

**Imperial College**  
London

**BSc GLOBAL HEALTH**

**YEAR 4**

**2011–2012**

**HANDBOOK–MODULE 2**

**PLEASE NOTE: THIS IS A DOCUMENT IN PROGRESS AND ANY UPDATES WILL BE ADDED WHEN THEY COME IN**

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## OVERVIEW

### THE BURDEN OF CHRONIC DISEASES

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#### Contents

Global burden of non-infectious diseases, including methods for describing and comparing; descriptive epidemiology by geographic area, ethnicity; health of indigenous populations; rates in migrants; trends; the epidemics of obesity and diabetes; nutritional epidemiology and the metabolic syndrome; malnutrition and child health; cardiovascular disease epidemiology; tobacco-related diseases and tobacco control; the role of environmental exposures in developed and developing countries; global maternal health; conflict and global mental health; migrant health and care of the victims of torture; climate change and its effects on health; adaptation to climate change; the interplay between genes and the environment; preventive strategies and policies; trade and health.

#### Learning outcomes

By the end of the module, you should be able to:

- Discuss key issues in public health on a global scale, concerning non-infectious diseases
- Describe and interpret key study design and epidemiological methodologies in relation to non-infectious diseases
- Be able to conduct systematic reviews on chronic diseases

- Appreciate the need for a multidisciplinary approach, spanning biology, socio-cultural approaches, economics and politics, for understanding and researching global health, particularly for non-infectious diseases
- Understand and appreciate the role of novel genetic and molecular methodologies in research
- Discuss the main causes of ill health in the developing world

### General structure of the module

Most topics will be treated according to the following scheme:

- Introductory lecture
- Reading of one paper and discussion in a seminar
- Methodological practical session on study design and statistical approach

Core course content is introduced in lectures. Slides will be available on the Imperial College Intranet, but they only outline the lecture topic and must be supplemented by notes taken in class. It is your responsibility to print off lecture slides if required. No handouts will be supplied in lectures. Lecture attendance is vital if you are to gain the skills and insights necessary for completion of assignments. Please note that you may be tested on lecture material if called to an end of year viva.

- Key articles from journals and books will be discussed in **seminars**, which involve some group work.
  - Your active preparation for and participation in seminars and practicals is crucial! Seminar readings expand on the lecture topics and provide additional information and understanding that is needed for the two assessments of this module and for the mini-project.
  - Reading material for seminars will be distributed at intervals in class. If you do not turn up to class then you will have to download all the readings yourself from the Imperial College Intranet.
  - You are encouraged to express your personal opinions on the readings, so please arrive in class with notes, and ready to talk.
- Lectures and seminars are followed by discussions and **practicals** in which you will allow you to explore issues in more depth, find and assess evidence, and practice data handling and analysis, with emphasis on methodology (study design and statistics).

### In course assessments

There will be two in course assessments within module 2 as outlined below.

### Short essay on country health profile

Students should individually submit on-line an independent written essay on the country profile of their choice. Country profiles refer to the main health indicators for a country, or a more specific topic such as recent changes in disease rates, or peculiarities in disease occurrence (e.g. obesity in Tonga). Essays should be no more than 2500 words; penalties will be applied for longer texts. References count 5% of the total mark.

### **Data interpretation exercise**

Each student will receive a simple set of data and (s)he will be required to describe and interpret them in a written form (5%).

### **Student-led seminars**

One or two student-led seminars per week are scheduled for module 2. These are to be led by students and may be moderated by a member of the course team. Papers for seminars are as below. Allocated groups will be expected to present one paper between them (presentations will last approximately 20 minutes with 10 minutes for discussion) and probably best presented on power point. To maximize educational benefit, all participants should read the suggested papers in advance. The presentations will not be assessed but these will provide students with the opportunity to develop their skills in critical appraisal that will be part of in-course assessment 2.

### **Essential Readings by week**

#### **Week 1**

Farhad Islami et al, Oesophageal cancer in Golestan Province, a high-incidence area in northern Iran – A review. *EUROPEAN JOURNAL OF CANCER* 45 (2009) 3156 –3165

Joffe M, Mindell J. Complex causal process diagrams for analyzing the health impacts of policy interventions. *Am J Public Health* 2006; **96**: 473-79.

Carvalho JJ, Baruzzi RG, Howard PF, Poulter N, Alpers MP, Franco LJ, Marcopito LF, Spooner VJ, Dyer AR, Elliott P, et al. Blood pressure in four remote populations in the INTERSALT Study. *Hypertension*. 1989;14(3):238-246

#### **Week 2**

Jia H, Lubetkin EI. Obesity-related quality-adjusted life years lost in the U.S. from 1993 to 2008. *Am J Prev Med*. 2010 Sep;39(3):220-7.

Esmailzadeh A and Azadbakht L (2008). Major Dietary Patterns in Relation to General Obesity and Central Adiposity among Iranian Women. *J. Nutr.* 138:358-363.

### Week 3

Vineis P. Individual susceptibility to carcinogens. *Oncogene.* 2004 Aug 23;23(38):6477-83.

Heijmans BT, Tobi EW, Stein AD, Putter H, Blauw GJ, Susser ES, Slagboom PE, Lumey LH. Persistent epigenetic differences associated with prenatal exposure to famine in humans. *Proc Natl Acad Sci U S A.* 2008 Nov 4;105(44):17046-9.

Daar, A., et al., *Grand challenges in chronic non-communicable diseases.* *Nature*, 2007. **450**(7169): p. 494-6.

Neil, H.A., et al., *Estimated 10-year cardiovascular risk in a British population: results of a national screening project.* *Int J Clin Pract*, 2008. **62**(9): p. 1322-31.

Yusuf S, Hawken S, Ôunpuu S, Dans T, Avezum A, Lanas F, McQueen M, Budaj A, Pais P, Varigos J, Lisheng L (2004). Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. *The Lancet*, Volume 364 (9438,11-17):937-952.

Starrs AM (2006). Safe motherhood initiative: 20 years and counting. *Lancet* 368,(9542,30):1130-1132

### Week 4

Hartung and Rovida. 2009. Chemical regulators have overreached. *Nature.* 460 1081-1082.

Turley. 2010. Reach deadline passes, registrations fall short of predictions. Available at: <http://www.rsc.org/chemistryworld/News/2010/December/01121003.asp>

Editorial. 2011. REACH further. *Nature.* 475, 139–140

Ingram D, Sanders K, Kolybaba M, Lopez D (1997). Case-control study of phyto-oestrogens and breast cancer. *Lancet*; 350: 990–94.

Vainio and Wilbourn. Identification of carcinogens within the IARC monograph program. *Scand J. Work Environ.* 1992: 18 Suppl 1: 64-73

Magnani C, Agudo A, González CA, Andron A, Calleja A, Chellini E, Dalmaso P, Escolar A, Hernandez S, Ivaldi C, Mirabelli D, Ramirez J, Turuguet D, Usel M, Terracini B. Multicentric study on malignant pleural mesothelioma and non-occupational exposure to asbestos. *Br J Cancer.* 2000 Jul;83(1):104-11.

## Week 5

Haines A, Kovats RS, Campbell-Lendrum D, Corvalan C. Climate change and human health: impacts, vulnerability and mitigation. Lancet 2006; 367; 2101-9

Haines A, McMichael AJ, Smith KR, Roberts I, Woodcock J, Markandya A, Armstrong BG, Campbell-Lendrum D, Dangour AD, Davies M, Bruce N, Tonne C, Barrett M, Wilkinson P. [Public health benefits of strategies to reduce greenhouse-gas emissions: overview and implications for policy makers.](#) Lancet 2009; 374: 2104-14

**IPCC, 2007: Climate Change 2007: Synthesis Report.** Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

## TIMETABLE

### Week 1: Describing the geography and history of non-infectious diseases: how they change by space and time (methods: spatial analysis)

	9.30–10.20am	10.40–11.30am	11.50am–12.40pm	2pm
Mon 14 Nov AM: Roger Bannister	INTRODUCTION TO THE WEEK: Studying variation in disease geography P Vineis	Discussion and reading P Vineis	Practical and key points PVineis	InterBSc session (KCL) Global Mental Health session Prof Martin Prince, Waterloo Campus, Franklin-Wilkins Building, Classroom 1.11
	9.30-10.20am	10.40-11.20am	11.50-12.40pm	
Tue 15 Nov AM: MSc room	Terrence Simmons: Health care to indigenous populations in remote regions	Terrence Simmons cont'd	Practical on small area studies Lea Fortunato	Read for Thursday Seminar
	9.30-11.30am			
Wed 16 Nov AM: Peart Room, 10th floor QEQM	Practical: analysis of confounding and interactions Marta Blangiardo  (with a break)			
	9.30-10.20am	10.40-11.30am		
Thu 17 Nov AM: MSc room	Lecture: Use of graphical approaches to understand poverty Mike Joffe	Seminar: Use of graphical approaches to understand poverty Mike Joffe	<b>Wrap-up of the week and key points Mariam Sbaiti</b>	
	9.30am-10.20	10.40am-11.30	11.50-12.40	
Fri 18 Nov AM: Roger Bannister LT	Lecture: Burden of disease - hypertension Majid Ezzati	Discussion on disease burden and key points Majid Ezzati		



