done through primary care initiatives, community outreach clinics and community awareness programs in settings such as workplaces.

Challenges: manpower; lack of infrastructure; lack of tools; resistance for change; funding and resources.

6.4 Capacity building for NCD prevention

Dr Harry Rutter, Senior Strategic Advisor to Public Health England, Senior Clinical Research Fellow London School of Hygiene and tropical Medicine, Senior Clinical Lecturer at University of Oxford.

Capacity: the ability of individuals, institutions and societies to perform functions, solve problems and achieve objectives in a sustainable manner; OR the ability of people, organisations and society as a whole to manage their affairs successfully.

Organisational capacity: the capability of an organisation to achieve effectively what it sets out to do.

Capacity building: the initial stages of creating capacities from scratch.

Capacity development: obtaining, strengthening and maintaining capacity over time.

Three levels:

- enabling environment (social systems, laws, policies, power relations)
- organisation/institutional structure, policies and procedures
- individual skills experience and knowledge

Four core issues:

- Institutional arrangements: policies, processes, structures
- Leadership: influence, inspire, adapt
- Knowledge: institutional as well as individual
- Accountability: monitor, learn, self-regulate, adjust

Conclusions

- Capacity sits within individuals, institutions and society
- Capacity is contingent upon institutional arrangements, leadership, knowledge and accountability
- Five steps to capacity building: engage; assess; formulate; implement; evaluate
- Capacity building is an important component of the response to complex NCD problems such as obesity

6.5 Knowledge into practice: Conducting public health research on NCDs in Africa

Professor Shabbar Jaffar, Professor of Epidemiology at London School of Hygiene and Tropical Medicine.

HIV

- Malawi: poor; landlocked; 17 million people; 2 doctors per 100,000; HIV prevalence 5 – 10%; successful delivery of programmes with limited resources
- Monthly earnings spent on single clinic visit: 13% men; 20% women
- In some HIV programmes, physicians will see 3-4 patients simultaneously
- HIV programmes are relatively well funded. NCD programmes are not

NCDs in Africa

- Rapidly rising
- Associated with poverty
- Affecting a younger population
- Prevalence rising much faster than was the case in high income countries
- But very little reliable data

Why study Malawi

- Very resource constrained, but competent cooperative public health system
- Good exchange between researchers and policy makers
- Interventions in individuals would complement other structural government efforts in tackling NCDs

Malawi STEPS study

Observational studies:

- Provides baseline
- Defines risk factor
- Measurement difficult

    - Populations mobile
    - Lack of standardised tools / indicators

Interventions

- Unclear how to intervene
- Priority must include linkage into and retention in care

Questions for new research programmes

- What's the prevalence of hypertension, diabetes and other NCDs?
- How do prevalence figures vary between rural and urban?
- What does it mean clinically?
- What's driving the NCD epidemic?
- What's the linkage to, and retention, in care?

MEIRU Malawi study

Outline: door-to-door study of hypertension, diabetes, cholesterol and chronic kidney disease, and their possible risk factors. Adults >18years enrolled consecutively.

Rural (Karonga n=17,000) used established site where births and deaths surveillance had been done for 10 years. That means it is well established.

Urban (Lilongwe n=23,000) required new site. Factors in developing the new site included:

- Develop partnership with health services
- Develop partnerships with community leaders and members
- Set up research offices and laboratories
- Map the area including all the houses and residents
- Interview, bleed and return results to the people

Findings

- Hypertension and diabetes rates half those published 5 years earlier
- Obesity two times higher in urban than rural
- Hypertension and Diabetes similar in urban and rural settings
- Salt intake is high
- Risks occur at home – little exposure to processed food or eating out

Challenges

- In urban areas, achieving coverage of >50% is challenging
- People sampled in working hours differed from those sampled after repeated visits or outside working hours

- Refusal rates are higher in urban than rural areas
- 10% rural vs 30% missed after 3 visits
- What are the clinical implications
- Who progresses in disease stage and what are the determinants of this
- Diagnostics / algorithms

Interventions

- Substitute or use less salt - ?sustainability of substitution (cost, availability)
- Prevention of NCDs must go hand in hand with effective treatment services
- Effective treatment services essential for prevention of complications for hypertension and diabetes

Service issues and other challenges

- Severe shortage of clinical staff – at crisis level
- Concept of chronic care is new to both health services and patients
- Clinical expertise in hypertension, diabetes management is limited
- Patient knowledge of NCDs also generally low
- Drug supply is a problem – NCD drugs are not part of the essential drug list in some countries
- Retention in care - <50% of those screened with hypertension or diabetes in the community came to clinic
- Need community based NCD services
- Need integration of chronic care services
- Research must drive policy
- Need training in NCD management

7 Day 4: Thursday 26 March Evaluation and case studies

7.1 Programme evaluation

Dr Charlie Foster, Deputy Director of the British Heart Centre on Population approaches to NCD prevention.

