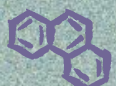




$$X^2 = \frac{\sum (O-E)^2}{E}$$



LONDON SCHOOL OF HYGIENE & TROPICAL MEDICINE

1899



1999

contributing to health worldwide



LONDON SCHOOL OF HYGIENE & TROPICAL MEDICINE
UNIVERSITY OF LONDON

Keppel Street London WC1E 7HT
Tel: +44 (0)207-636 8636
Fax: +44 (0)207-436 5389
Internet: <http://www.lshtm.ac.uk>

Patron

HRH The Prince Philip,
Duke of Edinburgh KG KT

**Chairman of the Court of
Governors**

IP Crawford GM MRCS LRCP
FFCM FFOM DPH DIH DTM&H

**Chairman of the Board of
Management**

The Rt Hon the Baroness
Chalker of Wallasey PC

Dean

Professor HC Spencer
MD MPH DTM&H FACP FACPM
FFPHM

Honorary Fellows

Sir Donald Acheson
Professor W Brass
Professor A Capron
Professor Sir Richard Doll
Dr J R Evans

Dr W Foege
Sir George Godber
Dr D Habte
Dr D A Henderson
Professor R Lainson

Dr A O Lucas
Dr H Mahler
Professor J N Morris
Professor G S Nelson
Sadako Ogata

Professor EHO Parry
Professor J C Waterlow
Dr P O Williams
Lord Wolfson

MISSION STATEMENT

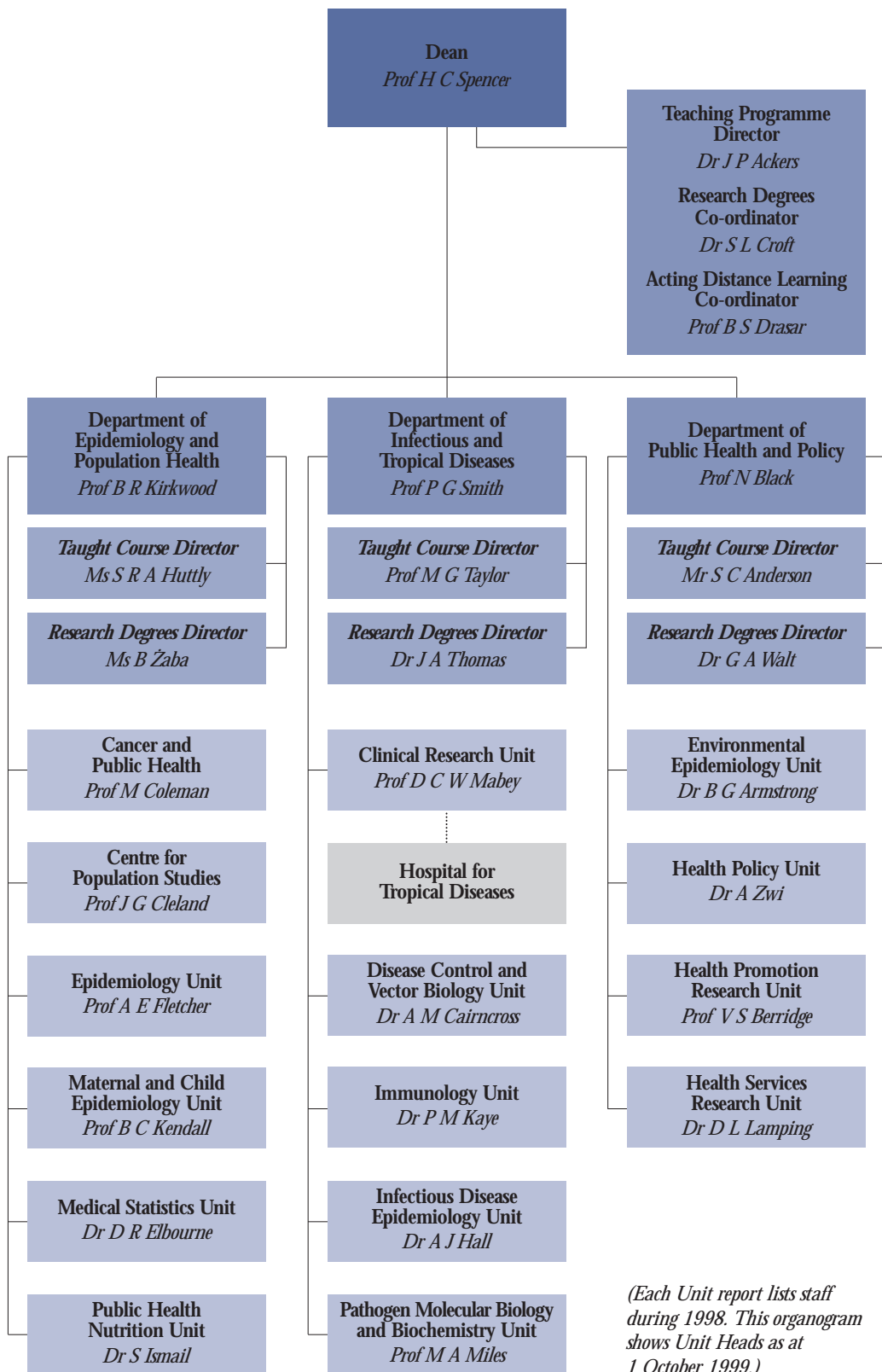
The mission of the London School of Hygiene & Tropical Medicine is to contribute to the improvement of health worldwide through the pursuit of excellence in research, postgraduate teaching, advanced training and consultancy in international public health and tropical medicine. To achieve this mission the School will enhance its role as:

- *Britain's national school of public health,*
- *a leading institution in Europe for research and postgraduate education in public health and tropical medicine, and*
- *an international centre of excellence in public health and medicine in developing countries.*

CONTENTS

	<i>Page</i>
ACADEMIC MANAGEMENT STRUCTURE _____	2
INTRODUCTION _____	3
DEPARTMENT OF EPIDEMIOLOGY AND POPULATION HEALTH	5
Cancer and Public Health Unit _____	7
Centre for Population Studies _____	11
Epidemiology Unit _____	15
Maternal and Child Epidemiology Unit _____	19
Medical Statistics Unit _____	23
Public Health Nutrition Unit _____	26
DEPARTMENT OF INFECTIOUS AND TROPICAL DISEASES	29
Clinical Research Unit _____	31
Disease Control and Vector Biology Unit _____	37
Electron Microscopy and Histopathology Services _____	43
Immunology Unit _____	45
Infectious Disease Epidemiology Unit _____	51
Pathogen Molecular Biology and Biochemistry Unit _____	57
DEPARTMENT OF PUBLIC HEALTH AND POLICY	62
Environmental Epidemiology Unit _____	64
Health Policy Unit _____	67
Health Promotion Research Unit _____	71
Health Services Research Unit _____	75
HOW TO BECOME A RESEARCH STUDENT AT THE SCHOOL _____	80
HOW TO BECOME A POST-DOCTORAL RESEARCH FELLOW _____	80
BUILDING HEALTH RESEARCH CAPACITY GLOBALLY _____	80
INDEXES	81
Outline Index to Regions _____	81
Organization _____	81
Outline Index to Disciplines _____	82
Outline Index to Research Interests of Units _____	83
Outline Index to Countries _____	84

ACADEMIC MANAGEMENT STRUCTURE



INTRODUCTION

I am delighted to present this Research Report which describes the work of the London School for the calendar year 1998 and continues the layout found helpful by readers in previous years, where, for each Unit, there are lists of staff, funding sources and research degree students, a brief report summarizing the Unit's fields of interest followed by a selective account of results and progress in the last year, and a list of its publications. Cross-cutting themes are addressed through the indexes on pages 81-84. Research workers seeking doctoral or post-doctoral places may be interested to see which scientific and professional disciplines are to be found in each Unit (page 82) and policy makers from particular countries may wish to see which Units are collaborating with their scientists, carrying out collaborative studies in their countries, or providing doctoral training for their nationals (page 84).

Ever since the School first opened its doors as the London School of Tropical Medicine on 2nd October 1899, research has been at the heart of the School's mission. The depth and breadth of multidisciplinary research carried out as presented here is an indication of our continuing commitment to scientific excellence. Interested scientists are very welcome to contact Heads of Units or other staff directly if they need further information. A list of Unit Heads as at 1st October 1999 can be found opposite. As always, comments on how to make this report more useful to its readers will be most welcome.

Professor Harrison Spencer
The Dean

September 1999



DEPARTMENT OF EPIDEMIOLOGY AND POPULATION HEALTH

HEAD OF DEPARTMENT

Betty R Kirkwood MA MSc DIC HonMFPHM

DEPARTMENTAL ADMINISTRATOR

Diana Harte

SECRETARY TO HEAD OF DEPARTMENT

Rosie Infanti

ASSISTANT TO DEPARTMENTAL ADMINISTRATOR

Gill Turner

COMPUTER SERVICES MANAGER

Kate Outhwaite BSc

DEPARTMENTAL COMPUTING OFFICERS

James Sanderson BSc

Andrew Reid BA MSc

ASSISTANT COMPUTING OFFICER

Margaret Mutenga

COMPUTING TEACHING CO-ORDINATOR

Judith Bailey (until August 1998)

Jill Szuscikiewicz BA (from September 1998)

COMPUTING TEACHING OFFICER

Barbara Neville BA MSc

TEACHING SECRETARY

Janette Costello

MSc COURSE SECRETARIES

Nathalie Chatelain

Eve Kirunda-Sevume

Bettina Plettenberg

Rehka Soni BA

Val Vickery BA

Aruni Yapa BA

VISITING PROFESSORS

Valerie Beral MBBS MRCP

Karen Dunnell BSc MA HonMFPHM

Stephen J Evans

BA MSc MInstP MBCS FIMA FSS FIS HonMFPHM HonMRCR

Richard GA Feachem

CBE BSc PhD DSc(Med) FEng FICE FIWEM HonMFPHM

John Fox BSc PhD HonMFPHM

Cesar Victora MBBS PhD

HONORARY SENIOR LECTURER

Richard Wiseman PhD

EMERITUS PROFESSORS

William Brass CBE MA FBA

Philip Payne BSc FIBiol

John Waterlow CMG FRS MD ScD FRCP

The Department houses the largest group of epidemiologists, statisticians and medical demographers in Europe, together with nutritionists, social scientists and public health practitioners. It is engaged in an extensive programme of research on the health and nutrition of populations, or subgroups of populations (such as the elderly), in order to inform public health and social policy. This is carried out with a wide network of collaborators in low-, middle- and high-income countries.

The Department currently comprises just over 100 academic staff and almost 50 computing, administrative and secretarial staff. There is a thriving research degree programme enriching the academic life of the Department with about 50 students registered for higher degrees. Research degree students form an integral part of the six academic units. Research being conducted by them is summarized at the end of each Unit's entry.

Much of our research continues to build on the Bradford Hill tradition of well-designed aetiological studies and clinical trials. Increasingly, however, the Department is engaged in multidisciplinary research related to the development and evaluation of interventions, the design

and evaluation of public health programmes and policy analysis. A major development in this new tradition was the creation at the beginning of 1998 of the Cancer and Public Health Unit, bringing together the considerable expertise within the School in this area. This new Unit has a remit to carry out a broad programme of research ranging from descriptive epidemiology through to public health policy on cancer and other chronic diseases. It brings together three professors, Michel Coleman, Tony Swerdlow and Klim McPherson and their research groups, as well a new collaborative programme of work with the Institute of Cancer Research, led by Professor Julian Peto, who now holds a joint position between the School and the Institute.

Our research profile was further expanded in 1998 by the creation of two new senior posts, one in UK demography (with an emphasis on ageing) and another in child health (with an emphasis on health-seeking behaviour and quality of care related to the WHO/UNICEF Integrated Management of the Sick Child Initiative). We were most fortunate to recruit Dr Emily Grundy to the former as Reader in Social Gerontology (Centre for Population Studies) and Dr Carl Kendall to the latter as Professor of Medical Anthropology & International Health (Maternal



and Child Epidemiology Unit). In addition the Public Health Nutrition Unit has been enhanced by the arrival of Dr Andrew Prentice's MRC International Nutrition Unit.

Considerable methodological expertise in the Department means that our substantive research is underpinned by the development of new or refined methodologies in epidemiology, medical statistics, demography and intervention-related research. We have recently started a new MRC co-operative grouping on 'a life courses approach to studying disease'. This builds substantially on existing successful research, but the wider collaboration is extending it in innovative ways and is likely to lead to

major new insights and methodological development. We also received support from the School's Academic Initiative Fund to expand work in clinical trials from its current emphasis on cardiovascular diseases to a range of areas such as perinatal medicine, asthma and HIV.

We are delighted that SmithKline Beecham offered to fund a new Chair in Biostatistics, and most fortunate to have recruited Professor Mike Kenward to this post. He will join the Department in the summer of 1999, and will be building a programme of applied methodological work focusing on issues in the analysis of longitudinal data and missing values.



CANCER AND PUBLIC HEALTH UNIT

Michel Coleman BA BM BCh MSc MFPHM	Professor & Head of Unit	<i>Epidemiologist</i>	FUNDING BODIES British Diabetic Association BUPA Foundation Cancer Research Campaign Civil Aviation Authority Commission of the European Communities Department of Health Foundation for Children with Leukaemia International Life Sciences Institute Medical Research Council NHS Executive
Klim McPherson MA PhD HonMFPHM FMedSci	Professor	<i>Epidemiologist</i>	
Julian Peto MA PhD	Professor	<i>Epidemiologist</i>	
Anthony Swerdlow BM BCh MA FFPHM PhD DM	Professor	<i>Epidemiologist</i>	
Bianca De Stavola BSc MSc PhD	Senior Lecturer	<i>Statistician</i>	
Isabel dos Santos Silva MD MSc DipPH&TM PhD	Senior Lecturer	<i>Epidemiologist</i>	
Elaine Meilahn MPH DrPH	Senior Lecturer	<i>Epidemiologist</i>	
Craig Higgins BSc MSc	Lecturer	<i>Statistician</i>	
Michael Jones BSc MSc	Lecturer	<i>Statistician</i>	
Punam Mangtani BSc MBBS DCH MRCP MRCGP MSc MD	Lecturer	<i>Epidemiologist</i>	
Dee Bhakta SRD RD	Research Fellow	<i>Dietician</i>	
Eldonna Boisson MSc BSc	Research Fellow	<i>Demographer</i>	
Annie Britton BA MSc	Research Fellow	<i>Epidemiologist</i>	
Susan Laing MA PhD	Research Fellow	<i>Epidemiologist</i>	
Geraldine Leydon BA MA	Research Fellow	<i>Sociologist</i>	
Alison Metcalfe BSc	Research Fellow		
Leena Sevak BSc MSc	Research Fellow	<i>Nutritionist</i>	
David Wonderling BA MSc	Research Fellow	<i>Economist</i>	
Fiona Barber SRN	Research Nurse		
Pip Murnaghan OND RGN RNT MPhil	Research Nurse		
Maureen Swanwick SRN NRT	Research Nurse		
Laurent Chenet	Research Assistant		
Gerhart Knerer MA MSc	Research Assistant	<i>Statistician</i>	
David Mayer BSc MSc	Research Assistant		
Bonita Peachey BA	Research Assistant		
Minouk Schoemaker BSc MSc	Research Assistant	<i>Statistician</i>	
Janette Dobbins BSc MSc	Data Manager		
Steve Bond	Computer Officer		
Debbie Carson BA	Computer Staff		
Zongkai Qiao MPH MSc	Computer Officer		
Rakhi Kabawala	Project Interviewer		
Nidhi Khurana BCOM(Hons) MCOM	Project Interviewer		
Christine Johnson	Research Clerk		
Ha Nguyen	Research Clerk		
Joyce Nicholas	Research Clerk		
Teresa Thorpe	Research Clerk		
Katie Andrew	Project Secretary		
Christine Brandon Jones	Secretary		
Evelyn Middleton	Programme Secretary		
Pascale Grosclaude	Visiting Research Fellow	<i>Tarn Cancer Registry, France</i>	
Alexandre Pitard PhD	Visiting Research Fellow	<i>Université de Franche-Comté, France</i>	

The Cancer and Public Health Unit was formed on 1 January 1998 to provide a focus for the School's research on public health problems due to cancer and to other chronic diseases, particularly diabetes and coronary heart disease (CHD).

TRENDS IN CANCER INCIDENCE, MORTALITY AND SURVIVAL

In collaboration with the Office for National Statistics (ONS) and with funding from the Cancer Research Campaign, Michel Coleman has co-ordinated a major study on cancer survival trends by material deprivation in England and Wales

over the period 1971-95 among almost three million patients. A book and a CD-ROM with the data and the findings were published (COLEMAN, MP et al. *Cancer survival trends in England and Wales 1971-1995: deprivation and NHS region*. London: The Stationery Office, 1999. *Studies in Medical & Population Subjects no.61*. ISBN 0-11-621031-1). Survival rates in the 100 Health Authorities are included among NHS outcome indicators and the stability of ranking and the effects of spatial auto-correlation are being examined. We have also made a major contribution to the EURO CARE study of cancer treatment and survival, which



provides comparisons of cancer survival across 17 European countries. A monograph with the main findings from this international study will be published in 1999. We have also conducted a major analysis of long-term trends in cancer incidence and mortality in the UK and a book with the major findings is being prepared in collaboration with Sir Richard Doll (Oxford University).

We have developed a computer algorithm to ascribe ethnicity, religion and region of origin of South Asians, the largest minority ethnic group in Britain, on the basis of their names. The dictionary contains about 20,000 first names and surnames. The algorithm performed well on preliminary validation. It is now being used in mortality and cancer registration data to examine the patterns of illness between the host and the migrant population in relation to their varying experience of environmental factors.

REPRODUCTIVE-RELATED CANCERS AND OTHER CHRONIC DISEASES IN WOMEN

The Unit has been studying how reproductive factors and sex hormones relate to chronic disease risk, in particular female-reproductive cancers and CHD in women. We contributed to a population-based cohort study of cancer risk in the relatives of women with breast and ovarian cancer and investigated the causes of breast (and testicular) cancer in a large population-based study of cancer in twins. We are now co-ordinating a national case-control study of the risk of second cancers of the uterus, ovary, large bowel and liver following tamoxifen treatment; a prospective study on the role of oestrogen metabolism in the risk of breast cancer; and a case-control study of contralateral breast cancer in young women. We are also conducting a case-control study to examine the protective effect of fruit and vegetables (mediated by phyto-oestrogens) on breast cancer risk in women of South Asian ethnicity.

We have been exploring the hypothesis that sex hormone levels underlie the difference in CHD risk between men and women, through population-based studies of exposure to sex hormones. In a cohort study of women from Guernsey, we are relating CHD mortality over a 20-year follow-up to endogenous androgen levels. We have also been involved in a study of bone density and hormone levels in women.

FOLLOW-UP OF CLINICAL COHORTS

The Unit is involved in following large patient cohorts, for the long-term effects of the diseases and their treatments on the risks of unwanted complications. We have reported on risks of testicular cancer several decades after orchidopexy and hormonal treatments for cryptorchidism, and second malignancy after Hodgkin's disease, as well as the long-term follow-up of patients with congenital adrenal hyperplasia and insulin-treated diabetes. A cohort of patients who underwent cardiothoracic transplantation, and large cohorts of patients with various genetic disorders and other studies are close to fruition. A long-term cohort study of 24,000 women treated

variously for menorrhagia is being set up.

HEALTH EFFECTS OF EXPOSURE TO IONIZING AND NON-IONIZING RADIATION

Our research on ionizing radiation has involved both internally deposited radionuclides – from Thorotrast in a Portuguese population and from plutonium in nuclear workers in the UK – and external radiation, in nuclear workers and in cancer patients. We also examined the influence of pigmentation on melanoma risk, worked on the dosimetry of ultraviolet radiation exposure, and participated in various case-control studies of melanoma.

HEALTH SERVICES RESEARCH

The information services for cancer patients and their families are being studied in collaboration with Cancer BACUP, to evaluate local services and improve understanding of cancer patients' information needs. We are also carrying out an audit of advice given at 27 cancer genetic services throughout the UK with follow-up of patients seen. We are beginning a national case-control study of cervical cancer to assess the influence of screening history on the risk of death. We have also completed a study of intensive care in the UK, and estimated the attributable mortality associated with the refusal to admit appropriately referred patients. The efficiency of intensive care in Colombia is being studied.

METHODOLOGICAL WORK

Unit staff are tackling the methodology of survival analysis, the bias caused by migration in case-control studies of prenatal factors for later disease, and statistical methods for the analysis of repeated exposure measurements in longitudinal studies. We have been investigating the possible role of patient preferences in assessing the effect of treatments, quantifying the extent to which randomized controlled trials might be misleading if such preferences were to affect the outcome. The Unit uses models to predict the health effects, including cancers, of hormone replacement therapy (HRT) and alcohol use. We have also reviewed health-related theoretical models for understanding the determinants of behavioural change. Isabel dos Santos Silva published a textbook on methodological principles in cancer epidemiology, with the International Agency for Research on Cancer.

OTHER RESEARCH

We are carrying out studies: of trends in mortality from Creutzfeldt-Jakob disease (CJD); on the possible mis-certification at death of CJD in the past; on drink driving; on alcohol policy in Europe; on the prognosis in primary biliary cirrhosis; on the assessment of foetal compromise by Doppler; on the diet of populations in Britain; on the cost-effectiveness of hepatitis B vaccination; and on the notification of tuberculosis in England and Wales.

FROM RESEARCH TO POLICY

We have contributed to debates on the future of public health



in the UK; to the Acheson Inquiry on Inequalities in Health, to the Chief Medical Officer's review of the public health function; and to the development of multidisciplinary public health. We have helped to set up the UK Health Policy Group at the School, to bring together researchers from all Units with an interest in the application of public health

research in the policy arena. Klim McPherson has made a contribution to the assessment of different methods of training and accreditation of specialists in public health in the UK, in collaboration with various national bodies and the NHS executive. An evaluation of the EC Europe Against Cancer programme was also co-ordinated in the Unit.

RESEARCH DEGREE STUDENTS

Dee Bhakta (UK). Dietary intake, nutritional status and chronic diseases in South Asian and British women.

Dympna Edwards (UK). Variations in head and neck cancer services.

Shin Lan Koong (Taiwan). Evaluation of cervical screening policy in Taiwan.

Elena Riza (Greece). Determinants of mammographic parenchymal patterns and implications for breast cancer aetiology: a study in Northern Greece (Ormylia mammography screening programme).

Diane I. Stockton (UK). Cancer survival — understanding geographic and social variation.

Gabriella Torres Mejia (Mexico). Influence of lifestyle and nutritional factors on women's chronic disease.

Regina A Winkelmann (Germany). Cancer registration in the former USSR.

PUBLICATIONS

Bataille V, Grulich A, Sasieni P, SWERDLOW AJ, Bishop JN, McCarthy W, Hersey P, Cuzick J. The association between naevi and melanoma in populations with different levels of sun exposure: a joint case-control study of melanoma in the UK and Australia. *British Journal of Cancer* 1998; 77:505-510.

Boudioni M, Mossman J, Jones AL, LEYDON GM, McPHERSON K. Celebrity's death from cancer resulted in increased calls to CancerBACUP. *British Medical Journal* 1998; 317:1016

Briggs A, Sculpher MJ, BRITTON A, Murray D, Fitzpatrick R. Costs and benefits of primary total hip replacement. How likely are new prostheses to be cost-effective? *International Journal of Technology Assessment in Health Care* 1998; 14:743-761.

BRITTON A. Binge drinking at Christmas. *Marie Claire* 1998;313

BRITTON A, McKee CM, Black NA, McPHERSON K, Sanderson CFB, Bain C. Choosing between randomised and non-randomised studies: a systematic review. *Health Technology Assessment* 1998; 2:

BRITTON A, Thorogood M, Coombes Y, Lewando-Hundt G. Evidence of effective health promotion. *British Medical Journal* 1998; 316:703-704.

Burnette MM, MEILAHN EN, Wing RR, Kuller LH. Smoking cessation, weight gain and changes in cardiovascular risk factors during menopause: The Healthy Women Study. *American Journal of Public Health* 1998; 88:93-96.

Carpenter LM, HIGGINS CD, Douglas AJ, Machonochie NES, Omar RZ, Fraser P, Beral V, Smith PG. Cancer mortality in relation to monitoring for radionuclide exposure in three UK nuclear industry workforces. *British Journal of Cancer* 1998; 78:1224-1232.

COLEMAN MP, Esteve J. Trends in cancer incidence, survival and mortality. In: Husband JE, Resnek RI, eds. *Imaging in oncology*. Oxford: ISIS Medical Media, 1998;

Crook T, Brooks LA, Crossland S, Osin P, Barker KT, Waller J, Smith PD, Yulug I, PETO J, Parker G, Allday MJ, Crompton MR, Gusterson BA. p53 mutation with frequent novel codons but not a mutator phenotype in BRCA-1 and BRCA-2 associated breast tumors. *Oncogene* 1998; 17:1681-1689.

DOS SANTOS SILVA I. Como planejar uma investigacao clinica. Parte 4. Avaliacao de metodos terapeuticos e preventivos. *Clube Anestesia Regional* 1998; 15:27-36.

DOS SANTOS SILVA I. Como planejar uma investigacao clinica. Parte 2. Avaliacao da historia natural de uma doenca ou condicao. *Clube Anestesia Regional* 1998; 14:29-35.

DOS SANTOS SILVA I. Como planejar uma investigacao clinica. Parte 3. Avaliacao de metodos de diagnostico. *Clube Anestesia Regional* 1998; 14:29-35.

ESTEBANEZ P, Grant JC. Value of workplace versus income in determining HIV status and other STDs among a sample of Spanish sex workers. *Sexually Transmitted Diseases* 1998; 25:194-195.

ESTEBANEZ P, Zunzunegui MV, Aguilar MD, Coloma C, Rua-Figueroa M, Fitch K, Grant J, Sarasqueta C, Najera R. Demographic and health survey of Spanish female sex workers: HIV prevalence and associated risk factors. *Journal of Biosocial Science* 1998; 30:365-379.

Ford D, Easton DF, Stratton M, PETO J. The Breast Cancer Linkage Consortium. Genetic heterogeneity and penetrance analysis of the BRCA1 and BRCA2 genes in breast cancer families. *American Journal of Human Genetics* 1998; 62:676-689.

Hemminki E, BRITTON A, Hataea E, McPHERSON K. Time trends of cardiovascular mortality and post-menopausal hormone use in Finland. *European Journal of Public Health* 1998; 8:217-221.

JONES ME, SWERDLOW AJ. Bias in the standardized mortality ratio when using general population rates to estimate expected number of deaths. *American Journal of Epidemiology* 1998; 148:1012-1017.

JONES ME, SWERDLOW AJ, Gill LE, Goldacre MJ. Prenatal and early life risk factors for childhood onset diabetes mellitus: a record linkage study. *International Journal of Epidemiology* 1998; 27:444-449.

JONES ME, SWERDLOW AJ, Griffith M, Goldacre MJ. Prenatal risk factors for cryptorchidism: a record linkage study. *Paediatric and Perinatal Epidemiology* 1998; 12:383-396.

JONES ME, SWERDLOW AJ, Griffith M, Goldacre MJ. Risk of congenital inguinal hernia in siblings: a record linkage study. *Paediatric and Perinatal Epidemiology* 1998; 12:288-296.

Key TJ, Fraser GE, Thorogood M, Appleby PN, Beral VJ, Reeves G, Burr ML, Chang-Claude J, Frenzel-Beyme R, Kuzma JW, Mann J, McPHERSON K. Mortality in vegetarians and non-vegetarians: a collaborative analysis of 8300 deaths among 76,000 men and women in five prospective studies. *Public Health Nutrition* 1998; 1:33-41.

Lakhani S, Jacquemier J, Sloane J, Gusterson BA, PETO J, et al. Multifactorial analysis of differences between sporadic breast cancers and cancers involving BRCA1 and BRCA2 mutations. *Journal of the National Cancer Institute* 1998; 90:1138-1145.

Lanoir D, Chambrier C, Vergnon P, Meynaud-Kraemer L, Wilkinson J, McPHERSON K, Bouletreau P, Colin C. Perioperative artificial nutrition in elective surgery: an impact study of French guidelines. *Clinical Nutrition* 1998; 17:153-157.

Lawrenson RA, LEYDON GM. Life after LIZ. *Health Service Journal* 1998;28-29.

Lawrenson RA, LEYDON GM, Freeman G, Fuller J, Ballard J, Ineichen B. Are we providing for ethnic diversity in A&E departments? *Journal of Ethnicity and Health* 1998; 3:

LEYDON GM, Lawrenson R, Meakin R, ROBERTS JA. Cost of alternative models of care for primary care patients attending accident and emergency departments: a systematic review. *Journal of Accident and Emergency Medicine* 1998; 15:77-83.

LEYDON GM, Lawrenson RA, Meakin R, Roberts JA, Freeman GK. Primary care in accident and emergency departments. *Journal of Accident and Emergency Medicine* 1998; 15:435

Majeed A, Lehmann P, Kirby L, COLEMAN MP. Mortality from dementias and neurodegenerative disorders in people aged 15-64 in England and Wales in 1979-96. *British Medical Journal* 1998; 317:320-321.

MANGTANI P, DOS SANTOS SILVA I. Phyto-oestrogens and breast cancer. *Lancet* 1998; 351:137

Massoudi MS, MEILAHN EN, Orchard TJ, Foley TP, Kuller LH. Does thyroid function play a role in the lipid and weight changes observed at menopause? Findings from the Thyroid Study in Healthy Women (TSH-W). *Journal of Women's Health* 1998; 6:553-558.

McKee CM, BRITTON A. The positive relationship between alcohol and heart disease in eastern Europe: potential physiological mechanisms. *Journal of the Royal Society of Medicine* 1998; 91:402-407.

McKee CM, BRITTON A, Black NA, McPHERSON K, Sanderson CFB, Bain C. Choosing between randomised and non-randomised studies. In: Black NA, Brazier J, Fitzpatrick R, Reeves B, eds. *Health Services Research Methods A Guide to Best Practice*. London: BMJ Books, 1998:61-72.

McKee CM, Figueras J, CHENET L. Health sector reform in the former Soviet Republics of Central Asia. *International Journal of Health Planning and Management* 1998; 13:131-147.

McPHERSON K. Wider "causal thinking in health sciences". *Journal of Epidemiology and Community Health* 1998; 52:608-613.

McPHERSON K. Alcohol and breast cancer. *European Journal of Cancer* 1998; 34:1307-1308.

McPHERSON K, BRITTON A. Are randomised controlled trials controlled? Patient preferences and catch 22. *Journal of Epidemiology and Community Health* 1998; 52:677-678.

McPHERSON K, Chalmers I. Incorporating patient preferences into clinical trials. Information about patients' preference must be obtained first. *British Medical Journal* 1998; 317:78

MEILAHN EN. Sex hormones and coronary artery disease. In: Ness R, Kuller LH, eds. *Health and disease in women: environmental and biological influences*. Oxford: Oxford University Press, 1998.

MEILAHN EN, DE STAVOLA BL, Allen DS, Fentiman IS, Bradlow HL, Sepkovic DW, Kuller LH. Do urinary oestrogen metabolites predict breast cancer? Gurnsey III cohort follow-up. *British Journal of Cancer* 1998; 78:1250-1255.

MRC Working Party in Childhood Leukaemia, PETO J. Impact of age on outcome in lymphoblastic leukaemia, MRC UKALL X and XA compared: a report from the MRC Paediatric and Adult Working Parties. *Leukaemia* 1998; 12:463-473.

Osin P, Gusterson BA, Philip E, Waller J, Bartek J, PETO J, Crook T. Predicted anti-oestrogen resistance in BRCA-associated familial breast cancers. *European Journal of Cancer* 1998; 34:1683-1686.

Overton C, Hargreaves J, METCALFE A, McPHERSON K, Maresh M. MISTLETOE 3 years on. *British Journal of Obstetrics and Gynaecology* 1998; 105:25

Palace J, Newsom-Davis J, Lecky B, McPHERSON K, Myasthenia Study Group. Randomised double blind trial of prednisolone alone or with azathioprine in myasthenia gravis. *Neurology* 1998; 50:1778-1783.

PITARD A, Dussaucy A, Meslan Y, Arveux P. Open cancer registries and the Internet: status of websites in 1998. *Bulletin du Cancer* 1998; 85:899-901.

Rooney C, McMichael AJ, Kovats RS, COLEMAN MP. Excess mortality in England and Wales, and in Greater London, during the 1995 heatwave. *Journal of Epidemiology and Community Health* 1998; 52:482-486.

Sant M, Caopocaccia R, Verdecchia A, Esteve J, Gatta G, Micheli A, COLEMAN MP, Berrino F, Eurocar Working Group. Survival of women with breast cancer in Europe: variation with age, year of diagnosis and country. *International Journal of Cancer* 1998; 77:679-683.