**Week 2: Malnutrition and the new epidemic of obesity and diabetes (methods: cohort studies)**

	9.30–10.20am	10.40–11.30am	11.50am–12.40pm	Afternoon
Mon 21 Nov AM: Roger Bannister	INTRODUCTION TO THE WEEK: The conundrum of obesity and diabetes - the built environment P Vineis	Discussion and reading of a paper P Vineis	Selected topics from Gapminder P Vineis	
Tue 22 Nov AM: Cockburn LT	9.30am-10.20am Lecture: Child malnutrition Tom Lissauer	10.40am-11.30am Student-led seminar: Tom Lissauer	11.50-12.40pm Practical: The design of a cohort study, and key points Marc Chadeau-Hyam	
Wed 23 Nov AM: Peart Room, 10th floor QEQM	9.30-10.20am Lecture: Nutritional epidemiology Anne-Claire Vergnaud	10.40am-11.30 Discussion and reading of a paper, and key points Anne-Claire Vergnaud	11.50-12.40pm Practical - Statistical analysis of a cohort study Anne-Claire Vergnaud	
Thu 24 Nov	9.30am-10.20am	10.40am-11.30am	11.50-12.40pm	
Fri 25 Nov AM: Roger Bannister LT	9.30–12.00p Film screening: The Corporation (optional attendance)	1.15–2.00pm Wrap-up of the week  Paolo Vineis	2.00-3.30pm Seminar on Child Malnutrition  Tom Lissauer	

### Week 3: The mechanisms of disease: genes and epigenetics, and Reproduction (methods: the role of the laboratory)

	9.30–10.20am	10.40–11.30am	11.50am–12.40pm	
Mon 28 Nov AM: MSc room	INTRODUCTION TO THE WEEK - Genes and/or environment – the construction of genetic predisposition from Cyril Burt to occupational hazards P Vineis	Discussion and reading of a paper P Vineis	Practical: genes, the epigenome and the environment P Vineis	
	9.30-10.20am	10.40-11.30am		
Tue 29 Nov AM: MSc room	From genetics to epigenetics - relevance for global health James Flanagan	Student-led seminar: The long-term consequences of famine in the Netherlands in the 2 <sup>nd</sup> WW James Flanagan		
	9.30am-10.20am	10.40-11.30am	11.50am-12.40pm	
Wed 30 Nov AM: Cockburn LT	Lecture: Cardiovascular disease epidemiology and biomarkers for CVD Marjo-Riitta Jarvelin	Discussion and reading of a paper	Practical: A case-control study on cardiovascular disease-bias, and key points Queenie Chan	
Thu 1 Dec AM: MSc room				
	9.30am-11 am	11.30am-12.30am		
Fri 2 Dec AM: Cockburn LT	Seminar: Global Maternal Health and Mortality Lesley Regan & Mariam Sbaiti <b>SESSION WITH MSC STUDENTS</b>	Seminar: Global Maternal Health Lesley Regan & Mariam Sbaiti <b>SESSION WITH MSC STUDENTS</b>	<b>Wrap-up of the week</b>	

### Week 4: Tobacco, occupation and other exposures (methods: case-control studies)

	9.30am–10.20am	10.40–11.30am	11.50am–12.40pm	Afternoon
Mon 5 Dec AM: MSc room	The era of chemical hazards T Athersuch	Discussion and reading of a paper	Practical and key points Toby Athersuch	Reading for Tuesday (Petra)
	9.30-11.00am		11.20am-12.20pm	
Tue 6 Dec AM: Cockburn LT	The causes of cancer Petra Peeters		Seminar: Discussion and reading of a paper (case-control study), key points Petra Peeters	Reading for Thursday
	9.30-10.20am	10.40am-11.30am		
Wed 7 Dec AM: Cockburn LT	Lecture: Occupational, and environmental cancers: aromatic amines, PCB and metals Rachel Kelly	Practical on environmental health: strength of evidence Rachel Kelly		
	9.30am-11.00	11.20am-12.20pm		
Thu 8 Dec AM: Clinical LT	Lecture: Tobacco as a major global health issue (9.30-11.00)  Ben Hawkins (LSHTM)	Student-led seminar: asbestos as a world-wide occupational and environmental carcinogenic exposure (11.30-12.30)  Karin van Veldhoven	Read for Friday Seminar (2)	<b>Assessment 1–Essays on country profile</b> Submission before 11.59pm
	9.30am-10.20	10.40am-11.30am	12.00-12.30pm	1.30pm-4.00pm
Fri 9 Dec AM: Rothschild LT	Refugee Health: Care of survivors of torture Robin Ewart-Biggs (Freedom from Torture) <b>SESSION WITH MSC STUDENTS</b>	Discussion and reading of a paper Robin Ewart-Biggs (Freedom from Torture) <b>SESSION WITH MSC STUDENTS</b>	In-course assessment advice (in the Rothschild LT) – Mariam Sbaiti	Lecture–Asthma in the world and Student-led seminar: asthma in Maori populations (1.30-4.00pm) Neil Pearce  <b>Wrap-up of the week PV</b>

**Week 5: From epidemiology to governance: prevention and intervention studies (methods: intervention studies)**

	9.30am–10.20am	10.40–11.30am	11.50am–12.40pm	Afternoon
Mon 12 Dec AM: Roger Bannister	Water quality and quantity and climate change Pauline Scheelbeek	Water salinity in Bangladesh Aneire Khan	Randomized trials Aneire Khan and Pauline Scheelbeek	Reading for Tuesday
	9.00am–10.00am	10.00–10.50am	11.00-12.00	Afternoon
Tues 13 Dec AM: Roger Bannister	Energy policies and their impact on human health Andy Haines <b>with 30 King's College London students</b>	Student-led seminar on climate change Aneire Khan <b>with 30 King's College London students</b>	The strategies to reduce CO2 and their impact on health - policy issues Simon Buckle, Grantham Institute <b>with 30 King's College London students</b>	Read for Wednesday Seminar (1)
	9.30am-11.00am		11.30am-1.00pm	2pm
Wed 14 Dec AM: Roger Bannister PM: MSc	Lecture: Trade and Health – Corporate actors and global health governance Ben Hawkins		Seminar: Trade and Health Ben Hawkins	Wrap'up of the week Paolo Vineis (MSc room)
Thu 15 Dec AM: MSc room	<b>Assessment 2–Exercise</b>			
	<b>9.30am-12.30pm</b>			
Fri 16 Dec AM: Clinical LT	Overall evaluation of the module and some conclusions about the interventions to implement to tackle the main global health problems today (all)			

# LECTURE OUTLINES

## Week 1: Describing the geography and history of non-infectious diseases: how they change by space and time

Monday 14 November

Paolo Vineis: "Studying variation in disease geography"

### Outline

The content of this topic will cover:

- How non-infectious disease occurrence varies by space and time, and how hypotheses about the causes of such variation are formulated
- Key examples of geographic variation for the most common non-infectious diseases (diabetes, cancer, cardiovascular diseases, neurological diseases)
- Key examples of time trends for the most common non-infectious diseases (diabetes, cancer, cardiovascular diseases, neurological diseases)
- Remote regions, indigenous populations and their needs
- Concept of burden of disease

### Learning Outcomes

By the end of the learning activities in this session you will:

- Be able to describe how geography affects the distribution of chronic diseases and what the hypotheses on geographic variation could be
- Be able to interpret small-area studies
- Be able to describe time trends and understand their determinants

### Articles to be read before the session (to be discussed as a group in the seminar):

Farhad Islami et al, Oesophageal cancer in Golestan Province, a high-incidence area in northern Iran – A review. EUROPEAN JOURNAL OF CANCER 45 (2009) 3156 –3165

Tuesday 15 November

Terrence Simmons: Access to health Care: challenges of delivering services to rural and remote indigenous populations:

The content of this topic will cover:

- Characteristics of and rationale for a good health system
- Key features of health access?
- Develop an understanding of rural and remote communities
- Samples of health care provision, including types of facilities- regional hospitals, health centres, health huts, Medex system, Community Health Workers, etc.
- Understand the challenges of delivering care to rural and remote communities using Guyana as a case study.

Learning outcomes:

By the end of the learning activities in this session you will:

1. Be able to describe some of the key features of health care access.
2. Be able to describe some of the challenges of health care delivery in rural and remote areas
3. Be able to describe some of the general approaches to delivering care to indigenous populations.

Lea Fortunato: Practical on small area studies and key points

### **Outline**

Wednesday 16 November

Marta Blangiardo: Practical – analysis of confounding and interactions

### **Outline**

In this practical we will

- Introduce the concepts of confounding and effect modification in epidemiology
- Explore how they impact on the measures of association between risk factors and health outcomes.
- We will then look at strategies to deal with these two issues.

The first part of the practical will consist of a presentation by the lecturer and some small group discussion. Then there will be time for some exercises, which will allow the students to carry out some simple analyses on the topics presented in the first part. The solution of the exercises will be provided at the end of the practical.

### **Learning objectives**

- To understand the issue of confounding and effect modification in cohort studies and the techniques to deal with these.
- To be able to assess the potential confounders in a cohort study and to correct for these in the analysis
- To be able to evaluate the presence of effect modifications and to carry on appropriate analyses to overcome this issue.