Purpose of evaluation: will be defined by what you and your organisation *value* about your scheme. What you *value* will define:

- What defines success
- What is seen as a strength or a weakness of scheme
- How these are “measured”
- Who does the “measuring”
- Who pays for the evaluation

- Who analyses the information
- How the results are shared

Danger: This is a political activity!

Why evaluate?

- To know whether the aims and objectives of the programme have been achieved
- To find out what went well and what could be improved
- To inform the development of the programme from the results
- To feed back to stakeholders, funders and supporters

Monitoring vs evaluation vs research

- Monitoring: the process of appraising and assessing work activities through performance monitoring
- Evaluation: a formal and systematic activity where assessment is linked to original intentions and is fed back into the planning process
- Research: a formal and systematic activity where the intervention, method and context of the activity are constructed by the researchers

Who is the evaluation for: funders; staff; participants; other projects (inform)

Focus on your project

- What is your project trying to achieve?
- With whom?
- By when?
- Why?
- In what way?
- What assumptions have been made?
- What are the mechanisms for action?
- What can you evaluate?

Stages of evaluation

- Developmental component and setting aims
- Formative evaluation
- Process evaluation
- Impact and outcome evaluation

What resources are available: people; time; money; evaluation tools?

Your evaluation plan

- Aim of the project and how it works
- Evaluation question
- Method – how you will collect information
- Analysis – how you will assess the information
- What you will do with the results (who, what to say, what next)
- Budget: include planning; data collection; data entry or transcription; data analysis; report writing; miscellaneous (training those involved, management time etc)

Remember

- Evaluation is always incomplete – it's impossible to assess every element of an intervention
- It's usually complex
- It consumes resources
- It needs its own clear aims
- It should use varied and appropriate measures

7.2 Development of a systems level intervention for CVD risk reduction in low and middle income countries (LMIC)

Professor Denis Xavier, Head of Pharmacology St Johns Medical College, Bangalore, India

Detailed research project – see powerpoints.

7.3 NCD prevention strategies.

Simon Gillespie, CEO British Health Foundation

Covers the experience of NCD prevention in: British Heart Foundation; World Heart Federation; and Slovenia Heart Association (Europe).

British Heart Foundation

- Scale of the challenge in UK:
    - 62% adults (18+) are overweight / obese (25% obese)
    - 30% of children are overweight / obese (16% obese)
    - Overweight or obese health related issues are estimated to cost the NHS more than 5 Billion pounds sterling every year
- By 2020 the BHF wants to:
    - Empower people to make healthy choices around physical inactivity, smoking, high blood pressure, elevated cholesterol and obesity that reduce their risk of cardiovascular disease
    - Reduce the number of people who smoke, or live with undiagnosed high blood pressure or elevated cholesterol
    - Focus work on people and communities at highest risk of cardiovascular disease

    - Support those tackling the wider environmental factors that affect cardiovascular health
- Our prevention activity:
    - Eat and drink more healthily
    - Be more active
    - Stop smoking

Approach: People Centred:

- Who is at greatest risk?
- What can we do about it?
- How can we support them?

Prevention: Individuals – resources

- www.cbhf.net
- www.yheart.net
- Plus information booklets, CDs and packs.

Prevention: community

- Healthy heart kits
- Pass it on training
    - E.g. Pickles, Pakorqas and Portions – the BHF South Asian Cooking Project
    - Hearty Lives Newham – school gardens

Prevention: population

- 0 – 5 years physical activity packs
- Hearty lives programmes
- Healthy hearts in the classroom
- Campaigns – No Smoking Day – "If at first you don't succeed, give up again"
- Health at work
- Health checks
- Health information books

Secondary prevention

- Heart support groups

World Heart Federation

- Vision: to work with its members and the larger cardiovascular health community to hasten the day when cardiovascular health is no longer a privilege but a right, and when CVD is

transformed from a life threatening disease to one that can be prevented and managed in all populations

- Role: to serve as the global facilitator, convener, trusted advisor and representative of CVD stakeholders, driving the global CV health agenda by converting policy into action, through its members and a broader network of partners, including World Health Organization (WHO), the NCD community, governments, the private sector and all those affected by CVD
- Focus: Low and Middle Income Countries (LMIC)
- Aligned to the WHOs target of reducing premature CVD mortality by 25% by 2025

7.4 Prevention of chronic diseases in rapidly developing countries

Professor Brian Oldenburg, Director, Centre for Health Equity, School of Population and Global Health, University of Melbourne, Australia.