SWERDLOW AJ. New research in testicular cancer epidemiology. In: Jones WG, Appleyard I, Harnden P, Joffe JK, eds. *Germ Cell Tumours IV*. John Libbey & Co. Ltd. 1998;3-8.

SWERDLOW AJ. Data quality in vital and health statistics. In: Armitage P, Cotton T, eds. *Encyclopedia of biostatistics*. Chichester: Wiley, 1998:1081-1089.

SWERDLOW AJ, DE STAVOLA BL, SWANWICK MA, Machonochie NES. Twinning, cancer, and genetics. *Lancet* 1998; 351:909-910.

SWERDLOW AJ, DOS SANTOS-SILVA I, Reid A, Qiao Z-K, Brewster D, Arrundale J. Trends in cancer incidence and mortality in Scotland: description and possible explanations. *British Journal of Cancer* 1998; 77:1-54.



SWERDLOW AJ, HIGGINS CD, Brook CGD, Dunger DB, Hindmarsh PC, Price DA, Savage MO. Mortality in patients with congenital adrenal hyperplasia: a cohort study. *Journal of Pediatrics* 1998; 133:516-517.

SWERDLOW AJ, Weinstock MA. Do tanning lamps cause melanoma? An epidemiologic assessment. *Journal of the American Academy of Dermatology* 1998; 38:89-98.

Trott KR, SCHOEMAKER MJ, Takahashi T, Fujimori K, Nakashima N, Othomo H, Watanabe M, Satomi S, Simon SL. Thyroid cancer and thyroid nodules in the people of the Marshall Islands potentially exposed to fall out from nuclear weapons testing. In: *International Seminar on Radiation and Thyroid Cancer*. Cambridge: 1998.

Van Leeuwen F, SWERDLOW AJ, Valagussa P, Tucker M. Second cancers. In: Mauch P, Armitage J, Diehl V, Hoppe R, Weiss M eds. *Hodgkin's disease*. Philadelphia: Lippincott-Raven, 1998.

WERNEKE U, McPHERSON K. Extending the benefits of breast cancer screening. *British Medical Journal* 1998; 317:360-361.

WONDERLING DE. Introduction to health economics. In: *Health economics and financing*. London: University of London, 1998.

WONDERLING DE. Market analysis. In: *Health economics and financing*. London: University of London, 1998.

REPORTS

BRITTON A, McKee CM. *Main public health issues in the European Union*. Report to Société Française de Santé Publique. 1998.

Bury J, McPHERSON K, Malpas J, Simonen O, CHENET L, Gary O, Lecomte P, Lessof S. *Evaluation of the Second Action Plan of the 'Europe Against Cancer' Programme 1990-94 & 1995*. Report to Europe Against Cancer. 1998.

International Programme on Chemical Safety, (PETO J.) *Environmental Health Criteria 203 - Chrysotile Asbestos*. Report to WHO. 1998.

Lawrenson RA, LEYDON GM, Newson RB, Feher MD. *Coronary heart disease in women with diabetes: the influence of diabetic treatment, hysterectomy and the use of hormone replacement therapy*. British Diabetic Association. 1998.

LEYDON GM, Lawrenson RA, Williams TJ, Feher MD. *Prescribing of contraception to young women with insulin-treated diabetes mellitus (ITDM)*. British Diabetic Association. 1998.

National Heart Forum Working Group, McPHERSON K. *Strengthening Public Health: Proposals for National Public Health Structures*. Report to the National Heart Forum. 1998.



CENTRE FOR POPULATION STUDIES

John Cleland MA	Professor & Head of Unit	<i>Demographer</i>	FUNDING BODIES Department for International Development (DIFD) Department for Social Security Family Care International Economic and Social Research Council Family Policy Studies Centre Ford Foundation Mellon Foundation Nuffield Foundation Population Council Rockefeller Foundation The Wellcome Trust World Health Organization
William Brass CBE MA FBA	Emeritus Professor	<i>Demographer</i>	
Emily Grundy MA MSc PhD	Reader	<i>Demographer</i>	
Fatima Juarez BSc MSc PhD	Senior Lecturer	<i>Demographer</i>	
Ian M Timæus MA MSc(Econ) PhD	Senior Lecturer	<i>Demographer</i>	
Basia W Zaba BSc MSc	Senior Lecturer	<i>Demographer</i>	
Sarah Castle BA PhD	Lecturer	<i>Demographic Anthropologist</i>	
Lynda Clarke BSc MSc	Lecturer	<i>Demographer</i>	
Louisiana Lush MA MSc	Lecturer	<i>Policy Analyst</i>	
Sarah Salway BA MSc PhD	Lecturer	<i>Demographer</i>	
Andrew Sloggett MSc MRPharmS	Lecturer	<i>Demographer</i>	
Brent Wolff MHS MA PhD	Lecturer	<i>Sociologist</i>	
Mohamed Ali BSc MSc	Research Fellow	<i>Statistician</i>	
Maia Ambegaokar BA MSc MBA	Research Fellow	<i>Management and Evaluation Analyst</i>	
Martine Collumbien MSc(Agric) MSc	Research Fellow	<i>Demographer</i>	
Megan Douthwaite BA MSc	Research Fellow	<i>Demographer</i>	
Masuma Mamdani BA MPH	Research Fellow	<i>Epidemiologist</i>	
Nicola Shelton BSc Dip StatsComp	Research Fellow	<i>Population Geographer</i>	
John Simons BA BSc(Econ)	Honorary Research Fellow	<i>Sociologist</i>	
Susan Harris BA MSc	Research Assistant	<i>Demographer</i>	
Gemma Holt BSc MSc	Research Assistant	<i>Demographer</i>	
Richard White BSc MSc	Research Assistant	<i>Demographer</i>	
Andrew Reid BA MSc	Computing Officer		
John GC Blacker MA PhD	Visiting Research Fellow	<i>Demographer</i>	
Evelyn Dodd BA	Unit Secretary		
Huyette Shillingford	Secretary		
Rekha Soni BA	Course Secretary		

The Centre is an interdisciplinary unit focusing on the measurement and explanation of population trends, and their consequences, in both developed and developing countries. The recruitment of Emily Grundy, Reader in Social Gerontology, has strengthened research activities in UK demography. Close links with the Family Policy Studies Centre ensure rapid dissemination of recent research results and their policy implications. A DFID programme grant supports much of the Centre's work on population and reproductive health in developing countries, with a particular focus on sub-Saharan Africa and South Asia.

POPULATION AND HEALTH IN THE DEVELOPED WORLD

Much of the completed work of the Centre staff working on developed countries concerned family and household circumstances and change across the life course, particularly in relation to health and well-being. An investigation by Andy Sloggett with Professor Glyn Lewis (University of Cardiff) of the ONS Longitudinal Study revealed that the risk of suicide was more strongly associated with lack of job security than with other socio-economic variables. Approximately 7% of suicides may be attributable to job insecurity, a figure which rises to nearly 13% for younger men.

In work with Glyn Lewis and Dr S Weich (Royal Free Hospital), Andy Sloggett used the British Household Panel

Study to investigate the link between common mental disorders and the number of social roles (worker, spouse, carer, etc.) which men and women hold. The hypothesis that common mental disorders are associated with unusually high or low numbers of social roles had some support but this did not explain the higher prevalence of common mental disorders amongst women.

Work on deprivation, with Professor H Joshi (Institute of Education), again made use of the ONS Longitudinal Study. Several adverse or 'inauspicious' life events (low birthweight, teenage birth, sole registered birth) showed strong associations with an areal index of deprivation. In most instances, but not all, personal or household factors outweighed the ecological measure in explaining incidence. The work demonstrated that, although personal factors seem overriding, census-based measures of local area deprivation can help identify not only mortality differentials but a variety of other poor outcomes. The incidence of teenage pregnancy and single-registered births appeared particularly sensitive to the social profile of an area.

Lynda Clarke, in collaboration with Dr E Cooksey (Ohio State University) undertook a comparative analysis of the socio-demographic profiles of fathers, and determinants of absent fatherhood in Britain and the United States. They found that, although fathers are on average younger in the



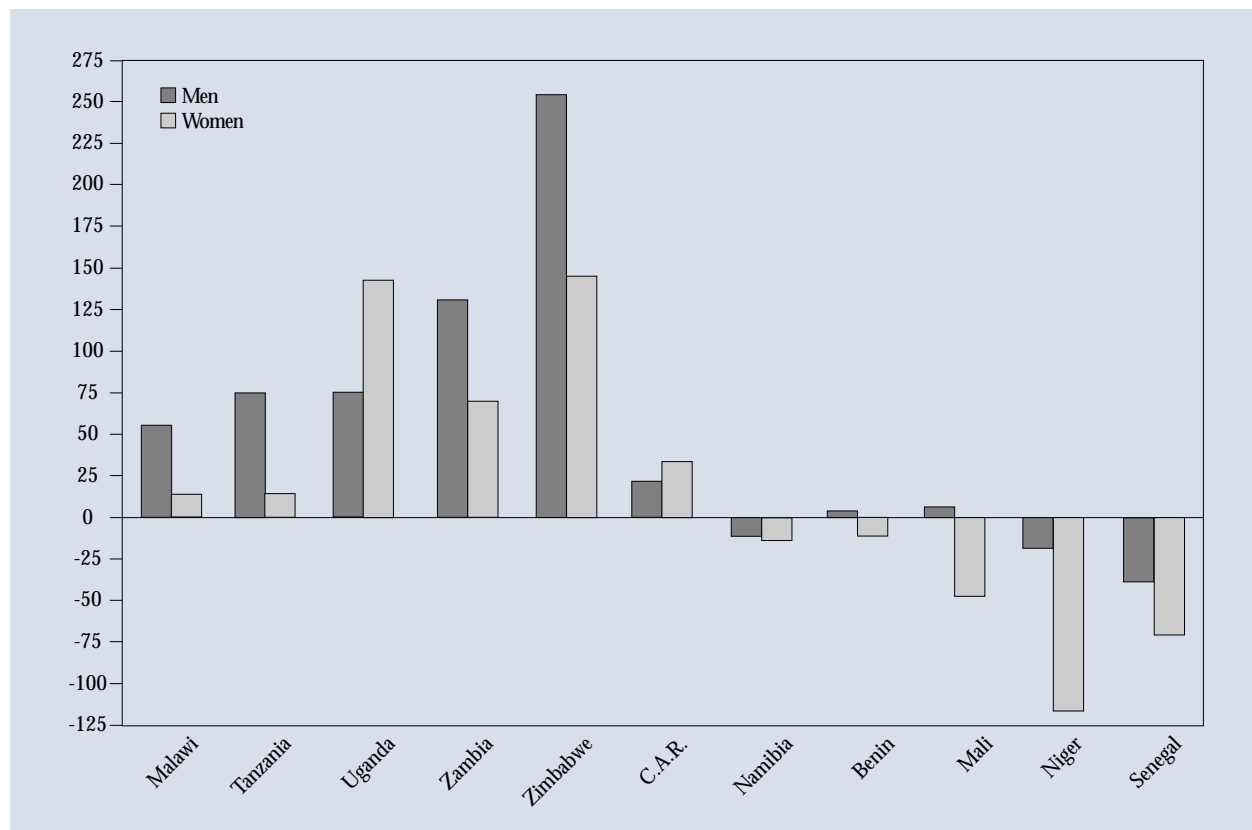
USA than in Britain, predictors of fathers' residency with their children are remarkably similar in the two countries. In both countries, the strongest predictor of a father's absence is the parents' relationship to each other at the time of the child's birth. Clarke also continued collaborative work with colleagues from City University on the effects of demographic change on the well-being of children and with the Family Policy Studies Centre on trends and patterns of childlessness in Britain. Analyses of longitudinal data from Britain and the USA showed an association between family type and child development in both countries. However, in the USA this association was stronger. Associations between household type, household change, migration and health at the other end of the age spectrum were the focus of some of Emily Grundy's work. Using data from the ONS Longitudinal Study she examined transitions between different types of household in 1971-81 and 1981-91. In the second decade, higher proportions of the very old moved to institutional care, while the proportion moving to join relatives was lower than in 1971-81. Regional differences in household type and household transitions diminished over the period considered. Other work included overviews of health status in later life and further consideration, with Ann Bowling, of the relationship between social networks and health.

MORTALITY IMPACT OF AIDS IN AFRICA

In most of sub-Saharan Africa, the coverage of routine systems for the registration of deaths is very low. Thus, it is difficult to measure the impact on mortality of the HIV

epidemic in this region. Estimates and projections produced by United Nations (UN) agencies and others indicate that massive declines in life expectancy have occurred in the more severely affected countries during the last decade. Until now, it has only been possible to document this directly for a few relatively small populations that have been the subject of intensive research. Recently, however, a range of survey and census data has begun to become available that can potentially measure mortality trends up to the early- or mid-1990s in at least some national populations in Africa. In response, in part, to requests from the UN Population Division, UNAIDS and the World Bank, the Centre has undertaken a series of studies to analyse these data.

The results demonstrate that the downward trend in adult mortality that existed in Eastern and Southern Africa until the 1980s has been reversed. In countries where HIV became prevalent by the late-1980s, massive rises in mortality occurred by the mid-1990s. In general, the rise in adult men's mortality has been at least as large as that in women's mortality. Adult death rates doubled or tripled between the 1980s and mid-1990s in Uganda, Zambia, and Zimbabwe. By 1996, 60 per cent of those Zambians who survived to age 15 could expect to die before age 60. Mortality has also risen substantially in the other Eastern and Middle African countries for which data exist but not in Western Africa. This geographical contrast, in combination with the finding that young adults aged 20-39 have been affected most where mortality has risen, makes it clear that the increase in adult



Percentage change over 6 years in adult death rates in 11 African countries, 1980s - 1990s. (C.A.R. = Central African Republic).



mortality is accounted for by AIDS deaths. This research also revealed that under-five mortality is stagnant or rising in several African countries. In most of these countries, this adverse trend is associated with the spread of HIV. In a few countries such as Nigeria and Zambia, however, infant and child mortality began to increase too early in the 1980s for this to be attributable entirely to HIV.

FERTILITY AND FAMILY PLANNING IN PAKISTAN

With funding from DFID, staff have assisted the National Institute of Population Studies in Islamabad in carrying out and analysing a nationally representative demographic survey. Though Pakistan still records much higher fertility than most other South Asian countries, the level of childbearing has now fallen to about 5.5 births per women from an earlier level of 7.0 births. One reason for this decline is rising age at marriage. In 1951 the mean age at marriage for females was 16.9 years. By 1996-7 it had increased to 22.0 years. Increased contraceptive use is the second direct cause. The survey estimated that 24 per cent of married couples are now

practising a method, up from 12 per cent in the early 1990s. Contrary to the stereotype that husbands are hostile or indifferent to family planning, two of the three most commonly used methods in 1996-97 were condoms and coitus interruptus. Megan Douthwaite undertook an intensive small scale-study of couples who practised the latter and found that the decision to use withdrawal was typically a joint one between husband and wife. Neither sex dominated the initiation of use. The main reason for use was the desire to prevent pregnancy without running the risk of side effects that were associated with modern contraceptive methods. Secondary reasons included convenience and privacy. One of the most intriguing findings of the study was the absence of a commonly understood term to describe coitus interruptus. A total of 17 different words or phrases were encountered in the course of the study. This lack of widely-understood terms suggests that the method is not a familiar element of sexual culture in Pakistan but rather that widespread resort to coitus interruptus is relatively recent and not discussed except within marriage.

RESEARCH DEGREE STUDENTS

Nurul Alam (Bangladesh). Child morbidity and health service use in rural Bangladesh.

Paul Armstrong (UK). Some are chosen, some are left! Who waits for elective surgery and why?

Virgile Capo-Chichi (Benin). Birth spacing and contraception in Cotonou, Benin.

Susan Hunter (UK). Fertility effects of HIV: implications for prevalence measurement based on antenatal surveillance.

Mashbileg Maidrag (Mongolia). Adolescents' sexual behaviour in Mongolia: knowledge, attitudes and practices.

Cicely Marston (UK). Teenage sexuality in Mexico.

Tom Moultrie (South Africa). Fertility among urban residents and migrants in South Africa.

Rose Nathan (Tanzania). Fostering and orphanhood in south-east Tanzania.

Lewis Ndhlovu (Zimbabwe). Quality of family planning services and their relationship to facility utilization.

PUBLICATIONS

ALAM N, David P. Infant and child mortality in Bangladesh: age specific effects of previous child's death. *Journal of Biosocial Science* 1998; 30:333-348.

Bhatia JC, CLELAND J. Health Seeking Behaviour of Women and Costs Incurred: An Analysis of Prospective Data. In: *Implementing a Reproductive Health Agenda in India*. New Delhi: Population Council, 1998:207-232.

Bowling A, GRUNDY E. Association between social networks and mortality in later life. *Reviews in Clinical Gerontology* 1998; 8:353-361.

Cheung Y, SLOGGETT AB. Health and adverse selection into marriage: evidence from a study of the 1958 British Birth Cohort. *Public Health* 1998; 112:309-311.

CLARKE L, Cooksey E, Verropoulou G. Fathers and absent fathers: sociodemographic similarities in Britain and the United States. *Demography* 1998; 35:217-228.

CLELAND J. Understanding Fertility Transition: Back to Basics. *Journal of the Centre for Nepal and Asian Studies* 1998; 25:199-214.

CLELAND J. Potatoes and pills: an overview of innovation-diffusion contributions to explanations of fertility decline. In: *Proceedings of Workshop on Social Processes Underlying Fertility Change in Developing Countries*. Washington DC: National Research Council, 1998:1-28.

CLELAND J, Bhatti M, Westlake AJ. Methodology, sample design and implementation. In: Hakim A, CLELAND J, Bhatti M, eds. *Pakistan Fertility and Family Planning Survey 1996-97*. National Institute of Population Studies, Islamabad and Centre for Population Studies, LSHTM, 1998:15-31.

CLELAND J, Harris K. The effect of maternal education on child health and survival - do girls benefit? In: *Too Young to Die: Genes or Gender*. (UN Population Studies no.155). New York: UN, 1998:179-207.

CLELAND J, Kaufmann G. Education, Fertility, and Child Survival: Unravelling the Links. In: Basu AM, Aaby P, eds. *The Methods and Uses of Anthropological Demography*. Oxford: Clarendon Press, 1998:128-152.

DOUTHWAITE M, Miller P, Sultana M, Haque M. Couple communication and sexual satisfaction among withdrawal users in Pakistan. *Reproductive Health Matters* 1998; 6:41-49.

Glaser K, GRUNDY E. Migration and Household Change in the Population Aged 65 and Over, 1971-1991. *International Journal of Population Geography* 1998; 4:323-339.

Gregson S, ZABA BW, Garnett GP, Anderson RM. Projections of the Magnitude of the HIV/AIDS Epidemic in Southern Africa. In: Whiteside A, ed. *Implications of AIDS for Demography in Southern Africa*. University of Natal, 1998:27-60.

GRUNDY E. Ageing, ill health and disability. In: Tallis R, ed. *Increasing longevity: medical, social and political implications*. London: Royal College of Physicians of London, 1998:17-30.

GRUNDY E. The epidemiology of aging. In: Tallis R, Fillit H, Brocklehurst JC, eds. *Brocklehurst's textbook of geriatric medicine and gerontology*. Edinburgh: Churchill Livingstone, 1998:1-17.

Hakim A, CLELAND J. Fertility levels, trends and differentials. In: Hakim A, Cleland J, Bhatti M, eds. *Pakistan Fertility and Family Planning Survey 1996-97*. National Institute of Population Studies, Islamabad and Centre for Population Studies, LSHTM, 1998:105-127.

Hakim A, CLELAND J, Farooqui MNI. Health and Survival. In: Hakim A, CLELAND J, Bhatti M, eds. *Pakistan Fertility and Family Planning Survey 1996-97*. National Institute of Population Studies, Islamabad and Centre for Population Studies, LSHTM, 1998:173-196.

Kelly P, Feldman R, Ndubani P, Baboo KS, TIMEUS IM, Farthing MJG, Wallman S. High adult mortality in Lusaka. *Lancet* 1998; 351:883

LEE K, LUSH L, WALT G, CLELAND J. Family planning policies and programmes in eight low-income countries: a comparative policy analysis. *Social Science and Medicine* 1998; 47:949-959.

Lewis G, SLOGGETT AB. Suicide, deprivation and unemployment: record linkage study. *British Medical Journal* 1998; 317:1283-1286.

McAllister F, CLARKE L. *Choosing childlessness*. London: Family Policy Studies Centre, 1998;

McGlone F, CLARKE L. Disability and carers: the information needs of non-specialist policy users and service providers. In: *Disability and Care: Questions and Needs Considered*. London: Office for National Statistics, 1998:5-36.

SALWAY SM. Contraceptive potential of lactation in Bangladesh. *Asia-Pacific Population Journal* 1998; 13:3-32.

SALWAY SM, Nurani S. Postpartum contraceptive use in Bangladesh: understanding users' perspectives. *Studies in Family Planning* 1998; 29:41-57

SALWAY SM, Nurani S. Uptake of contraception during postpartum amenorrhoea: understandings and preferences of poor, urban women in Bangladesh. *Social Science and Medicine* 1998; 47:899-909.

SALWAY SM, Rahman S, Jesmin S. Women's Employment and Gender Identity Among the Urban Poor of Dhaka. *Discourse* 1999; 2:75-111.

Shehata HA, ALI MM, Evans-Jones JC, Upton GJG, Manyonda IT. Red cell distribution width (RDW) changes in pregnancy. *International Journal of Gynecology and Obstetrics* 1998; 62:43-46.

SIMONS J. Population trends. In: Bailey J, ed. *Social Europe*. Longman, 1998:53-76.

SLOGGETT AB, Joshi HE. Deprivation indicators as predictors of life events 1981-1992 based on the UK ONS longitudinal study. *Journal of Epidemiology and Community Health* 1998; 52:228-233.

SLOGGETT AB, Joshi HE. Indicators of deprivation in peoples and places: longitudinal perspectives. *Environment and Planning A* 1998; 30:1055-1076.

TIMEUS IM. Impact of the HIV epidemic on mortality in sub-Saharan Africa: evidence from national surveys and censuses. *AIDS* 1998; 12(suppl 1):S15-S27.

TIMEUS IM. Demography. In: Armitage P, Colton T, eds. *Encyclopedia of biostatistics*. Chichester: Wiley, 1998:1127-1131.

1899



1999

TIMÆUS IM, Harris K, Fairbairn F. Can use of health care explain sex differentials in child mortality in the developing world? In: *Too Young to Die: Genes or Gender?* New York: United Nations, 1998;154-178.

TIMÆUS IM, Reynar A. Polygynists and their wives in sub-Saharan Africa: an analysis of five demographic and health surveys. *Population Studies* 1998; 52:145-162. Weich S, SLOGGETT AB, Lewis G. Social roles and gender difference in the prevalence of common mental disorders. *British Journal of Psychiatry* 1998; 173:489-493.

ZABA BW, Boerma JT, Marchant T. *Fertility in the era of AIDS: A social science research agenda*. Belgium: International Union for the Scientific Study of Population, 1998;

ZABA BW, Gregson S. Measuring the impact of HIV on fertility in Africa. *AIDS* 1998; 12(suppl 1):S41-S50.

ZABA BW, MADULU N. A Drop to Drink? Population and Water Resources: Illustrations from Northern Tanzania. In: de Sherbinin A, Dompka V, eds. *Water and Population Dynamics: Case Studies and Policy Implications* AAAS, 1998;49-86.

REPORTS

CLARKE L, Condy A, Downing A. *Fathers: a socio-demographic profile*. Family Policy Studies Centre Working Paper 6. London: Family Policy Studies Centre, 1998;1-25.

DOUTHWAITE M. Male involvement in family planning and reproductive health in Pakistan: a review of the literature. Islamabad: Population Council, 1998; Research Report 7.

Hakim A, CLELAND J. Fertility levels, trends and differentials. In: Hakim A, Cleland J, Bhatti M, eds. *Pakistan Fertility and Family Planning Survey 1996-97*. National Institute of Population Studies, Islamabad and Centre for Population Studies, LSHTM, 1998;105-127.

Joshi HE, Cooksey E, CLARKE L, Wiggins D, McCulloch A. Family disruption and the cognitive and behavioural development of the children in longitudinal data from Britain and USA. 1998. National Development Study Working Paper 50.

LUSH L, Makoala S. Integrating HIV/STD services with primary health care in the Northern Province, South Africa. London School of Hygiene and Tropical Medicine, 1998.

MAMDANI M. *Community-Based Programmes Addressing Women's Reproductive Health Needs in India*. London School of Hygiene and Tropical Medicine, 1998.

THESES

Boisson E. (UK) *Sexual behaviour and bias in HIV prevalence estimates based on pregnant women*. (PhD), 1998.

Muhwava W. (Zimbabwe) *Fertility decline in Zimbabwe*. (PhD), 1998.

Taylor H. (UK) *Child work and school attendance in urban India*. (PhD), 1998.

1899



1999

EPIDEMIOLOGY UNIT

Astrid Fletcher BA DipPhysAnthrop PhD HonMFPHM	Professor & Head of Unit	<i>Epidemiologist</i>	FUNDING BODIES Bayer plc British Heart Foundation Commission of the European Communities Department for International Development (DFID) Department of Health Department of the Environment, Transport and the Regions Health Education Authority Medical Research Council North West Thames Regional Health Authority NHS Management Executive (Research and Development Strategy) The Wellcome Trust The World Bank UNICEF World Cancer Research Fund World Health Organization
Anthony J McMichael MBBS PhD FFPHM FAFPHM FRCP	Professor	<i>Epidemiologist</i>	
David A Leon BA PhD	Reader	<i>Epidemiologist</i>	
Paul M McKeigue MB BChir MSc PhD MFPHM	Reader	<i>Epidemiologist</i>	
Patricia E Doyle BSc MSc PhD	Senior Lecturer	<i>Epidemiologist</i>	
Martin Prince BA MB BChir MRCPsych MSc MD	Senior Lecturer	<i>Epidemiologist/Psychiatrist</i>	
Iлона Кoupilová MD PhD MSc DrMedSc	Clinical Lecturer	<i>Epidemiologist</i>	
Hugh Markowe MBBS MSc MFPHM	Honorary Senior Lecturer	<i>Epidemiologist</i>	
Eve Roman BSc PhD	Honorary Senior Lecturer	<i>Epidemiologist</i>	
Martin J Shipley BA MSc	Honorary Senior Lecturer	<i>Statistician</i>	
Elizabeth Breeze BA MSc CStat	Lecturer	<i>Epidemiologist</i>	
Noreen Maconochie BA MSc PhD	Lecturer	<i>Epidemiologist/Statistician</i>	
Joceline Pomerleau BSc MSc PhD	Lecturer	<i>Epidemiologist</i>	
Gail Davey MB BChir MRCP MD	Honorary Lecturer	<i>Epidemiologist</i>	
Lisa Hilder MBBS MSc	Honorary Lecturer	<i>Epidemiologist</i>	
Anthony Kessel BSc MBBS DFFP MPhil MSc	Honorary Lecturer	<i>Public Health & Ethics</i>	
Nita Forouhi BMed Sci MBBS MSc MRCP	Clinical Research Fellow	<i>Epidemiologist</i>	
Elizabeth Hall MB BChir MSc	Clinical Research Fellow	<i>Epidemiologist</i>	
Mariam Molokhia BSc(MedSci) MBBS MRCPGP	Clinical Research Fellow	<i>Epidemiologist</i>	
Sarah Wild MBBS MSc MRCP MRCPGP	Clinical Research Fellow	<i>Epidemiologist</i>	
Lucy Thomas BM MSc	Clinical Research Fellow	<i>Epidemiologist/Distance Learning Health Policy</i>	
Martine Donoghue BSc MSc	Research Fellow	<i>Environmental Epidemiologist</i>	
Sari Kovats BA MSc	Research Fellow	<i>Statistician</i>	
Susan L Stirling BSc MSc	Research Fellow	<i>Epidemiologist</i>	
Martin Bobak DM MSc	Honorary Research Fellow	<i>Epidemiologist</i>	
Robert Clarke MD MRCP MSc DCH	Honorary Research Fellow	<i>Epidemiologist</i>	
Samantha Lewis BA	Research Assistant		
Smita Patel BSc MSc	Research Assistant	<i>Nutritionist</i>	
Susan Prior BA	Research Assistant		
Susana Scott MSc BSc	Research Assistant	<i>Epidemiologist</i>	
Graham Davies MSc BSc	Data Manager	<i>Database & Computing Manager</i>	
Susan Gammerman BA	Part-time Project Manager	<i>Administrator</i>	
Sue P Teoh SRN	Unit Secretary		
Sally Bradley RGN	Research Nurse		
Margo Pelerin SRN HV	Visiting Research Nurse		
Patrick Sampson	Study Clerical Officer		
Rakhi Kabawala	Clerical Assistant (part-time)		
Julia Stowe	Clerical Assistant		
Janet Sullivan	Clerical Assistant		
Jay Olshansky	Visiting Research Fellow	<i>University of Chicago, Illinois,</i>	
Neeral Shah	Visiting Research Fellow	<i>Cornell University, New York</i>	
Kirk Smith	Visiting Research Fellow	<i>University of California, Berkeley</i>	

Research activities in the Epidemiology Unit are diverse. Most of the research is of an aetiological kind (ranging from genes to personal behaviours and exposures, to national diets and drinking behaviours, to global climatic patterns); some assesses preventive interventions; some entails population health risk assessment; and some assesses aspects of health care. Inequalities in health is a theme spanning much of this research.

FOETAL ORIGINS OF ADULT DISEASE

The portfolio of projects on the early origins of adult disease built up in the Unit continues to grow. David Leon and colleagues in the Unit, the Cancer and Public Health and Public Health Nutrition Units has established an MRC Co-operative Group on life course and trans-generational influences on disease risk. This multidisciplinary co-operative aims to address the influence of exposures operating across the life course and between generations and diseases and their



socio-economic variation. A new project from the Co-operative Group will revitalize a cohort of 13,000 Aberdeen schoolchildren born in the 1950s to study life-course influences on birth outcome and health.

Elizabeth Hall, David Leon, Paul McKeigue and Tony McMichael have been studying coronary artery calcification in relation to size at birth and ethnicity in collaboration with the Royal Brompton Hospital. Links with Uppsala, Sweden have continued to bear fruit, with Iлона Koupilova, David Leon and Paul McKeigue showing that blood pressure and known cardiovascular risk factors measured in middle age do not mediate the association between size at birth and cardiovascular mortality. Further work with the Swedish collaborators includes an analysis of blood pressure in relation to size at birth in 160,000 Swedish conscripts and a study of maternal affects on childhood blood pressure and endothelial function.

EPIDEMIOLOGY OF AGEING

Another major programme of work focuses on the elderly, and includes studies of screening, nutritional epidemiology, ophthalmic epidemiology and health inequalities. The MRC Trial of Assessment and Management of over-75s in the community is a randomized trial in 106 general practices (some 40,000 elderly people) which aims to evaluate universal versus selective screening and a multidisciplinary geriatric team versus a primary care team. The main outcomes of the trial are mortality, hospital and institutional admissions, quality of life and economic data on use of health services. Astrid Fletcher, David Leon and Elizabeth Breeze, in collaboration with University College London (UCL) and the Clinical Trials Unit at Oxford have recently completed a re-survey of the Whitehall cohort (9000 men) and shown the persistence of social class inequalities on morbidity in old age.

A variety of studies on nutrition is being undertaken, including a detailed nutrition and physical activity assessment in a sample of 2000 patients in the MRC Elderly Hypertension Trial; and a case-control study of diet and UV exposure as risk factors for cataract in Spain (conducted by Maria Pastor).

REPRODUCTIVE HEALTH

Pat Doyle, Noreen Maconochie and the reproductive epidemiology group are conducting a number of projects. Analyses of the Nuclear Industry Family Study are nearing completion; outcomes of interest include foetal death, congenital malformation and childhood cancer. A large study of reproductive outcome and child health among 53,000 UK veterans of the 1991 Gulf War and a similarly-sized comparison group is in the data-collection phase. Other ongoing studies include the follow-up of women treated for infertility, and the resulting children, and the investigation of variation in the sex ratio. A study of reproduction in dry cleaning workers is now complete. Women who operated dry cleaning machines at the time of their pregnancy had an approximately 50% excess

risk of miscarriage compared to women who did not operate machines but did similar work. Work on low birthweight and infertility in this workforce is ongoing.

PSYCHIATRIC EPIDEMIOLOGY

Martin Prince's main research area is in the aetiology and prevention of late-life mental disorder. The Gospel Oak Study in North London has been a valuable research resource in understanding the relationship between depression, disablement and handicap in later life. Martin Prince, in conjunction with Scott Weich and others from the Royal Free Hospital are evaluating the effects of Camden Council's regeneration project on mental health and quality of life.