Thursday 17 November

**Mike Joffe: Lecture and seminar: use of graphical approaches to understand poverty**

### **Outline**

- use of health to evaluate policy
  - why health is relevant to policy beyond healthcare
  - health, basic human needs, and sustainable development
  - health as a major policy criterion
- causal diagrams
  - examples of systems that affect health status
  - analysis of how causal diagrams are used
  - functions of causal diagrams
  - methodological aspects
- diagrams and policy
  - policy uses of causal diagrams
  - “change” models
  - technical fixes and broader perspectives
  - systems with feedback
- seminar: discussion of health in the context of absolute rural poverty
  - energy and health
  - food/agriculture/nutrition and health

### Learning outcomes

- to understand how health relates to basic human needs
- to be able to construct and to interpret causal diagrams
- to understand how diagrams can be used for policy

### Readings

Required:

- Joffe M, Mindell J. Complex causal process diagrams for analyzing the health impacts of policy interventions. *Am J Public Health* 2006; **96**: 473-79.

Additional:

- Wilkinson P, Smith KR, Joffe M, Haines A. Energy and Health 1 – A global perspective on energy: health effects and injustices. *Lancet* 2007; **370**: 965-98.
- Joffe M. Health, livelihoods, and nutrition in low-income rural systems. *Food Nutr Bull* 2007; **28**: S227-36.

Friday 18 November

### Lecture: Burden of disease – hypertension

#### Majid Ezzati

The effects of elevated blood pressure on human health have been established for decades and effective and efficacious interventions exist and are used in clinical settings. Much less has been done on blood pressure patterns and their effects on the health of populations worldwide, across regions or over time. This session will use a range of epidemiological and population health studies to understand the role of high blood pressure and in interventions in global health, both across and within countries.

#### Key learning points

- High blood pressure is one of leading risk factors for global and burden of disease, even compared to risk factors for child and maternal mortality

- Blood pressure levels have declined substantially and significantly in high-income countries over the past few decades.
- Currently, the highest blood pressure levels are in some low and middle income regions including sub-Saharan African and Central and Eastern Europe
- There are known, efficacious and effective population-based and individual interventions to prevent and reduce high blood pressure
- At least in high-income societies, marginalized and low-SES groups have higher blood pressure, leading to considerable inequalities in health

## Readings

- Carvalho JJ, Baruzzi RG, Howard PF, Poulter N, Alpers MP, Franco LJ, Marcopito LF, Spooner VJ, Dyer AR, Elliott P, et al. Blood pressure in four remote populations in the INTERSALT Study. *Hypertension*. 1989;14(3):238-246
- Elliott P, Stamler J, Nichols R, Dyer AR, Stamler R, Kesteloot H, Marmot M. Intersalt revisited: further analyses of 24 hour sodium excretion and blood pressure within and across populations. Intersalt Cooperative Research Group. *Bmj*. 1996;312(7041):1249-1253
- Danaei G, Finucane MM, Lin JK, Singh GM, Paciorek CJ, Cowan MJ, Farzadfar F, Stevens GA, Lim SS, Riley LM, Ezzati M on behalf of the Global Burden of Metabolic Risk Factor of Chronic Diseases Collaborating Group (Blood Pressure). National, regional, and global trends in systolic blood pressure since 1980: Systematic analysis of health examination surveys and epidemiological studies with 786 country-years and 5.4 million participants. *Lancet* 2011; **377**(9765):568-577
- Danaei G, Rimm EB, Oza S, Kulkarni SC, Murray CJL, Ezzati M. The promise of prevention: the effects of four preventable risk factors on national life expectancy and life expectancy disparities by race and county in the United States. *PLoS Medicine* 2010; **7**(3):e1000248
- Wald NJ, Law MR. A strategy to reduce cardiovascular disease by more than 80%. *Bmj*. 2003;326(7404):1419
- Asaria P, Chisholm D, Mathers C, Ezzati M, Beaglehole R. Chronic disease prevention: health effects and financial costs of strategies to reduce salt intake and control tobacco use. *Lancet* 2007; **370**(9604):2044-2053



## **Week 2: Malnutrition and the new epidemic of obesity and diabetes**

Monday 21 November

### **Paolo Vineis: “The conundrum of obesity and diabetes”**

#### **Outline**

The content of this topic will discuss:

- How and why is obesity spreading all over the world? Is it genetic or environmental? What are the main hypotheses?
- What are the relationships between diabetes and obesity? Do the two diseases completely overlap epidemiologically or not? Is the epidemiology of diabetes different in Asia vs. other countries?
- What are the diseases associated with obesity and diabetes?
- What is the total burden of diabetes and obesity-related disease in the world

#### **Learning Outcomes**

By the end of the learning activities in this session you will:

- Be able to describe the epidemic of obesity and diabetes and the main scientific hypotheses
- Be able to describe the total burden of disease attributable to obesity and diabetes
- Be able to discuss potential policies to tackle the epidemic

#### **Articles to be read before the session (to be discussed as a group in the seminar):**

Jia H, Lubetkin EI. Obesity-related quality-adjusted life years lost in the U.S. from 1993 to 2008. *Am J Prev Med.* 2010 Sep;39(3):220-7.

Tuesday 22 November

### **Tom Lissauer: Lecture and seminar – ‘Child malnutrition’**

#### **Outline**

The main clinical features outlined will be:

- What is meant by malnutrition and how to identify it
- Different types of malnutrition
- The principles of management of acute malnutrition

Student-led seminar (students divide into groups and give presentation, max 10 mins for each topic):  
The following topics for each group:

- 1) Epidemiology of child malnutrition globally
- 2) What are its long term effects on children

- 3) Why is there malnutrition when the world can produce sufficient food to feed everyone?
- 4) What strategies are adopted by countries and aid agencies to prevent childhood malnutrition and how effective are they?
- 5) How serious a problem is childhood malnutrition in the UK?

Learning outcomes

To know:

- how child malnutrition is defined
- about the different types of malnutrition
- the most important clinical features and principles of management

To understand:

- Where and why it occurs
- What strategies are adopted for its prevention

### **Marc Chadeau-Hyam: Practical – The design of a cohort study, and key points**

#### **Outline**

In this session students will be introduced to the different study designs, based on concrete examples from the literature, and their properties, advantages and drawbacks will be developed.

#### **Learning objectives**

By the end of this session, participants should be able to:

- Define the different study designs
- Identify and critically appraise the design of existing studies
- Define the optimal design to answer a specific question, and justify its features

Wednesday 23 November

### **Anne-Claire Vergnaud: Lecture – Nutritional epidemiology as a Public Health Science**

Learning objectives

By the end of this session, participants must

- Understand the goals of nutritional epidemiology
- Know the most usual exposure assessment methods
- Understand their strengths and weaknesses

- Understand the main methodology issues related to nutritional epidemiology
- Have a first idea about what is nutrition transition

### **Anne-Claire Vergnaud: Practical – Statistical analysis of a cohort study**

Learning objectives

By the end of this session, participants must

- Calculate person-years
- Estimate a relative risk associated with an exposure
- Interpret a Cox proportional hazard model

### **Readings**

Esmailzadeh A and Azadbakht L (2008). Major Dietary Patterns in Relation to General Obesity and Central Adiposity among Iranian Women. *J. Nutr.* 138:358-363.

Yadav K and Krishnan A (2008). National Prevalence of Obesity Changing patterns of diet, physical activity and obesity among urban, rural and slum populations in north India. *Obes Rev.*;9(5):400-8. )

## **Week 3: The mechanisms of disease: genes and epigenetics**

Monday 28 November

Paolo Vineis: “Genes and the environment”

### **Outline**

The content of this topic will cover:

- Some historical background on how the concept of genetic predisposition arose (Galton, Cyril Burt, Mendel)
- Modern genetics and the concepts of highly penetrant mutations and low-penetrant gene variants
- What is the environment? What proportion of diseases is due to genes and which proportion to the environment?
- What is epigenetics and why it is important

### **Learning Outcomes**

By then end of the learning activities in this session you will:

- Be able to know what highly-penetrant and low-penetrant gene variants are and their role in disease
- Be able to discuss the role of genes and environment in the main diseases
- Be able to discuss the concept of epigenetics

**Articles to be read before the session (to be discussed as a group in the seminar):**

Vineis P (2004). Individual susceptibility to carcinogens. *Oncogene*. 23;23(38):6477-83.

Tuesday 29 November

James Flanagan: From genetics to epigenetics – relevance for global health

## **Outline**

### **This lecture will cover the following**

- The definition of epigenetics and all the different levels of epigenetic regulation
- What is known about epigenetic dysregulation in disease, particularly during cancer development.
- An overview of the current research topics including disease risk, prognosis and epigenetic drug development.
- Finally a discussion on some recent controversies in epigenetics: What is and isn't considered an "epimutation"

### **Key learning points**

- What is Epigenetics and how do these mechanisms regulate genes?
- How do we measure the epigenome?
- What goes wrong in the Epigenome during disease development (eg Cancer)
- How do we use Epigenetic information to answer clinical questions and will epigenetic drugs be effective therapies?
- How do you define an "epimutation"

### **Recommended reading**

1: Heijmans BT, Tobi EW, Stein AD, Putter H, Blauw GJ, Susser ES, Slagboom PE, Lumey LH. Persistent epigenetic differences associated with prenatal exposure to famine in humans. *Proc Natl Acad Sci U S A*. 2008 Nov 4;105(44):17046-9.

2: Santos-Rosa H, Caldas C. Chromatin modifier enzymes, the histone code and cancer. *Eur J Cancer*. 2005 Nov;41(16):2381-402. Epub 2005 Oct 13. Review.