How to decide which evidence gaps to close? It depends on who you ask. Researchers, policy makers practitioners and citizens look at the world through different eyes. All need to be part of the same conversation.

Public health benefit is not just determined by evidence of efficacy / effectiveness, but also by:

- Reaching large number of people for most benefit
- Being widely adopted by different settings
- Being consistently implemented by staff members with moderate levels of training and expertise
- Producing replicable and long-lasting effects (and minimal negative impacts) at reasonable cost

Glasgow's REAIM framework

How to achieve this for prevention in rapidly developing countries? Research and evidence development:

- The need is great
- Resources and capacity are always constrained and has to compete with health services
- Requires extensive collaboration in a global world

Lancet (NCD series, 4 Feb 2013)

"… Despite rhetoric and resolutions, chronic NCDs remain the least recognised group of conditions that threaten the future of human health and wellbeing. There is almost a taboo about substantively engaging with this most pressing of health predicaments. So where are the global conferences on NCDs, the research meetings, the task forces, the grand challenges created by funders and foundations? ***They don't exist****."* Richard Horton, Editor Lancet.

WHO has set nine voluntary global targets for reducing NCDs, but it is hard to see how these will be achieved in LMICs.

We need to apply what we know and transfer what we know between cultures, settings and populations, recognising that "One size / approach does not fit all". Need to adapt, refine, exchange and build local sustainability capacity.

Project in North Karelia, India, described, run by National Public Health Institute in Finland. Objective is to evaluate the effectiveness of a community based peer led lifestyle intervention programme in reducing type 2 diabetes mellitus incidence related outcomes at 24 months. Secondary objectives are: to evaluate cost effectiveness in reducing incidence of T2DM; determine reach, dose delivered, dose received and fidelity of the intervention; and to evaluate the potential for future scalability in other resource constrained settings.

https://www.youtube.com/watch?v=E82w4sUuxIM

Summary

- Failure to prevent NCDs is a political, not a technical, failure
- Action is inadequate – nationally and by development agencies and foundations in most countries
- Leadership is very important

7.5 Evaluation and evidence: The legacy of Archie Cochrane

Professor Mike Kelly, Department of Public Health and Primary Care, University of Cambridge

http://www.nuffieldtrust.org.uk/sites/files/nuffield/publication/Effectiveness_and_Efficiency.pdf

Questions to be answered

- Do we know whether intervention x for public health problem y is effective?
- How do we know it is effective?
- How do we know whether it is more or less effective than intervention z?
- On what basis do we make that judgment of effectiveness?
- Do we know what it costs? And is it cost effective?
- If it is not cost effective, why is it still being used?
- What are the dangers posed to the public of interventions and actions about which we are scientifically uncertain?
- Are the interventions dangerous? Why are we using potentially dangerous or worthless interventions?

Some popular ideas but where the evidence is far from convincing:

- Peer support approaches
- Social marketing
- Stages of change models of behaviour change

- Financial incentives
- Nudge theory

The implementation gap

- There is an extensive evidence base about what works and about what is cost effective in preventing NCDs
- The failure over the last two decades has been not to implement that which is known to be effective in favour of doing gimmicks, bright ideas, common sense, rolling out pilots, vision statements etc, etc – not applying the evidence
- There has also been a failure to apply scientific knowledge about human behaviour to the problem of prevention
- This in turn arises out of the conceptualising human behaviour as a risk

"The nation, which is but the aggregate of us all is … little disposed to endure a medical tyrant … Mr Chadwick and Dr Southwood Smith have been deposed, ***and we prefer to take our chance of cholera and the rest than be bullied into health.*** The Times, 1 August 1854 p8.