The 10/66 group established by Martin Prince is planning pilot studies on the methodological problems associated with dementia diagnosis in low education populations and care arrangements for people with dementia in a range of international settings. Data from the 12-year follow-up of the MRC Elderly Hypertension Trial cohort explores the interaction of genetic and environmental risk factors in the aetiology of dementia. At the other end of the age spectrum, Kumari Galbodi-Liyanage is examining the relationship between nurturing and behaviour disorder in pre-school children in East London.

ETHNIC VARIATION IN DISEASE RISK

Paul McKeigue and colleagues are studying the interactions between genes, metabolism and behaviour that underlie ethnic variation in rates of diabetes and cardiovascular disease. They have developed a novel method to measure whole-body nitric oxide production, and are using this to study the metabolic basis of hypertension in West African and Afro-Caribbean people. Paul McKeigue has devised a novel approach to mapping genes that underlie ethnic differences in disease risk. Collection of hypertensive families for a study based on this design is under way in Trinidad. Mariam Molokhia is studying the relationship of systemic lupus erythematosus to non-African admixture in people of West African descent in Trinidad.

ENVIRONMENT, CLIMATE CHANGE AND HUMAN HEALTH

With colleagues at St George's Hospital and UCL, Tony McMichael has analysed the impact of air pollution patterns in London on short-term variations in deaths, hospital admissions/visits and GP consultations. Formal quantitative risk assessments are now being conducted, to aid policy-making.

The prospect of global climate change poses an unusual challenge to public health scientists: how best to forecast the likely population health impacts? A project funded by the UK government has begun to assess the impact of climate change on malaria, dengue, schistosomiasis, and thermal stress. This work, based on the development, validation and use of mathematical modelling, is being done in collaboration with

colleagues at the University of Maastricht and the Jackson Environment Institute, UCL.

Tony McMichael and Sari Kovats have contributed to several reports of the UN's Intergovernmental Panel on Climate Change Working Group II. Tony McMichael is currently the co-Convening Lead Author of the chapter on Human Health for the IPCC's Third Assessment Report. Sari Kovats has co-authored reviews on the potential health impacts of climate change in Europe for the WHO-European Centre for Environment and Health and an EU-funded project, and has co-authored a report for WHO on the health impacts of El Niño in developing countries.

HEALTH IN EASTERN EUROPE

The epidemiological work of the European Centre on Health of Societies in Transition (ECOHST) continues apace. Substantial socio-economic differences in mortality in Russia both before and after the collapse of the Soviet Union in 1991

have been described by David Leon in collaboration with colleagues from Moscow. Further studies of adult mortality in Russia and Estonia are under way.

Iлона Koupilová with colleagues from the Czech Republic and Estonia has studied social variation in birth outcome during the period of transition in these two countries. Iлона Koupilová also continues to work on the European Longitudinal Study on Pregnancy and Childhood, investigating the effects of social stress and support on health of children and parents in selected European countries.

Most recently ECOHOST has been undertaking a comparative study of injuries and violence among children in the former communist countries of Europe. Rates of mortality from these causes are two to three times higher than in the West and provide an important area for potential effective public health action.

RESEARCH DEGREE STUDENTS

Emily Banks (UK). Prospective study of hormone replacement therapy and breast cancer.

Jenny Evans (UK). Risk factors for age-related macular degeneration.

Kumari Galboda-Liyanage (Sri Lanka). Effect of parenting style on emotional/behaviour disturbance of pre-school children.

Susan Morton (New Zealand). Biological and social determinants of reproductive outcome and inter-generational study of Aberdeen women.

Maria Asuncion Pastor Valero (Spain). The contribution of nutritional intake, sunlight exposure and the history of diarrhoeal illness to the aetiology of cataract.

Katalin Veress (Hungary). Epidemiological approaches to monitoring, defining correlates and prevention of drug abuse in Hungary.

PUBLICATIONS

Al-MAHROOS F, McKEIGUE PM. High prevalence of diabetes in Bahrainis: associations with ethnicity and raised plasma cholesterol. *Diabetes Care* 1998; 21:936-942.

Banks E, BERAL VJ, Reeves G. The epidemiology of epithelial ovarian cancer: a review. *International Journal of Gynecological Cancer* 1997; 7:425-438.

Banks E, Richardson A, BERAL VJ, Crossley B, Simmonds M, Hilton E, English R, Davis J, Austoker J. Effect on attendance at breast cancer screening of adding a self administered questionnaire to the usual invitation to breast screening in southern England. *Journal of Epidemiology and Community Health* 1998; 52:116-119.

BRITTON A, McKEE CM, LEON DA. *Cardiovascular disease and heavy drinking: a systematic review*. London: PHP Publishing, 1998;i,1-vi, 92

Bulpitt CJ, FLETCHER AE. Hypertension: the influence of age and pressure on treatment options. In: McEwan JR, ed. *Current issues in cardiology: management strategies* London: BMJ Publishing Group, 1997;119-139.

Bulpitt CJ, FLETCHER AE, Dossegger L, Neiss A, Nielsen T, Viergutz S. Quality of life in chronic heart failure: chlazapril and captopril versus placebo. *Heart* 1998; 79:593-598.

Bulpitt CJ, Palmer AJ, Battersby C, FLETCHER AE. Association of symptoms of type 2 diabetic patients with severity of disease, obesity and blood pressure. *Diabetes Care* 1998; 21:111-115.

Byberg L, Siegbahn A, Berglund L, McKEIGUE PM, Reneland R, Lithell HO. Plasminogen activator inhibitor-1 activity is independently related to both insulin sensitivity and serum triglycerides in 70-year old men. *Arteriosclerosis, Thrombosis and Vascular Biology* 1998; 18:264

Carpenter LM, HIGGINS CD, Douglas AJ, MACONOCHE NES, Omar RZ, Fraser P, Beral V, SMITH PG. Cancer mortality in relation to monitoring for radionuclide exposure in three UK nuclear industry workforces. *British Journal of Cancer* 1998; 78:1224-1232.

Chenet L, LEON DA, McKee CM, Vassin S. Deaths from alcohol and violence in Moscow: socio-economic determinants. *European Journal of Population* 1998; 14:19-37.

Chenet L, McKee CM, LEON DA, Shkolnikov VM, Vassin S. Alcohol and cardiovascular mortality in Moscow: new evidence of a causal association. *Journal of Epidemiology and Community Health* 1998; 52:772-774.

Clarke R, BREEZE E, Sherliker P, Shipley MJ, Youngman L, FLETCHER AE, Fuhrer R, LEON DA, Parish S, Collins R, Marmot MG. Design objectives, and lessons from a pilot 25 year follow up re-survey of survivors in the Whitehall study of London Civil Servants. *Journal of Epidemiology and Community Health* 1998; 52:364-369.

Crawford M, PRINCE MJ, Menezes PR, Mann A. Depression in the elderly. Which patients do General Practitioners miss? *International Journal of Geriatric Psychiatry* 1998; 13:172-176.

Davey Smith G, Shipley MJ, LEON DA. Height and mortality from cancer among men: prospective observational study. *Lancet* 1998; 317:1351-1352.

Dedovic Z, KOUPILOVÁ I, Suchanek I. Keratinocytes as biological dressing in the treatment of partial-thickness burns in children. *Annals of Burns and Fire Disasters* 1998; 11:37-40.

Dedovic Z, KOUPILOVÁ I, Suchanek I. Evaluation of burn-scar management program in children. *EuroRehab* 1998; 3-4:47-51.

DOYLE PE, Bunch KJ, BERAL VJ, Draper GJ. Cancer incidence in children conceived with assisted reproductive technology. *Lancet* 1998; 352:452-453.

FLETCHER AE. Multidimensional assessment of elderly people in the community. *British Medical Bulletin* 1998; 54:945-960.

FLETCHER AE, Bulpitt CJ, Tuomilehto J, Browne JP, Bossini A, Kawecka-Jaszcz K, Kivinen P, O'Brien E, Staessen J, Thijs L, Vanska O, Vanhanen H. Quality of life of elderly patients with isolated systolic hypertension: baseline data from the Syst-Eur Trial Investigators. *Journal of Hypertension* 1998; 16:1117-1124.

FLETCHER AE, Holdright DR, McEwan JR. Assessment and treatment of cardiovascular risk and disease in women. In: McEwan JR, ed. *Current issues in cardiology: management strategies* London: BMJ Publishing Group, 1997;1-19.

FLETCHER AE. Members of the UK Small Aneurysm Trial. Mortality results for randomised controlled trial of early elective surgery or ultrasonographic surveillance for small abdominal aortic aneurysms. *Lancet* 1998; 352:1649-1655.

FLETCHER AE, Rake C. Effectiveness of interventions to promote healthy eating in elderly people living in the community: a review. In: *Health Promotion Effectiveness Review*. Health Education Authority, 1998;

FLETCHER AE, Vijaykumar V, Selvaraj S, Thulasiraj RD, Ellwein LB. The Madurai intraocular lens study. III: visual functioning and quality of life outcomes. *American Journal of Ophthalmology* 1998; 125:26-35.

Grievetti L, LEON DA, Rasmussen K, Shetty PS, Steckel R, Villar J. Report of the IDECC Working Group on variation in fetal growth and adult disease. *European Journal of Clinical Nutrition* 1998; 52:S102-S103.

Gulson BL, Cameron MA, Smith AJ, Mizon KJ, Korsch MJ, Vimpani G, McMICHAEL AJ, Pisaniello D, Jameson CW, Mahaffey KR. Blood Lead - Urine Lead relationships in adults and children. *Environmental Research Section A* 1998; 78:152-160.

Haines A, McMICHAEL AJ, KOVATS RS, Saunders M. Majority view of climate scientists is that global warming is indeed happening. *British Medical Journal* 1998; 316:1530

Harwood RH, PRINCE MJ, Mann A, Ebrahim S. Associations between diagnosis, impairments, disability and handicap in a population of elderly people. *International Journal of Epidemiology* 1998; 27:261-268.

Harwood RH, PRINCE MJ, Mann AH, Ebrahim S. Prevalence of diagnoses, impairments, disabilities and handicaps in a population of elderly people living in a defined geographical area: the Gospel Oak Project. *Age and Ageing* 1998; 27:707-714.

Holcík J, KOUPILOVÁ I. Transformace zdravotnictví v České republice: naděje, realita a perspektivy. *Cisto* 1998; 1-2:6-8.

Holcík J, KOUPILOVÁ I. Health care reform in the Czech republic: hopes, facts and perspectives (in Czech). *Zdravotnictví v České republice* 1998; 1:6-8.

Holcík J, KOUPILOVÁ I. Rationing of health care and priority setting (in Czech). *Zdravotnictví v České republice* 1998; 1:23-25.

KESSEL AS. Confidentiality may be overvalued. *British Medical Journal* 1998; 316:56-57.

KESSEL AS. Ethics and research in psychiatry. *International Review of Psychiatry* 1998; 10:331-337.

KESSEL AS, Meran J. Advance directives in the UK: legal, ethical and practical considerations for doctors. *British Journal of General Practice* 1998; 48:1263-1266.

KOUPILOVÁ I, Bobak M, Holcík J, Pikhart H, LEON DA. Increasing Social Variation in Birth



- Outcomes in the Czech Republic after 1989. *American Journal of Public Health* 1998; **88**:1343-1347.
- KOUPILOVÁ I, LEON DA. Health of children and youth during the transition in Eastern Europe. *Eurohealth* 1998; **4**:10-12.
- KOUPILOVÁ I, McKEE CM, Holčík J. Neonatal mortality in the Czech Republic during the transition. *Health Policy* 1998; **46**:43-52.
- KOUPILOVÁ I, Vágerö D, LEON DA, Pikhart H, Prikazský V, Holčík J, Bobák M. Social variation in size at birth and preterm delivery in the Czech Republic and Sweden, 1989-91. *Paediatric and Perinatal Epidemiology* 1998; **12**:7-24.
- KOVATS RS, Haines A. Monitoring the health impacts of global climate change. *Update IHDP* 1998; **1**:4.
- KOVATS RS, Patz J, Dobbins D. Global climate change and environmental health: proceedings of the 1997 Annual Conference of the Society for Occupational and Environmental Health. *International Journal of Occupational and Environmental Health* 1998; **4**:41-52.
- LEON DA. Commentary: unequal inequalities across Europe. *British Medical Journal* 1998; **316**:1642.
- LEON DA. Fetal growth and adult disease. *European Journal of Clinical Nutrition* 1998; **52**:S72-S82.
- LEON DA, Lithell HO, Vágerö D, KOUPILOVÁ I, Mohsen R, Berglund L. Reduced fetal growth rate and increased risk of death from ischaemic heart disease: cohort study of 15,000 Swedish men and women born 1915-29. *British Medical Journal* 1998; **317**:241-245.
- LEON DA, Shkolnikov VM. Social stress and the Russian mortality crisis. *Journal of the American Medical Association* 1998; **279**:790-791.
- MacKellar L, Lutz W, McMICHAEL AJ, Surhke A. Population and health. In: Rayner S, Malone EL, eds. *Human choice and climate change. Vol 1: the societal framework*. Columbus, Ohio: Battelle Press, 1998:89-193.
- McKee CM, Bobák M, Rose R, Shkolnikov VM, Chenet L, LEON DA. Patterns of smoking in Russia. *Tobacco Control* 1998; **7**:22-26.
- McKEIGUE PM. Mapping genes that underlie ethnic differences in disease risk: methods for detecting linkage in admixed populations, by conditioning on parental admixture. *American Journal of Human Genetics* 1998; **63**:241-251.
- McKEIGUE PM, DAVEY G. Interrelationships between hypertension and diabetes. In: Sadler MJ, ed. *Encyclopedia of Human Nutrition*. Academic Press, 1998:1058-1064.
- McKEIGUE PM, Lithell HO, LEON DA. Glucose tolerance and resistance to insulin-stimulated glucose uptake in men aged 70 years in relation to size at birth. *Diabetologia* 1998; **41**:1133-1138.
- McMICHAEL AJ. The influence of historical and global changes upon the patterns of infectious diseases. In: Greenwood BA, De Cock KM, eds. *New and resurgent infections: prediction, detection and management of tomorrow's epidemics*. Chichester: Wiley, 1998:17-31.
- McMICHAEL AJ. Global climate change: potential health risks, and implications for research and policy. *Professione Santa Publica e Medicina Pratica* 1998; **6**:8-10.
- McMICHAEL AJ. Foreword. In: Martens WJM, ed. *Health and Climate Change*. London: Earthscan, 1998.
- McMICHAEL AJ, Anderson HR, Brunekreef B, Cohen AJ. Inappropriate use of daily mortality analyses to estimate longer-term mortality effects of air pollution. *International Journal of Epidemiology* 1998; **27**:450-453.
- McMICHAEL AJ, LEON DA. Beyond medicine: the wider determinants of population and global health. In: Baume P, ed. *The tasks of medicine: an ideology of care*. Sydney: MacLennan & Petty, 1998:183-196.
- McMICHAEL AJ, Patz J, KOVATS RS. Impacts of global environmental change on future health and health care in tropical countries. *British Medical Bulletin* 1998; **54**:475-488.
- McMICHAEL AJ, Woodward AJ. Introductory concepts. In: Vainio H, et al. eds. *Quantitative Estimation and Prediction of Cancer Risk*. Oxford: Oxford University Press, 1998.
- Megens T, KOVATS RS, McMICHAEL AJ. Mortality impact of heatwaves in the UK, 1976 and 1995. *Globe* 1998; **42**:4-5.
- MOLOKHIA M. Obesity wars: a pilot study of very low calorie diets in obese patients in general practice. *British Journal of General Practice* 1998; **48**:1251-1252.
- MOLOKHIA M, Muir EH, Fuller JH, Pietroni R, Olney S. Setting the standards in GP teaching: views from teachers and students; the 8th Ottawa International Conference on Medical Education, 1998.
- Pierpoint T, McKEIGUE PM, Isaacs AJ, Wild SH, Jacobs H. Mortality of women with polycystic ovary syndrome at long-term follow-up. *Journal of Clinical Epidemiology* 1998; **51**:581-586.
- POMERLEAU J, McKEIGUE PM. Long term effect of calcium supplementation during pregnancy on the blood pressure of offspring: follow up of a randomised controlled trial - Commentary. *Evidence-based Cardiovascular Medicine* 1998; **2**:10.
- POMERLEAU J, McKEIGUE PM, Chaturvedi N. Risk factors for obesity in South Asian, Afro-Caribbean and European women. *International Journal of Obesity* 1998; **23**:25-33.
- POMERLEAU J, Ostbye T, Bright-See E. Place of birth and dietary intake in Ontario. I. Energy, fat cholesterol, carbohydrate, fiber, and alcohol. *Preventive Medicine* 1998; **27**:32-40.
- POMERLEAU J, Ostbye T, Bright-See E. Place of birth and dietary intake in Ontario. II. Protein and selected micronutrients. *Preventive Medicine* 1998; **27**:41-49.
- PRINCE MJ. Measurement in psychiatry. *International Review of Psychiatry* 1998; **10**:264-271.
- PRINCE MJ. Classification and measurement of disablement, with emphasis on depression, and its applications for clinical gerontology. *Reviews in Clinical Gerontology* 1998; **8**:227-240.
- PRINCE MJ. Cross-sectional survey. *International Review of Psychiatry* 1998; **10**:272-277.
- PRINCE MJ. Is chronic low-level lead exposure in early life an etiologic factor in Alzheimer's Disease? *Epidemiology* 1998; **9**:618-621.
- PRINCE MJ. Overview of psychiatric epidemiology. *International Review of Psychiatry* 1998; **10**:258-263.
- PRINCE MJ, Harwood RH, Thomas A, Mann AH. Prospective population-based cohort study on the effects of disablement and social milieu on the onset and maintenance of late-life depression. The Gospel Oak Project VII. *Psychological Medicine* 1998; **28**:337-350.
- PRINCE MJ, Rabe-Hesketh S, Brennan P. Do anti-arthritis drugs decrease the risk for cognitive decline? An analysis of data from the MRC Treatment Trial of Hypertension in Older Adults. *Neurology* 1998; **50**:374-379.
- Rapport DJ, Costanza R, McMICHAEL AJ. Assessing ecosystem health. *Tree* 1998; **13**:397-402.
- Rasmussen F, Johansson M, LEON DA. Association of maternal and fetal factors with systolic blood pressure and body size at 18 years of age: a cohort study of 166,072 Swedish male conscripts born from 1973 and 1976. *American Journal of Epidemiology* 1998; **147**:S28.
- Rooney C, McMICHAEL AJ, KOVATS RS, Coleman MP. Excess mortality in England and Wales, and in Greater London, during the 1995 heatwave. *Journal of Epidemiology and Community Health* 1998; **52**:482-486.
- Saracci R, Olsen J, McMICHAEL AJ. Europe's health research: getting the right balance. *British Medical Journal* 1998; **316**:795.
- Shkolnikov VM, Cornia GA, LEON DA, Meslé F. Causes of the Russian mortality crisis: evidence and interpretations. *World Development* 1998; **26**:1995-2011.
- Shkolnikov VM, LEON DA, Adamets S, Andreev E, Deev A. Educational level and adult mortality in Russia: an analysis of routine data 1979 to 1994. *Social Science and Medicine* 1998; **47**:357-369.
- Stassen J, Fagard R, Thijs L, Celis H, Birkenhager W, Bulpitt CJ, de Leeuw PW, FLETCHER AE. Subgroup and Per-Protocol Analysis of the Randomized European Trial on Isolated Systolic Hypertension in the Elderly. *Archives of Internal Medicine* 1998; **158**:1681-1691.
- Stassen J, Thijs L, Fagard R, Birkenhager W, FLETCHER AE, et al. Calcium channel blockade and cardiovascular prognosis in the European trial on isolated systolic hypertension. *Hypertension* 1998; **32**:410-416.
- Tong S, Baghurst PA, Sawyer MG, Burns J, McMICHAEL AJ. Declining blood levels and changes in cognitive function during childhood - The Port Pirie Cohort Study. *Journal of the American Medical Association* 1998; **280**:1915-1919.
- Tong S, Peng B, Parton K, Hobbs J, McMICHAEL AJ. Climate variability and transmission of epidemic polyarthritis. *Lancet* 1998; **351**:1100.
- Vineis P, McMICHAEL AJ. Commentary. Bias and confounding in molecular epidemiological studies: special considerations. *Carcinogenesis* 1998; **19**:2063-2067.
- Walberg P, McKee CM, Shkolnikov VM, Chenet L, LEON DA. Economic change, crime, and mortality crisis in Russia: regional analysis. *British Medical Journal* 1998; **317**:312-318.
- Wigg NR, Tong S, McMICHAEL AJ, Baghurst PA, Vimpani G, Roberts R. Does breastfeeding at six months predict cognitive development? *Australian and New Zealand Journal of Public Health* 1998; **22**:232-236.
- Zatonski WA, McMICHAEL AJ, Powles JW. Ecological study of reasons for sharp decline in mortality from ischaemic heart disease in Poland since 1991. *British Medical Journal* 1998; **316**:1047-1051.
- Zhao J, Sui R, Jia L, FLETCHER AE, Ellwein LB. Visual acuity and quality of life outcomes in patients with cataract in Shunyi County, China. *American Journal of Ophthalmology* 1998; **126**:515-523.

REPORTS

- ECOHST. *Childhood injuries: a priority area for the transition countries of Central and Eastern Europe and the Newly Independent States*. Report for UNICEF Regional Office for Central and Eastern Europe, the Commonwealth of Independent States and the Baltics. 1998.
- KOVATS RS. *Workshop Report: WHO/UNEP/MRC First Inter-Agency Climate Change and Human Health Monitoring Workshop: Identifying Research Priorities, 4-5 December 1997*. 1998.
- KOVATS RS, Bouma M. *El Niño and health: background report on the potential use of ENSO to forecast and mitigate health impacts*. Report prepared for Medecin sans Frontieres. 1998.
- McMICHAEL AJ, KOVATS RS. *Assessment of the impact on mortality in England and Wales of the heatwave and associated air pollution episode of 1976*. Report to the Department of Health. 1998.
- McMICHAEL AJ, KOVATS RS. *Research needs and priorities for studying the potential human health impacts within Europe*. A report to the European Science Foundation. 1998.

THESES

- Al-Mahroos F (Bahrain). *Prevalence of diabetes and coronary heart disease risk factors among Bahrainis in Bahrain*. (PhD), 1998.
- DAVEY G. (UK). *Exercise and omega-3 fatty acids supplementation in insulin resistance in South Asians and Europeans*. (University of Cambridge MD), 1998.



MATERNAL AND CHILD EPIDEMIOLOGY UNIT

Sharon RA Huttly BSc MSc	Senior Lecturer & Head of Unit	<i>Epidemiologist</i>	FUNDING BODIES Commission of the European Communities Department for International Development (DFID) John Snow Inc, MotherCare National Institutes of Health (US) The Population Council The Wellcome Trust World Health Organization
Betty R Kirkwood MA MSc	Professor & Head of Department	<i>Epidemiologist</i>	
Carl Kendall BA MA PhD	Professor	<i>Anthropologist</i>	
Oona MR Campbell BS ScM PhD	Senior Lecturer	<i>Epidemiologist/Demographer</i>	
Simon Cousens MA DipMathsStats	Senior Lecturer	<i>Epidemiologist</i>	
Tom F De C Marshall BA MSc	Senior Lecturer	<i>Medical Statistician</i>	
Wendy J Graham BSc DPhil	Honorary Senior Lecturer	<i>Epidemiologist/Demographer</i>	
Claudio Lanata MD MPH	Honorary Senior Lecturer	<i>Epidemiologist</i>	
L Andres de Franciso Serpa MD MSc PhD	Honorary Senior Lecturer	<i>Epidemiologist</i>	
Paul Arthur MB ChB MPH MSc	Lecturer	<i>Epidemiologist</i>	
Véronique Filippi DDG DISP	Lecturer	<i>Demographer/Epidemiologist</i>	
Linda A Morison BSc MA CStat	Lecturer	<i>Medical Statistician</i>	
Rüdiger Pittrof MBBS MRCP	Lecturer	<i>Obstetrician/Gynaecologist</i>	
Carine CA Ronsmans MD DPH	Lecturer	<i>Epidemiologist</i>	
Dominique Behague MA	Honorary Lecturer	<i>Anthropologist</i>	
Saul Morris BA MSc	Honorary Lecturer	<i>Medical Statistician/Demographer</i>	
Theo Vos MD MSc	Honorary Lecturer	<i>Epidemiologist</i>	
Caroline E Shulman MBBS MSc MRCP	Clinical Research Fellow	<i>Epidemiologist</i>	
Christopher Coldham BA MSc	Research Fellow	<i>Epidemiologist</i>	
Louise Linsell BSc MSc	Research Fellow	<i>Medical Statistician</i>	
Chizuru Misago BEcon MSc	Research Fellow	<i>Epidemiologist</i>	
Zelee Hill BA MSc	Research Assistant	<i>Demographer</i>	
Michelle Levene BA MSc	Research Assistant	<i>Health Economist</i>	
Julia Mortimer BA	Research Assistant		
Nina Saroi	Unit Administrator		
Angela Vega BA	Unit Secretary		

Multidisciplinary and international collaborative research involving epidemiology and the social and behavioural sciences to improve maternal and child health is the focus of work in the Unit. Staff working in the Population and Reproductive Health Programme are an internationally recognized source of research and policy for programmes attempting to reduce maternal mortality and improve childbirth for all women. Child health researchers work closely with the World Health Organization's Integrated Management of Childhood Illness programme in defining new interventions, enhancing care seeking and evaluating outcomes. Traditional strengths of the Unit in the development and quantitative evaluation of interventions are now being integrated with qualitative research tools to improve the appropriateness and effectiveness of interventions and to improve provider performance and the quality of care.

POPULATION AND REPRODUCTIVE HEALTH PROGRAMME

The DFID-funded four-year Population and Reproductive Health Programme ended in March 1999. It brought together two groups at the School -- one working on population and family planning and the other on maternal health -- together with a group at Liverpool specializing in adolescent health issues. Programme staff generated well over 100 papers and reports on a broad range of topics. This brief selective summary of achievements is restricted to the outputs

of the maternal health group in London.

The maternal health component focused on assessing the effectiveness of specific elements of maternity care. A successfully completed randomized controlled trial looking at the effectiveness of bednets and malaria chemoprophylaxis in preventing severe anaemia in primipara in Kenya showed that while bednets had no effect on preventing severe anaemia in women, sulfadoxine-pyrimethamine in the second and third trimesters of pregnancy was successful in reducing severe anaemia by 39%. This latter result has been adopted as policy in Kenya and widens poor women's access to effective care. We also studied the effect of post-abortion contraceptive counselling on contraceptive uptake in Brazil, and showed that while counselling improved knowledge of contraceptive methods, there was no impact on uptake of contraception or on subsequent pregnancy rates. A follow-up study looked at widening access to reproductive health services by introducing an emergency contraceptive service, which is likely to be more suitable to the needs of women in unstable relationships.

The programme also looked at ways of determining the health impact of comprehensive maternal health services. Examples of research informing the latter are: evaluating a government upgrading of district maternity services in South Kalimantan, Indonesia; monitoring an anaemia-prevention programme in Malawi; developing 'near-miss' indicators for



maternal mortality in Benin; and exploring methods of assessing quality of obstetric care. Results from these studies are being finalized. Our overall experience within the Maternal Health Programme over the last decade is published in 'Lessons Learnt'. A new five-year programme in maternal health begins in 1999.

NEAR-MISS AUDITS

Staff in the Population and Reproductive Health Programme are conducting a study entitled 'Hospital near-miss enquiries as a strategy to improve the quality of obstetric care in Benin, Côte d'Ivoire and Morocco', funded by the European Commission and the Department for International Development. The overall aim of this study is to develop, implement and evaluate a new strategy to monitor and improve the quality of obstetric care in referral hospitals in Benin, Côte d'Ivoire, Morocco and Ghana. This strategy is based on the identification of substandard care and avoidable factors related to near-miss obstetric events in referral hospitals, and on the participation of all those concerned in the selected hospitals and in the policy arena. It involves: setting-up a Near-Miss Enquiry Committee in each of the three countries to facilitate the development and application of the near-miss enquiry tool; developing a quality of care framework adapted to the local contexts, for measuring standards of care through the study of near-miss events; applying the new enquiry tool in 6 referral hospitals with detailed multidisciplinary case studies of a sample of near-miss events and a quantitative analysis of routine medical records for all near-miss cases; identifying realistic targets based on the enquiries' findings; and measuring progress towards selected targets. The success of the enquiries in bringing changes in the quality of care provided (from both a clinical and policy perspective) and in promoting health providers awareness and accountability will then be evaluated.

CAESAREAN SECTION

Births by Caesarean section have increased in many countries, Brazil being particularly notable, to levels higher than necessary to ensure mothers' and infants' health. The underlying factors are many and complex, ranging from practice and attitudes of health service providers, organization of maternity services to women's preferences.

A study in a large public maternity hospital in southern Brazil included observation in the delivery room, in-depth interviews of obstetricians and a survey of women after their deliveries. Apart from absolute medical indications, women most likely to have a Caesarean tend to be older, with either a previous Caesarean or having their first birth, with previous delivery experiences favouring Caesarean, or otherwise pre-disposed to a Caesarean, who take steps during pregnancy to ensure one, or who seek admission for delivery early. Physicians' attitudes are crucial for the performance of Caesarean section and vary among individual obstetricians. The maternity environment appears to induce anxiety, with

an interventionist approach and value placed on delivery 'on time'. The study helped define the need for educating physicians and policy dialogue, and more preparation and information for women in pregnancy.

WORKING WITH PROVIDERS IN CENTRAL ASIA

Staff in the Population and Reproductive Health Programme are also working directly with providers to improve obstetric practice. In collaboration with HealthProm, a London-based NGO, senior obstetricians and neonatologists in Uzbekistan are involved in an initiative to manage the introduction of more cost-effective primary care. Some physicians had resisted this change, fearing hospital closure and job insecurity. One barrier to change was an elaborate system of medical standards (Prikaz) that had been handed down by previous generations of obstetricians. The Prikaz — closely guarded and little disseminated — are applied by gatekeepers to punish physicians who adopt new practices. The goal of the project now is to engage gatekeepers and other physicians in Uzbekistan in developing flexible, evidence-based and cost-effective practices and guidelines that respond to the sweeping changes occurring in Uzbekistan.

HYGIENE PROMOTION

The sanitary disposal of faeces is recognized as a key behaviour for promotion to prevent diarrhoeal diseases in young children, yet surprisingly little is known about faeces disposal practices, their determinants and feasibility for change. Phase 1 of this study used qualitative research methods to investigate these issues in a shanty town of Lima. The use of potties and the clearance of stools in situations where 'accidents' occur among the toddler age group, emerged as priority areas of behaviour. A micro-trial was conducted which indicated that change in these behaviours was both feasible and acceptable.

In Phase 2, a trial was undertaken in eight communities of the shanty town. Health centre personnel were trained in effective communication techniques and in the content of materials to promote hygiene. The latter included a motivational video in the style of a soap opera and illustrated pamphlets; these were very popular with staff and the target population.

Difficulties were encountered in achieving sufficient coverage of the intervention during the study period available and thus impact on target behaviours was limited. Nevertheless, there were a number of positive findings and the Peruvian Ministry of Health has distributed the materials to all regions.

VITAMIN A AND OTHER MICRONUTRIENTS

Field work for a trial to evaluate the impact of vitamin A supplementation on the response to immunizations in young infants was continued to completion in January 1999 (results available mid-1999). Findings from two completed studies, that explored dietary interventions for improving vitamin A status and strategies for young infant supplementation, were



disseminated in local and national meetings in Ghana, and at international scientific meetings. These findings were part of a review of Ghana's National Vitamin A Programme which recommended distribution of vitamin A supplements during the national (polio) Immunization Days, extension of supplementation to the whole country — but not to children under 6 months of age — use of red palm oil use (RPO) in food aid and supplementary feeding programmes, and trials to promote RPO use in areas where it is more readily available.

Preparations began for two new field trials starting in 1999 in Ghana. The first will evaluate the effectiveness of a newly developed dispensing technology for daily administration of low-dose multiple micronutrient supplements (iron–vitamin A 'Sprinkles'). 'Sprinkles' are particles of ferrous fumarate and retinyl palmitate, micro-encapsulated with a mono- or diglyceride and packed in a single daily sachet dose, for mixing into children's meals. This method of supplementation would avoid some of the problems associated with delivery of iron mixtures and periodic high-dose vitamin A supplementation. If effective, it would be particularly suitable in areas where social marketing of supplements is feasible. The second study will evaluate the impact of vitamin A on maternal mortality, to verify the results from a trial in Nepal, which found a 43% reduction in maternal mortality following weekly vitamin A supplementation of women. It will be a large trial of 103,000 pregnant women, recruited and followed up over four years in three field sites. The trial will clarify the potential role of vitamin A in maternal health programmes, and explain the mechanisms through which its impact might be mediated.