3: McCabe MT, Brandes JC, Vertino PM. Cancer DNA methylation: molecular mechanisms and clinical implications. *Clin Cancer Res*. 2009 Jun 15;15(12):3927-37.

4: Suter CM, Martin DI, Ward RL. Germline epimutation of MLH1 in individuals with multiple cancers. *Nat Genet*. 2004 May;36(5):497-501.

Wednesday 30 November

Marjo-Riitta Jarvelin: Cardiovascular disease epidemiology and biomarkers for CVD

### **Session outline / learning outcomes:**

1. Cardiovascular diseases (CVD) and their intermediate endophenotypes – some definitions and diagnostic points
2. Main causes of death from CVD perspective – globally and in selected regions
3. Trends in CVD deaths and disease
4. Global burden of CVD
5. Determinants, causes and intermediate endophenotypes of CVD
6. Life-course perspective in CVD mortality and morbidity

Introduction:

CVD is the leading cause of death globally as the estimated 17.5 million CVD deaths e.g. in 2005 represented 30% of all deaths worldwide. In Europe, CVD cause about 4.4 million deaths and more than 1.9 million deaths in the European Union (EU) every year accounting for 49% of all deaths in Europe and 42% of all deaths in the EU, respectively. CVD are the main cause of death in women in all European countries and in men in all except France and San Marino. Comparing Western vs. Eastern Europe, over the past 30 years mortality from CVD has been declining steadily in the developed economies of Western Europe. However, in some Eastern European newly independent states there has been an increasing trend. According to the WHO report of 2004, non-communicable diseases are expected to account for just above 75% of all deaths in 2030 worldwide and global CVD deaths will rise from 17.1 million in 2004 to 23.4 million in 2030.

Some reading:

1. Daar, A., et al., *Grand challenges in chronic non-communicable diseases*. Nature, 2007. **450**(7169): p. 494-6.
2. Neil, H.A., et al., *Estimated 10-year cardiovascular risk in a British population: results of a national screening project*. Int J Clin Pract, 2008. **62**(9): p. 1322-31.
3. Deckert, A., et al., *Time trends in cardiovascular disease mortality in Russia and Germany from 1980 to 2007 – are there migration effects?* BMC Public Health, 2010. **10**: p. 488

**Queenie Chan - Practical session - Case-Control Study on Cardiovascular Disease**

The lecture will provide the skills necessary to interpret and critically appraise findings on a case-control study on risk factors and myocardial infarction (MI).

Friday 2 December

Lesley Regan: Lecture and seminar - Global Maternal Health and Mortality

**Learning outcomes**

Develop an in-depth knowledge and appreciation of issues relating to the practice of maternal and child health in developing countries. This lecture addresses global maternal health problems and their underlying social, cultural and political causes. You will also explore a range of primary health care approaches, including new interventions and strategies.

At the end of this lecture you should be able to :

1. Demonstrate an understanding of global, national and local factors impacting on the reproductive health of women in developing countries
2. have outlined the magnitude, patterns and causes of maternal morbidity and mortality in developing countries
3. have developed an understanding of antenatal and obstetric causes of public health importance, and of current intervention strategies
4. have critically appraised principles of programme development within the context of specific maternal and child health care issues.

## Readings

Starrs AM (2006). Safe motherhood initiative: 20 years and counting. *Lancet* 368,(9542,30):1130-1132

Recommended reading <http://www.thelancet.com/series/maternal-survival>

## Week 4: Tobacco, occupation and other exposures (methods: case-control studies)

Monday 5<sup>th</sup> December

Toby Athersuch: "The Era of Chemical Hazards"

### Outline

The content of this topic will:

- Discuss how industrial development has influenced the type of chemical hazards that are present in the natural, built and working environment.
- Highlight key examples of environmental and occupational chemical exposures and describe their relationship with disease.
- Consider the efforts that have been made worldwide to understand and control chemical hazards to reduce the burden of disease.

### Learning Outcomes

By the end of the learning activities in this session you will:

- Be able to describe how the industrial revolution and continued industrialisation around the world has influenced chemical hazards and exposures.
- Have knowledge of several examples of chemical hazards that exist in the natural, built, and occupational environment that have an impact on health, and describe efforts that have been made to limit this impact.
- Be able to describe recent EU legislation that is aimed at characterising chemical hazards, and comment on the limitations that exist in the implementation of this legislation.

**Articles to be read before the session (to be discussed as a group in the seminar):**

Hartung and Rovida. 2009. Chemical regulators have overreached. *Nature*. 460 1081-1082.

Turley. 2010. Reach deadline passes, registrations fall short of predictions.

*Online:* <http://www.rsc.org/chemistryworld/News/2010/December/01121003.asp>

Editorial. 2011. REACH further. *Nature*. 475, 139–140

Tuesday 6 December

Petra Peeters: The causes of cancer

Outline

Brief outline of the session:

Causation of cancer, points discussed:

- description of distribution of most frequent cancer types worldwide
- understand lifestyle and genetic causes of cancer
- pros and cons of different study designs in cancer etiology
- prevention vs treatment of cancer

Learning outcomes:

- Discuss key issues in worldwide incidence and mortality of cancer
- Describe and interpret key study design and epidemiological methodologies in relation to cancer
- Be able to conduct systematic reviews on etiology of cancer
- Discuss the main causes of cancer in the developing world

Reading session:

Case-control study of phyto-oestrogens and breast cancer. David Ingram, Katherine Sanders, Marlene Kolybaba, Derrick Lopez

Lancet 1997; 350: 990–94

Wednesday 7 December

Rachel Kelly: Occupational and environmental cancers: aromatic amines, PCB and metals

Outline

**Lecture: Occupational and environmental cancers: aromatic amines, PCB and metals**

- An overview of environmental and occupational cancers – facts and figures, historical examples eg Percival Pott and Chimney sweeps

- Policy/regulations – the impact these discoveries have had on industry and the workplace (brief list of policy regulations in the UK/EU eg. Control of Substances Hazardous to Health (COSHH) Regulations 2002)
- The global perspective – variations/double standards in regulation of carcinogens between the developed and developing world, specific examples
- Compiling evidence – IARC monographs, systematic reviews, meta-analyses, strength of evidence
- Future of occupational and environmental cancer –
  - Identify carcinogens -EnviroGenoMarkers Project (link back to aromatic amines, PCBs and heavy metals)
  - Strategies of prevention of environmental cancers – the Asturia Declaration

### Practical on environmental health: strength of evidence

- Discussion of the Vainio paper and the IARC monograph on polychlorinated biphenyls
- Comparison of two different papers reporting on cancer rates following two different industrial accidents; one in Italy and one in India:
  - The class will be split into small groups, half the groups will receive the Dikshit paper and half will receive the Pesatori paper (may provide them with modified versions of these papers containing only the relevant sections)
  - Each group will be asked to prepare an A3 sheet with bullet points very briefly detailing the evidence available from these papers focussing on – the subjects, any comparison groups, the accident, the types of cancers, other possible reasons for the observed cancer rates
  - Each group will have to present their results to the rest of the class
  - A discussion on the differences between the papers detailing industrial accidents in the developed world and the developing world will follow; will consider whether these compounds can be classed as carcinogenic based on the IARC criteria

### Learning outcomes

- To understand the importance of environmental and occupational cancers in relation to global burden and to consider what can be done to reduce this burden
- To understand the importance of type, source and timing of evidence
- To understand the use and value of meta-analyses and systematic reviews in making decisions about causal risk factors
- To understand the role of IARC in classifying specific carcinogens

### Required readings

Readings prior to class:

Vainio and Wilbourn. Identification of carcinogens within the IARC monograph program. *Scand J. Work Environ.* 1992; 18 Suppl 1: 64-73

IARC. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Volume 18 Polychlorinated biphenyls and Polybrominated biphenyls: Summary of Data Reported and Evaluation.

( Available at <http://monographs.iarc.fr/ENG/Monographs/vol18/volume18.pdf>)

### Articles for inclass exercise

Dikshit, R and Kanhere, S. Cancer patterns of lung, oropharynx and oral cavity cancer in relation to gas exposure at Bhopal. *Cancer Causes and Control* 10: 627-636, 1999.

Pesatori, A et al Cancer incidence in the population exposed to dioxin after the "Seveso accident": twenty years of follow-up. *Environmental Health* 2009, 8:39



Thursday 8 December

### **Tobacco as a major global health issue – Ben Hawkins (LSHTM)**

#### **Session Overview**

- This session examined the global tobacco pandemic and the attempts by Transnational Tobacco Corporations (TTCs) to resist tobacco control measures aimed at addressing it.
- It will examine the research conducted on TTC activities as a result of documents released during class action lawsuits in the USA in the 1990s.
- We will focus on the different stages of the tobacco pandemic, the interventions designed to counter it and the shift in TTC strategy which resulted from this.
- The lecture examines the lobbying strategies employed by TTCs to influence policy.
- It focuses also on their complicity in facilitating smuggling and contraband activity.
- The final part of the lecture examines the FCTC and tobacco corporations response to this, using Corporate Social responsibility initiatives as a means of avoiding further regulation.