Some evidence to policy successes

- The breathalyser and drink driving legislation
- Seat belt legislation
- The smoking ban
- The responses to HIV AIDS

Problems with the evidence

- The research doesn't exist
- The research doesn't say what you thought it said
- The research doesn't answer the question
- The research muddles the individual and social
- The research is of poor / dreadful quality methodologically
- There isn't qualitative or grey literature to fill the gaps
- The findings are utterly equivocal

Causation

The pathogenic and predictive model of disease causation which emerged in the nineteenth century has dominated thinking about the ways interventions *should* work against non-communicable diseases and the epidemics of obesity, diabetes, cardiovascular disease and chronic kidney disease.

Causal models of disease and how interventions should work have become confused. Using the aetiological path disease D occurs because of X, Y, Z preceding factors is *because* type of explanation. But causal models of *interventions* are probabilistic. I take action A at time T1 in the

hope of having outcome B at time T2. This involves making a prediction about the outcome of my action A. The prediction is much less secure than my prediction about the exposure to factors – germs, viruses (X,Y,Z) - and their role in causation of disease.

The error is assuming knowledge of the outcome of Action A is analogous to knowledge of outcome of preceding factors XYZ in the cause of disease. Prediction of the outcomes of Action A includes prediction of human and organisational behaviour. Human behaviour is not very amenable to simple prediction.

The apparent certainties of germ theory have long since given way to webs of causation and/or the actions of the wider determinants of health. But in public health *interventions* the simple predictive model of disease aetiology remains influential. Applied to non-communicable diseases the pathogenic model is almost completely unhelpful.

An example: Smoking is harmful. Toxins are in the tobacco smoke. So protection from exposure to smoke will be effective. But exposure occurs because of behaviour. Behaviour is conceptualised as a risk. Risks are conceptualised as pathogens. Behaviour is unpredictable.

Common errors include:

- It's common sense
- It's about getting the message across
- Knowledge and information drive behaviour
- People act rationally
- People act irrationally
- It is possible to predict accurately

Evidence

There is an evidence base

http://www.nice.org.uk/guidance/published?type=ph

Seek evidence and base evaluations on mechanisms not on risks and predictions based on poorly conceived causal prediction.

7.6 Presentations of assignments. Monitoring and surveillance of Healthy Families New Zealand – Lower Hutt.

Dr Ruth Richards

Slide 1: Title slide

- Healthy Families NZ – Lower Hutt. Monitoring and Surveillance

- Presentation to Preventive Strategies for Non Communicable Diseases Course, Oxford 26 March 2015

Slide 2: Our Community. Deprivation map and photos from two community events.

Slide 3: Aims of the assignment

- To frame up a local system to monitor the implementation, impact and outcomes
- To make data available to inform the national level evaluation
- To inform the community of changes occurring as a result of their efforts through the HFNZ initiative and to support on-going efforts

Slide 4: The Plan so far

- Outline currently available data
- Decide which part of the system is to be monitored – implementation, impact outcome or a combination
- Identify new data required locally and capacity for collection and analysis
- How to set up data collection systems locally – who, what, where
- How it will be used in the community

Slide 5: Questions?

Further information from ruth.richards@huttvalleydhb.org.nz

8 Day 5: Friday 27 March
Policy development and implementation in low and middle income countries

8.1 Global policy context and the impact of the high level United Nations summit

Bente Mikkelsen, Head, Global Coordinating Mechanism on the Prevention and Control of Non Communicable Diseases, World Health Organisation.

United Nations General Assembly

"We, Heads of State and Government, assembled at the United Nations on 19 and 20 September 2011, acknowledge that the global burden and threat of non-communicable diseases constitutes one of the major challenges for development in the 21st century. (Paragraph 1 – Resolution A/RES/66/2).

In 2011, globally, 13.8million deaths occurred from non-communicable diseases in people of working age (30 – 69 age group). 85% of these deaths occur in developing countries.

The Director General of WHO, commenting on the Report on Prevention and Control of Non Communicable Diseases:

"The report underscores the fact that as progress has been insufficient and hhighly uneven, continued efforts are essential for achieving a world free of the avoidable burden of non-communicable diseases. The international community is encouraged to provide support for national efforts to implement a list of priority actions identified for Member States if progress is to be widespread and sustainable."

The WHO Global Action Plan for the Prevention and Control of Non Communicable Diseases 2013 – 2020 has a vision of "A world free of the avoidable burden of non communicable diseases" and operates on the following principles:

- Life-course approach
- Empowering of people and communities
- Evidence based strategies
- Universal health coverage
- Management of real, perceived or potential conflicts of interest
- Human rights approach
- Equity-based approach
- National action and international cooperation and solidarity
- Multisectoral action.