GHANA HEALTH-SEEKING BEHAVIOUR PROJECT

Timely and appropriate care-seeking for sick children by their families is clearly important for the reduction of childhood morbidity and mortality. In Ghana a study is under way to examine the treatment decisions made by carers, the barriers to appropriate treatment-seeking, and the process and context in which decisions are made. The study uses a newly developed health-seeking behaviour framework that links ethnographic and quantitative findings. The framework focuses on recognition, labelling, patterns of resort and adherence. This project is part of a WHO-funded multi-site study, in collaboration with the Kintampo Health Research Centre, that not only examines care-seeking practices and barriers but also evaluates the feasibility and effectiveness of enhancing care-seeking behaviour for young children.

During the six months of formative research, qualitative and quantitative methods have been used to explore the local illness taxonomy and care-seeking behaviours. Key informants were mothers, healers, druggists and public and private health workers. Problems in illness recognition, labelling, resort to care and adherence were found, and included: a lack of recognition of several danger signs and symptoms, most notably those associated with acute respiratory infections; the classification of several illnesses as 'not for the hospital' resulting in seriously ill children being treated only with traditional medicine; and delayed clinic/hospital attendance due to the use of inappropriate home, healer and druggist medicines. The intervention content has been defined and potential community-based intervention channels identified. The intervention phases of the study are scheduled to start early in the year 2000.

RESEARCH DEGREE STUDENTS

Rossana Bojalil (Mexico). Understanding factors influencing the case management of young children in Hildago, Mexico and their relevance for design of strategies to improve child health and survival.

Mandi Bruce (USA). Abortion care in Zambia.

Juraci Cesar (Brazil). Community health workers: how can they contribute to the Integrated Childhood Illness Strategy?

Lisa Davies (UK). The effect of childbearing patterns, birth spacing and contraceptive use on mortality in adults in Matlab, Bangladesh.

Paulo Freitas (Brazil). The epidemic of Caesarean sections in Brazil.

Tamar Kabakian (Lebanon). Comparative study of gynaecologic morbidity in 3 countries.

Najwa Rizkallah (Palestine). Reproductive morbidity and cardiovascular disease risk factors.

PUBLICATIONS

Anglaret X, Diabougba S, Mortier E, Meda N, Vergé-Valette V, Sylla-Koko F, COUSENS SN, Laruche G, Ledru E, Bonard D, Dabis F, Van de Perre P. CD4+ T-lymphocyte counts in HIV infection: are European standards applicable to African patients. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology* 1997; 14:361-367.

ARTHUR P, Bahl R, Bhan MK, KIRKWOOD BR, Martines JC, Moulton L, Penny ME, Ram M, Underwood B. Randomised trial to assess the benefits and safety of vitamin A supplementation linked to immunisations in early infancy. *Lancet* 1998; 352:1263

Bruce ME, Will RG, Ironside JW, McConnell I, Drummond D, Suttie A, McCardle L, Chree A, Hope J, Birkett C, COUSENS SN, Fraser H, Bostock CJ. Transmissions to mice indicate that 'new variant' CJD is caused by BSE agent. *Nature* 1997; 389:498-501.

CAMPBELL OMR. *Safe motherhood in Indonesia. Appraisal mission report.* World Bank/Government of Indonesia, 1997;

CAMPBELL OMR, LEWANDO-HUNDT G. Profiling maternal health in Egypt, Jordan, Lebanon, Palestine and Syria. In: Barlow R, Brown JW, eds. *Reproductive Health and Infectious Disease in the Middle East.* Ashgate Publishing Ltd, 1998:22-44.

COUSENS SN, Cassels-Brown A, Murdoch I, Babalola OE, Jatau D, Alexander NDE, Evans JE, Danboyi P, Abiose A, Jones BR. Impact of annual dosing with ivermectin on progression of onchocercal visual field loss. *Bulletin of the World Health Organization* 1997; 75:229-236.

COUSENS SN, VYNNYCKY E, Zeidler M, Will RG, SMITH PG. Predicting the CJD epidemic in humans. *Nature* 1997; 385:197-198.

COUSENS SN, Yahaya H, Murdoch IE, Samaila E, Evans J, Babalola OE, Zakari M, Abiose A, Jones BR. Risk factors for optic nerve disease in communities mesoendemic for savannah onchocerciasis, Kaduna state, Nigeria. *Tropical Medicine and International Health* 1997; 2:89-98.

COUSENS SN, Zeidler M, Esmonde TF, De Silva R, Wilesmith JW, SMITH PG, Will RG. Sporadic Creutzfeldt-Jacob disease in the United Kingdom: analysis of epidemiological surveillance data for 1970-96. *British Medical Journal* 1997; 315:389-396.

Deeb ME, CAMPBELL OMR, Kabakian TK. Safe motherhood in Lebanon: new population-based results from the Beirut 1994 survey. *International Journal of Gynecology and Obstetrics* 1997; 56:181-182.

FILIPPI VGA, Alihonou E, Mukantaganda S, GRAHAM WJ, RONSMANS C. Near misses: maternal morbidity and mortality. *Lancet* 1998; 351:145-146.

Fonseca W, MISAGO C, FREITAS P, Santos E, Fernandes L, Correia I. Socio-demographic, reproductive, and clinical characteristics of abortion patients hospitalized in southern Brazil. *Cadernos de Saude Publica* 1998; 14:279-286.

Geissler PW, SHULMAN CE, Prince RJ, Mutemi W, Mnazi C, Friis H, Lowe B. Geophagy, iron status and anaemia among pregnant women on the coast of Kenya. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92:549-553.



- Habluetzel A, Diallo DA, Esposito F, Lamizana L, Pagaoni F, Lengeler C, Traoré C, COUSENS SN. Do insecticide-treated curtains reduce all-cause mortality in Burkina Faso? *Tropical Medicine and International Health* 1997; 2:855-862.
- HUTTLY SRA, LANATA CF, Yeager BAC, Fukumoto M, del Aguila R, KENDALL C. Feces, flies and fetor: findings from a Peruvian shantytown. *Revista Panamericana de Salud Pública* 1998; :75-79.
- KENDALL C. Role of formal qualitative research in negotiating community acceptance: the case of dengue control in El Progreso, Honduras. *Human Organisation* 1998; 57:75-79.
- Khanum S, ASHWORTH A, HUTTLY SRA. Growth, morbidity and mortality of children in Dhaka after treatment for severe malnutrition: a prospective study. *American Journal of Clinical Nutrition* 1998; 67:940-945.
- KIRKWOOD BR, ARTHUR P, Morris SS, WHO/CHD Immunisation-Linked Vitamin A Supplement Study Group. Randomised trial to assess benefits and safety of vitamin A supplementation linked to immunisation in early infancy. *Lancet* 1998; 352:1257-1263.
- LANATA CF, HUTTLY SRA, Yeager BAC. Diarrhoea - whose feces matter? Reflections from studies in a Peruvian shanty town? *Pediatric Infectious Disease Journal* 1998; 17:7-9.
- Landers A, Murdoch IE, Birch J, COUSENS SN, Babalola OE, Lawal B, Abiose A, Jones BR. Blue-yellow colour vision in an onchocercal area of northern Nigeria. *British Journal of Ophthalmology* 1998; 82:510-516.
- Ly MY, Easterbrook P, MARSHALL Tfd. Relationship between CD4 count and CD4% in HIV-infected people. *International Journal of Epidemiology* 1997; 26:1367-1372.
- MARSHALL Tfd, Zazri A, Jus'at I, Achede E, Huque AA. *Maternal and Neonatal Health in Indonesia: Baseline findings from a community survey 1996*. Arlington, Virginia: MotherCare/John Snow Inc. 1998;
- MISAGO C, Fonseca W, Correia L, Fernandes L, CAMPBELL OMR. Determinants of abortion among women admitted to hospitals in Fortaleza, North Eastern Brazil. *International Journal of Epidemiology* 1998; 27:833-839.
- Morris SS, Santos CAST, Barreto ML, COUSENS SN, Strina A, Santos LMP, Assis AMO. Measuring the burden of common morbidities: sampling disease experience versus continuous surveillance. *American Journal of Epidemiology* 1998; 147:1087-1092.
- Murdoch IE, Jones BR, COUSENS SN, Liman I, Babalola OE, Dauda J, Abiose A. Visual field constriction as a cause of blindness or visual impairment. *Bulletin of the World Health Organization* 1997; 75:141-146.
- Murdoch IE, Morris SS, COUSENS SN. People and eyes: statistical approaches in ophthalmology. *British Journal of Ophthalmology* 1998; 82:971-973.
- Nacul L, ARTHUR P, KIRKWOOD BR, Morris SS, Cameiro AC, Benjamin AF. Impact of vitamin A supplementation given during a pneumonia episode on the subsequent morbidity of children. *Tropical Medicine and International Health* 1998; 3:661-666.
- RONSMANS C. Statement from a task force meeting on validation of women's reporting of obstetric complications in national surveys. *MotherCare Matters* 1997; 6:15-16.
- RONSMANS C, CAMPBELL OMR. Short birth intervals don't kill women: evidence from Matlab, Bangladesh. *Studies in Family Planning* 1998; 29:282-290.
- RONSMANS C, Vanneste AM. Safe motherhood research and new challenges in the maternity care programme. In: Anonymous *Proceedings of a workshop for dissemination of findings*. Dhaka: International Centre for Diarrhoeal Diseases Research, 1997;
- RONSMANS C, Vanneste AM, Chakraborty J, Van Ginneken J. A comparison of three verbal autopsy methods to ascertain levels and causes of maternal deaths in Matlab, Bangladesh. *International Journal of Epidemiology* 1998; 27:660-666.
- Santos IS, Victora CG, HUTTLY SRA, Carvalho JB. Caffeine intake and low birth weight: a population-based case-control study. *American Journal of Epidemiology* 1998; 147:620-627.
- Santos IS, Victora CG, HUTTLY SRA, Morris S. Caffeine intake and pregnancy outcomes: a meta analytic review. *Cadernos de Saude Publica* 1998; 14:523-530.
- SHULMAN CE, Dorman EK, Talisuna AO, Lowe BS, Nevill CG, Snow RW, Jilo H, Peshu N, Bulmer JN, GRAHAM S, Marsh K. Community randomized control trial of insecticide-treated bednets for the prevention of malaria and anaemia among primigravid women on the Kenyan coast. *Tropical Medicine and International Health* 1998; 3:197-204.
- Will RG, Knight RSG, Zeidler M, Stewart G, Ironside JW, COUSENS SN, SMITH PG. Reporting of suspect cases of new variant Creutzfeldt-Jakob disease. *Lancet* 1997; 349:847
- WILLIAMS IA. Eradicating female circumcision: human rights and cultural values. *Health Care Analysis* 1998; 6:24-58.

THESIS

MISAGO C (Japan/Brazil). *Preventing induced abortion among the urban poor in Fortaleza, Brazil: Is post-abortion counselling effective?* (PhD), 1998.

1899



1999

MEDICAL STATISTICS UNIT

Diana R Elbourne BSc MSc PhD	Senior Lecturer & Head of Unit	<i>Statistician</i>	FUNDING BODIES Astra Draco Pharmaceuticals British Heart Foundation Commission of the European Communities Department of Health ENDIT Foundation for the Study of Infant Deaths Glaxo Pharmaceuticals Medical Research Council Novoste Corporation Nuffield Foundation Orion Pharmaceuticals Roche Pharmaceuticals Royal Free Hospital NHS Trust SOCAR Syntax Development Research The Wellcome Trust
Mike Kenward BSc MSc PhD	Professor	<i>Statistician</i>	
Stuart J Pocock BA MSc PhD	Professor	<i>Statistician</i>	
Douglas Altman BSc PhD	Honorary Senior Lecturer	<i>Statistician</i>	
Abdel Babiker BSc PhD	Honorary Senior Lecturer	<i>Statistician</i>	
Robert G Carpenter MA PhD	Honorary Senior Lecturer	<i>Statistician</i>	
AV Swan MSc PhD	Honorary Senior Lecturer	<i>Statistician</i>	
Andrew Westlake BA MSc	Honorary Senior Lecturer	<i>Statistician</i>	
Mona Abdalla PhD	Lecturer	<i>Statistician</i>	
James Carpenter PhD	Lecturer	<i>Statistician</i>	
Christopher Frost BA MA DipStat	Lecturer	<i>Statistician</i>	
Stephen Sharp MA MSc	Lecturer	<i>Statistician</i>	
Duoluo Wang BSc MSc PhD	Lecturer	<i>Statistician</i>	
Ian White MA MSc	Lecturer	<i>Statistician</i>	
Caroline Goldfrad BSc MSc	Honorary Lecturer	<i>Statistician</i>	
Aviva Petrie MSc	Honorary Lecturer	<i>Statistician</i>	
Mark Alston BA	Research Fellow	<i>Computing Co-ordinator</i>	
Tim Clayton MSc	Research Fellow	<i>Statistician</i>	
Pollyanna Hardy MSc	Research Fellow	<i>Statistician</i>	
Angela McKenzie MSc	Research Fellow	<i>Statistician</i>	
Kiran B Nanchahal MSc	Research Fellow	<i>Statistician</i>	
Claire Snowdon BA MA	Research Fellow	<i>Social Scientist</i>	
Richard Crook	Research Assistant	<i>Technician</i>	
Andrew King BA	Research Assistant	<i>Computer Programmer</i>	
Roger Smith	Research Assistant	<i>Technician</i>	
Mike Bennett BSc MSc MBChB	Computer Programmer		
Claire Marley	Research Co-ordinator		
Ann Truesdale BSc	Research Co-ordinator		
Rosemary Knight	Research Co-ordinator		
Keith Tomlin BSc MSc	Data Manager		
Christine Vosper	Data Manager		
Steven Robertson BA	Clerical Assistant		
Katie Foster BMus	Unit Secretary		
Nathalie Chatelain	Course Secretary		
Mark Espeland	Visiting Professor	<i>University of Wake Forest</i>	
Gary Lyman BA MD MPH	Visiting Professor	<i>University of Florida</i>	

The Medical Statistics Unit undertakes a broadly-based research programme in applied projects and in statistical methodology, although these distinctions are not fixed — indeed theoretical work often arises from the applied research, and the results are then used to inform the design and analysis of future studies.

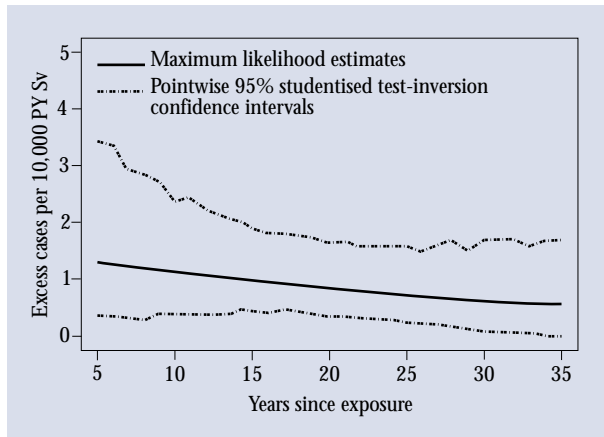
We facilitate research interaction amongst all the School's medical statisticians, and many of our projects involve extensive, often international, research collaborations. In particular, there is an expanding Clinical Trials Group, which is primarily concerned with the planning, co-ordination, statistical analysis and reporting of multicentre clinical trials. The Unit has also established a reputation for being a leading innovative centre for biostatistical methodology relevant to medical research. We also have a broader responsibility for influencing the research development and training of our profession, and held a highly successful research conference in celebration of 30 years of the MSc in Medical Statistics. We

are delighted that Michael Kenward was appointed to the newly-established SmithKline Beecham Chair in Biostatistics.

METHODOLOGICAL RESEARCH

Treatment differences in clinical trials may be influenced by patient non-compliance, changes of treatment, and the use of rescue medication. We have been actively concerned with devising appropriate methods to incorporate these factors into the statistical analysis in order to achieve more precise effect of treatments, using simulations to compare the biases associated with the different methods. We have also been involved in devising practical model-based methods for handling informative drop-outs in studies investigating predictors of decline in mental health scores in patients with Alzheimer's disease.

Variables in epidemiological studies are often measured with error, and we are considering ways of allowing for simultaneous errors in continuous and categorical data in



From the Japanese atomic bomb survivors data, it is possible to calculate the expected excess number of cases of particular forms of cancer caused by exposure to a particular dose of radiation (measured in Sieverts). The graph shows the expected number of excess cases of chronic myelogenous leukaemia in females per 10,000 Person-Year Sieverts at risk. The outer lines are 95% pointwise bootstrap confidence intervals.

multiple regression models. We have developed 'bootstrap' techniques for evaluating parameter uncertainty in statistical models (*see Figure*) and work in this area of computationally-intensive methods was displayed in House of Commons as an example of the best work of young British researchers.

We have continued to work on practical and statistical issues in the conduct of meta-analyses of clinical trials. We have been reviewing and developing statistical models for relating the magnitude of treatment benefit to measured trial level covariates, with appropriate allowance for residual heterogeneity, and have been developing methods to combine the results of trials of different designs.

APPLIED RESEARCH

Most members of the Unit work on some aspects of randomized trials. The Unit is currently co-ordinating trials in cardiology, neonatology and hepatology.

The three RITA trials are all involved in the evaluation of treatments for angina. RITA-1 randomized 1011 patients with severe angina to initial coronary angioplasty (PTCA) or bypass surgery (CABG). Although at five-year follow-up there was no difference in risk of death and myocardial infarction between policies, PTCA patients had more re-interventions and recurrent angina, and by a median 6.3 years' follow-up there were similar health care costs in the two groups. In contrast, RITA-2 randomized 1018 patients with moderate to severe angina to policies of immediate PTCA or continued medical treatment. Based on a median 2.7 years' follow-up, early intervention with PTCA was associated with greater symptomatic improvement, but the suggestion of more deaths or myocardial infarctions. Further publications will consider quality of life, economic costs and cost-

effectiveness at up to 3 years' follow-up. The most recent cardiology trial is RITA-3, which is the first large-scale trial designed to test an initial conservative strategy (optimal medical treatment) versus an initial interventional strategy (early coronary arteriography and subsequent PTCA or CABG as indicated) in the management of patients with acute unstable angina. The main outcomes are the rates of death, myocardial infarction and refractory angina. Recruitment began in November 1997, and patients will be followed up at four months, one year and five years.

The TMC trial is comparing two immunosuppressants, and has recruited 606 patients undergoing liver transplantation from all the transplant centres in the UK and Ireland. The primary outcomes are death, retransplantation and treatment failure for immunological reasons, and the one-year follow-up is in progress.

The MRC-funded INNOVO trial is evaluating the addition of nitric oxide to the ventilator gases for newborn babies with severe respiratory failure. Primary outcomes are death and severe disability at one year of age. Nearly 100 babies have been recruited so far from the UK, Ireland, Belgium and Finland.

In addition to trial co-ordination, the Unit acts as the statistical centre for a number of studies such as the international cardiological trials co-ordinated by SOCAR Research in Switzerland. This includes the placebo-controlled ACTION trial of nifedipine in 6000 coronary artery disease patients to be followed for 5 years. We have a varied programme of clinical trial research in asthma, particularly concerning when to start inhaled steroids, whether to use beta-agonists regularly, and the effects of allergen avoidance. We are also statistical collaborators in a trial to assess the effectiveness of a programme to co-ordinate and support follow-up care in general practice after a hospital diagnosis of myocardial infarction or angina pectoris.

A survey of trials centres is under way to ascertain the extent and nature of consumer involvement in research, and qualitative research is exploring the views of trial participants about randomization and other aspects of their experience.

In epidemiology, we are involved in meta-analyses of studies relating plasma homocysteine to risk of stroke and coronary heart disease, and in using meta-analysis to model the relationship between alcohol consumption and death. In addition, we have conducted analyses of the cross-sectional phase of the Marks & Spencer cardiovascular risk factor study, and are involved in the development of the longitudinal phase. Related research is considering methodological aspects of physical activity. Bob Carpenter's cot deaths research has led the European Society for the Study and Prevention of Infant Death to recognize his 'outstanding work in the field of infant mortality'.

1899



1999

RESEARCH DEGREE STUDENTS

Christina Bamias (Greece). Methodology of clinical trials.
François Curtin (Switzerland). Clinical trials methodology.

Mostafa Hosseini (Iran). Analysis of data contained in Iran National Health Survey.

PUBLICATIONS

Ayres JG, FROST C, Holmes WF, Williams DRR, Ward SM. Postmarketing surveillance study of a non-chlorofluorocarbon inhaler according to the safety assessment of marketed medicines guidelines. *British Medical Journal* 1998; **317**:926-930.

Beacon HJ, THOMPSON SG, ENGLAND PD. Analysis of complex patterns of longitudinal binary response: an example of transient dysphagia following radiotherapy. *Statistics in Medicine* 1998; **17**:2551-2561.

CARPENTER J. Assessing parameter uncertainty via bootstrap likelihood ratio confidence regions. *Journal of Applied Statistics* 1998; **25**:639-649. Clarke R, FROST C, Leroy V, Collins R. Lowering blood homocysteine with folic acid based supplements: meta-analysis of randomised trials. *British Medical Journal* 1998; **316**:891-898.

Clarke R, Woodhouse P, Ulvik A, FROST C, Sherliker P, Refsum H, Ueland PM, Khaw K-T. Variability and determinants of total homocysteine concentrations in plasma in an elderly population. *Clinical Chemistry* 1998; **44**:102-107.

CURTIN F, Niveau G. Psychosocial profile of Swiss sexual offenders. *Journal of Forensic Science* 1998; **43**:755-759.

Dunn N, WHITE IR, Freemantle S, Mann R. The role of prescribing and referral bias in studies of the association between third generation oral contraceptives and increased risk of thromboembolism. *Pharmacoepidemiology and Drug Safety* 1998; **7**:3-14.

ELBOURNE D, Dezateux C. Effect of delaying timing of clamping of cord is being studied. *British Medical Journal* 1998; **316**:145-146.

ELBOURNE D, Wiseman RA. Types of intra-muscular opioids for maternal pain relief in labour. *Cochrane Library* 1998.

Ford R, Durcan G, Warner L, HARDY P, Muijen M. One day survey by the Mental Health Act Commission of acute adult psychiatric inpatient wards in England and Wales. *British Medical Journal* 1998; **317**:1279-1283.

Gordon B, Mackrodt C, Fern E, TRUESDALE A, Ayers S, Grant A. The Ipswich Childbirth Study: 1. A randomised evaluation of two stage postpartum perineal repair leaving the skin unsutured. *British Journal of Obstetrics and Gynaecology* 1998; **105**:435-440.

Gunnell DJ, Davey Smith G, Frankel S, NANCHAHAL K, Braddon FEM, Pemberton J, Peters TJ. Childhood leg length and adult mortality: follow up of the Carnegie (Boyd Orr) Survey of diet and health in pre-war Britain. *Journal of Epidemiology and Community Health* 1998; **52**:142-152.

Gunnell DJ, Frankel SJ, NANCHAHAL K, Peters TJ, Davey Smith G. Childhood obesity and adult cardiovascular mortality: a 57-year follow-up study based on the Boyd Orr cohort. *American Journal of Clinical Nutrition* 1998; **67**:1111-1118.

Henderson RA, POCOCK SJ, SHARP SJ, NANCHAHAL K, Sculpher MJ, Buxton MJ, Hampton JR. Long-term results of the RITA-1 trial: clinical and cost comparisons of coronary angioplasty and coronary-artery bypass grafting. *Lancet* 1998; **352**:1419-1425.

Hill RG, Shepherd G, HARDY P. In sickness and in health: The experiences of friends and relatives caring for people with manic depression. *Journal of Mental Health* 1998; **7**:611-620.

HOSSEINI M, CARPENTER RG, Mohammad K. Identification of outlying height and weight data in the Iranian National Health Survey 1990-92. *Journal of Applied Statistics* 1998; **25**:601-612.

HOSSEINI M, CARPENTER RG, Mohammad K. Growth charts for Iran. *Annals of Human Biology* 1998; **25**:237-247.

Johnston A, Field D, ELBOURNE D, Grant A. The collaborative UK ECMO trial: follow-up to 1 year of age. *Pediatrics* 1998; **101**:e1-e10.

Jolly K, Bradley F, SHARP SJ, Smith H, Mant D. Follow-up care in general practice of patients with myocardial infarction or angina pectoris: initial results of the SHIP trial. *Family Practice* 1998; **15**:548-555.

Kennedy C, Campbell M, ELBOURNE D, Hope P, Johnson AO. International randomised controlled trial of acetazolamide and furosemide in posthaemorrhagic ventricular dilatation in infancy. *Lancet* 1998; **352**:433-439.

Macfarlane AJ, ELBOURNE D. Midwifery, obstetrics, and neonatology. In: Armitage P, Colton T, eds. *Encyclopedia of biostatistics*. Chichester: Wiley, 1998;2590-2599.

Mackrodt C, Gordon B, Fern E, Ayers S, TRUESDALE A, Grant A. The Ipswich Childbirth Study:2. A randomised comparison of polyglactin 910 with chromic catgut for postpartum perineal repair. *British Journal of Obstetrics and Gynaecology* 1998; **105**:441-445.

McCandlish R, Bowler U, van Asten H, Berridge G, Winter C, Sames L, Garcia J, Renfrew M, ELBOURNE D. Randomised controlled trial of the care of the perineum during second stage of normal labour. *British Journal of Obstetrics and Gynaecology* 1998; **105**:1262-1272.

Pitt B, Julian DG, POCOCK SJ. *Clinical trials in cardiology*. London: WB. Saunders, 1997.

POCOCK SJ. Clinical trials with multiple outcomes; a statistical perspective on their design, analysis, and interpretation. *Controlled Clinical Trials* 1997; **18**:530-549.

POCOCK SJ, ABDALLA M. The hope and the hazards of using compliance data in randomized controlled trials. *Statistics in Medicine* 1998; **17**:303-317.

Roberts TE, Mugford M, NORMAND CEM, ELBOURNE D, Field D, Grant A, Harris C, Johnson A, Wrotchford A. Economic evaluation and randomised controlled trial of extracorporeal membrane oxygenation: UK collaborative trial. *British Medical Journal* 1998; **317**:911-916.

Rogers J, Wood J, McCandlish R, Ayers S, TRUESDALE A, ELBOURNE D. Active versus expectant management of third stage of labour: the Hinchingsbrooke randomised controlled trial. *Lancet* 1998; **351**:693-699.

SHARP SJ. Meta-analysis regression. *Stata Technical Bulletin* 1998; **no.42**:16-22.

SHARP SJ, Sterne J. New syntax and output for the meta-analysis command. *Stata Technical Bulletin* 1998; **no.42**:6-8.

SNOWDON C, Garcia J, ELBOURNE D. Reaction of participants to the results of a randomised controlled trial: exploratory study. *British Medical Journal* 1998; **317**:21-26.

Verberne AAPH, FROST C, Duiverman EJ, Grol MH, Kerrebijn KF. Addition of salmeterol versus doubling the dose of beclomethasone in children with asthma. *American Journal of Respiratory and Critical Care Medicine* 1998; **158**:213-219.

Waite A, MCKENZIE CMA, CARPENTER RG, Coombs R, Damen-Willems C, Emery J. *Report on 5000 babies using the CONI (Care of Next Infant) Programme*. London: Foundation for the Study of Infant Deaths, 1998.

WHITE IR, Goetghebuer EFJ. Clinical trials comparing two treatment policies: which aspects of the treatment policies make a difference? *Statistics in Medicine* 1998; **17**:319-339.

THESIS

Hoinville LJ. (UK) *An investigation of the epidemiology of transmissible spongiform encephalopathies in ruminants* (PhD), 1998.

PUBLIC HEALTH NUTRITION UNIT

Prakash S Shetty MBBS MD PhD Philip R Payne BSc FIBiol John C Waterlow CMG FRS MD ScD FRCP Ann Ashworth Hill BSc PhD Elizabeth A Dowler MA MSc PhD Suraiya J Ismail BA PhD Simon S Strickland MA PhD Jeya Henry MSc PhD Andrew M Prentice BSc PhD John Seaman MBBS LRCP DCH Martin Wiseman MBBS MRCP Alizon Draper BA MSc PhD Jane A Pryer BSc MSc PhD Sarah Salway BA MSc PhD Claire Schofield BA MSc Alison Tedstone BSc PhD Michael Wilkinson MSc MEd PhD Margaret Ashwell BSc PhD Franco Cappuccio MBBS MD MSc Marilyn Aviles BA MSc Adrian Cook MSc Angela Donkin BSc PhD Patricia Harman BA MCommH Msc Hereward Hill MSc MIBiol Matthew Kiggins MSc Karen McColl BSc MPH Susan Rifkin BA MIA CTCMH PhD Veronica Berry Gabrielle Palmer MA MSc Carol Aldous Ezzat Ahmed Aly Ibrahim MSc Renuka Jayatissa MBBS MSc MD	Professor & Head of Unit Emeritus Professor Emeritus Professor Reader in Community Nutrition Senior Lecturer Senior Lecturer Senior Lecturer Honorary Senior Lecturer Honorary Senior Lecturer Honorary Senior Lecturer Honorary Senior Lecturer Lecturer Lecturer Lecturer Lecturer Lecturer Lecturer Lecturer Honorary Lecturer Honorary Lecturer Research Assistant Research Fellow Research Fellow Nutrition Information Officer Research Fellow Research Fellow Research Fellow Honorary Senior Research Fellow Honorary Research Fellow Honorary Research Fellow Unit Secretary Visiting Research Fellow Visiting Research Fellow	<i>Physiologist</i> <i>Applied Nutritionist</i> <i>Physiologist</i> <i>Nutritionist</i> <i>Nutritionist</i> <i>Nutritionist</i> <i>Anthropologist</i> <i>Nutritionist</i> <i>Nutritionist</i> <i>Physician</i> <i>Physician</i> <i>Nutritionist</i> <i>Epidemiologist</i> <i>Demographer</i> <i>Nutritionist</i> <i>Nutritional Physiologist</i> <i>Health Promotion</i> <i>Nutritionist</i> <i>Epidemiologist</i> <i>Nutritionist</i> <i>Statistician</i> <i>Nutritionist</i> <i>Nutritionist</i> <i>Statistician</i> <i>Food Policy</i> <i>Social Scientist</i> <i>Archivist</i> <i>Nutritionist</i> Suez Canal University University of Colombo	FUNDING BODIES Canadian International Development Agency Coronary Prevention Group Department for International Development Health Education Authority (Department of Health) International Life Sciences Institute Joseph Rowntree Foundation Ministry of Agriculture, Fisheries and Food Nestlé Foundation North Thames NHS Executive Simon Population Trust Swedish International Development Agency Rowett Research Institute The Wellcome Trust US Agency for International Development World Health Organization
--	---	---	--

The Public Health Nutrition Unit has a multidisciplinary research programme of activities primarily concerned with food and nutrition research in the public health context both in developing and developed countries. The Unit's research interests cover areas such as infant, child and adult malnutrition and its management; nutrition and nutritional requirements of adults and of the elderly and their nutritional status assessment in the community; the emergence of non-communicable diseases in developing societies; and nutrition, poverty and social exclusion in the West. Collaborative research is conducted across the School and in partnership with collaborators in other countries.

MATERNAL AND CHILD NUTRITION

Promoting good infant feeding practices is crucial for child nutrition both in developing and developed societies. Exclusive breast-feeding of infants for four to six months by mothers needs to be promoted, as breast-milk provides the best food for the first few months of life. Systematic reviews were undertaken on behalf of the Health Education Authority (HEA), UK on the effectiveness of interventions to promote breast-feeding and healthy feeding of infants under one year of age in industrialized societies. The most successful

breast-feeding promotions spanned both pre- and post-natal periods, and involved intensive as well as multiple contacts. Breast-feeding promotions were, however, largely aimed at low income or minority ethnic groups in these developed societies and were successful at increasing initiation of breast-feeding, but few had any impact on the duration or exclusiveness of breast-feeding. In Bangladesh, programmes promoting exclusive breast-feeding are focused mainly on hospitals while the majority of mothers deliver at home. An intervention trial examined the impact of community-based peer counsellors on infant feeding practices, on the duration of exclusive breast-feeding and its impact on infant nutrition. In the intervention group there was early initiation of breast-feeding and significantly more were exclusively breast-fed up to 4 months of age. In this group, 69% of mothers fed their infants colostrum as the first food compared to 11% of the controls, and 70% breast-fed exclusively for 5 months as compared to 6% of the controls. At the end of 5 months, the mean weight-for-length Z score was +0.1 (SD 0.8) in the intervention group and -0.9 (SD 0.8) in the control group. The majority of mothers who breast-fed exclusively, also accepted and practised the lactational amenorrhoea method of contraception. This study demonstrated that trained



community-based peer counsellors could significantly increase exclusive breast-feeding and appropriate contraceptive practices, with benefits to infant health and nutrition.