#### **Learning Outcomes**

By the end of the session, you will have:

- been introduced to the structure of TTCs;
- examined their marketing and lobbying strategies;
- assessed their attempts to avoid regulation and their complicity through various measures.
- 

#### **Core Reading**

**Holden, C and Lee, K. Corporate power and social policy: the political economy of the transnational tobacco companies. *Global Social Policy* 2009; 9(3): 328–354.**

This article focuses on the economic and political interests of global tobacco corporations. It begins by setting out a useful framework for analysing the political influence of corporate actors in terms of structure and agency power. This may prove a useful tool for students when analysing the activities of corporations in other sectors. It goes on to offer a useful overview of the emergence and consolidation of trans-national tobacco corporations. The latter part of the article examines their political interests and influence through the lens of the structure-agency model. In reading the article students should focus on the different activities engaged in by TTCs in order to influence policy and try to assess the effectiveness of these in influencing policy. How effective are they in achieving their goals and why do they employ the approach they do? In addition, students should evaluate the values of the structure agency framework for analysing these issues. How could this approach be applied to other policy issues and industries?

### **Further Reading**

**Lopez, A et al. A descriptive model of the cigarette epidemic in developed countries. *Tob. Control* 1994; 3: 242-247.**

This article charts the development of the tobacco epidemic in developed countries over a period of more than 100 years. In so doing it demonstrates the effectiveness of tobacco control measures in countering the population level health impact of widespread tobacco use and demonstrates the challenges faced by developing countries in countering the health impact of tobacco.

**Holden, C et al. Trade policy, health and corporate influence: British American Tobacco and China's accession to the World Trade Organisation. *Int J Health Serv* 2010; 40 (3): 421–441.**

This article examines the influence of Transnational Tobacco Corporations (TTCs) attempts to influence negotiations over China's accession to the World Trade Organization through a range of mechanisms, including personal access of BAT employees and lobbyists to policymakers; employment of former civil servants from key U.K. government departments; use of organized business groups and participation in forums organized by Chatham House. As such it provides an important insight into the global reach of TTC and the variety of overt and covert tactics employed by them to pursue their interests. It demonstrates also that the political forums targeted by the TTCs and the lobbying activities they employ extend beyond the level of the state and into the international sphere. In addition, the article examines the interaction between corporate and state actors, particularly the US government, during the negotiations. When reading the article students should consider the extent to which the interests of the US government (and the European Commission) coincided with those of the TTCs. They should ask themselves when reading this article what role governments ought to play in representing corporate interests in international trade negotiations and other forums? Should the role they play differ when dealing with tobacco as opposed to other, arguably less harmful products?

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- **WHO Report on the Global Tobacco Epidemic – The MPOWER package (2008)**
- Available at: <http://www.who.int/tobacco/mpower/en/index.html>

Karin van Veldhoven: **Student- led seminar: asbestos as a world-wide occupational and environmental carcinogenic exposure**

**Outline**

The students will prepare for the student led seminar by reading the paper by Magnani et al. They will be asked to discuss the paper and as a guideline we will make sure that the following points have been addressed:

- Sources of non-occupational exposure
- Why a case-control study
- Who are selected as cases and who are selected as controls and what are the implications of this?
- Methods (implications)
- Results (descriptive statistics and outcomes), discussion, conclusion, implications
- Potential sources of bias

**Readings**

Magnani C, Agudo A, González CA, Andrion A, Calleja A, Chellini E, Dalmaso P, Escolar A, Hernandez S, Ivaldi C, Mirabelli D, Ramirez J, Turuguet D, Usel M, Terracini B. Multicentric study on malignant pleural mesothelioma and non-occupational exposure to asbestos. Br J Cancer. 2000 Jul;83(1):104-11.

Friday 9 December

Robin Ewart-Biggs: Refugee health – care of survivors of torture

**Outline**

- To consider the contexts from which refugee families may arrive and approaching health care services.
- To raise awareness about the “host society” discourses concerning refugee families.
- To raise awareness about early identification of survivors of torture
- To consider ‘good practice’ in relation to interviewing survivors of torture.
- To consider ‘impact on self’ when working with survivors of torture.

**Learning outcomes for the session**

- To gain an understanding of relevant issues, e.g. dislocation (stories of leaving and arriving), loss, asylum, language, acculturation (across generations), resilience, the impact of torture/organised violence, the impact of family reunion.
- To gain an understanding of assessment, identification and interviewing skills when working with survivors of torture.
- To gain self-reflexive understanding of impacts of working with survivors of torture.

**Indicative content of the session**

- PowerPoint Slides as backdrop for ideas introduced throughout session.
- Case example to generate awareness of a range of issues relevant to working with refugee families.
- Reflecting conversation to develop students thinking and self-reflexivity in relation to working with survivors of torture.

**Learning and teaching strategies for the session**

- Didactic presentation.
- Practice example.
- Reflecting conversation exercise.

Neil Pearce: Lecture – Asthma in the world and student-led seminar: asthma in Maori populations

## **Outline**

### **Week 5**

Monday 12 December

#### **Water salinity in Bangladesh (10.40 – 11.30) - Aneire Khan**

The lecture will cover:

- Climate change and sea-level rise impacts on water security in Bangladesh
- The health consequences due to rising salinity, mainly among vulnerable coastal groups
- A case-control study investigating the relationship between high salinity consumption and blood pressure
- Precautions and potential adaptation measures

Tuesday 13 December

#### **Energy policies and their impact on human health**

Climate change and health - vulnerability, adaptation and mitigation

Andy Haines

#### **Brief outline**

The presentation will outline potential health effects of climate change, the potential for adaptation to reduce impacts and the health benefits of a low carbon economy.

#### **Learning objectives**

By the end of the session students should be able to outline:

1. the health outcomes that are likely to be affected by climate change,
2. populations that are likely to be particularly vulnerable to the effects on health
3. potential adaptation strategies and their limitations
4. the health benefits of a low carbon economy

#### **Reading**

Haines A, Kovats RS, Campbell-Lendrum D, Corvalan C. Climate change and human health: impacts, vulnerability and mitigation. *Lancet* 2006; 367; 2101-9

Haines A, McMichael AJ, Smith KR, Roberts I, Woodcock J, Markandya A, Armstrong BG, Campbell-Lendrum D, Dangour AD, Davies M, Bruce N, Tonne C, Barrett M, Wilkinson P. Public health benefits of strategies to reduce greenhouse-gas emissions: overview and implications for policy makers. *Lancet* 2009; 374: 2104-14

## **Climate change mitigation and why dealing with CO<sub>2</sub> is so difficult**

Simon Buckle (Grantham Institute)

### Brief outline

This session will explain

1. the role of greenhouse gases in causing climate change
2. the projections of, and evidence for, climate change
3. why dealing with CO<sub>2</sub> is so difficult given the nature of our energy, industrial and transport systems
4. where international efforts to prevent climate change have got to and what key emitting countries are doing

### Learning outcomes

An understanding of

- the contribution of different greenhouse gases to climate change
- the main mitigation strategies, options and technologies for CO<sub>2</sub>; and
- the technical and political challenges involved in tackling climate change

### Required reading

**IPCC, 2007: Climate Change 2007: Synthesis Report.** Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

### Optional reading:

S. Pacala, *et al.* Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies, *Science* 305, 968 (2004);

14 December

## **Corporate Actors Lecture**

Ben Hawkins

### **Session Overview**

- The aim of this session is to introduce students to the idea of Trans-National Corporations (TNCs) as political actors and the impact they have on global health policy.
- The first part of the session will focus on the nature of a corporation and will chart the emergence of Transnational Corporations.
- It will examine the role that TNCs play in the political process in both the domestic and international spheres.
- We examine how the global nature of these corporations differentiates them from domestic actors and in what ways this impacts on the political power they can wield.
- The second part of the lecture examines specific examples of the role of corporations in global health.
- We will examine examples of corporate influence on public regulation, co-regulation and self-regulation by private standards.
- In so doing, we shall look at case studies of the WTO TRIPS agreement, The UN Global Compact and WHO Framework Convention on Tobacco Control (FCTC).

### **Learning Outcomes**

By the end of the session, you will have:

- been introduced to the structure and workings of a TNC;
- examined the various ways in which TNCs engage in the political process;
- understood their relevance to global health;
- critically engaged with specific examples of TNC activity in the field of global health.

### **Core Reading**

**Bond, L, Daube, M and Chikritzhs, T. Selling addictions: similarities in approaches between big tobacco and big booze. Australasian Medical Journal 2010; 3 (6): 325-332.**

This article examines the similarities in approach between the global alcohol and tobacco industries by focusing on corporations active in both the tobacco and alcohol markets. It draws parallels between the framing of debates and the influencing tactics employed in each sector. Furthermore, it draws on the internal communications of these corporations to examine the extent to which the lobbying strategy employed by alcohol industry actors was specifically informed by the experiences of the tobacco industry. In reading the article students are encouraged to reflect on the similarities and differences between the two industries. In what ways are the pressures and calls for regulation faced by each industry the same and how do they differ? What differences are there in approach to the

policy process and what may account for this? Finally students should consider the effects of industry lobbying on the policy process and how this impacts on public policy and public health more broadly.