There are nine voluntary global targets and twenty-five indicators for these targets:

- A 25% relative reduction in risk of premature mortality from cardiovascular disease, cancer, diabetes or chronic respiratory diseases
- At least a 10% relative reduction in the harmful use of alcohol, as appropriate, within a national context
- A 10% relative reduction in prevalence of insufficient physical activity
- A 30% relative reduction in mean population intake of salt/sodium
- A 30% relative reduction in prevalence of current tobacco use in persons aged 15+ Years
- A 25% relative reduction in the prevalence of raised blood pressure or contain the prevalence of raised blood pressure, according to national circumstances
- Halt the rise in diabetes and obesity
- At least 50% of eligible people receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes
- An 80% availability of the affordable basic technologies and essential medicines, required to treat major noncommunicable diseases in both public and private facilities.

It also includes a set of very effective and affordable interventions for all Member States ("best-buys") e.g. for alcohol:

- Regulate commercial and public availability of alcohol
- Restrict or ban alcohol advertising and promotions
- Use pricing policies such as excise tax increases on alcoholic beverages

Facilitate and enhance coordination of activities, multi-stakeholder engagement and action across sectors at the local, national and regional levels, in order to contribute to the implementation of the WHO Global NCD Action Plan 2013 – 2020.

http://www.who/int/global-coordinatioon-mechanism/en/

Key messages on Non Communicable Diseases from WHO

1. In all countries – including developing countries – and by any metric, NCDs now account for a large enough share of premature deaths and poverty to merit a (government-led) public policy response
2. A global vision, a road map of commitments from world leaders, and a set of very cost-effective and affordable solutions for all countries now exist to prevent 14 million people from dying prematurely each year from NCDs
3. At WHO, we witness how programme managers in developing countries are increasingly challenged to build effective national solutions to address NCDs. WHO and the UN Task Force are doing their best in meeting these requests for technical assistance, but other international partners need to step their international efforts to help meet this rapidly increasing demand
4. All governments have committed themselves to a 25% reduction in premature mortality from NCDs in 2025 and are in the process of committing themselves to a 30% reduction in premature mortality from NCDs by 2030

8.2 Linking development and NCD prevention

Dr Kremlin Wickramasinghe, Researcher, British Heart Foundation Centre on Population Approaches for NCD prevention, Nuffield Department of Population Health, University of Oxford.

Description of research in developing country. See presentation for details.

8.3 Implementation: Learning more about public health approaches to NCDs in China

Dr Xuefeng Zhong, Director, Institute of Hewalth Education, Anhui CDC, China.

Case study in developing country. See presentation for details

8.4 Advocacy for NCD prevention.

Katie Ddain, Modi Mwatsama, Celine Gorre. Global Alliance for Chronic Disease

Two papers on advocacy in developing country. See presentations for details.

Appendix 1: List of acronyms and their meaning

Acronym	Meaning
NCD	Non Communicable Disease
LMIC	Low and Middle Income Countries
CHD	Coronary Heart Disease
CVD	Cardiovascular Disease
WHO	World Health Organisation
UN	United Nations
RPH	Regional Public Health (Wellington)
PHCD	Preventive Health and Chronic Diseases
AMI	Acute Myocardial Infarction
CABG	Coronary Artery Bypass Graft
PTCA	Percutaneous Transluminal Coronary Angioplasty
HIV	Human Immunodeficiency Virus
FLICC	Front of pack Food Labelling Impact on Consumer Choice
<FOP	Front Of Pack

Useful documents and websites

1. United Nations High Level Political Declaration on Prevention of Non Communicable Diseases, September 2011
2. World Health Organization Global Action Plan on Non Communicable Diseases 2013- 2020
3. World Health Organisation Global Burden of Disease 2010
4. http://globalncds.lshtm.ac.uk/
5. www.healthmetricsandevaluation.org/sites/default/files/countryprofiles
6. European Code against Cancer 2014
7. World Cancer declaration 2013
8. www.cbhf.net
9. www.yheart.net
10. http://www.nuffieldtrust.org.uk/sites/files/nuffield/publication/Effectiveness_and_Efficiency.pdf (Archie Cochrane book)
11. NCD Lancet series http://www.thelancet.com/series/obesity-2015
12. http://www.nice.org.uk/guidance/published?type=ph (NICE Guidelines evidence)
13. http://www.who/int/global-coordinatioon-mechanism/en/
14. http://rph.org.nz (slides of all presentations and pdfs of major documents)