Infections are major causes of poor nutritional status of children. *Helicobacter pylori* is a common gastrointestinal infection in children in developing countries which is implicated in poor growth and nutritional status. Studies conducted in urban school children aged 9–10 years in Mexico to assess the prevalence of *H.pylori* infection (using stable isotopic techniques) have indicated prevalence rates of about 48%. The likely risk factors that predispose to *H.pylori* infection in poor households in urban Mexico include overcrowding within a household, the number of children in the house and sharing of beds by siblings. Rural children, particularly girls, in developing countries, undertake arduous work in their homes and outside from an early age. Increased work of this nature is likely to compromise their nutritional status and affect their proper growth. A study of children aged 6–18 years in two villages in rural Nepal showed a significant sex difference in daily workloads; with girls on average, working twice as long as boys (5.8 versus 2.8 hours), spending more time performing heavy work (1.5 versus 0.7 hours). The nutritional status of the girls was no worse than that of the boys thus providing little evidence that the girls' heavy workloads adversely affected their growth in rural Nepal.

NUTRITIONAL STATUS OF ADULTS AND THE ELDERLY

The chewing of areca (betel) nut is a common practice in developing countries in Asia among several hundreds of millions of adults – up to 20% of the world's population, principally in South and South-East Asia, East Asia, Melanesia, and in communities of migrants from these regions. Studies in Sarawak, Malaysia have indicated that lower-age related gains in Body Mass Index (BMI) and body fatness and higher resting metabolic rates are seen in chewers of areca nut than in non-chewers. Experimental studies are being conducted in collaboration with partners in Bangalore, India on the effects of areca nut on resting energy expenditure, substrate oxidation, and ratings of hunger.

Studies on assessment of nutritional status of the elderly indicate that the prevalence of malnutrition is similar among the elderly in urban India or rural Malawi. Physical impairment was highest among the elderly in urban India and increased with age and deteriorating nutritional status. Undernutrition is a significant problem among older people even in rural Malawi. These observations highlight the need to incorporate the elderly into nutrition and health programmes in developing societies. The elderly also constitute a proportion of any refugee population. Studies in a Rwandan refugee camp in Tanzania have shown that the prevalence of undernutrition in both sexes was higher among those aged over 60 years as compared to younger adults. Using the National Diet & Nutrition Survey data of the adult population of the UK aged over 65 years, the nature and the extent of under-reporting among the elderly has been

investigated. The level of dietary under-reporting among the free-living elderly was much higher than that observed among the adult population in the UK using a similar methodology. The strongest predictor of low-energy reporting was obesity among elderly men and women, much like that seen among young adults, while social class appeared to be more important than educational status in the elderly in contrast to that seen among adults.

CHRONIC DISEASES IN DEVELOPING SOCIETIES

The emerging epidemic of obesity and chronic diseases in developing societies and in those in transition and the risk factors that may be contributing to it, is an area being investigated by the Unit. Studies on obesity among a representative sample of adult women in Kuwait suggest that the prevalence of obesity (BMI > 30.0) was 56% and much higher than that seen in the West. Increasing age and inability to return to pre-pregnancy weight were the two most important independent risk factors. It was also observed that women tended to underestimate their weight with 61% of the participants in the study reporting that their husband's perception of their true weight was also grossly underestimated. Studies are in progress in Pune, India examining the differences in body composition among rural and urban adults who are at increased risk of non-insulin dependant diabetes mellitus and coronary heart disease.

URBAN LIVELIHOODS, HEALTH AND NUTRITION

The Unit, in partnership with Proshika (a Bangladeshi social development NGO), continues to explore issues related to vulnerability of livelihoods in Dhaka slums and aims to produce an integrated analysis of the relationship between social, maternal and environmental conditions of households and health and nutritional status of slum dwellers in Dhaka. Analysis related to ill-health on household economy, the coping strategies resorted to by householders to deal with various shocks and stresses as well as the determinants of nutritional status is in progress.

FOOD, POVERTY AND SOCIAL EXCLUSION IN THE UK

Work on food, poverty and social exclusion in the UK focuses on three main areas: characterizing problems of nutrition and diet in low-income households; analysis and evaluation of policy responses to these problems; and exploring and evaluating local, community initiatives in this area. Income inequalities influence geographic and economic access to food. Local authority housing and retailing changes have often left poorer estates with a very limited range of food shops, where food is more expensive. Studies with the Institute of Education have been mapping access to healthy food in an ethnically diverse and deprived area. This has involved the construction of indices of price and availability, which can be used with local data to determine levels of physical and economic access to a healthy diet. Participatory appraisal techniques have been used to engage local communities in the research and to lead towards sustainable solutions. Contributions have also been made to efforts at costing a 'minimum living wage' for the UK.



RESEARCH DEGREE STUDENTS

Nawal Al Hamad (Kuwait). Nutritional status, dietary intakes and the prevalence of diabetes mellitus in Kuwait.

Rukhsana Haider (Bangladesh). Impact of peer counsellors on breast-feeding practices of urban mothers in Dhaka, Bangladesh.

Ferew Lemma Feyissa (Ethiopia). Morbidity, immunity and functional status in adults with low Body Mass Index: a prospective study among Ethiopians.

Francisco Jimenez Guerra (Mexico). *Helicobacter pylori* infections and growth in pre-school children in Mexico.

Arete Lagiou (Greece). Dietary fat and obesity in a Greek adult cohort.

Monica Osorio (Brazil). Risk factors for anaemia in children under 5 years in the state of Pernambuco, Brazil.

Anamaria Ricalde de Freixa (Brazil). Mid-upper arm circumference in pregnant women and its relation to birthweight and pre-pregnancy weight.

Miki Yamanaka (Japan). Children's workload and their growth retardation in rural Nepal.

PUBLICATIONS

ASHWORTH A. Nutrition interventions to reduce diarrhoea morbidity and mortality. *Proceedings of the Nutrition Society* 1998; 57:167-174.

ASHWORTH A. Effects of intrauterine growth retardation on mortality and morbidity in infants and young children. *European Journal of Clinical Nutrition* 1998; 52:S34-S42.

ASHWORTH A. Role of viscosity and other organoleptic factors. In: Fitzpatrick DW, Anderson JE, L'Abbe ML, eds. *From Nutritional Science to Nutrition Practice for Better Global Health*. Canadian Federation of Biological Sciences, 1998;102-104.

ASHWORTH A, Morris SS, Lira PIC, Grantham-McGregor SM. Zinc supplementation, mental development and behaviour in low birthweight term infants in northeast Brazil. *European Journal of Clinical Nutrition* 1998; 52:223-227.

ASHWORTH A, SCHOFIELD EC. Latest developments in the treatment of severe malnutrition in children. *Nutrition* 1998; 14:244-245.

Barrett JH, DRAPER A, Calvert C, Cade J, UK Women's Cohort Study Steering Group. Identifying patterns of food consumption among women in the UK Women's cohort study: preliminary results. *Proceedings of the Nutrition Society* 1998; 57:66A

BERRY V, ed. *The Gambia Experiment 1946-1950 and Other Papers* London: Academy Books, 1998.

Cade J, Calvert C, Barrett JH, UK Women's Cohort Study Steering Group, DRAPER A. Beef consumption and nutrient intake: analysis of the UK Women's Cohort Study. *Proceedings of the Nutrition Society* 1998; 57:54A

Cavalcante AAM, Pinheiro LMP, Monte C, Guimarães ARP, ASHWORTH A. Treatment of malnutrition in Brazil: simple solutions to common problems. *Tropical Doctor* 1998; 28:95-97.

CHILIMA DM, ISMAIL SJ. Anthropometric characteristics of older people in rural Malawi. *European Journal of Clinical Nutrition* 1998; 52:643-649.

DONKIN AJM, Johnson AE, Lilley JM, Morgan K, Neale RJ, Page RM, Silburn RL. Gender and living alone as determinants of fruit and vegetable consumption among the elderly living at home in urban Nottingham. *Appetite* 1998; 30:39-51.

DONKIN AJM, Johnson AE, Morgan K, Neale RJ, Lilley JM. Interaction of physical, psychosocial, socioeconomic and sociodemographic variables on the body mass index (MINDEX) of the community-dwelling elderly. *Journal of Nutrition* 1998; 2:143-148.

DOWLER EA. Food poverty and food policy. *IDS Bulletin* 1998; 29:58-65.

DOWLER EA. Food as a utility: ensuring food security for all. *Consumer Policy Review* 1998; 8:162-168.

DOWLER EA, Calvert C. Budgeting for food on state benefits. In: Köhler BM, Feichtinger E, Barlösius E, DOWLER EA, eds. *Poverty and food in welfare states*. Berlin: Sigma, 1997;307-315.

DOWLER EA, PRYER JA. Socioeconomic status. Relationship with diet and nutritional status. In: Sadler MJ, ed. *Encyclopedia of Human Nutrition*. Academic Press, 1998;1765-1774.

DRAPER A, DOWLER EA. Nutrition policies: in developed countries. In: Sadler MJ, ed. *Encyclopedia of Human Nutrition*. Academic Press, 1998;1326-1333.

DRAPER A, SCHOFIELD EC. Nutritional anthropology. In: *Health Exchange*. London: International Health Exchange, 1998;6-7.

DRAPER AK, SCHOFIELD EC Good food guide. *Health Exchange* 1998;6-7.

Ferro-Luzzi A, SHETTY PS. Seasonality: nutritional implications. In: Sadler MJ, ed. *Encyclopedia of Human Nutrition*. Academic Press, 1998;1741-1752.

Grantham-McGregor SM, LIRA PIC, ASHWORTH A, Morris SS, Assuncao MS. Development of low birth weight term infants and the effects of the environment in Northeast Brazil. *Journal of Paediatrics* 1998; 132:661-666.

Grivetti L, LEON DA, Rasmussen K, SHETTY PS, Steckel R, Villar J. Report of the IDECC Working Group on variation in fetal growth and adult disease. *European Journal of Clinical Nutrition* 1998; 52:S102-S103.

HAIDER R, ASHWORTH A, Kabir I, HUTTLY SRA. Peer counsellors improve early postpartum breastfeeding practices in an urban community in Dhaka, Bangladesh. *Proceedings of the Nutrition Society* 1998; 57:63A

Johnson AE, DONKIN AJM, Morgan K, Lilley JM, Neale RJ, Page RM, Silburn RL. Food safety knowledge and practice among elderly people living at home. *Journal of Epidemiology and Community Health* 1998; 52:745-748.

Johnson AE, DONKIN AJM, Morgan K, Neale RJ, Page RM, Silburn RL. Fruit and vegetable consumption in later life. *Age and Ageing* 1998; 27:723-728.

Khanum S, ASHWORTH A, HUTTLY SRA. Growth, morbidity and mortality of children in Dhaka after treatment for severe malnutrition: a prospective study. *American Journal of Clinical Nutrition* 1998; 67:940-945.

Kirk S, Woodhouse A, Conner M, UK Women's Cohort Study Steering Group, DRAPER A. Beliefs, attitudes and behaviour in relation to supplement use in the UK Women's Cohort Study (UKWCS). *Proceedings of the Nutrition Society* 1998; 57:54A

Lira PIC, ASHWORTH A, Morris SS. Effect of zinc supplementation on the morbidity, immune function, and growth of low-birth-weight, full-term infants in northeast Brazil. *American Journal of Clinical Nutrition* 1998; 68:4185-4245.

Macallan DC, McNurlan MA, Kurpad AV, De Souza G, SHETTY PS, Calder G, Griffin GE. Whole body protein metabolism in human pulmonary tuberculosis and undernutrition: evidence for anabolic block in tuberculosis. *Clinical Science* 1998; 94:321-331.

Monte CM, ASHWORTH A, Sa ML, Diniz RL. Effectiveness of nutrition centers in Ceara state, northeastern Brazil. *Revista Panamericana de Salud Publica* 1998; 4:375-382.

PIETERSE S, MANANDHAR MC, ISMAIL SJ. Nutritional status of older Rwandan refugees. *Public Health Nutrition* 1998; 1:259-264.

SCHOFIELD EC. Reducing mortality rates in severely malnourished children. *SCN News* 1997;24

SHETTY PS. Diet-, nutrition-, and lifestyle-related chronic non-communicable diseases: the emerging epidemic in developing countries. In: *Nestlé Foundation Annual Report 1997*. Nestlé Foundation, 1998;53-61.

SHETTY PS. Energy requirements. In: Sadler MJ, ed. *Encyclopedia of Human Nutrition*. Academic Press, 1998;645-650.

SHETTY PS. Malnutrition. Definition, classification and epidemiology. In: Sadler MJ, ed. *Encyclopedia of Human Nutrition*. Academic Press, 1998;1241-1246.

SHETTY PS. Adaptation. Overview of adaptive responses to malnutrition. In: Sadler MJ, ed. *Encyclopedia of Human Nutrition*. Academic Press, 1998;1-6.

SHETTY PS. Malnutrition and undernutrition. *Medicine* 1998; 77:14-18.

SHETTY PS, Uauy R, Karyadi D, Flores BT, Besrat A, Solon F, Valyasevi A. Working Group report on developing a national pyramid for advanced training in food and nutrition. *Food and Nutrition Bulletin* 1998; 18:166-171.

Soares MJ, Piers LS, O'Dea K, SHETTY PS. No evidence for an ethnic influence on basal metabolism: an examination of data from India and Australia. *British Journal of Nutrition* 1998; 79:333-341.

STRICKLAND SS. Biological anthropology. In: Barnard A, Spencer J, eds. *Encyclopaedic dictionary of social and cultural anthropology*. London: Routledge, 1996;66-71.

STRICKLAND SS. Nutrition. In: Barnard A, Spencer J, eds. *Encyclopaedic dictionary of social and cultural anthropology*. London: Routledge, 1996;400-402.

STRICKLAND SS, Ageing in non-Western populations. In: Ulijaszek SJ, Preece MA, Johnston FE, eds. *Encyclopaedia of human growth and development*. Cambridge: Cambridge University Press, 1996;426-427.

STRICKLAND SS, DUFFIELD AE. Areca nut chewing and tobacco smoking in rural Sarawak. *Annals of Human Biology* 1997; 24:271-272.

STRICKLAND SS, DUFFIELD AE. Nutrition and ecosystems in Sarawak: the role of the areca nut. *Asia and Pacific Journal of Clinical Nutrition* 1998; 7:300-306.

STRICKLAND SS, SHETTY PS. *Human biology and social inequality*. Cambridge: Cambridge University Press, 1998.

STRICKLAND SS, SHETTY PS. Human biology and social inequality. In: Strickland SS, Shetty PS, eds. *Human biology and social inequality*. Cambridge: Cambridge University Press, 1998;1-19.

STRICKLAND SS, Tuffrey VR. Parental investment theory and birth sex ratios in Nepal. *Annals of Human Biology* 1997; 24:1-82.

TEDSTONE AE, AVILES M, SHETTY PS, DANIELS L. *Effectiveness of interventions to promote healthy eating in preschool children aged 1 to 5 years: a review*. Health Education Authority, 1998;

TEDSTONE AE, DUNCE N, AVILES M, SHETTY PS, DANIELS L. *Effectiveness of interventions to promote healthy eating in infants under one year of age: a review*. Health Education Authority, 1998.

Vaz M, Kulkarni RN, SHETTY PS. Metabolic responses to repeated infusions of identical doses of norepinephrine in chronically energy deficient human subjects. *Indian Journal of Medical Research* 1998; 107:103-10.

REPORTS

Akor S, Yeboah Antwi K, ARTHUR P, Creed-Kanashiro H, DRAPER A, Rajapaksa L, Shrestha R, Yeager B. Drug dispensing issues for infants and young children: formative research into factors affecting the acceptability of dispensing technologies for iron and multi-micronutrient supplements. The results of a multi-country study. 1998. Report to OMNI Research, Washington DC.

DOWLER EA, DRAPER A, Nelson M, Thomas R, Dobson B. *Scoping study for a proposed national dietary and nutritional survey of people living on low incomes in the UK*. MAFF, 1998.

ISMAIL SJ, PIETERSE P, MANANDHAR MC. *Assessing malnutrition of older adults and elderly people in unstable situations*. Report to DFID 1997.

Kaduskar S, Boaz A, DOWLER EA, Rayner M. Process and outcome evaluation of a community café in Luton: Interim report to the Health Education Authority, 1998.

RIFKIN SB, LLEWANDO-HUNDT G, DRAPER AK. *Review of the participatory approaches in health promotion and planning. A report prepared for the Health Education Authority*. Health Education Authority, 1998;Wainwright E, DRAPER A. Inventory of Current Vitamin A Research and Program Activities Related to Child Survival in Developing Countries. 1998.

THESES

Chilima D. (Malawi) *Nutritional status and functional ability of older people in rural Malawi*. (PhD), 1998.

Duffield A. (UK) *Anthropology, morbidity, mortality and reproductive performance in rural Sarawak*. (PhD), 1998.

Haider R. (Bangladesh) *Impact of peer counsellors on breastfeeding practices in Dhaka, Bangladesh*. (PhD), 1998.

Strawford A. (UK) *The determinants of the lean body mass response to therapy in men with HIV/AIDS related wasting*. (PhD), 1998.



DEPARTMENT OF INFECTIOUS AND TROPICAL DISEASES

HEAD OF DEPARTMENT

Peter G Smith BSc DSc HonMFPHM FMedSci

DEPARTMENTAL ADMINISTRATOR

Helen Edwards

SECRETARY TO HEAD OF DEPARTMENT

Yvonne Jones

ASSISTANT TO DEPARTMENTAL ADMINISTRATOR

Lisa Schmidt MA

DEPARTMENTAL COMPUTING MANAGER

William Hart BSc (to 12.03.99)

Ken Clarke HNC (from 31.05.99)

DEPARTMENTAL COMPUTING OFFICER

Michael Gardiner

TEACHING SECRETARY

Barbara Kashani (to 19.03.99)

SHORT COURSES SECRETARY

Eileen Chappell BSc

RESEARCH DEGREE SECRETARY

Deanne Eastwood BA

MSc COURSES SECRETARY

Angel Hathaway

LABORATORY MANAGER

Christine Matthews (to 30.04.99)

DEPUTY TO LABORATORY MANAGER

Lesley Kempson HNC

PRINCIPAL CLINICAL SCIENTIST

John Williams CBiol MBiol AIMLS

TEACHING & DIAGNOSTIC GROUP TECHNOLOGISTS

Dawn Britten MSc

Peter Donachie

John Krahn BSc

Karen Osborne

Sue Passarelli

Claire Rogers AIBiol MSc

Juliana Tucker BSc

CENTRAL SERVICES LABORATORY STAFF

Elizabeth Fletcher

Mary McDonnell

Kathleen Walker

The Department was created in 1997 in a major reorganization of the management of research and teaching on infectious diseases in the School. The new department comprises all those conducting laboratory-based research, most of the infectious and tropical disease epidemiologists and those involved in clinical research on tropical diseases. The philosophy of the change was to foster synergistic collaboration between these groups to capitalize better on our combined strengths in these disciplinary areas.

An initial stocktaking of strengths and weaknesses identified some key areas where strengthening was required and senior appointments have been made in malaria immunology, bacteriology and clinical tropical medicine. Further such appointments are planned in virology and mathematical modelling. At the same time, an extensive programme of laboratory and office refurbishment is under way associated with moving all departmental staff to occupy the second floor and above of the Keppel Street building.

The breadth of our activities is illustrated in the summaries of ongoing studies and achievements presented by each of the five Units in the pages that follow. The range of work in the Department spans studies aimed at understanding the basic molecular and cell biology of major disease-causing agents

through to applied field and policy research on the disease problems caused by those agents. For some diseases this whole spectrum is covered, specifically this includes the work on malaria and tuberculosis and, to a large extent, trachoma and leishmaniasis. For other diseases our work is focused in a particular area. For example, there is an extensive programme of research on the epidemiology and control of HIV/AIDS, including several large trials investigating behavioural interventions, but we have decided that it would not make strategic sense to try to build up a large programme of laboratory-based research in this area given the strengths of other groups. Rather, we will seek to increase collaborative activity with these groups.

In what has been a very busy and active year on many research fronts, it is difficult to select particular activities to highlight. However, it is appropriate to draw attention to significant developments with respect to our organization of research on malaria. This disease is quintessentially considered as a 'tropical' disease (even though it was not so many years ago a disease endemic in some distinctly non-tropical parts of Europe!) which causes an enormous burden of morbidity and mortality in some of the poorest developing countries, particularly those in sub-Saharan Africa. In recent years the public health impact of the disease has increased due to



changes in its distribution as a result of global climatic changes. In particular, epidemics have occurred in some highland areas previously considered to be areas of low risk for the disease. The spread of chloroquine resistance, the drug around which therapeutic interventions centred for many years, and resistance to other anti-malarial drugs has much worsened the problem. Some significant progress in developing new intervention approaches has been made. New drugs have been developed which may provide temporary respite and the successful development and evaluation of the use of insecticide-impregnated bednets has added a powerful new tool to control efforts. The much-awaited prophylactic vaccines seem tantalisingly close but still elude us.

Global attention to the problem of malaria has been highlighted by changes in the structure of the World Health Organization. In particular, malaria is one of two disease problems selected for special focus and funding (the other is control of diseases caused by tobacco) and the 'Roll Back Malaria' initiative has galvanized international support for making a concerted effort to control the disease, which is responsible for over one million deaths annually, mostly among children in African countries. The School has long enjoyed a high reputation for its work on malaria and this disease has always been a very important component in our tropical disease research portfolio. During the year we were pleased to gain further support for some major activities on malaria in the Department. In particular, a successful bid was made to renew and expand the research programme on the control of the disease funded by the Department for International Development (DFID). We were also successful in gaining renewed support from DFID for our consultancy work on malaria, conducted jointly with the Liverpool School of Tropical Medicine, under the umbrella of the Malaria Consortium. This enables us to provide practical advice and support for those in developing countries responsible for planning and managing malaria control activities at a national and regional level.

The formation of the new department brought many of the key research workers on malaria in the School into the same organizational grouping and one of our major objectives has

been to increase research co-ordination in order to contribute more effectively to global control efforts. A major new initiative has been the formation of a 'Malaria Centre' in the School under the directorship of Brian Greenwood. Through this we are seeking to bring together on a regular basis all of those working on different aspects of malaria in the School, predominantly in the Department, but including major groups in other Departments, such as those working on malaria in pregnancy and on the economic aspects of the disease and its control. At an early stage we appreciated that although our ongoing research on malaria was very broadly based, there was a need for greater interchange and co-operation between different research groups. Further, we realised that our field activities were widely spread and increased focus in particular geographical areas would have considerable advantage in both strengthening ongoing work and in facilitating the planning and organization of new research initiatives. Preliminary visits have been made to several countries in Africa to explore the possibility of setting up a major new collaborative field research activity. We are still at a relatively early stage in this initiative, but the prospects look good for a major development in this area in the coming years. There is much excitement in the Department about the opportunities this will provide for advancing our understanding of the epidemiology and control of the disease.

It is pleasing to report that the excitement in the new Department about malaria research developments is shared with respect to the other major infectious diseases on which we work and, although it is still relatively early days, the 'experiment' of mixing laboratory scientists and epidemiologists is going well!

TEACHING AND DIAGNOSTICS GROUP

The teaching and diagnostics group provides research support to students and staff requiring training in diagnostic methods for parasitic and microbial infections. The group is also involved in the development of new diagnostic methods and John Williams has a particular interest in the role of protozoan parasites in irritable bowel disease, collaborating with several clinical groups outside the School on this topic.

1899



1999

CLINICAL RESEARCH UNIT

David Mabey MA DM FRCP	Professor & Head of Unit	<i>Physician (Infectious Diseases)</i>
Anthony Bryceson BA MD FRCP DTM&H	Professor	<i>Physician (Tropical Medicine)</i>
Brian Greenwood FRS BA CBE MA MB BCh MD DTM&H FRCP FWACP FFPHM	Professor	<i>Clinical Epidemiologist</i>
Kevin de Cock MB BCh FRCP MD DTM&H	Visiting Professor	<i>Physician / Clinical Epidemiologist</i>
Harold Lambert MA MD FRCP FRCPATH FFPHM	Visiting Professor	<i>Physician (Infectious Diseases)</i>
Eldryd Parry OBE MD FRCP FWACP	Visiting Professor	<i>Physician (Tropical Medicine)</i>
Keith McAdam MA MB BCh FRCP	Professor <i>(on secondment to MRC Laboratories, The Gambia)</i>	<i>Physician (Infectious Diseases)</i>
Robin Bailey BA MBBS MRCP DTM&H PhD	Senior Lecturer	<i>Physician (Infectious Diseases)</i>
Alison Elliott MD MRCP DTM&H	Senior Lecturer	<i>Ophthalmologist</i>
Allen Foster MBBS FRCS	Senior Lecturer	<i>Physician (Infectious Diseases)</i>
Peter Godfrey-Faussett BA MBBS MRCP DTM&H	Senior Lecturer	<i>Physician/Leprologist</i>
Diana Lockwood BSc MD MRCP	Senior Lecturer	<i>Clinical Epidemiologist</i>
John Porter MBBS MRCP MPH FFPHM FAFPHM DA DCH	Senior Lecturer	<i>Virologist</i>
Kwesi Tsiquaye BSc PhD FRCPATH	Senior Lecturer	<i>Physician</i>
Philippe Mayaud MD MSc	Senior Lecturer	<i>(Sexually Transmitted Diseases)</i>
Ron Behrens MD BSc FRCP	Honorary Senior Lecturer	<i>Physician (Travel Medicine)</i>
Peter Chiodini BSc PhD MBBS FRCP	Honorary Senior Lecturer & Clinical Director, HTD	<i>Clinical Parasitologist</i>
Rod J Hay MA BM BCh FRCPATH FRCP	Honorary Senior Lecturer	<i>Physician</i>
Paul Kelly MBBS MRCP	Honorary Senior Lecturer	<i>Physician (Gastroenterologist)</i>
Andrew Tomkins MBBS FRCP	Honorary Senior Lecturer	<i>Physician</i>
Stephen Wright BM BS FRCP DCMT	Honorary Senior Lecturer & Consultant at HTD	<i>(Nutrition and Child Health)</i>
Sebastian Lucas BA MA BM BCh FRCP FRCPATH	Honorary Senior Lecturer	<i>Physician (Tropical Medicine)</i>
Helen Ayles BSc MBBS MRCP	Clinical Research Fellow	<i>Pathologist (Tropical Disease)</i>
Mark Felton MB BCh DTM&H MRCP	Clinical Research Fellow	<i>Physician (Infectious Diseases)</i>
Vincent Tihon BSc MD MSc Dip TropMed	Clinical Research Fellow	<i>Physician (Infectious Diseases)</i>
Elizabeth Corbett BA MB ChB MRCP	Clinical Research Fellow	<i>Physician (Infectious Diseases)</i>
Mark Hawken BSc MB ChB DTM&H MSc FRACP	Clinical Research Fellow	<i>Physician (Infectious Diseases)</i>
Sarah Hawkes MBBS	Clinical Research Fellow	<i>Physician</i>
Nuhan Marbiah MD MSc PhD	Clinical Research Fellow	<i>Immunologist</i>
Deborah Watson-Jones BA BM BCh MSc DTM&H MRCP	Clinical Research Fellow	<i>Physician</i>
John Day BM BS MRCP	Honorary Lecturer	<i>Physician (Infectious Diseases)</i>
Andrew Reid MBBS MRCP	Honorary Lecturer	<i>Physician (Infectious Diseases)</i>
Mark Evans MBBS MRCP	Honorary Lecturer	<i>Physician (Infectious Diseases)</i>
Chris Whitty BA MA BM BCh MRCP DTM&H MSc	Honorary Lecturer	<i>Physician (Infectious Diseases)</i>
Tim Bray BSc MSc	Research Fellow	<i>Scientific Officer</i>
Ruth McNerney CBiol MIBiol	Research Fellow	<i>Molecular Biologist</i>
Ali Allouche BSc	Post-Doctoral Research Fellow	<i>Molecular Biologist</i>
David Little BVMS MRCVS	Post-Doctoral Research Fellow	<i>Pathologist</i>
Rachel Baggaley BA MBBS MSc	Honorary Research Fellow	<i>Physician (Community Medicine)</i>
Paul Emerson BSc	Research Assistant	
Wendy Hodsdon BSc	Research Assistant	
Sarah Lewin BA MA	Research Assistant	
Philip Broadbent HND	Technologist	
Tamara Hurst BSc	MLSO 2 Co-ordinator, Wellcome Trust Bloomsbury Centre for Clinical Tropical Medicine	
Claire Bertschinger	Clinical Teacher - Tropical Nursing Course	
Sue Leede RCN	Clinical Teacher - Tropical Nursing Course	
Sarah Henson	Senior Overseas Project Co-ordinator	
Julia Mitchell BSc CertEd	Secretary to Professor Greenwood	
Vivienne Hammer	Secretary to Allen Foster	
Annastella Costella	Unit Secretary	

FUNDING BODIES

Ciba-Geigy Ltd

Commission of the European Communities

Department for International Development (DFID)

Edna McConnell Clark Foundation

GlaxoWellcome plc

Hospital and Homes of St Giles

LEPRA

Medical Research Council

National Institutes of Health (US)

Rockefeller Foundation

The Wellcome Trust



The research programme of the Unit encompasses infectious diseases of major public health importance in developing countries. Activities include trials of new therapies, vaccines and educational interventions; the development of new diagnostic tests; studies to elucidate the immunological and molecular correlates of pathogenesis and protective immunity, and to identify genetic polymorphisms conferring protection or susceptibility to infectious diseases; health services research which aims to identify the most efficient and cost-effective way to deliver health care; and health policy analysis.

Many members of the Unit are practising clinicians, but many are also trained in epidemiology and/or laboratory science. We collaborate widely with colleagues in other Units and Departments within and outside the School, and our research covers many disciplines, from molecular immunology to public health and policy. Members of the Unit have initiated and are responsible for major research programmes in Zambia, Tanzania, The Gambia, Uganda, South Africa and India, and are also closely involved with clinical research and teaching at the Hospital for Tropical Diseases, London. The Wellcome Trust Bloomsbury Centre for Clinical Tropical Medicine is based in the Unit.

TUBERCULOSIS

Several projects focus on the interaction between *Mycobacterium tuberculosis* and HIV. In collaboration with the Uganda Virus Research Institute in Entebbe, the relationship between cellular immune responses and progression to active tuberculosis is being investigated in a cohort of 700 HIV-positive individuals. At baseline, associations were observed with intestinal nematode infestation. Individuals with intestinal nematodes had reduced interferon-gamma responses to *M. tuberculosis* antigens, suggesting that worms may reduce immunity to tuberculosis. Unexpectedly, it was also found that individuals with a BCG scar were less likely to have intestinal nematodes than those without, and this was not a confounding effect of socioeconomic status. This raises the fascinating possibility that BCG immunization in childhood may have a long-term effect on the type 1/ type 2 balance of the immune system influencing susceptibility to helminths.

Two studies, in different towns in South Africa, have been investigating the reasons behind the exceptionally high incidence of mycobacterial disease in South African gold miners. DNA fingerprinting of all isolates from a prospective cohort has demonstrated that there is intense ongoing transmission of TB, despite a well-resourced control programme that is curing 88% of new cases. The increasing TB incidence appears to be due to the introduction of HIV infection, now at high prevalence, into a population which is already predisposed to TB because of occupational exposure to silica dust. The effects of HIV infection and silicosis on TB incidence were shown to combine in a multiplicative fashion, explaining why TB incidence remains highly dependent on silica exposure and silicosis in HIV-positive miners. TB

incidence among HIV-positive miners has increased 4-fold in the period 1991 to 1998, suggesting either more advanced immunosuppression or increasing TB transmission within the workforce, or a combination of the two. The failure of the well-run TB control programme, which includes all the features of the recommended WHO DOTS strategy plus an active case-finding component, to contain the current HIV-associated TB epidemic suggests that a more radical approach may be required to achieve short-term control, although improved dust control and HIV prevention have to be the long-term goals. Possibilities would include more active case finding with, for example, sputum screening, or mass preventive therapy.

Action-oriented operational research in urban Lusaka has emphasized the drop out at every stage of the diagnostic process for people with a cough and is currently exploring the role of non-governmental organizations in supporting TB control. A randomized trial of 24 vs. 6 months of isoniazid as tuberculosis preventive therapy in people living with HIV has recently started, and a pilot site is being developed in Lusaka that uses voluntary counselling and HIV testing as an entry into a more holistic package of care for TB and other HIV-related illnesses.

DFID TUBERCULOSIS RESEARCH PROGRAMME

The DFID Tuberculosis Research Programme links the School with the Nuffield Institute for Health in Leeds and addresses four areas: the development of new knowledge about how to prevent and treat TB effectively in developing countries; the development of new and improved techniques to diagnose TB and drug resistance; improved understanding of the options for the effective delivery of TB interventions through health care systems; and the development of effective mechanisms for capacity building in developing countries through collaboration and training.