In addition, students should watch the film *The Corporation* prior to the lecture. The entire film is available on its own (legal and official) You Tube page:

[http://www.youtube.com/view\\_play\\_list?p=FA50FBC214A6CE87](http://www.youtube.com/view_play_list?p=FA50FBC214A6CE87)

### **Further Reading**

#### **Jernigan, D. The global alcohol industry: an overview. *Addiction* 2008; 104 (Suppl. 1): 6–12.**

This article was chosen as it offers an overview of the structure and interests of the global alcohol industry. It should be read therefore as a supplement to the core reading set out above which focus on the links between the tobacco and alcohol industries. Furthermore, the article looks to explain the development and characteristics of the industry within the context of globalisation. It argues that industry activity is shaped by the trans-national character of the largest corporations which control many of the best selling alcohol brands in the market. When reading the article, students should attempt to understand the policy priorities of these corporations and the rationale they have for adopting the positions they do. This is essential to understanding the direct and indirect ways in which corporations articulate their interests to regulators and in order to shape policy. One mechanism through which industry actors engage in the policy arena is through social aspects organisations (SAOs) which are discussed here. Understanding these issues allows us to question whether policy as it currently stands privileges certain powerful actors over other interests and to analyse how further regulation of the industry may impact on the alcohol corporations.

#### **Munro, G. An addiction agency's collaboration with drinks industry: Moo Joose as a case study. *Addiction* 2004; 99: 1370–1374.**

This article presents a case study of how corporate actors have sought to influence the regulation of alcoholic beverages in Australia through the mechanism of a SAO. As such it follows on and complements the issues covered in the previous article. When reading the article students are encouraged to consider the function played by SAOs and whether they should be involved in the policy making process. Are the criticisms levelled at their involvement well founded or can they make a positive contribution to regulating the industry effectively? What are the consequences of excluding these organisations from the policy process? What issues does this case study raise beyond the remit of SAOs?

### **Seminar Role Play: US-Indonesia WTO Dispute**

#### **Background**

Ninety percent of world trade is regulated by the World Trade Organisation (WTO) which oversees the various treaties and rules regarding the regulation of international trade through national tariff systems and other measures. There are a number of examples of trade disputes arising from efforts to protect public health. Trade in goods and services can be restricted by various measures if they are believed to pose a risk to public health, but this must be based on sound scientific evidence and should be as least trade restrictive as possible. Evidence used must be of certain scientific standards, and the applicability of the "precautionary principle" (potential risk/harm to health versus proven risk/harm to health) as a basis for limiting trade remains contested. A member state of the WTO can challenge the

imposition of such measures through the Disputes Settlement Body (DSB) if it feels there is evidence of unfair trade practices at play.

The US Family Smoking Prevention and Tobacco Control Act became law in June 2009. From September of that year, the Act bans all flavoured cigarettes except menthol cigarettes. The intention of the measure is to protect teenagers and children from smoking, since it is believed that they are more likely to be attracted to flavoured cigarettes. In August 2009, Indonesia circulated a communication to the WTO Committee on Technical Barriers to Trade, questioning why menthol cigarettes had been exempted from the law when clove cigarettes had not, and on 9th June 2010 it requested the establishment of a disputes panel. The panel has not yet reported its findings.

Clove cigarettes, kreteks, are the main form of tobacco consumption in Indonesia, and the country is the largest exporter of such cigarettes to the US and other countries. Whilst most clove cigarettes smoked in the US are imported, most menthol cigarettes are produced domestically. Menthol is the most popular flavoured cigarette in the US, with a large market among African Americans. Indonesia argues that the different treatment of clove and menthol cigarettes is discriminatory and violates several WTO agreements, including the General Agreement on Tariffs and Trade (GATT), the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS), and the Agreement on Technical Barriers to Trade (TBT).

### Task

This task takes the form of a role-play based upon the presentation of the respective cases of Indonesia and the USA to the WTO disputes panel. You, along with your fellow group members, will act as one of the legal representatives to the panel of the WTO DSB. The class will be divided into 3 groups. **Group 1** will present the case for Indonesia, arguing that the Family Smoking and Tobacco Control Act is discriminatory and that importation and sale of clove cigarettes in the US should be permitted. **Group 2** will present the position of the US government, arguing that the Act is not discriminatory but is a legitimate public health measure. **Group 3** will play the role of the WTO Dispute Resolution Panel. The members of the panel will hear the case and make a ruling based on the strengths of the arguments (NB: votes should be based on group performance and not your own personal views).

### Rules and Procedure

- Each legal team will be permitted up to 30 minutes to present their case as they wish. You may present evidence, cite scientific data, and/or call expert witnesses. The seminar leader will act as the chair of the panel and keep speakers strictly to time. (two teams x 30 minutes = 60 minutes total)
- After the two teams have presented their cases there will be a period for questions from the panel (remainder of the class). (20 minutes maximum)
- Each team will then be permitted 5 minutes to summarise their case. (two teams x 5 = 10 minutes)
- The members of the panel (Group 3) will then have an opportunity to discuss among themselves the pros and cons of the case. Members of Groups 1 and 2 may not speak during this part of the seminar. (10 minutes maximum)



- The members of the panel (Group 3) should elect a chair who will deliver their judgement (in collaboration with other group members). Group 3 will then make a decision by a vote on the case (if there is a draw the Chair will cast the final vote) and explain their decision to the representatives of the US and Indonesia.

### Guidance and Preparation

Your group will act as the legal representation for either Indonesia or the US at the DSB/WTO. You will have a maximum of 30 minutes to present your case orally to the DSB panel. Remember that members of the panel are not public health or scientific experts but are trade law specialists. You should present the merits of your case accordingly. You might also wish to anticipate the arguments of the opposing group.

Please meet with your group to plan your presentation. All members of the group are expected to be involved in preparing and/or presenting. Individual team members should also coordinate in order to avoid overlap or repetition. The overall content of the presentations of the speakers should be planned together to optimise final impact.

You may wish to consider the following questions in preparing your case:

- What key arguments are there for or against the ban on flavoured cigarettes, the inclusion of cloves in this, and/or the exemption of menthol?
- Are clove cigarettes and menthol cigarettes comparable or like products?
- What scientific evidence can your group use to underpin your case?
- What opinions of recognised and respected organisations and individuals can you cite to support your case?

### Purpose

The seminar seeks to demonstrate how international trade rules can be an important factor in determining what measures can be permitted to protect and promote health. Through an examination of this case, you should gain a better understanding of how trade policy and social policy may intersect and sometimes come into conflict, and how such disputes are resolved through the machinery of the WTO.

Please see the group allocation below for this seminar.

<b>Group</b>	<b>Surname</b>	<b>First name</b>
1	Daryanani Melwani	Roshan Niresh
1	Bates	Sophie
1	Prathapan	Kajann
1	Evbuomwan	Samuel
1	Li	Xuanxiang
1	Ruzky	Aliyar
1	Bakhai	Krishna
1	Khaki	Husain
1	Patel	Aarti

1	Toczek	Alison
2	Quinn	Joanna
2	De Silva	Mahamarakkala Prathiba
2	Bauer	Stefan
2	Gasperment	Marion
2	Brocchi	Stephanie
2	Skinner	Verena
2	Davies	Anna Margaret Prawdzic
2	Babu	Hari Sunil
2	Blevings	Ruby
2	Clifford	Emily Bridine
3	Abel	Alexandra
3	Cho	Hyoung-Jin
3	Waraich	Saira
3	Yang	Emma
3	Atefi	David
3	Dey	Teesta
3	De Rosa	Eleanor Jane
3	Eker Moustafa	Ali
3	Clarke	Emily
3	Rahman	Shati
3	Benjamin Blake	Lindsey
3	Wu	Dawei

## GROUPS

Group	Surname	First name	Week 1	Week 2	Week 3	Week 5
A	Eker Moustafa	Ali				
A	Abel	Alexandra				
A	Prathapan	Kajann				
B	Evbuomwan	Samuel				
B	Benjamin Blake	Lindsey				
B	Toczek	Alison				
C	Yang	Emma				
C	Khaki	Husain				
C	Patel	Aarti				
D	Davies	Anna Margaret Prawdzic				
D	Quinn	Joanna				
D	Bates	Sophie				
E	Bauer	Stefan				
E	Dey	Teesta				
E	Brocchi	Stephanie				
F	Clarke	Emily				
F	Waraich	Saira				
F	Babu	Hari Sunil				
G	Skinner	Verena				
G	Clifford	Emily Bridine				
G	Atefi	David				
H	Cho	Hyoung-Jin				
H	Blevings	Ruby				
H	Gasperment	Marion				
H	Daryanani Melwani	Roshan Niresh				
I	Bakhai	Krishna				
I	De Rosa	Eleanor Jane				
I	Li	Xuanxiang				
J	Ruzky	Aliyar				
J	Rahman	Shati				
J	De Silva	Mahamarakkala Prathiba				
J	Wu	Dawei				

## Module 2 ICA 1 Guidance for students

Essay : country health profile

**Submission deadline** 11.59pm on Thursday 8 December 2011  
**Submission email** [TBC](#)

### Description

A **2500** word essay on the country profile of your choice.

### Instructions

A country profile is understood as an account and analysis of the main health indicators for a country, or a more specific topic such as recent changes in disease rates, or peculiarities in disease occurrence (e.g. obesity in Tonga). A country profile should contain at least a basic epidemiological profile of the area. The rest of the work can then be either a more in-depth epidemiological review of the area, or it can look at the policies that were put in place, or the determinants of health which lead to certain diseases being more prevalent for instance.

Essays should be no more than **2500 words**. Please include your **word count** at the end and be aware that there are penalties for essays longer or shorter than the advised word count by over 1%, as per Assessment Guidelines. References should be made in Vancouver style according to ICL plagiarism and citation guidelines. References will count towards 5% of marks. As you know, this is an individual task so we will expect essays to be written individually. However, you are allowed to focus your essay on the same country as other students.

Sections can (but do not necessarily have to) include:

Abstract  
Introduction  
Methods  
Results  
Discussion  
Conclusion

If you would like to approach your subject from the point of view of a commentary/analysis, you may choose the more conventional essay format (ie. Introduction, different arguments/subheadings, conclusions).

Some examples of last year's essays are available on the intranet. These are by no means there to say that those are the only ways in which the task should be completed. Rather, they are meant guide but more to give you an idea of the variety of ways in which this task can be approached. Some will choose to focus on one disease in a large country; others will choose a small country and give an overall description of its burden of disease and health system. Original creative approaches are prized as long as they are accurate and consistent.

## Assessment Guidelines

### Penalties for late submission:

5% will be deducted from the awarded mark for assessed work for each day late up to 14 days after the deadline.

No mark will be awarded for work submitted after fourteen days.

### Penalties for word count:

1% of the mark will be deducted for every 1% over the word limit

### Where to get ideas for your topic

To get some ideas for your chosen topic, it may be worth looking through the World Health Organisation's website under Countries. The balance between a descriptive approach (e.g. the epidemiology of a non-communicable disease within a given country) and a wider analysis (e.g. linking this to the country's health system/policies/programmes to respond to the chosen NCD) depends on your preference.

For a multidisciplinary source of data on countries, you may find some useful information on the following website (a database of development literature which also contains a health section in each country's profile, as well as some links to country-specific recent literature relating to this): <http://www.eldis.org/go/country-profiles>

## Module 2 ICA 2 Guidance for students

### Data Interpretation

Format	written assessment (90 minutes)
Date	15 December 2011
Venue	details will be confirmed by email

## Marking scheme for in-course assessment essays as well as Part B exams essays

The following criteria are the basis on which both exam answers and course work essays are assessed.

Mark (%)	Criteria
100 95 90 85	<b>Exceptional</b> Answer is an exceptionally well presented exposition of the subject, showing (1) command of the relevant concepts and facts, (2) a high critical or analytical ability <sup>***</sup> , (3) originality and (4) evidence of substantial outside reading (where applicable). Comments from markers should show how this exceeds the expected level of performance of a student at this stage of their degree.
80 76 72	<b>Excellent</b> ( <i>approx 1<sup>st</sup> class</i> ): Answer is (1) a very well presented exposition of the subject, (2) shows command of the relevant concepts and facts and (3) most of the above features, but falling short in one or two of them.
68 65 62	<b>Very Good</b> ( <i>approx Upper 2<sup>nd</sup> class</i> ): Answer shows (1) a clear grasp of the relevant concepts and facts, (2) gives an accurate account of the relevant taught material (as exemplified in the model answer), and (3) shows evidence of some outside reading or critical or analytical ability <sup>**</sup> .
58 55 52	<b>Good</b> ( <i>approx Lower 2<sup>nd</sup> class</i> ): Answer shows (1) a grasp of the basic concepts and facts, (2) gives a mainly accurate account of at least half of the relevant taught material, but (3) does not go beyond that, or goes beyond that but is then marred by significant errors.
48 45 42	<b>Adequate</b> ( <i>approx 3<sup>rd</sup> class</i> ): Answer shows (1) only a moderate grasp of the subject, and (2) is marred by major errors or brevity, but (3) by presenting at least a third of the material expected of a Very Good answer, shows sufficient relevant knowledge to reach degree level.
Below 40 38 35	<b>Fail</b> Answer shows a weak grasp of the subject that includes about one third of the material expected for a Very Good answer. Major errors of understanding may be evident, or the answer is too brief to show better than a Pass level of understanding.
30 25	Answer shows (1) a confused understanding of the question, and (2) insufficient relevant knowledge to reach degree level by presenting less than a third of the material expected of a Very Good answer.
20 15	Answer is too inaccurate, too irrelevant, or too brief to indicate more than a vague understanding of the question, and presents less than a quarter of the material expected of a Very Good answer.
10 5	Answer presents only one, two or three sentences or facts that are correct and relevant to the question.
0	Answer contains nothing correct that is relevant to question.

<sup>\*\*</sup>Analytical = assessing a hypothesis or statement by breaking it down into its elements and examining their inter-relationships and contribution to the whole; cf. critical = judging a hypothesis or conclusion by examining the validity of the evidence adduced for it.

## **BIOGRAPHIES**

### **Dr Toby Athersuch, Lecturer in Environmental Toxicology & Biomarkers, MRC-HPA Centre for Environment & Health, Imperial College London**

Toby started at Imperial College London as a PhD student in 2002, studying the metabolism of aromatic amines in vivo using a range of analytical chemistry techniques including nuclear magnetic resonance (NMR) and mass spectrometry (MS). His postdoctoral work included the application of these techniques to address the effects of chemical carcinogens on in vitro cell systems (EU FP6 carcinoGENOMICS) and in the search for 'omics' markers that can link environmental exposures to pollutants with cancer endpoints (EU FP7 EnviroGenomarkers). He continues to be involved in these projects, and was appointed as a lecturer at the MRC-HPA Centre for Environment & Health in 2010. His primary research is directed at developing novel analytical and statistical techniques for metabolic profiling, and to implement them as an efficient tool for providing individual-level, information rich measurements in molecular epidemiological studies. In addition to his research, he is heavily involved in the running of the postgraduate training programme for the MRC-HPA Centre.

### **David Beran, UCL, Project Coordinator**

David Beran has been based at University College London in parallel to the role of Project Coordinator for the International Insulin Foundation since 2002. The Foundation I work for was established to investigate barriers to care for people with diabetes in resource poor countries. For this project I developed a protocol in order to provide a framework for assessing health systems with regards to the provision of diabetes care. To date I have carried out this assessment and implementation of projects to address the findings of these studies in Kyrgyzstan, Mali, Mozambique, Nicaragua, the Philippines, Vietnam and Zambia and have had the chance to do similar work in Thailand.

During these projects I had the chance to work with a variety of colleagues from International Organisations, Donor Agencies, Ministries of Health, International and National Non Governmental Organisations, healthcare workers and people with diabetes. I have also managed a project on behalf of Diabetes UK in Mozambique as well as collaborating closely with the World Health Organization and International Diabetes Federation.

Through this work I have assisted in the preparation of two national policy documents on diabetes and Non Communicable Diseases in Mozambique and Tanzania. This work meant I needed to look at the overall health challenges in a broad sense as development, trade, urbanisation and other factors can all impact on the burden of Non Communicable Diseases.

### **Marta Blangiardo, Lecturer in Biostatistics, MRC-HPA Centre for Environment and Health, Department of Epidemiology and Biostatistics.**

Marta has a degree in Statistics, Demography and Social Sciences from the University of Milan (Italy) and a PhD in Applied Statistics from the University of Florence (Italy). She joined Imperial College in 2005 as Research Associate in Biostatistics and became a Lecturer in 2010. She works on Bayesian hierarchical models with applications on environmental epidemiology. Some of her recent works includes the development of Bayesian models for a better characterisation of exposure to air pollution using time activity data and the specification of latent variables models for linking pesticide exposure during pregnancy and adverse birth outcomes.

**Dr. Simon Buckle, Director, Climate Policy, Grantham Institute**

Simon joined the Grantham Institute for Climate Change at Imperial as Policy Director in September 2007 after some 20 years working in the Foreign and Commonwealth Office, as an economist in the Bank of England (1998-2002) and in the Ministry of Defence (1988-91). Simon originally trained and worked as a theoretical physicist in low-temperature physics and quantum optics. Simon was awarded a CMG in the 2007 New Year's Honours and is a Fellow of the Institute of Physics. Simon became Pro Rector for International Affairs at Imperial on 1 October 2011.

**Queenie Chan PhD, Department of Epidemiology and Biostatistics, School of Public Health, Imperial College London, UK**

Dr Chan is a research associate in the Department of Epidemiology and Biostatistics. She has been the statistician for the INTERMAP Study since May 2000 and is the co-author of over 20 peer reviewed publications on the INTERMAP Study. She is currently the lead statistician and the coordinator for INTERMAP London Coordinating Centre, working closely with Professors Elliott, Nicholson and Holmes, Dr Stamler and colleagues in Japan, People's Republic of China and US.

**Professor Majid Ezzati, Chair in Global Environmental Health, Imperial College London**

Majid Ezzati is the Chair in Global Environmental Health at Imperial College London. His research focuses on exposure to, and health effects of, environmental, behavioural, nutritional, and metabolic risk factors and their interventions at the population level. The research activities routinely combine concepts, data, and methods from a range of environmental, health, and quantitative sciences with a systems perspective. Ezzati's research group collect and analyze primary field data on environmental risk factors (primarily air pollution). They also develop and apply analytical models to combinations of primary and secondary data to estimate health effects of risk factor exposures and interventions. He led the World Health Organization's collaborative project on risk factors (titled "the Comparative Risk Assessment Project") which appeared in the *World Health Report 2002: Reducing Risks, Promoting Healthy Life* and is currently leading the



Comparative Risk Assessment component of the Global Burden of Diseases, Injuries, and Risk Factors 2010 Study.