Major themes of the programme include: preventive therapy in persons with HIV infection, the development of new, affordable diagnostics tests, the introduction and critique of the international TB control strategy of directly observed therapy short course (DOTS), and the interaction between TB patients and different health care providers in the public and private sectors. The work is concentrated in several countries including: Zambia, Kenya, Malaŵi, South Africa, India, Pakistan and Nepal. The programme works through the development of collaborative links with academic, research, non-governmental, and government organizations in these countries.

During the past year, new work has begun in South Africa with the TB Association of the Western Cape to develop a community-based TB/HIV care model. In Malaŵi, work continues on TB transmission, risk factors, presentation delay and glandular TB. Following the review of a LEPROA-funded pilot TB/leprosy integration project among tribal communities in Orissa, India, in 1998, there is now the

opportunity for further qualitative research on the integration of TB services into the state primary health care infrastructure. Work supported by the DFID and Cooperation Française has led to the development of a research project to look at the perceptions and beliefs of communities about TB in several West African countries. In the laboratory, further work is being conducted on the mycobacteriophage replication technology developed for diagnosis and drug susceptibility testing.

MALARIA

During 1998, a further evaluation of the circumsporozoite malaria vaccine RTS,S developed by SmithKline Beecham and the Walter Reed Army Institute of Medical Research was undertaken in The Gambia. Approximately 300 adults were vaccinated with 3 doses of RTS,S or with rabies vaccine and followed throughout the 1998 malaria transmission season. Clinical and parasitological data collected during the surveillance period have now been collated and typing of malaria parasites collected from study subjects has been completed at the School. The vaccine code will be broken in June 1999.

TRACHOMA

Research on blinding diseases in developing countries has been greatly strengthened by the recruitment of Allen Foster from the International Centre for Eye Health. His current work includes the outcome of different techniques for cataract surgery, the causes and control of childhood visual loss and blindness and the control of ocular infections particularly due to trachoma and onchocerciasis. Trachoma is a particular interest of the Unit, and two important trials were completed in 1998: a trial of community-based mass treatment with the new azalide antibiotic azithromycin, and a trial of fly control, using ultra low volume spraying with deltamethrin. Mass treatment was shown to be well accepted, and to reduce the village-wide prevalence of active trachoma for at least 12 months. Fly control reduced the prevalence by 60% over a 3-month period (*Figure 1*).

The complete genome sequence of *Chlamydia trachomatis*, the cause of trachoma, was published in 1998, revealing a number of new potential determinants of pathogenesis and

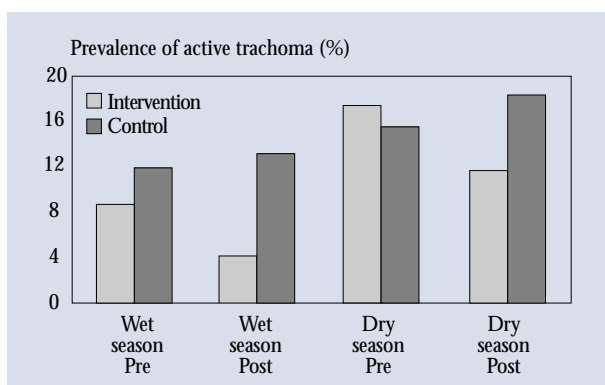


Figure 1. Prevalence of active trachoma before and after fly control.

immunity. Four new putative outer membrane proteins have been cloned and expressed, and their immunogenicity is being explored, using a panel of sera from clinically well characterized individuals from trachoma-endemic populations in The Gambia.

ACUTE RESPIRATORY INFECTIONS

Preparations continue for a large efficacy trial of a new nine-valent pneumococcal conjugate vaccine in Gambian infants. A phase 2 trial involving 600 infants was started at the beginning of the year and is nearing completion. This has been undertaken to check that administration of the new conjugate vaccine does not interfere with responses to routine EPI vaccines. Pilot testing of many of the procedures that will be used in the trial has started and it is anticipated that vaccination of the 30,000 infants in the main trial will commence around the end of 1999. The trial will last approximately five years.

ENTERIC PROTOZOAL INFECTIONS

A 3-year longitudinal study of transmission of enteropathogens in Misisi, an unplanned settlement in Lusaka, Zambia, has recently started. High transmission rates had been previously found in this community. A cohort of adults is being followed, with systematic evaluation of episodes of illness, in which the presence of enteric infections is related to the severity of tropical enteropathy evaluated by jejunal biopsies and permeability studies. Initial surveys and investigations suggest a high burden of morbidity, both infectious and non-infectious. Preliminary assessment of the jejunal biopsies indicates that the small intestinal morphological change associated with living in the tropics is indeed present, but full evaluation of structure, function, and defence molecule expression is only just beginning.

LEPROSY

The strong collaboration with Dhoolpet Leprosy Research Centre, Hyderabad continues and several new projects have been established there in the past year. The main focus continues to be the role of cytokines in causing tissue damage since the identification of cytokines associated with pathology may pave the way for new treatments. A series of nerve biopsies was collected from patients with acute neuritis and the cells and cytokines in acutely inflamed nerves were identified by immuno-histochemistry. CD4 cells predominate in nerve from patients with borderline forms of disease. Patients with borderline tuberculoid and borderline lepromatous leprosy have abundant intra-neural interferon gamma. This cytokine is pro-inflammatory and is probably activating other cells to cause damage. In contrast nerves from patients with lepromatous leprosy, although they have clinical evidence of neuritis, have almost no interferon gamma. Steroid treatment reduces the CD4 cell infiltrate in skin granulomata during reversal reactions, and results in a marked reduction in the local production of interferon gamma. Abundant chemokine production was found in skin lesions across the leprosy spectrum, even in anergic



lepromatous patients. Thus the anergy seen in lepromatous lesions may be occurring as a local phenomenon.

DFID WORK PROGRAMME ON HIV/AIDS AND STDs

The relationship between HIV transmission and other sexually transmitted diseases (STDs) is a particular interest of the Unit. A previous study, conducted in collaboration with colleagues in the Infectious Disease Epidemiology Unit (IDEU) and in Mwanza, Tanzania, found that improved treatment of bacterial STDs can reduce HIV incidence. However, viral STDs, especially *Herpes simplex* type 2 (HSV 2) are an increasing problem in countries with advanced

HIV/AIDS epidemics; in rural Tanzania, it was found that almost 50% of girls were infected by the age of 20 years. In the Central African Republic, a study conducted in collaboration with colleagues in Paris and Bangui showed that HIV-1 infection increased the shedding of HSV 2 in the female genital tract (*Figure 2*), implying a degree of 'epidemiological synergy' between the two infections.

WHO estimates that 50% of new HIV infections are acquired by people aged less than 25 years, making prevention in this age group the top priority. A community-randomized trial is being undertaken, in collaboration with colleagues in Tanzania and in IDEU, of a behavioural intervention, supported by more 'adolescent friendly' STD treatment services, against HIV and other STDs in Tanzania.

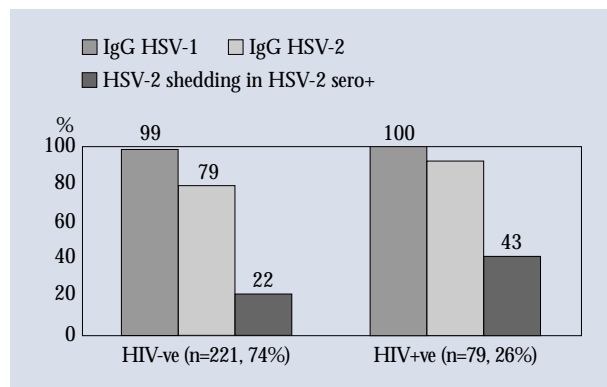


Figure 2. HSV-1&2 antibody sero-prevalence and HSV-2 shedding by HIV serostatus, amongst 300 women attending a multipurpose reproductive health clinic in Bangui, Central African Republic. (Source: Mbopi-Keou et al (unpublished, 1999)).

Syndromic management for STDs has been strongly promoted by the WHO, especially since the publication of the original Mwanza trial showing that it could reduce HIV incidence. However, it is difficult to apply in women, and a study among rural women in Bangladesh found that in this conservative society, with a low STD prevalence, it was not a cost-effective control strategy; it would be better to target services to higher risk groups, or to men. Screening of pregnant women for syphilis was found to be cost-effective even with a prevalence of less than 1%. Preliminary results of a trial in Mwanza suggest that a single dose of intramuscular benzathine penicillin is sufficient to prevent adverse pregnancy outcomes due to syphilis.

RESEARCH DEGREE STUDENTS

Willie Abela Githui (Kenya). Drug resistance of TB: epidemiology in Kenya.

Habib Najibullah Ayub (Afghanistan). Health survey in holiday travellers.

Anna-Karin Hurtig (Sweden). TB in Nepal.

Alice Amanda Kirkaldy (UK). Chemokines in reversal health in leprosy.

Monique Ollif (South Africa). Analysis of integrated STD care in reproductive health services in Tanzania.

Emilia Jesus Encarnacao Valadas (Portugal). Immunology of TB.

David G Withum (USA). HIV epidemiology.

PUBLICATIONS

Adegbola RA, Leach A, Mulholland K, Hilton S, Demba E, JAFFAR S, GREENWOOD BM. Antigenuria in Gambian infants following immunization with a *Haemophilus influenzae* type b polyribosylribitol phosphate-tetanus toxoid protein conjugate (PRP-T) vaccine. *Diagnostic Microbiology and Infectious Disease* 1998; 32:15-19.

Adegbola RA, Mulholland EK, Secka O, JAFFAR S, GREENWOOD BM. Vaccination with a *Haemophilus influenzae* type b conjugate vaccine reduces oropharyngeal carriage of *H. influenzae* type b among Gambian children. *Journal of Infectious Diseases* 1998; 177:1758-1761.

Aikins MK, Fox-Rushby JA, D'Alessandro U, Langerock P, Cham K, New L, Bennett S, GREENWOOD BM, Mills AJ. The Gambian National Impregnated Bednet Programme: costs, consequences and net cost-effectiveness. *Social Science and Medicine* 1998; 46:181-191.

BAILEY RL, Fowler A, Peeling RW, MABEY DCW, Whittle H, Jepson A. Lymphoproliferative responses to *C. trachomatis* Ebs in a Gambian twin population; estimating the role of host genetic factors. In: Stephens RS et al (eds). *Chlamydial Infections. Proceedings of the Ninth International Symposium on Human Chlamydial Infections* California: 1998:474-477.

Ballinger A, KELLY P, Hallyburton E, Besser R, Farthing MJG. Plasma leptin in chronic inflammatory bowel disease and HIV: implications for the pathogenesis of anorexia and weight loss. *Clinical Science* 1998; 94:479-483.

BEHRENS RH. Mefloquine to prevent malaria. interpretation of study was not based on evidence. *British Medical Journal* 1998; 316:1980

Berman JD, Badaro R, Thakur CP, Wasunna K, Behbehani K, Davidson R, Kuzoe F, Pang L, Weerasuriya K, BRYCESON ADM. Efficiency and safety of liposomal amphotericin B (AmBisome) for visceral leishmaniasis in endemic developing countries. *Bulletin of the World Health Organization* 1998; 76:25-32.

Bojang KA, Obaro SK, D'Alessandro U, Bennett S, Langerock P, TARGETT GAT, GREENWOOD BM. An efficacy trial of the malaria vaccine SPf66 in Gambian infants - second year of follow-up. *Vaccine* 1997; 16:62-67.

Bojang KA, Schneider G, Forck S, Obaro SK, JAFFAR S, Pinder M, Rowley J, GREENWOOD BM. A trial of Fansidar⁷ plus chloroquine or Fansidar⁷ alone for the treatment of uncomplicated malaria in Gambian children. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92:73-76.

Bosu WK, Annan JJ, MABEY DCW. Management of pelvic inflammatory disease in the central region of Ghana is not standardised. *International Journal of STD & AIDS* 1998; 9:408-413.

Bosu WK, MABEY DCW. Availability and cost of antibiotics for treating PID in the central region of Ghana and implications for compliance with national treatment guidelines. *International Journal of STD & AIDS* 1998; 9:551-553.

Bowman RC, Yorston D, Wood M, Gilbert C, FOSTER A. Primary IOL implantation for Penetrating Lens Trauma in Africa. *Ophthalmology* 1998; 105:1770-1774.

BRYCESON ADM. Imported fever. In: Savill J, ed. *Horizons in Medicine*. London: Royal College of Physicians, 1998:61-67.

CHANDRAMOHAN D, GREENWOOD BM. Is there an interaction between human immunodeficiency virus and *Plasmodium falciparum*? *International Journal of Epidemiology* 1998; 27:296-301.

CHIODINI PL. Non-microscopic methods for diagnosis of malaria. *Lancet* 1998; 351:80-81.

Clarke M, Collinson A, Faal H, Gaye A, Jallow M, Joof-Cole A, McADAM KPWJ, Schim van der Loeff M, Thomas V, Whittle HC. Ethical issues facing medical research in developing countries. *Lancet* 1998; 351:286-287.

Coleman RL, Wilkinson D, McADAM KPWJ. Voluntary lay supervisors of directly observed therapy for tuberculosis in Africa. *Tropical Doctor* 1998; 28:78-80.

DE COCK KM, Johnson A, M. From exceptionalism to normalisation: a reappraisal of attitudes and practice around HIV testing. *British Medical Journal* 1998; 316:290-293.

De Gourville E, MABEY DCW, Quigley MA, Jack N, Mahabir B. Risk factors for concordant HIV infection in heterosexual couples in Trinidad. *International Journal of STD & AIDS* 1998; 9:151-157.

- Eckstein M, Vijayalakshmi P, Killekar M, Gilbert C, FOSTER A. Use of intra-ocular lenses in children with traumatic cataract in south India. *British Journal of Ophthalmology* 1998; **82**:911-915.
- ELLIOTT AM, Klaus BD, North DS, Martin HP. Furazolidone-induced mood disorder during the treatment of refractory giardiasis in a patient with AIDS. *Clinical Infectious Diseases* 1998; **26**:1015
- Enwere G, Boele van Hensbroek M, Adegbola R, Palmer A, Onyiorah E, Weber MW, GREENWOOD BM. Bacteraemia in cerebral malaria. *Annals of Tropical Paediatrics* 1998; **18**:275-278.
- FELTON JM, Hsia R-C, MABEY DCW, BAILEY RL. The effects of TAP1 gene polymorphisms in scarring trachoma. In: Stephens RS et al (eds). *Chlamydial Infections. Proceedings of the Ninth International Symposium on Human Chlamydial Infections* California: 1998:415-418.
- Ford L, Abdullahi A, Anjorin FI, Danbauchi SS, Isa MS, Maude GH, PARRY EHO. The outcome of peripartum cardiac failure in Zaria, Nigeria. *Quarterly Journal of Medicine* 1998; **91**:93-103.
- FOSTER A. How can blind children be helped? *Community Eye Health Journal* 1998; **27**:33
- FOSTER A, Gilbert C. Childhood Blindness. In: Anonymous *Strategies for the Prevention of Blindness in National Programmes* World Health Organisation, 1998;
- FOSTER A, Thulasiraj RD. Planning, Management and Evaluation of Eye-Care Services. In: Johnson GJ, ed. *Epidemiology of Eye Disease*. Chapman and Hall, 1998;
- Gilbert SC, Plebanski M, Gupta S, Morris J, Cox M, Aidoo M, Kwiatkowski D, GREENWOOD BM, Whittle HC, Hill AVS. Association of malaria parasite population structure, HLA, and immunological antagonism. *Science* 1998; **279**:1173-1177.
- GODFREY-FAUSSETT P, BAGGALEY R. Exceptionalism in HIV. Challenge for Africa too. *British Medical Journal* 1998; **316**:1826
- GODFREY-FAUSSETT P, Mwinga A, Hosp M, BAGGALEY R, QUIGLEY MA, PORTER JDH. Obtaining informed consent for trials in Africa is possible. *British Medical Journal* 1998; **316**:627-628.
- Grant AD, DE COCK KM. The growing challenge of HIV/AIDS in developing countries. *British Medical Bulletin* 1998; **54**:369-381.
- GREENWOOD BM. Traditional medicine to DNA vaccines: the advance of medical research in West Africa. *Tropical Medicine and International Health* 1998; **3**:166-176.
- GREENWOOD BM, DE COCK KM. *New and resurgent infections: prediction, detection and management of tomorrow's epidemics*. Chichester: Wiley, 1998;
- Harman K, LOCKWOOD DNJ, Black MM. Never take things at face value. *Lancet* 1998; **352**:1190
- Hassan-King M, Adegbola RA, Baldeh I, Mulholland K, Omosigbo C, Oparaugo A, Usen S, Palmer A, Schneider G, Secka O, Weber M, GREENWOOD BM. Polymerase chain reaction for the diagnosis of *Haemophilus influenzae* type b in children and its evaluation in a vaccine trial. *Pediatric Infectious Disease Journal* 1998; **17**:309-312.
- HAWKES S. Why include men? Establishing sexual health clinics for men in rural Bangladesh. *Health Policy and Planning* 1998; **13**:121-130.
- HAWKES S, Hart G. The sexual health of travellers. *Infectious Disease Clinics of North America* 1998; **12**:413-430.
- JAFFAR S, Jepson A, Leach A, Greenwood AM, Whittle H, GREENWOOD BM. Causes of mortality in twins in a rural region of The Gambia, West Africa. *Annals of Tropical Paediatrics* 1998; **18**:231-238.
- Jakobsen PH, McKay V, N'Jie R, Olaleye BO, D'Alessandro U, Zhang G, Eggelte TA, Koch C, GREENWOOD BM. Decreased antioxidant activities among children with clinical episodes of malaria. *Infection and Immunity* 1998; **66**:1654-1659.
- Jakobsen PH, Rasheed FN, Bulmer JN, Theisen M, Ridley RG, GREENWOOD BM. Inflammatory reactions in placental blood of *Plasmodium falciparum*-infected women and high concentrations of soluble E-selectin and a circulating P *falciparum* protein in the cord sera. *Immunology* 1998; **93**:264-269.
- Jawara M, McBeath J, Lines JD, Pinder M, Sanyang F, GREENWOOD BM. Comparison of bednets treated with alphacypermethrin, permethrin or lambdacyhalothrin against *Anopheles gambiae* in The Gambia. *Medical and Veterinary Entomology* 1998; **12**:60-66.
- Johnson GJ, FOSTER A. Prevalence, Incidence and Distribution of Visual Impairment. In: Johnson GJ, ed. *Epidemiology of Eye Disease*. Chapman and Hall, 1998;
- KELLY P, Feldman R, Nduabani P, Baboo KS, Timæus IM, Farthing MJG, Wallman S. High adult mortality in Lusaka. *Lancet* 1998; **351**:883
- KELLY P, Makumbi FA, Carnaby S, Simjee AE, Luo NP, Farthing MJG. Variable distribution of *Cryptosporidium parvum* in small and large intestine in AIDS revealed by polymerase chain reaction. *European Journal of Gastroenterology and Hepatology* 1998; **10**:855-858.
- Kessler C, Connolly M, Levy M, PORTER JDH, Rieder HL. Tuberculosis control in refugee populations: a challenge to both relief agencies and national programs. *International Journal of Tuberculosis and Lung Disease* 1998; **2**:105-110.
- Khanolkar-Young S, Snowdon D, LOCKWOOD DNJ. Immunocytochemical localization of inducible nitric oxide synthase and transforming growth factor-beta (TGF-beta) in leprosy lesions. *Clinical and Experimental Immunology* 1998; **113**:438-442.
- Klein JL, CORBETT EL, Slade PM, Miller RF, Coker RJ. *Mycobacterium kansasii* and human immunodeficiency virus co-infection in London. *Journal of Infection* 1998; **37**:252-259.
- Kwara A, Adegbola RA, Corrah PT, Weber M, Achtman M, Morelli G, Caugant DA, GREENWOOD BM. Meningitis caused by a serogroup W135 clone of the ET-37 complex of *Neisseria meningitidis* in West Africa. *Tropical Medicine and International Health* 1998; **3**:742-746.
- Limburg H, FOSTER A. Cataract Surgical Coverage. *Community Eye Health* 1998; **11**:3-6.
- LOCKWOOD DNJ. Single agent injectable aminosidine for 21 days is more effective than sodium stibogluconate for the treatment of visceral leishmaniasis in Bihar, India. *British Medical Journal* 1998; **316**:1205
- LOCKWOOD DNJ. Commentary: some good news for treatment of visceral leishmaniasis in Bihar. *British Medical Journal* 1998; **316**:1205
- LOCKWOOD DNJ. Leprosy. In: Burg H, Ingelfinger JR, Wald ER, Polin RA, eds. *Gellis and Kagan's Current Paediatric Therapy*. 1998;
- LOCKWOOD DNJ, BRYCESON ADM. Leprosy. In: Champion RH, Burton JL, Burns DA, Breathnach SM, eds. *Textbook of Dermatology*. Blackwell, 1998;
- LOCKWOOD DNJ, McADAM KPWJ. *Mycobacterium leprae*. In: Gorbach SL, Bartlett JG, Blacklow NR, eds. *Infectious diseases* Philadelphia: WB Saunders, 1998:2307-2312.
- LOCKWOOD DNJ, McADAM KPWJ. Leprosy. In: Gorbach SL, Bartlett JG, Blacklow NR, eds. *Infectious diseases* Philadelphia: Saunders, 1998:1528-1541.
- MABEY DCW, BAILEY RL, Paal H, Vitale S, Schachter J, ACT Group. Azithromycin in control of trachoma 2. Community based treatment of trachoma with oral azithromycin: a one year follow-up study in The Gambia. In: Stephens RS et al (eds). *Chlamydial Infections. Proceedings of the Ninth International Symposium on Human Chlamydial Infections* California: 1998:351-354.
- Man WD-C, Weber MW, Palmer A, Schneider G, Wadda R, JAFFER S, Mulholland EK, GREENWOOD BM. Nutritional status of children admitted to hospital with different diseases and its relationship to outcome in The Gambia, West Africa. *Tropical Medicine and International Health* 1998; **3**:678-686.
- MARBIAH NT, Petersen E, David KP, Magbity EB, Lines JD, Bradley DJ. Controlled trial of lambda-cyhalothrin-impregnated bed nets and/or dapsone/pyrimethamine for malaria control in Sierra Leone. *American Journal of Tropical Medicine and Hygiene* 1998; **58**:1-6.
- Matasha E, Ntembelela T, MAYAUD P, Saidi W, Todd J, Mujaya B, Tendo-Wambua L. Sexual and reproductive health among primary and secondary school pupils in Mwanza, Tanzania: need for intervention. *AIDS Care* 1998; **10**:571-582.
- MAYAUD P, HAWKES S, MABEY DCW. Advances in control of sexually transmitted diseases in developing countries. *Lancet* 1998; **351**:29-32.
- MAYAUD P, Ka-Gina G, Cornelissen J, Todd JE, Kaatano G, West B, Uledi E, Rwakatare M, Koppe L, Manoko D, Laga M, Grosskurth H, Hayes RJ, MABEY DCW. Validation of a WHO algorithm with risk assessment for the clinical management of vaginal discharge in Mwanza, Tanzania. *Sexually Transmitted Infections* 1998; **74**:S77-S84.
- MAYAUD P, Ka-Gina G, Grosskurth H. Effectiveness, impact and cost of syndromic management of sexually transmitted diseases in Tanzania. *International Journal of STD & AIDS* 1998; **9**:11-14.
- MAYAUD P, Mwijarubi E, Gavyole A. Syndromic management of sexually transmitted diseases at primary health care level in Tanzania. *Jornal Brasileiro de Doencas Sexualmente Transmissíveis* 1998; **9**:20-28.
- MAYAUD P, Uledi E, Cornelissen J, Ka-Gina G, Todd JE, Rwakatare M, West B, Koppe L, Manoko D, Grosskurth H, Hayes RJ, MABEY DCW. Risk scores to detect cervical infections in urban antenatal clinic attenders in Mwanza, Tanzania. *Sexually Transmitted Infections* 1998; **74**:S139-S146.
- McGuire W, D'Alessandro U, Stephens S, Olaleye BO, Langerock P, GREENWOOD BM, Kwiatkowski D. Levels of tumour necrosis factor and soluble TNF receptors during malaria fever episodes in the community. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; **92**:50-53.
- McIntosh HM, GREENWOOD BM. Chloroquine or amodiaquine combined with sulfadoxine-pyrimethamine as a treatment for uncomplicated malaria - a systematic review. *Annals of Tropical Medicine and Parasitology* 1998; **93**:265-270.
- Muller O, Corrah T, Katabira E, Plummer FA, MABEY DCW. Antiretroviral therapy in sub-Saharan Africa. *Lancet* 1998; **351**:68
- Mwinga AG, Hosp M, GODFREY-FAUSSETT P, QUIGLEY MA, Mwaba P, Mugala BN, Niyiranda O, Luo N, Pobee JOM, ELLIOTT AM, McADAM KPWJ, PORTER JDH. Twice weekly tuberculosis preventive therapy in HIV infection in Zambia. *AIDS* 1998; **12**:2447-2457.
- Nchito M, KELLY P, Stanongo S, Luo NP, Feldman RA, Farthing MJG, Baboo KS. Cryptosporidiosis in urban Zambian children: an analysis of risk factors. *American Journal of Tropical Medicine and Hygiene* 1998; **59**:435-437.
- Nduabani P, KELLY P, Farthing MJG, Wallman S. Local understandings of adult diarrhoeal disease and its treatment in an area of high HIV seroprevalence in Zambia. *Tropical Medicine and International Health* 1998; **3**:783-787.
- Olaleye BO, Williams LA, D'Alessandro U, Weber MW, Mulholland K, Okorie C, Langerock P, Bennett S, GREENWOOD BM. Clinical predictors of malaria in Gambian children with fever or a history of fever. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; **92**:300-304.
- Peeling RW, BAILEY RL, CONWAY DJ, Holland MJ, Campbell AE, Jallow O, Whittle HC, MABEY DCW. Antibody response to the 60-kDa chlamydial heat-shock protein is associated with scarring trachoma. *Journal of Infectious Diseases* 1998; **177**:256-259.
- Peeling RW, MABEY DCW. Outbreak of chlamydia infection in a rural Australian town. *Lancet* 1998; **352**:1551
- PORTER JDH. Ethics and responsibilities of the public health professional. In: Anonymous *health, epidemiology and statistics* University of London/London School of Hygiene and Tropical Medicine, 1998;
- PORTER JDH, OGDEN JA. Social inequalities in the re-emergence of infectious disease. In: Strickland SS, Shetty PS, eds. *Human biology and social inequality*. Cambridge: Cambridge University Press, 1998:96-113
- Quiñones ML, Lines JD, Thomson MC, Jawara M, GREENWOOD BM. Permethrin-treated bed nets do not have a 'mass-killing effect' on village populations of *Anopheles gambiae s.l.* in The Gambia. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; **92**:373-378.
- REID A, WHITTY CJM, AYLES HM, Jennings RM, Bovill BA, FELTON JM, BEHRENS RH, BRYCESON ADM, MABEY DCW. Malaria at Christmas: risk of prophylaxis versus risks of malaria. *British Medical Journal* 1998; **317**:1506-1508.
- REYBURN H, BEHRENS RH, WARHURST DC, BRADLEY DJ. The effect of chemoprophylaxis on the timing of onset of falciparum malaria. *Tropical Medicine and International Health* 1998; **3**:281-285.
- Richards MW, BEHRENS RH, Doherty JF. Hematology changes in acute, imported Plasmodium falciparum malaria. *American Journal of Tropical Medicine and Hygiene* 1998; **59**:859
- Schachter J, West S, MABEY DCW, Dawson CM, Bobo L, BAILEY RL. Azithromycin in control of trachoma 3. Effect of treatment on *Chlamydia trachomatis* infections in trachoma. In: Stephens RS et al (eds). *Chlamydial Infections. Proceedings of the Ninth International Symposium on Human Chlamydial Infections* California: 1998:347-350.
- Schwartz E, Renk J, Hopkins A, Huss R, FOSTER A. Method to determine the coverage of ivermectin distribution in onchocerciasis-control programmes. *Annals of Tropical Medicine and Parasitology* 1998; **92**:793-796.
- Suara RO, Adegbola RA, Mulholland EK, GREENWOOD BM, Baker CJ. seroprevalence of antibodies to group B streptococcal polysaccharides in Gambian mothers and their newborns. *Journal of the Pakistan Medical Association* 1998; **90**:109-114.
- Taylor RR, Allen SJ, GREENWOOD BM, RILEY EM. IgG3 antibodies to *Plasmodium falciparum* merozoite surface protein 2 (MSP2): increasing prevalence with age and association with clinical immunity to malaria. *American Journal of Tropical Medicine and Hygiene* 1998; **58**:406-413.
- Usen S, Adegbola R, Mulholland K, JAFFAR S, Hilton S, Oparaugo A, Omosigbo C, Lahai G, Corrah T, Palmer A, Schneider G, Weber MW, GREENWOOD BM. Epidemiology of invasive pneumococcal disease in the Western Region, The Gambia. *Pediatric Infectious Disease Journal* 1998; **17**:23-28.
- Veitch KM, KELLY P, Segal I, Spies SK, Farthing MJG. Does sucrose deficiency in black South Africans protect against colonic disease? *Lancet* 1998; **351**:183
- von Seidlein L, Bojang K, Jones P, JAFFAR S, Pinder M, Obaro S, Doherty T, Haywood M, Snounou G, Gemperli B, Gathmann I, Royce C, McADAM KPWJ, GREENWOOD BM. Randomised controlled trial of CQP56697, a new antimalarial, and pyrimethamine sulfadoxine in the treatment of uncomplicated falciparum malaria. *American Journal of Tropical Medicine and Hygiene* 1998; **58**:638-644.
- Weber MW, Dackour R, Usen S, Schneider G, Adegbola R, Cane P, JAFFAR S, Milligan P, GREENWOOD BM, Whittle HC, Mulholland EK. The clinical spectrum of respiratory syncytial virus disease in The Gambia. *Pediatric Infectious Disease Journal* 1998; **17**:224-230.
- Weber MW, Mulholland EK, GREENWOOD BM. Respiratory syncytial virus infection in tropical and developing countries. *Tropical Medicine and International Health* 1998; **3**:268-280.
- Weber MW, Mulholland EK, GREENWOOD BM. Epidemiology of respiratory syncytial virus infection in tropical and developing countries. *Tropical Medicine and International Health* 1998; **3**:268-280.



WHEELER PR, RAYNES JG, O'SULLIVAN GM, DUGGAN D, McADAM KPWJ. Sulphatide-binding properties are shared by serum amyloid P component and a polyreactive germ-line IgM autoantibody, the TH3 idiotype. *Clinical and Experimental Immunology* 1998; **112**:262-269.

WHITTY CJM, Sudlow CL, Warlow CP. Investigating individual subjects and screening populations for asymptomatic carotid stenosis can be harmful. *Journal of Neurology, Neurosurgery and Psychiatry* 1998; **64**:619-623.

THESES

PORTER JDH. (UK) *Tuberculosis in the 1990s and the role of preventive therapy in low income countries* (MD), 1998.

TEMPERTON NJ. (UK) *Functional studies on superoxide dismutase in Trypanosoma cruzi*. (PhD), 1998.

WEST B. (UK) *Neisseria gonorrhoeae isolated from population groups in the Lake Zone, Northern Tanzania*. (PhD), 1998.