**Dr. James Flanagan. Research Fellow, Department of Surgery and Cancer, Imperial College London**

**James** has completed his PhD in 2002 at the Queensland Institute of Medical Research (QIMR) in Brisbane, Australia. He pursued postdoctoral training in Cancer Genetics (QIMR), Epigenetics (University of Toronto) and Cancer Epigenetics (University College London). In 2009 he was awarded a Breast Cancer Campaign fellowship to move to Imperial College London as a group leader within the Epigenetics Unit of the Department of Surgery and Cancer. His current research aims to investigate normal epigenetic variation as a mechanism for carcinogenesis. Current projects includes using DNA methylation profiling to define tumour subgroups, identification of epigenetic risk markers in breast cancer patients, determining the prognostic value of epigenetic variability in patients in clinical trials and a recently funded project to investigate the use of DNA methylation for characterising pathogenicity of BRCA1 unknown variants. He is currently funded by Breast Cancer Campaign and Cancer Research UK

**Ben Hawkins, Research Fellow, Department of Global Health and Development, LSHTM**

Ben Hawkins is a Research Fellow in the Department of Global Health and Development at the London School of Hygiene and Tropical Medicine. His research interests include the alcohol and tobacco policy in the UK and beyond. He has recently completed an AERC/ARUK funded research project on alcohol policy in the UK and is currently working on an NIH funded project on global trade agreements and tobacco regulation. Methodologically, his speciality is qualitative research methods including semi-structured interviews and documentary analysis.

**Professor Marjo-Riitta Järvelin, Director of Postgraduate Studies, Imperial College London**

Professor Marjo-Riitta Järvelin was trained in medicine in the University of Oulu, Finland and in Environmental Epidemiology and Policy at the London School of Hygiene and Tropical Medicine, University of London. She has been affiliated at Imperial College London in the Department of Epidemiology and Biostatistics since 1998. She has been running large-scale population based studies for over 20 years. Her team is currently working on the genetic and early life environmental origins of multi-factorial diseases/disorders in close collaboration with many internationally well-known institutions, groups and networks. She is a director of the widely acknowledged Northern Finland Birth Cohort (NFBC) Studies (about 20 000 subjects, born in 1966 and 1986), and has developed areas of study related to cardiovascular metabolic health. The NFBC team has done pioneering work on smoking and alcohol drinking during pregnancy and its consequences for offspring. Recent research has targeted on genome wide genetic and life-course analyses of intermediate cardiovascular phenotypes such as blood pressure, lipids, obesity and metabolic syndrome. Professor

Järvelin's special focus has been in understanding the disease or disorder development from prenatal period until adult age. She has also a special interest in the methodological aspects related to the analyses of longitudinal lifecourse data. She has also an active role in research training as a Divisional Director of Postgraduate Studies.

**Dr. Mike Joffe, Imperial College London**

Mike Joffe has worked in epidemiology for over 30 years, mainly at Imperial College. His research interests include reproduction, and chemicals and health. He has contributed to methodological development in relation to the evidence base for Health Impact Assessment. He is now working on the philosophy of biology, and on the economics of growth and bubbles.

**Rachel Kelly, PhD student, Imperial College London**

I am a second year PhD Student looking at gene-environment interactions in Non-Hodgkin's Lymphoma. I studied Biological Sciences at Warwick University before completing a Masters in Public Health at the University of Nottingham. For my master's dissertation I developed a model that considered the impact of HPV vaccination on cervical cancer incidence and mortality. This led to a position at the Institute of Cancer Research, Sutton where I worked for three years on the implementation of HPV testing in the cervical screening programme. This convinced me that I wished to pursue a career in research and in October 2010 I began my PhD. My research interests include environmental carcinogens, genetic epidemiology, the use of biomarkers and biostatistical techniques.

**Aneire Khan, Research Assistant, Imperial College London**

Aneire Ehmar Khan is a Research Assistant and a PhD candidate at the Dept. Of Epidemiology and Biostatistics at Imperial College London. She is a Grantham Institute for Climate Change Scholar and her research thesis is investigating "Water salinity and Maternal Health Impacts in coastal Bangladesh". Ms. Khan's research publications include 'Contamination of drinking water in Bangladesh' in the Lancet and most recently, 'Drinking Water Salinity and Maternal Health in Coastal Bangladesh: Implications of Climate Change' in the Environmental Health Perspectives Journal.

In 2010, Ms Khan she received the 1st 'HSBC Climate Change Award' in Bangladesh for her research on Climate Change and maternal health; and has been an invited panelist to "Setting the Scene: Health, Climate Change & Bangladesh" at the 2009 WHO – Government of Bangladesh National Workshop on Climate Change & Health Impacts in Bangladesh.

Ms. Khan completed her MSc in Modern Epidemiology from Imperial College London in 2006; and her BA in Neuroscience & Behaviour from Wesleyan University, Middletown, USA in 2004.

**Dr Tom Lissauer, Honorary Clinical Senior Lecturer, Imperial College London**

Hon. Consultant Paediatrician at Imperial College Healthcare Trust, Consultant Paediatric Programme Director in Global Health at Imperial College London and Hon. Advisor in Child Health at THET (Tropical Health Education Trust).

Previously Consultant Neonatologist and Paediatrician at St Mary's Hospital, with a particular interest in medical education. Was Officer for Examinations at the RCPCH (Royal College of Paediatrics and Child Health). He has edited "Illustrated Textbook of Paediatrics", (Lissauer T and Clayden G, 4th edition published in 2011), a widely used textbook for undergraduates and "Neonatology at a Glance" (Lissauer T, Fanaroff A, 2<sup>nd</sup> edition 2011), an introduction to neonatology for junior doctors and neonatal nurses.

Currently concentrating on International Child Health, mainly in Rwanda, where he conducts regular teaching, training and assessment in neonatology and child health. Initiated and coordinates Imperial College-Rwanda partnership programme of ETAT+ (Emergency Triage and Treatment Plus Admission ) courses for the recognition and management of sick children. Courses conducted by instructors from Kenya for all final year medical students and staff in district hospitals followed by assistance with its implementation to improve patient care. Imperial College will join WHO African Partnership for Patient Safety programme in Rwanda. Also involved in Palestine (course in primary care paediatrics), in Sierra Leone (children's hospital) and North Sudan (postgraduate paediatric assessment).

**Professor Petra HM Peeters, Imperial College London**

Prof P. Peeters is a Dutch Medical Doctor, who has a PhD in cancer epidemiology. She is prof at the University Medical Center in Utrecht, the Netherlands as well as appointed at the Imperial College. Her main interest is in breast cancer etiology and prevention. She is the Principle Investigator of a Dutch cohort participating in the European Prospective Investigation into Cancer and Nutrition (EPIC).

**Terrence Simmons, Project Manager, Imperial College London**

BA History – University of Guyana  
MA – History (Econ) – University of Guyana

Registered PRINCE2 Project and Programme management (MSP) Practitioner – APMG UK

- Current Role – Project Manager to Prof Paolo Vineis, EBS, School of Public Health
- Has worked in international & grassroots-based development for the last 20 years, working in social and economic development areas of health, education, youth and small business development
- Served as Programme Director for the United States Peace Corps in Guyana for 9 years
- Consultant to UNDP and the Ministry of Health of Guyana in community peace building and development of community health partnerships.
- Has worked in London on the development of social infrastructure for Black and other Ethnic Minority Communities including serving on the Advisory Board of London's Minority Ethnic Network (MiNet)

### **Karen Van Veldhoven, PhD student, Imperial College London**

I studied physiotherapy and after that biomedical sciences at the Radboud University in the Netherlands. As part of my masters I performed an 8 month internship at the department of Epidemiology and Biostatistics at Imperial College London, with prof. Paolo Vineis as my supervisor. I investigated the association between physical activity and lymphomas and leukemias in the EPIC study, which resulted in a publication in the European Journal of Cancer. After getting my degree I worked for 1 year as a junior researcher at the Human Genetics Foundation in Turin, Italy where I was involved in various epidemiological studies. In October 2010 I started my PhD at Imperial College London focussing on exposure to environmental pollutants, biomarkers based on –omics technologies and breast cancer risk.

### **Dr. Anne-Claire Vergnaud, Research Associate, Imperial College**

Dr. Anne-Claire Vergnaud received her MSc in Mathematical engineering in biology, statistics applied to social sciences and epidemiology (University of Paris V, 2005) and her PhD in Public Health and Epidemiology (University of Paris V / Paris XI, 2008). Her thesis examined the determinants of weight gain and weight fluctuations and their consequences on cardiovascular disease risk. Since 2008, she is working as a Research Associate in Epidemiology in the Department of Epidemiology and Biostatistics, Imperial College of London. Her current research focussed on two distinct projects. In the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort, she studies the relations between diet and prospective weight gain as well as the individual and combined effect of lifestyle factors on cancer risk and mortality. She is also working on the ongoing Airwave Health Monitoring Study aiming to determine the long term health effect of TETRA (Terrestrial Trunked Radio) exposure in police officers of the United Kingdom. Her current research focuses on TETRA

exposure estimation and the associations between new measures of arterial stiffness and cardiovascular risk factors.

**Professor Paolo Vineis, Chair of Environmental Epidemiology, Imperial College London**

Professor Paolo Vineis is Chair of Environmental Epidemiology at Imperial College London. His research focuses on cancer epidemiology, and in particular environmental causes of cancer, the use of laboratory methods (epigenetics, adducts, mutations) applied to the study of cancer etiology in populations; and gene-environment interactions. He has led methods development in the field of molecular epidemiology. He is Head of the Genetic and Molecular Epidemiology Unit at the HuGeF Foundation in Torino, Italy.