1899



1999

DISEASE CONTROL AND VECTOR BIOLOGY UNIT

Sandy M Cairncross MA PhD MICE MCIWEM	Reader & Head of Unit	<i>Public Health Engineer</i>	FUNDING BODIES British Council Commission of European Communities (CEC) Department for International Development (DFID) Drinking Water Inspectorate (DWI) Medical Research Council (MRC) Protec Health Ltd Sir Halley Stewart Trust UNICEF Unilever Research The Wellcome Trust World Health Organization (WHO)
David J Bradley MA DM FRCP FRCPath FFPHM FIBiol HonFCIWEM	Professor	<i>Epidemiologist</i>	
Christopher F Curtis BA DipAnimGenet PhD	Professor	<i>Medical Entomologist</i>	
Bohumil S Drašar BSc PhD DSc FRCPath CBiol FIBiol DCDHE	Professor	<i>Bacteriologist</i>	
Alan Clements BSc PhD	Emeritus Professor	<i>Medical Entomologist</i>	
MDR Varma BSc PhD DSc CBiol FIBiol	Emeritus Professor	<i>Medical Entomologist</i>	
Gerry Webbe MSc DSc CBiol FIBiol	Emeritus Professor	<i>Helminthologist</i>	
Peter Borriello BSc PhD FRCPath	Visiting Professor	<i>Microbiologist</i>	
Richard GA Feachem CBE BSc PhD DSc(Med) FEng FICE FCIWEM HonFFPHM	Visiting Professor	<i>Public Health Engineer</i>	
Colin Roberts BSc DipBact MB ChB FRCPath	Visiting Professor	<i>Medical Microbiologist</i>	
Christopher Dye BA DPhil	Reader	<i>Population Biologist</i>	
Ursula J Blumenthal BA MSc PhD PGCE ADipTCDHE	Senior Lecturer	<i>Epidemiologist</i>	
Clive R Davies MA MSc DPhil	Senior Lecturer	<i>Epidemiologist</i>	
Jo D Lines BSc MSc PhD	Senior Lecturer	<i>Mosquito Biologist</i>	
Sylvia R Meek MA MSc PhD	Senior Lecturer	<i>Malaria Control Specialist</i>	
Robert F Sturrock ARCS DIC BSc PhD CBiol FIBiol EurBiol	Senior Lecturer	<i>Medical Parasitologist</i>	
Roger H Webber MD MSc LRCP DTPH DTM&H DObst	Senior Lecturer	<i>Tropical Disease Epidemiologist</i>	
Steve Barrett BM MSc	Honorary Senior Lecturer	<i>Medical Microbiologist</i>	
David Felmingham BSc MSc	Honorary Senior Lecturer	<i>Clinical Scientist</i>	
Robert George MBBS MSc MRCP	Honorary Senior Lecturer	<i>Medical Microbiologist</i>	
Ruben Gruneberg MD FRCPath	Honorary Senior Lecturer	<i>Medical Microbiologist</i>	
Tyrone L Pitt BSc MPhil PhD	Honorary Senior Lecturer	<i>Clinical Microbiologist</i>	
Geoff Ridgway MD MRCP FRCPath	Honorary Senior Lecturer	<i>Medical Microbiologist</i>	
Geoff Scott MD FRCP FRCPath DTM&H	Honorary Senior Lecturer	<i>Medical Microbiologist</i>	
Stephanie Simmonds OBE MPhil	Honorary Senior Lecturer	<i>Health Planner</i>	
Peter Wilson MA MD MRCP FRCPath	Honorary Senior Lecturer	<i>Medical Microbiologist</i>	
Mary Cameron BSc PhD	Lecturer	<i>Medical Entomologist</i>	
Daniel Chandramohan MBBS MSc	Lecturer	<i>Epidemiologist</i>	
Desmond Chavasse BSc PhD	Lecturer	<i>Medical Entomologist</i>	
Valerie A Curtis BEng MSc PhD	Lecturer	<i>Engineer / Epidemiologist</i>	
Peter Kolsky BA MSc CEng MCIWEM	Lecturer	<i>Tropical Public Health Engineer</i>	
Colin Leake BSc PhD	Lecturer	<i>Arbovirologist</i>	
Paul Coleman BA	Honorary Lecturer	<i>Epidemiologist</i>	
Marion Robbins MSc FIMLS	Honorary Lecturer	<i>Medical Microbiologist</i>	
Brian Williams BSc PhD	Honorary Lecturer	<i>Epidemiologist</i>	
Menno Bouma BA MSc MD PhD	Research Fellow	<i>Clinician</i>	
Ilona Carneiro BSc DPhil	Research Fellow	<i>Epidemiologist</i>	
Sarah Cleaveland BSc PhD	Research Fellow	<i>Epidemiologist</i>	
Jonathan Cox BSc PhD	Research Fellow	<i>GIS Specialist</i>	
Caroline Jones BSc MSc PhD	Research Fellow	<i>Social Scientist</i>	
Caroline Maxwell BSc MSc	Research Fellow	<i>Medical Entomologist</i>	
Anne Peasey BSc MSc	Research Fellow	<i>Epidemiologist</i>	
Cally Roper BSc PhD	Research Fellow	<i>Molecular Population Geneticist</i>	
Mark Rowland MSc PhD	Honorary Research Fellow	<i>Epidemiologist</i>	
Diarmid Campbell-Lendrum BA DPhil	Research Assistant	<i>Entomologist</i>	
Ben Cave BA MSc	Research Assistant	<i>Anthropologist</i>	
John Day BSc MSc	Research Assistant	<i>Entomologist</i>	
Bronwen Lambson BSc MSc PhD	Research Assistant	<i>Molecular Biologist</i>	
Helen Pates BSc MSc	Research Assistant	<i>Mosquito Ethologist</i>	
Roslin Russell BSc MSc	Research Assistant	<i>Molecular Biologist</i>	

Nigel Hill BSc	Head Technologist	<i>Medical Entomologist</i>
Patricia Aiyenuro BSc	Technologist	<i>Medical Entomologist</i>
Oluoyomi Akinpelu BSc MSc	Technologist	<i>Medical Entomologist</i>
Cheryl Cooper BSc MSc	Technologist	<i>Medical Entomologist</i>
Jill Curtis BSc MSc PhD	Technologist	<i>Molecular Biologist</i>
Barbara Sawyer MIST	Technologist	<i>Medical Entomologist</i>
Sue Sherry ACIS	WELL Co-ordinator	
Susanne Groener BA	Managing Editor, <i>Tropical Medicine & International Health</i>	
Marie Blaze	Information Assistant, Malaria Reference Laboratory	
Ryanne Matthias BSocSci	Assistant to WELL Co-ordinator	
Helen Priestley BA	Malaria Programme Administrator	
Caroline Smart BA	Environmental Health Group Administrator	
Valerie Smith HNC	Information Assistant, Malaria Reference Laboratory	
Stephanie Thorpe BA	Malaria Consortium Administrator	
Jane Wooders BA	Unit Administrator	
Frank Cox BSc PhD DSc DAP&E	Visiting Research Fellow	<i>Parasitologist</i>

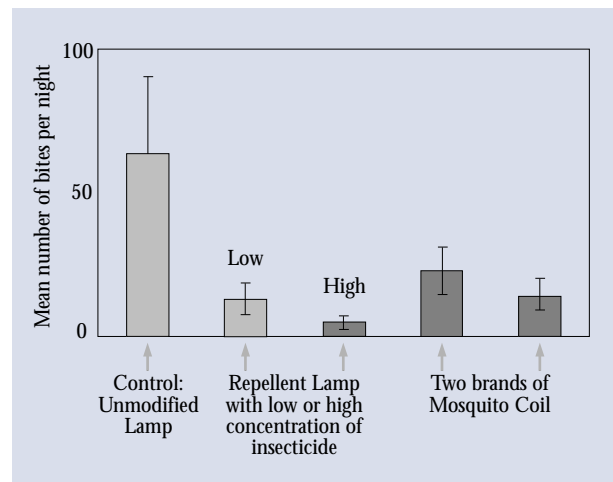
MALARIA AND ITS VECTORS

Unit staff, with their Tanzanian colleagues, have been surveying the prevalence of malaria fever, anaemia and splenomegaly in children in relation to entomological inoculation rate (EIR) in a lowland area near Muheza and a highland area near Amani at about 1200 metres. Results confirm and amplify those of the late Ruth Ellman that in the highlands, where the EIR is about 5% of that in the lowlands, all the measures of mild and chronic malaria morbidity are also lower. In both areas the prevalence of malaria infection and morbidity decline steeply with age between 1 and 6 years. These data do not support the point of view that converting an area of high malaria transmission to one of moderate transmission (e.g. by use of treated bednets) would delay occurrence of malaria morbidity until a later age and could in the long run make the overall problem worse. Surveys of villages where treated nets have been in use for 2 or 3 years show that prevalence of anaemia and splenomegaly are markedly less than in similar villages without nets.

Continuing the Unit's work on low-cost technology for vector control in the community, a new method has been devised for the application of insecticide as a nocturnal domestic mosquito repellent. This uses a modified version of the hand-made kerosene lamps which in many African communities are the most common source of light at night. The kerosene is used to heat a small amount of cooking oil, containing a trace of transfluthrin, a volatile pyrethroid. This has been found to reduce indoor mosquito biting rates by over 90%, better than common brands of mosquito coil (*see Figure*), and at far lower cost; the insecticide for one evening's use costs less than half a US cent.

Meanwhile, the Unit's work on the dip-it-yourself approach to the promotion of impregnated mosquito nets, reported in the *Research Report 1995-6* has become increasingly

influential. Now all four of the major manufacturers of pyrethroids have launched, or are preparing to launch their own products in this form. The Technical Support Network on Insecticide-Treated Nets of the Roll Back Malaria Programme now agrees on the importance of the dip-it-yourself approach in Africa.



In a suburb of Dar es Salaam, five teams of mosquito catchers sat from 6pm to 10pm every night for 25 nights, counting the mosquitoes biting them. The repellent lamp (with different concentrations of insecticide) was compared with two brands of mosquito coil and with the control (an unmodified lamp).

Another research project has sought to test winter spraying as a strategy for control of the malaria vector *Anopheles arabiensis* in KwaZulu, South Africa. In the dry winter season, populations of *An.gambiae* sl. appear to retreat to a few widely scattered permanent water holes, whereas in the rains they are everywhere. It has long been speculated that insecticide treatment of these small and clearly defined winter foci could prevent the normal rainy season expansion. Microsatellite



population genetic analysis was used to determine whether the summer population expansion originated locally from the small numbers of surviving resident mosquitoes rather than from migrant mosquitoes moving into the region from more seasonally stable populations elsewhere. The results provide evidence of limited migration within the region, supporting field trials of dry season larviciding. These are now under way, and the impact of this intervention upon the local incidence of malarial disease is being monitored. Microsatellite markers will be used to measure the impact upon local genetic diversity in the vector population.

In Hubei Province, China, comparison of deltamethrin-treated mosquito nets and DDT residual wall spraying showed that both methods were equally effective in the control of malaria but, as the treatment of nets was cheaper and preferred by the population, this was selected as the method of choice.

DFID MALARIA PROGRAMME

This year saw the completion of the last full year of the current DFID malaria programme, its favourable review by DFID, and also the preparation of a new 5-year programme on the applied aspects of malaria and its control, which was selected by DFID and funded. It has also been a year of unprecedented activity in malaria as a whole, as the subject rises to the top of WHO's agenda for the first time since the 1970s and School staff have been much involved in the preparation for Roll Back Malaria.

Several major projects have come to fruition: detailed analysis of the results of our large community-randomized trial of insecticide-treated mosquito nets (ITMN) show them to be comparable with, and even to exceed, wallspraying against *Anopheles culicifacies*-transmitted malaria in rural Gujarat, India. The overall approach to national programmes has taken shape; a global review of existing programmes, carried out in the field with the Malaria Consortium, has been completed as a guide to operational work on a larger scale; and work is under way on an innovative alternative approach to preventing biting by vectors. Vaccine trials completed have indicated no breakthroughs as yet, but molecular methodology has been used to detect strain pattern modification by vaccines and to separate reinfections from recrudescences in drug trials. The first phase of the African highland malaria project was completed and initial plans for a network for forecasting malaria epidemics in highland areas have been drawn up with Control Programmes in Kenya, Uganda and Tanzania. The predictive use of the El Niño phenomenon in epidemic forecasting developed: in India, Gujarat State proposed a major initiative in this area based upon DFID programme work. The urban malaria studies in Surat are now yielding results relevant to improved service delivery and prevention.

LEISHMANIASIS

The changing epidemiology of American cutaneous

leishmaniasis (ACL) and its significance for control policy remains the principal focus of research. In most endemic countries, a steadily increasing health burden from ACL is suggested by the number of cases reported annually by health services since the 1980s. This pattern was confirmed in Brazil by an analysis of active search data (clinical and immunological) collected from a prospective survey in Pernambuco, indicating a 10-fold increase during the last 10 years. This region typifies the new epidemiology of ACL as transmission by sandfly vectors (in this case *Lutzomyia whitmani*) is largely in the domestic environment. Where ACL transmission is domestic, vector control becomes a feasible intervention; but the decision where to target the limited resources available for ACL control requires reliable spatial data on the risk of infection. Widespread monitoring of sandfly abundance is not a realistic option, so that distributional maps generated by risk factor analysis are paramount. In the coffee-growing region of Huila Department, Colombia, a regression analysis of newly collected sandfly data demonstrated that 81% of the spatial variance in abundance of *Lu. longiflora* (the suspected ACL vector in this region) can be explained by variation in rainfall, temperature, altitude and habitat type. Domestic transmission was again indicated, especially where houses were close to traditional coffee plantations, a preferred habitat for this sandfly species.

Domestic transmission of ACL depends on the behavioural traits of the local sandfly vectors and on the abundance of potential domestic reservoir hosts. Field studies on the host-seeking behaviour of sandflies (*Lu. whitmani*) have provided the first evidence of consistent behavioural heterogeneities within sandfly populations: sandflies were significantly more likely to seek one host type (either cattle or horses) if they had previously tried to feed from the same host. However, population genetic studies of sandfly populations (in collaboration with the Natural History Museum), using three newly discovered microsatellite loci, failed to find any strong evidence for population structure amongst *Lu. whitmani* sandflies collected over a radius of 15 miles (including both domestic and forest populations), and so the possibility that differences in host preference may be learnt rather than genetically determined cannot be discounted. The odour cues that attract sandflies to particular hosts are not known, but field studies (in collaboration with Universidade Federal do Paraná) comparing the attractance of human hosts with the attractance of equivalent emissions of carbon dioxide (to *Lu. whitmani* and *Lu. intermedia*) are the first to demonstrate that the relative attractance of hosts in the field is not solely due to differences in carbon dioxide output, i.e. there must be additional specific host odour cues.

Studies on domestic reservoir hosts (in collaboration with the University of Cambridge) are concentrating on dogs, as these have a suspected role in the domestic transmission of ACL throughout much of its range. For the first time, ACL prevalence in dogs has been measured by a PCR-based assay



on blood, rather than by the less-specific serological assays or the less-sensitive parasitological diagnoses previously used. The assay identified *Leishmania (Viannia)* DNA in the blood or bone marrow of 8.1% of dogs sampled in Huanuco Department, Peru (an endemic region of *Le. braziliensis* and *Le. peruviana*). This not only provides evidence of a relatively high ACL prevalence amongst this ubiquitous domestic animal, but also suggests that infected dogs are likely to be infectious to bloodfeeding sandflies.

FILARIASIS

A rapid epidemiological assessment method using prevalence of hydrocele was found to provide a good monitoring indicator of the night blood microfilariae rate in Ghana. This can be used effectively by peripheral health workers, following questioning of community key informants. The method will be used as the basis for discovering pockets of endemicity in the initial phase of a country-wide control programme.

ENVIRONMENTAL HEALTH

The programme of research into domestic hygiene behaviour continues. Manuals on how to carry out formative research for hygiene promotion, based on previous research in the Unit, have been distributed world-wide by UNICEF and other agencies. An evaluation of an experimental hygiene promotion programme carried out in Burkina Faso showed that handwashing with soap after contact with children's stools had increased from 13% to 31% as a result of the intervention. With the support of Unilever Research, a multidisciplinary model of the motivation for hygienic behaviour has been developed which includes psychological and cultural factors such as the desire to order and classify, to beautify, to display and to avoid objects that elicit disgust. Environmental and habit-related factors were also found to be important as determinants of hygiene practices in field work in the Netherlands and in India. The findings suggest that hygiene is not just a simple matter of germ avoidance and that other motivations for hygiene are important if practices are to improve. The cross-disciplinary work continues in current projects to promote safe domestic hygiene in Europe and Africa.

Studies have continued on the control of atopic allergies through interventions to control house dust mite allergen. A wide range of domestic vacuum cleaners advertised as 'allergen friendly' are being tested using a specially developed series of rigorously controlled experiments to measure allergen removal, dispersal and retention. The first full-scale clinical trials utilizing the impregnated mattress covers developed by Unit staff to control mite allergens are ready to begin in spring 1999 in collaboration with the Department of Thoracic Medicine at The Royal Free Hospital, London. Collaboration has begun with several regional health authorities to monitor the development and distribution of insecticide resistance in the UK head louse population. Early results indicate widespread resistance to all classes of pesticides currently in use, organophosphates, carbamates and even the most recently introduced pyrethroids.

Frequent flooding in the slums of developing countries is a potentially serious problem in environmental health, as flood waters are heavily polluted by overflowing sewers and latrines. Analysis was completed on a study of drainage and flooding in Indore (India). Major results included the finding that small changes in road design could substantially reduce the frequency and extent of flooding, even in 'upgraded' slums where drainage had already been improved. The work points to the importance of the careful design of road systems as drainage networks. Such an approach would not only cost less than pipes or channels, but would also be less susceptible to blockage from rubbish and construction debris. The study has also yielded a manual on drainage evaluation for practitioners.

A sero-epidemiological study (IgA) of calicivirus-Mx in the general population, studying both seropositivity and seroresponse, was concluded in Mexico. Hygiene variables (cleanliness of mother's clothes, handwashing, direct contact with partially treated wastewater and with dogs) appear as important risk factors for an infection previously only studied in outbreak conditions, and generally associated with contaminated drinking water supplies, with oysters, or with illness among food handlers.

RESEARCH DEGREE STUDENTS

Hussain Al Samt (United Arab Emirates). Epidemiology of group A streptococci (*Streptococcus pyogenes*) in Dubai, United Arab Emirates.

Morten Holst Andreassen (Denmark). Genetic sex separation systems in *Anopheles* with special emphasis on the use of the sterile insect technique.

Christopher Day (UK). Risk assessment in food hygiene and food-borne hygiene.

Martinho Dgedge (Mozambique). Implementation of insecticide treated net programme for malaria control in Mozambique through the primary health care system: socio-economic factors associated with equity and sustainability.

Abdoulaye Diarra (Mali). A critical study of the integration and implementation of malaria and schistosomiasis national control programmes in Mali's decentralized health system.

Iwan Dwiprahasto (Indonesia). Epidemiology of malaria during pregnancy in Indonesia.

Wanjiku Kamau (Kenya). Health of displaced and transient populations.

Jan Kolaczinski (Germany). Aspects of pyrethroid resistance in relation to impregnated bednets.

Katrin Gaardbo Kuhn (Denmark). The potential effect of global warming on the distribution and transmission of malaria and leishmaniasis in Europe.

Dapeng Luo (China). Spatial prediction of malaria in the Red River Basin, Yunnan, China, using geographical information systems and remote sensing.

Edward Magbity (Sierra Leone). Entomological and other techniques for the evaluation of pyrethroid treated nets.

Magda Magris Crestini (Venezuela). The efficacy of treated nets in Yanomami communities in the Upper Orinoco region of Venezuela.

Shyam Misra (India). Indoor residual spray versus treated mosquito nets using deltamethrin to control malaria: a community randomized trial in rural Surat, India.



SCOWAR: Afouda A, Bhatia R, Becker A, CAIRNCROSS AM, Falkenmark M, Kinder J, Kinzelbach W, Naiman RJ, Oyebande L. Water resources research: trends and needs in 1997. *Journal of Hydrological Sciences* 1998; 43:19-46.

Shen J., Zhang S., Xu B., Cheng F., Pei S., Ye J., Jiang M., Liu S., WEBBER RH. Surveillance for low-level malaria. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92:3-6.

Somboon P, Aramrattana A, LINES JD, WEBBER RH. Entomological and epidemiological investigations of malaria transmission in relation to population movements in forest areas of north west Thailand. *Southeast Asian Journal of Tropical Medicine and Public Health* 1998; 29:3-9.

STURROCK RE, STURROCK BM. St Lucia revisited: a successful schistosomiasis control programme? *Bulletin of the Royal Society of Tropical Medicine and Hygiene* 1998; 6:8

Tayeh A, CAIRNCROSS AM. Effect of size of surface drinking water sources on dracunculiasis prevalence in the Northern Region of Ghana. *International Journal of Environmental Health Research* 1998; 8:285-292.

Troaré M, MAUDE GH, BRADLEY DJ. *Schistosoma haematobium* in Mali: prevalence rate in school-age children as index of endemicity in the community. *Tropical Medicine and International Health* 1998; 3:214-221.

Vadivelu J, Puthucherry SD, DRAŠAR BS, Dance DAB, Pitt TL. Stability of strain genotypes of *Burkholderia pseudomallei* from patients with single and recurrent episodes of melioidosis. *Tropical Medicine and International Health* 1998; 3:518-521.

WEBBER RH, Gyapong JO. Eradication of filariasis and the Ghana control programme. In: *Anonymous Health in the Commonwealth: challenges and solutions* London: Kensington Publications, 1998;

Xu B., Xiao X., WEBBER RH, LINES JD. Comparison of the effect of insecticide-treated bed nets and DDT residual spraying on the prevalence of malaria transmitted by *Anopheles anthropophagus* in China. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92:135-136.

REPORTS

Brabin B, Kazembe P, HILL J. *Developing a generic framework for antimalarial drug policy in children and pregnant women*. Harare 9-12 November 1998

CAVE B, CURTIS V. *Effectiveness of promotional techniques in environmental health*: Task No 165. Report to DIFD. March 1999.

CAIRNCROSS S. *7th African Regional Conference on Dracunculiasis Eradication, Bamako, Mali 31 March - 3 April 1998*. Task No 131. Report to DIFD April 1998.

HILL J, MEEK S. *Report on WHO/AFRO Task Force Meeting on Malaria Control*. Harare 25-27 February 1998.

MARTINEZ J, HILL J, MEEK S. *Global coordination of malaria control effort*.

MEEK S. *Antimalarial Drug Usage in the Context of national Malaria Control programmes: the Critical Issues MIM Antimalarial Drug Resistance and Policies Meeting*. Geneva 15 May 1998.

MEEK S. *Malaria Control Rapid Assessment Mission, World Bank, World Health Organisation, UNICEF: Technical Addendum to Aide memoire*, Tanzania 15-20 November 1998.

MEEK S. (1998) *Review of Project Proposal for the Promotion of Personal Protection against Malaria through Social Marketing of Pyrethroid Impregnated Mosquito Hammock Nets*

MEEK S. *Summary of questionnaire responses and country profiles* WHO Roll Back Malaria/Division of Emergency and Humanitarian Action Expert Committee Meeting on Malaria Control in Complex Emergencies 1-2 December 1998, Geneva.

MEEK S, HILL J. *1998 Report Malaria Coordination Meeting USAID/UNICEF/Malaria Consortium*. 29 January 1998 Washington.

MEEK S, HILL J, MEHRA S. *Synthesis of Experience of DIFD Support for Malaria Control Including Research*.

MEEK S, Robb A, SHULMAN C. *Malaria and Pregnancy: Interaction with other policy elements* Presented at CDC meeting: A Confronting the challenge of Antimalarial drug resistance in Africa. Harare 9-12 November 1998.

Mutabingwa T, Ouma J, Rapuoda B, Watkins W, Talisuna A, Mandike R, D'Alessandro U, MEHRA S, MEEK S. *1998 Project Memorandum*. East Africa Network for Monitoring Antimalarial Treatment Efficacy.

1899



1999

ELECTRON MICROSCOPY AND HISTOPATHOLOGY SERVICES

Simon L Croft BSc PGCE PhD
David S Ellis MA DM
Helen M Counihan MSc
Maria V McCrossan HNC
Aden C Smith MSc

Reader and Head of Unit
 Honorary Senior Research Fellow
 Technologist
 Technologist
 Technologist

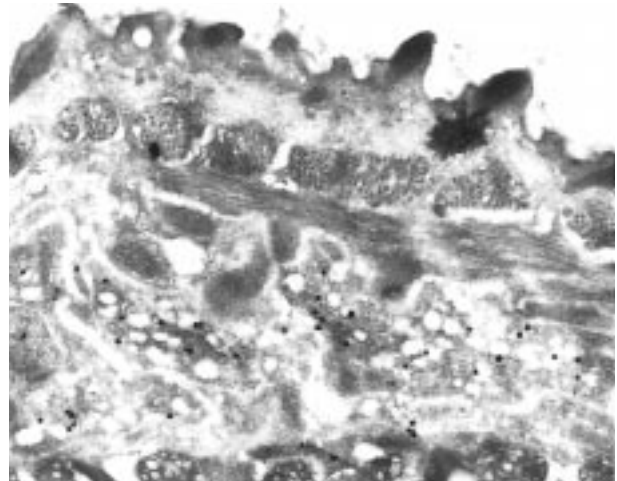
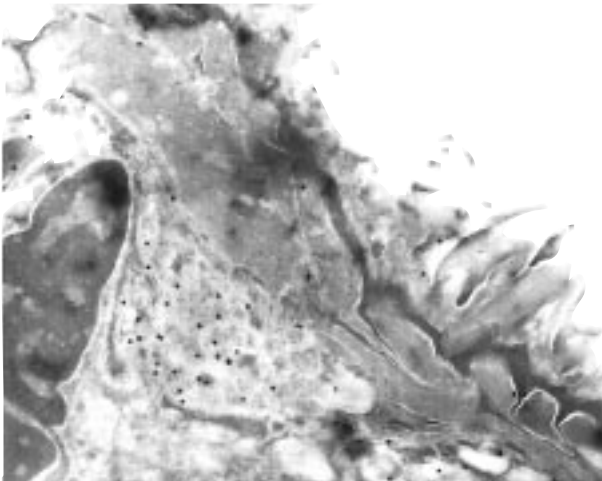
Parasitologist
Microbiologist

FUNDING BODIES

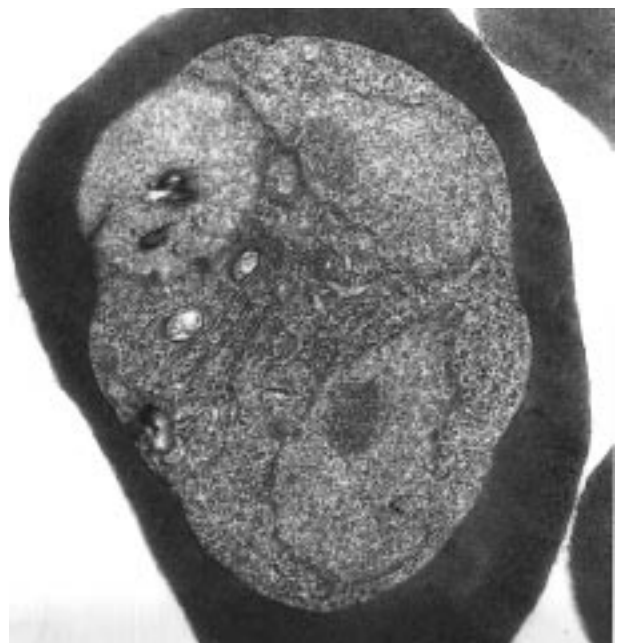
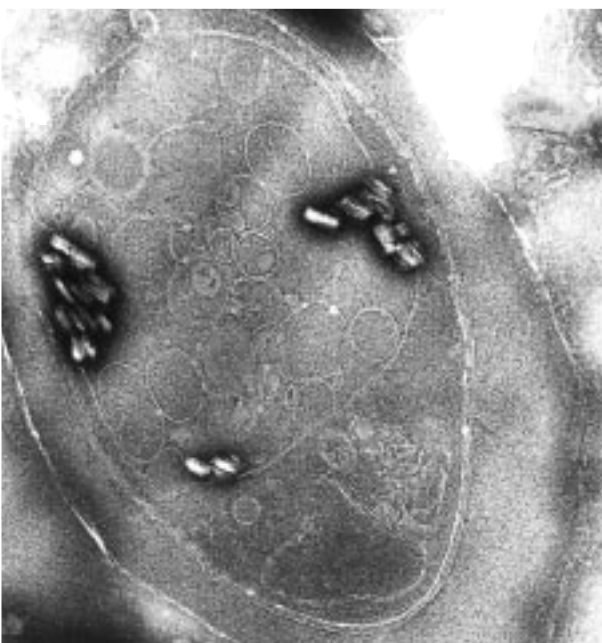
CBD Porton Down
 The Leverhulme Trust

Techniques appropriate for research in the School continue to be developed. Cryo-electron microscopy allows the examination of specimens that have been deep frozen with only mild chemical fixation and no subsequent dehydration and embedding in resins. This approach enables better preservation of antigens and more sensitive immunocytochemistry. It produces a very different image of the

ultrastructure of cells and tissues (see Figures contrasting traditional transmission electron microscopical with cryo-electron microscopical images of the erythrocytic stages of *Plasmodium falciparum* and the tegument of *Schistosoma mansoni*). Cryo-EM is currently being used for the localization of myosin specific antibodies in *Schistosoma japonicum* (with Yaobi Zhang, Immunology Unit); surface



Micrographs of *S.mansoni* following cryo-preservation (left) and routine fixation (right).



Micrographs of *P.falciparum* erythrocytic stage following cryo-preservation (left) and routine fixation and embedding (right).



proteins on *Chlamydia* EBs (with Ru-ching Hsia, Pathogen Molecular Biology and Biochemistry Unit (PMBBU)) and other antigens on *Caenorhabditis elegans* (with George Joshua, Immunology Unit); *Trypanosoma cruzi* (with Shane Wilkinson, PMBBU); and *Entamoeba histolytica* (with Jorge Tovar, PMBBU).

In a project with Dr Y Miao and Professor B Gazzard

(Chelsea and Westminster Hospital, London) gut biopsies are being examined both before and after triple therapy. The focus of the study is on gut pathogens, in particular Microsporidia and *Cryptosporidium*, and changes in pathology. A collaboration on the function of the Golgi network and rab proteins in *Trypanosoma brucei* has continued (with Drs H and M Field, Imperial College of Science, Technology & Medicine).

PUBLICATIONS

HARLEY VS, Dance DAB, TOVEY DG, McCROSSAN MV, DRAŠAR BS. An ultrastructural study of the phagocytosis of *Burkholderia pseudomallei*. *Microbios* 1998; 94:35-45.

TOVER J, Cunningham ML, SMITH AC, CROFT SL, Fairlamb AH (1998). Down-regulation of *Leishmania donovani* trypanothione reductase by heterologous expression of a trans-dominant mutant homologue: effect on parasite intracellular survival. *Proceedings of the National Academy of Sciences* 1998; 95:5311-5316.

1899



1999

IMMUNOLOGY UNIT

Paul M Kaye BSc ARCS PhD**Eleanor M Riley**

BSc BVSc MRCVS PhD

Michael W Steward

BSc PhD DSc FRCPath

Geoffrey AT Targett BSc PhD DSc**Martin G Taylor** MSc PhD DSc**Gregory J Bancroft** BSc PhD**Simon L Croft** BSc PGCE PhD**Hazel M Dockrell** BA PhD**Quentin D Bickle** BA MSc PhD**John G Raynes** BSc PhD**J Alero Thomas** MBBS MRCPath**Dorothy H Crawford**

PhD MD FRCPath DSc

John R Stephenson BSc PhD**Francisco Vega-Lopez** MD MSc PhD**Louise A Brooks** BSc MSc PhD**David J Meyer** BSc PhD**Adam S Malin**

BSc MB ChB MRCP DTM&H PhD

David S Ellis MA DM**Sara E Atkinson** BSc PhD**Gillian F Black** BSc PhD**Katherine B Bodman-Smith**

BSc PhD

Nicola J Borthwick BSc PhD**Catherine M Browne**

BSc MA MSc PhD

Antonella Chiuichiuni MSc PhD**Christian R Engwerda** BSc PhD**GWP Joshua** BSc MSc PhD**Rachel A Lawrence** BSc PhD**Anne MacFarlane** BSc MSc**Obeid E Obeid** MBBS MSc PhD**Debbie Smith** BSc PhD**Colin J Sutherland** BSc PhD MPH**Rosemary E Weir** BSc MSc PhD**Saroj R Young** BSc MSc PhD**Yaobi Zhang** MB PhD**Corine Bronke** BSc MSc**Carolyn A Gray** BSc**Shiou-Chih Hsu** BSc PhD**Mohammad Iqbal** DVM MSc**Jenny O'Nions** BSc**Timothy HP Tan** BSc MSc**Pramila Vohra** BSc MSc**Vanessa Yardley** BSc MSc**Kate Barratt****Anne Coulthart** BSc MSc**Helen M Counihan** MSc**Rachel E Gregory** HNC BSc**Rashmi Kumari****Margaret Long****Luci P MacCormac****Maria V McCrossan** HNC**Michaela L Murphy** BSc PhD**Heidi A Robinson** BSc**Peter J Rock** MSc

Professor & Head of Unit

Professor

Professor

Professor

Professor

Reader

Reader

Reader

Senior Lecturer

Immunoparasitologist

Senior Lecturer

Senior Lecturer

Honorary Senior Lecturer

Honorary Senior Lecturer

Honorary Senior Lecturer

Lecturer

Lecturer

Honorary Lecturer

Honorary Senior Research

Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Assistant

Research Assistant

Research Assistant

Research Assistant

Research Assistant

Research Assistant

Research Assistant

Research Assistant

Technologist

Technologist

Technologist

Technologist

Technologist

Technologist

Technologist

Technologist

Technologist

Technologist

Technologist

*Immunologist**Immunologist**Immunologist**Immunoparasitologist**Immunoparasitologist**Immunologist**Parasitologist**Immunologist**Biochemist**Clinical Immunopathologist**Viral Oncologist**Molecular Virologist**Dermatologist**Molecular Virologist**Parasite Biochemist**Immunologist**Microbiologist**Immunologist**Immunologist**Immunologist**Immunologist**Immunologist**Immunologist**Immunologist**Molecular Biologist**Immunologist**Immunologist**Immunologist**Immunologist**Immunoparasitologist**Immunologist**Immunologist**Clinical Immunoparasitologist**Immunologist**Immunologist**Immunologist**Immunologist**Molecular Biologist**Immunologist**Immunologist**Parasitologist***FUNDING BODIES**

Action Research

Axis Genetics

Boehringer Ingelheim Ltd

British Council

British Lung Foundation

CBD Porton Down

Commission of the
European Communities

CONICYT

Cortecs Ltd

Edenland Inc

GlaxoWellcome plc

Home Office

Hospital & Homes of St.
Giles

LEPRA

Leukaemia Research Fund

Leverhulme Trust

Medical Research Council

MOD/MRC

Nexstar

Novartis Pharma AG

Peptide Therapeutics

The Royal Society

Sir Halley Stewart Trust

Sir Samuel Scott of Yews
Trust

United Biomedical Inc

The Wellcome Trust

The Wolfson Foundation

World Health Organization

Aden C Smith BSc MSc	Technologist	
Carolynne Stanley	Technologist	
Wendy M Fidler	Secretary	
Sue Horrill BSc	Unit Secretary	
Caroline Newman	Secretary	
El Amir M Amin MBCh MSc	Visiting Research Fellow	<i>Menoufeya University, Cairo</i>
Fernando Cardoso MSc	Visiting Research Fellow	<i>Centro de Malaria e Outras Tropicais, Lisbon</i>
Patrick Corran BA PhD	Visiting Research Fellow	<i>National Institute for Biological Standardization & Control, UK</i>
Maria Garcia PhD	Visiting Research Fellow	<i>University of Yucatán, Mexico</i>
Issa Nebie BSc	Visiting Research Fellow	<i>Burkina Faso</i>
Marianne Quiding MSc PhD	Visiting Research Fellow	<i>Sweden</i>
Simona Stäger DVM PhD	Visiting Research Fellow	<i>Switzerland</i>
Marian Szczepanik PhD	Visiting Research Fellow	<i>Jagiellonian University, Kraków</i>
Andrei Timofeev	Visiting Research Fellow	<i>Institute for Poliomyelitis & Viral Encephalitis, Moscow</i>
Claudia Weiss Pharm PhD	Visiting Research Fellow	<i>Switzerland</i>
Ping Ye BSc	Visiting Research Fellow	<i>Institute of Animal Parasitology, Shanghai</i>
Minsik Park MSc	Visiting Student	<i>Korea</i>
So-Jung Park MSc	Visiting Student	<i>Korea</i>
Dimitra Peppas BSc MSc	Visiting Student	<i>Greece</i>
Marie-Claire Rowlinson	Visiting Student	<i>UK</i>

The Immunology Unit continues its traditional blend of research into basic mechanisms of host immunity, involvement in the evaluation and monitoring of immunity at the population level, and the transfer of immunological interventions to the field. Added impetus to the experimental work of the Unit has come over the past 2 years with the acquisition of new equipment for cell biology, the appointment of new staff and the completion of new laboratory space.

INFLAMMATION AND MECHANISMS OF HOST RESPONSE

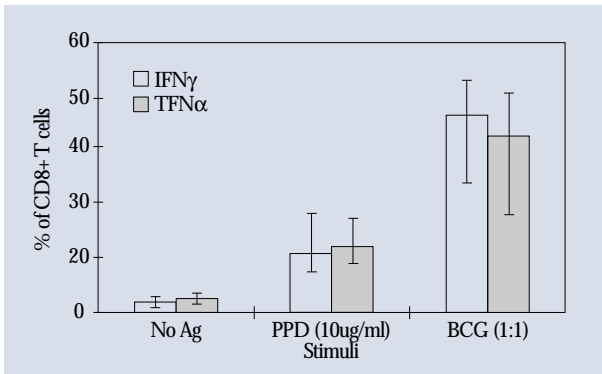
Studies on the host response to *Burkholderia pseudomallei* the causative agent of melioidosis, continue to progress rapidly. Pitak Santanirand has shown that the organism is only able to induce a strong TNF α response from macrophages when they have been IFN γ stimulated. However, in contrast to most other gram negative bacteria, the lipopolysaccharide of *B.pseudomallei* does not appear responsible for TNF α triggering. Working in Greg Bancroft's laboratory, Ganjana Lertmemongkolchai has shown that neutralization of IFN γ *in vivo* in an experimental model of infection increased the susceptibility by 100,000 fold. We have now demonstrated that *in vitro* incubation of *B.pseudomallei* with naive leukocytes stimulate the rapid production of IFN γ by NK cells and CD8, but not CD4 T cells. This early IFN γ response is dependent on two key cytokines, IL-12 and IL-18. We believe this mechanism of NK cell and bystander CD8 T cell activation is also an important component of the innate immunity to other intracellular pathogens.

Silvia Bino and colleagues at Imperial College of Science, Technology & Medicine are continuing their investigations of antisense peptide regulation of interleukin 1 β . An inhibitory peptide was discovered to share amino acids with the IL-1 β R binding site, adding another twist to this exciting

new line of research. Kikki Bodman-Smith, with colleagues in Glasgow, has demonstrated that the C-reactive protein (CRP) has a very strong binding affinity for the Fc γ R1 receptor present on macrophages and activated neutrophils. This finding should have important implications for the biology of pathogens which directly or indirectly bind CRP.

Work by David Meyer has discovered the first cytokine-like molecules from parasitic nematodes, macrophage migration inhibition factor (MIF) orthologues of *Trichinella spiralis*, *Trichuris muris* and *Brugia pahangi*, as well as the first sub-micromolar ligand for human MIF, namely haematin.

Hazel Dockrell's research group are investigating T cell and macrophage responses to pathogenic mycobacteria and their antigens, in order to develop tests which would be reliable correlates of protective immunity. Recombinant vaccinia viruses, expressing individual mycobacterial antigens, produced by Adam Malin, were used to show that BCG-stimulated CD8 T cells recognized antigens including the Ag85A, 85B, 19kDa and 38kDa antigens. Current work involves mapping the peptide epitopes recognized within the Ag85A antigen using synthetic peptides and ELISPOT assays for cytokine production. Hazel Dockrell also co-ordinates an EC-funded collaborative study with partners in Birmingham, Oxford, Lisbon, The Gambia and Mexico. The new phase of this study, which combines groups working on both tuberculosis and leprosy, is investigating the activation of CD8 and $\gamma\delta$ cells, and the role of a novel pathway of mycobacterial killing mediated by the P2z receptor. The P2z work, led by Dr D Kumararatne and Dr DA Lammis at the University of Birmingham, is of great interest as not only does ATP-mediated cytotoxicity for infected macrophages kill the intracellular mycobacteria, something human cells find it hard to do, but there is evidence for heterogeneity among healthy subjects in their expression of the P2z receptors.



*CD8+ T cells make IFN γ and TNF α in response to mycobacterial antigens. This response is greatest to stimulation with a live *M. bovis BCG* infection as compared to the soluble antigen PPD.*

Modulation of the extracellular matrix is a crucial component of inflammatory cell recruitment and pathology. Matrix metalloproteases (MMPs) are a family of endopeptidases that play a crucial role in matrix remodelling and in the activation of key molecules of the immune system including L-selectin, IL-6 and TNF. Marianne Quiding-Jarbrink has now demonstrated that phagocytosis of mycobacteria is a potent stimulus for secretion of active MMPs (particularly MMP-9 and -2) by murine macrophages *in vitro*. This process is rapid, occurring within 12 hours of infection and is most likely cytokine-driven, since induction can be inhibited by neutralization of TNF α .

It had previously been reported that the immune response to *Leishmania donovani* is organ-specific, the liver being a site of acute, resolving infection, whereas a chronic infection is established in the spleen and bone marrow. Work in Paul Kaye's group continues to explore how the immune response is initiated in these different organs, concentrating on the role of dendritic cells and costimulation. Recently, Chris Engwerda's laboratory has found that in visceral leishmaniasis splenic T cells are very susceptible to programmed cell death (PCD; apoptosis). Both intrinsic changes in splenic T cells during VL and signals from antigen-presenting cells from infected spleens contribute to this phenomenon.

POPULATION-BASED IMMUNOLOGY

Two important observations regarding mechanisms of clinical immunity were made during the year in Eleanor Riley's laboratory. Firstly, data from studies of malaria-endemic populations confirmed the general hypothesis that clinical immunity to malaria is associated with down-regulation of inflammatory cytokine responses. In a study in Ghana, susceptibility to clinical malaria was clearly linked to the propensity to produce high levels of the cytokines IL-12 and IFN γ , whilst clinical immunity was associated with down-regulation of these responses. Secondly, also in Ghana, a longitudinal analysis of infection and antibody data from 200 children showed clear associations between decreasing maternal antibody levels and increasing risk of malaria

infection. However, it is also clear that some children carry persistent malaria infections and that these infections are kept below the threshold for triggering clinical disease, either in the presence or absence of detectable malarial antibodies.

Investigations in The Gambia by Geoffrey Targett and colleagues on the impact of different drug combinations on transmission of malaria showed that Fansidar treatment enhanced the release of gametocytes, which were infective to mosquitoes. Transmission was also achieved after treatment with drug combinations containing artesunate, which is thought to be gametocytocidal, though the number of gametocytes produced was greatly reduced. After drug treatment, blood samples containing only gametocytes were obtained and RT-PCR is being used to express genes coding for PfEMP 1, the rif/stevor multigene family, and CLAG, another family of genes linked with cytoadherence.

Emilia Valadas has been investigating cytokine production in tuberculosis, in collaboration with Francisco Antunes and Fernando Ventura (Centro de Malaria e Outras Tropicais, Lisbon). Patients with clinical tuberculosis often show depressed production of Type 1 cytokines and this was confirmed with blood samples from patients with pulmonary tuberculosis. Patients with extrapulmonary tuberculosis proved to have even lower IFN γ production, while secretion of TNF α was raised. Other work by Sara Atkinson and Emilia Valadas in London has been investigating TNF α production by individual monocyte-derived macrophages using fluorescent-labelled mycobacteria and intracellular flow cytometry. Within infected cultures, non-infected as well as infected macrophages make TNF α , presumably triggered by products released by the infected cells.

Hazel Dockrell's group is also involved in larger immunoepidemiological studies. As part of a Wellcome Trust-funded programme with Paul Fine (Infectious Disease Epidemiology Unit), a BCG vaccination study is under way in Malaŵi, where BCG vaccination has been shown to provide protection against leprosy, but not tuberculosis. A total of 633 subjects were recruited in the first year of this project, two-thirds of whom were BCG vaccinated, with the remainder receiving placebo. Gillian Black is testing both T cell and monocyte responses to a wide range of mycobacterial antigens, to dissect the immunological changes induced by BCG vaccination. All the subjects are being followed up one year later, and a parallel study in UK schoolchildren, who are protected against tuberculosis by BCG vaccination, will start in 1999.

VACCINE DESIGN

Research into the development of vaccines against respiratory syncytial virus (RSV) and measles virus (MV) infections in Mike Steward's laboratory has focused on two major areas, namely the development of epitope-based DNA vaccines and of peptide-based vaccines. Plasmid DNA vectors have been constructed with minigenes encoding a single cytotoxic T-cell



(CTL) epitope from either the M2 protein of RSV or from the nucleoprotein of MV with or without a signal sequence. Protection against MV-induced encephalitis and reduction in viral load following RSV challenge was significantly enhanced in the presence of a signal sequence. These results highlight the ability of epitope-based DNA immunization to induce protective immune responses to well-defined epitopes and indicate the potential of this approach for the development of vaccines against infectious diseases.

Previous work had shown that RSV-specific cytotoxic T lymphocytes (CTL) or neutralizing antibodies can protect against RSV infection when induced separately by immunization with synthetic peptides. In work performed this year, RSV-specific neutralizing antibodies and CTLs were induced following immunization with a cocktail of peptides consisting of a B-cell mimotope (S1S-MAP), a T-helper epitope (SH: 45-60) and a CTL epitope linked to a fusion (F) peptide (F/M2: 81-95) comparable to those induced by the peptides alone. Following challenge, a 190-fold reduction in RSV titre and significantly reduced cellular infiltration in the lungs was observed following peptide cocktail immunization. The combination of RSV-specific humoral and cellular immunity induced by the peptide cocktail was thus more effective at clearing RSV than peptide-induced humoral or cellular immunity alone.

John Stephenson began a new research collaboration (with Dr J Nokes, Warwick University, and Dr W Ayele in Addis Ababa) designed to shed light on an important problem in controlling measles, i.e. the inability of very young children to be protected by conventional measles vaccine. The work is at an early stage, but should determine how the humoral immune response of young infants differs from that of adults (in this case their own mothers) thus giving clues about how to design better vaccines for very young children.

Andrei Timofeev (Russia) and John Stephenson have been developing some powerful new vectors aimed at studying the immune response to dengue and a related encephalitic disease, tick-borne encephalitis. Recent exciting results demonstrate that defective recombinant adenoviruses induce a Th1-like immune response and thus can be used as novel vaccines against these important diseases. Furthermore these results are strengthened by the observation that natural virus

infections are very poor at inducing anti-inflammatory cytokines, suggesting possible therapeutic interventions for these important diseases.

A main research interest of the molecular helminthology group is in schistosomiasis vaccine development. EC-supported work on the major Asian parasite *Schistosoma japonicum* has reached the stage where we are testing recombinant and DNA vaccines in the natural domestic animal reservoir hosts in China. Also in China, and with an eye to eventual clinical vaccine trials, we are carrying out investigations of antibody and cytokine responses against our 'candidate vaccine antigens' using serum and cells from *S. japonicum* patients with predefined levels of naturally-acquired immunity. Our collaborating partners in this work are Dr J-M Grzych and Professor A Capron (Institut Pasteur, Lille), Dr H Bogh and Professor P Nansen (Royal Agricultural and Veterinary University, Copenhagen), Professor Shi Fuhui (Chinese Academy of Agricultural Sciences, Shanghai), and Professor Zhang Zhaosong (Nanjing Medical University), and the cytokine analysis is being performed in close collaboration with Rosemary Weir and Hazel Dockrell.

DRUG DISCOVERY

The WHO/TDR supported group has identified several groups of compounds with novel antiprotozoal activity including terpyridine-platinum (II) complexes against *Leishmania* and *Trypanosoma cruzi* (with Professor G Lowe, University of Oxford), glutathione derivatives against *T. brucei* (with Dr C D'Silva, Manchester Metropolitan University), trypanothione reductase subversive substrates against *Trypanosoma* and *Leishmania* (with Dr E Davioud, Institut Pasteur, Lille) and apicidin derivatives against *T. brucei* (with Dr J Murray, GlaxoWellcome, Cambridge). An immunomodulator, tucarecol, has shown significant activity against *L. donovani* in models of infection (with Dr J Rhodes, GlaxoWellcome, Stevenage). Research on new amphotericin B formulations has continued with arabinogalactan conjugates (with Dr J Golenser, Hebrew Haddassah Medical School, Jerusalem) and heat-modified drug (with Professor J Bolard, Université Pierre et Marie Curie, Paris) showing improved activity against experimental leishmaniasis and lipid formulations having activity against *T. cruzi* infections.

RESEARCH DEGREE STUDENTS

Marco Albonico (Italy). Evaluation of effective strategies for the control of morbidity due to intestinal nematodes.

Peter Axton (UK). Cytokine function in the regulation of cell recruitment in pulmonary cryptococcosis.

Shweta Brahmhatt (UK). Human T cell responses to *Mycobacterium leprae* peptides.

Sara Cotterell (UK). Chemokine function in visceral leishmaniasis.

Patricia Escobar (Colombia). Interaction between drugs and the immune response in leishmaniasis and trypanosomiasis.

Silvia Fejzo Bino (Albania). Antisense complementary peptides as cytokine inhibitors.

Shisong Jiang (China). Peptide vaccines against RSV.

Muthoni Junghae (Kenya). *Leishmania*/drug interactions and macrophage activation.

Fatima Kazi (UK). The role of NK cell-derived cytokines in immunity to tuberculosis.

Magita Khalouha (UK). Nutritional status in ballet dancers.



Ganjana Lertmemongkolchai (Thailand). Mechanisms of cell mediated immunity to *Burkholderia pseudomallei*.

Sangeeta Matu (Denmark). Studies on anti-leishmanial alkyllysophospholipids.

Paul Morrison (UK). Cellular immune responses induced by chimeric virus particles expressing measles virus epitopes.

Wieslawa Olszewska (Poland). Antibody responses induced by chimeric virus particles expressing measles virus epitopes.

Diane Ordway de Abreu Pereira (USA). Cytotoxic role of $\gamma\alpha$ T cells to immunity against tuberculosis and HIV infection.

Nicholas Pugh (UK). Disease associations of the novel human herpesvirus, HHV-8, in immunocompromised and non-compromised subjects.

Martin Sanchez Silva (Venezuela). T-cell receptor usage in visceral leishmaniasis.

Pitak Santanirand (Thailand). Cytokine responses and immunity to *Burkholderia pseudomallei* in vitro and in vivo.

Steven Smith (UK). The role of antigen-specific CD8+ T cells in immunity to tuberculosis.

Emilia Jesus Encarnacao Valadas (Portugal). Human cytokine responses induced by *Mycobacterium bovis* BCG.

Anong Wongsriraksa (Thailand). Identification of antigens of *Burkholderia pseudomallei* reactive with patients' antibodies in melioidosis.

PUBLICATIONS

Altare F, Lammas D, Revy P, Jouanguy E, Doffinger R, Lamhamedi S, Drysdale P, Scheel-Toellner D, DOCKRELL HM, et al. Inherited interleukin 12 deficiency predisposes to infections due to Mycobacteria and Salmonella. *Journal of Clinical Investigation* 1998; 102:2035-2040.

Bojang K, Obaro S, D'Alessandro U, BENNETT S, Langerock P, TARGETT GAT, GREENWOOD BM. Efficacy trial of the malaria vaccine SPf66 in Gambian infants: second year of follow-up. *Vaccine* 1998; 16:62-67.

Boshoff C, Gao S, Healy LE, Matthews S, THOMAS JA, Coignet L, Warnke RA, Strauchen JA, Matutes E, Kamel OW, Moore PS, Weiss RA, Chang Y. Establishing a KSHV+ cell line (BCP-1) from peripheral blood and characterising its growth in Nod/SCID mice. *Blood* 1998; 91:1671-1679.

Chan C, Yin H, Garforth J, McKie JH, Jaouhari R, Speers P, Douglas KT, ROCK PJ, YARDLEY V, CROFT SL, Fairlamb AH. Phenothiazine inhibitors of trypanothione reductase as potential antitrypanosomal and antileishmanial drugs. *Journal of Medical Chemistry* 1998; 41:148-156.

CHARGELEGUE D, OBEID OE, HSU S-C, Shaw MD, Denbury A, Taylor G, STEWARD MW. Peptide mimic of a protective epitope of respiratory syncytial virus selected from a combinatorial library induces virus-neutralizing antibodies and reduces viral load in vivo. *Journal of Virology* 1998; 72:2040-2046.

CHIRINOS-ROJAS CL, STEWARD MW, Partidos CD. Peptidomimetic antagonist of TNF- α mediated cytotoxicity identified from a phage displayed random peptide library. *Journal of Immunology* 1998; 161:5621-5626.

Crook T, BROOKS LA, Crossland S, Osin P, Barker KT, Waller J, Smith PD, Yulug I, Peto J, Parker G, Allday MJ, Crompton MR, Gusterson BA. p53 mutation with frequent novel codons but not a mutator phenotype in BRCA-1 and BRCA-2 associated breast tumors. *Oncogene* 1998; 17:1681-1689.

Day KP, Hayward RE, SMITH D, Culvenor JG. CD36-dependent adhesion and knob expression of the transmission stages of *Plasmodium falciparum* is stage-specific. *Molecular and Biochemical Parasitology* 1998; 93:187-177.

DOCKRELL HM, WEIR RE. Whole blood cytokine assays - a new generation of diagnostic test for tuberculosis? *International Journal of Tuberculosis and Lung Disease* 1998; 2:441-442.

Drakeley CJ, Mulder L, Tchoukang T, Gupta S, Sauerwein R, TARGETT GAT. Transmission-blocking effects of sera from malaria-exposed individuals on *Plasmodium falciparum* isolates from gametocyte carriers. *Parasitology* 1998; 116:417-423.

ENGWERDA CR, MURPHY ML, COTTERELL SEJ, SMELT SC, KAYE PM. Neutralization of IL-12 demonstrates the existence of discrete organ-specific phases in the control of *Leishmania donovani*. *European Journal of Immunology* 1998; 28:669-680.

Flitlau SM, RAYNES JG, Simmank K, Wagstaff LA. Vitamin A status does not influence neutrophil production during illness or health in South African children. *British Journal of Nutrition* 1998; 80:75-79.

Fooks AR, Jeevarajah D, Warnes A, Lee JM, Niewiesk S, Ter Meulen V, STEPHENSON JR, Clegg JCS. Oral or parenteral administration of replication-deficient adenoviruses expressing the measles virus haemagglutinin and fusion proteins: protective immune response in rodents. *Journal of General Virology* 1998; 79:1027-1031.

GORAK P, ENGWERDA CR, KAYE PM. Dendritic cells, but not macrophages, produce IL-12 immediately following *Leishmania donovani* infection. *European Journal of Immunology* 1998; 28:687-695.

Haque T, Amlot PL, Helling N, THOMAS JA, Sweny P, Rolles K, Burroughs AK, Prentice HG, CRAWFORD DH. Reconstitution of EBV-specific T cell immunity in solid organ transplant recipients. *Journal of Immunology* 1998; 160:6204-6209.

Harboe M, MALIN AS, DOCKRELL HM, Wiker HG, Ulvund G, Holm A, Jorgensen MC, Andersen P. B cell epitopes and quantification of the ESAT-6 protein of *Mycobacterium tuberculosis*. *Infection and Immunity* 1998; 66:717-723.

Harley VS, Dance DAB, Tovey DG, McCROSSAN MV, DRAŠAR BS. An ultrastructural study of the phagocytosis of *Burkholderia pseudomallei*. *Microbios* 1998; 94:35-45.

Hathaway LJ, OBEID OE, STEWARD MW. Protection against measles virus induced encephalitis by antibodies from mice immunized intranasally with a synthetic peptide. *Vaccine* 1998; 16:135-141.

HSU S-C, Chargelegue D, STEWARD MW. Reduction of respiratory syncytial virus titer in the lungs of mice after intranasal immunization with a chimeric peptide consisting of a single CTL epitope linked to a fusion peptide. *Virology* 1998; 240:376-381.

HSU S-C, OBEID OE, Collins M, Chargelegue D, STEWARD MW. Protective CTL responses against paramyxoviruses induced by immunisation with an epitope-based DNA vaccine. *International Immunology* 1998; 10:1441-1447.

Hussain R, DOCKRELL HM, Shahid F, Zafar S, Chiang TJ. Leprosy patients with lepromatous disease recognize cross-reactive T cell epitopes in the *Mycobacterium leprae* 10-kD antigen. *Clinical and Experimental Immunology* 1998; 114:204-209.

KHANOLKAR-YOUNG S, Snowdon D, LOCKWOOD DNJ. Immunocytochemical localization of inducible nitric oxide synthase and transforming growth factor-beta (TGF-beta) in leprosy lesions. *Clinical and Experimental Immunology* 1998; 113:438-442.

Lalvani A, Brookes R, Wilkinson RJ, MALIN AS, Pathan AA, Andersen P, DOCKRELL HM, PAVOL G, Hill AVS. Human cytolytic and interferon gamma-secreting CD8+ T lymphocytes specific for *Mycobacterium tuberculosis*. *Proceedings of the National Academy of Sciences* 1998; 95:270-275.

Mahenthiralingam E, Marklund BI, BROOKS LA, Smith DA, BANCROFT GJ, Stokes RW. Site directed mutagenesis of the 19 kilodalton lipoprotein antigen reveals no essential role for the protein in the growth and virulence of *Mycobacterium intracellulare*. *Infection and Immunity* 1998; 66:3626-3634.

McDonald V, BANCROFT GJ. Immunological control of *Cryptosporidium* infection. In: Liew FY, Cox FEG, eds. *Immunology of intracellular parasitism*. Basel: Karger, 1998; 103-123.

McGuinness D, Koram K, BENNETT S, Wagner G, Nkrumah FK, RILEY E. Clinical case definitions for malaria: clinical malaria associated with very low parasite densities in African infants. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92:527-531.

Modiano D, CHIUCCHIUINI A, Petrarca V, Sirima BS, Luoni G, Perlmann H, Esposito F, Coluzzi M. Humoral response to *Plasmodium falciparum* Pfl55/ring infected erythrocyte surface antigen and Pf332 in three sympatric ethnic groups of Burkina Faso. *American Journal of Tropical Medicine and Hygiene* 1998; 58:220-224.

MURPHY ML, COTTERELL SEJ, Gorak PMA, ENGWERDA CR, KAYE PM. Blockade of CTLA-4 enhances host resistance to the intracellular pathogen *Leishmania donovani*. *Journal of Immunology* 1998; 161:4153-4160.

Omer FM, RILEY EM. TGF-beta production is inversely correlated with severity of murine malaria infection. *Journal of Experimental Medicine* 1998; 188:39-48.

ORDWAY D, Arroz MA, Fernandes A, DOCKRELL HM, Ventura F. Respostas Th1 e Th2 desencadeadas por *Mycobacterium tuberculosis* virulento em doentes com tuberculose pulmonar. *Revista Portuguesa de Pneumologia* 1998; IV:393-402.

Owen M, STEWARD MW. Antigen recognition. In: Roitt IM, Brostoff J, Male D, eds. *Immunology*. Mosby, 1998; 107-119.

Pennock JL, Behnke JM, BICKLE QD, Devaney E, Grecnis RK, Isaac RE, JOSHUA GW, Selkirk ME, ZHANG Y, MEYER DJ. Rapid purification and characterization of L-dopachrome-methyl ester tautomerase (macrophage-migration-inhibitory factor) from *Trichinella spiralis*, *Trichuris muris* and *Brugia pahangi*. *Biochemical Journal* 1998; 335:495-498.

pennock JL, Wipasa J, Gorge MP, MEYER DJ. Interaction of macrophage-migration-inhibitory factor with haematin. *Biochemical Journal* 1998; 331:905-908.

Perera SM, THOMAS JA, Burke M, CRAWFORD DH. Analysis of the T-cell micro-environment in Epstein-Barr virus-related post-transplantation B lymphoproliferative disease. *Journal of Pathology* 1998; 184:177-184.

Reddy A, Lyall EG, CRAWFORD DH. Epstein-Barr virus and lymphoid interstitial pneumonitis: an association revisited. *Pediatric Infectious Disease Journal* 1998; 17:82-83.

Rees L, Thomas A, Amlot PL. Disappearance of an Epstein-Barr virus-positive post-transplant plasmacytoma with reduction of immunosuppression. *Lancet* 1998; 352:789.

Riordan FA, Bravery CA, Mengubas K, Ray N, BORTHWICK NJ, Akbar AN, Hart SM, Hoffbrand AV, Mehta AB, Wickremasinghe RG. Herbimycin A accelerates the induction of apoptosis following etoposide treatment or gamma-irradiation of bcr/abl-positive leukaemia cells. *Oncogene* 1998; 16:1533-1542.

Roche P, DOCKRELL HM, Brennan PJ. Progress in research towards a world without leprosy. Report of a WHO meeting in Ethiopia. *Leprosy Review* 1998; 69:151-159.

Soares MV, BORTHWICK NJ, Maini M, Janossy G, Salmon M, Akbar AN. IL-7-dependent extrathymic expansion of CD45RA+ T cells enables preservation of a naive repertoire. *Journal of Immunology* 1998; 61:5909-5917.

STEPHENSON JR. Recombinant defective adenoviruses as novel vaccines for the Flaviviridae. *Clinical and Diagnostic Virology* 1998; 10:187-194.

STEPHENSON JR, Warnes A. Recombinant antigens for viral diagnosis. In: STEPHENSON JR, Warnes A, eds. *Diagnostic Virology Protocols*. Humana Press, 1998; 315-330.

STEWART MW, Male D. Immunological techniques. In: Roitt IM, Brostoff J, Male D, eds. *Immunology*. Mosby, 1998; 381-395.

TARGETT GAT. Malaria: variety is the price of life. *Nature Medicine* 1998; 4:267-268.

TAYLOR MG. Immunity to schistosomes in humans and other animals. *Parasitology Today* 1998; 12:166.

TAYLOR MG. Schistosomiasis. In: Palmer S, Soulsby L, Simpson DJH, eds. *Zoonoses: Biology, Clinical Practice and Public Health Control*. Oxford University Press, 1998; 717-729.

TAYLOR MG, Huggins MC, Shi F, Lin J, Tian E, Ye P, Shen W, Qian CG, Lin BF, BICKLE QD. Production and testing of *Schistosoma japonicum* candidate vaccine antigens in the natural ovine host. *Vaccine* 1998; 16:1290-1298.

Taylor R, Allen S, GREENWOOD BM, RILEY E. IgG3 antibodies to *Plasmodium falciparum* merozoite surface protein 2 (MSP2): increasing prevalence with age and association with clinical immunity to malaria. *American Journal of Tropical Medicine and Hygiene* 1998; 58:406-413.

TEMPERTON NJ, WILKINSON SR, MEYER DJ, KELLY JM. Overexpression of superoxide dismutase in *Trypanosoma cruzi* results in increased sensitivity to the trypanocidal agents gentian violet and benzimidazole. *Molecular and Biochemical Parasitology* 1998; 98:176.

Thomson AM, MEYER DJ, Hayes JD. Sequence, catalytic properties and expression of chicken glutathione-dependent prostaglandin D2 synthase, a novel class sigma glutathione S-transferase. *Biochemical Journal* 1998; 333:317-325.

Timofeev AV, Ozherelkov SV, Pronin AV, Deeva AV, Karganova GG, Elbert LB, STEPHENSON JR. Immunological basis for protection in a murine model of tick-borne encephalitis for protection elicited by a recombinant adenovirus carrying the gene encoding the NS1 non-structural protein. *Journal of General Virology* 1998; 79:689-695.

Todorov PT, McDevitt TM, MEYER DJ, Ueyama I, Ihekubo I, Tisdale MJ. Purification and characterization of a tumor lipid-mobilizing factor. *Cancer Research* 1998; 58:2353-2358.

TOVAR J, Cunningham ML, SMITHAC, CROFT SL, Fairlamb AH. Down-regulation of *Leishmania donovani* trypanothione reductase by heterologous expression of a trans-dominant mutant homologue: Effect on parasite intracellular survival. *Proceedings of the National Academy of Sciences* 1998; 95:5311-5316.



VEZENAT JA, CROFT SL, Furtado Campos JH, MILES MA. Failure of buparvaquone (Butalex) in the treatment of canine visceral leishmaniasis. *Veterinary Parasitology* 1998; 77:71-73.

Wagner G, Koram K, McGuinness D, BENNETT S, Nkrumah FK, Riley E. High incidence of asymptomatic malaria infections in a birth cohort of children less than one year of age in Ghana, detected by multicopy gene polymerase chain reaction. *American Journal of Tropical Medicine and Hygiene* 1998; 59:115-123.

Waterfall M, Black A, RILEY E. Gamma-delta+ T cells preferentially respond to live rather than killed malaria parasites. *Infection and Immunity* 1998; 66:2393-2398.

WEIR RE, Butlin CR, Neupane KD, Failbus SS, DOCKRELL HM. Use of a whole blood assay to monitor the immune response to mycobacterial antigens in leprosy patients: a predictor for type I reaction onset. *Leprosy Review* 1998; 69:279-293.

WHEELER PR, RAYNES JG, O'Sullivan GM, Duggan D, McADAM KPWJ. Sulphatide-binding properties are shared by serum amyloid P component and a polyreactive germ-line IgM autoantibody, the TH3 idiotype. *Clinical and Experimental Immunology* 1998; 112:262-269.

ZHANG Y, TAYLOR MG, BICKLE QD. *Schistosoma japonicum* myosin: cloning, expression and vaccination studies with the homologue of the *S. mansoni* myosin fragment IrV-5. *Parasite Immunology* 1998; 20:583-594.

THESES

CHIRINOS-ROJAS C. (Venezuela) *Use of combinatorial peptide libraries to identify inhibitors of the TNF induced cytotoxicity in vitro.* (PhD), 1998.

HAYAT S. (UK) *The effect of serum amyloid A on some high density lipoprotein functions* (PhD), 1998.

HSU S-C. (Taiwan) *Induction of Respiratory Syncytial Virus-specific cytotoxic T-cell responses by synthetic peptides in mice.* (PhD), 1998.

MALIN A. (UK) *Vaccinia expression of Mycobacterium tuberculosis antigen 85 and ESAT-6 secreted proteins* (PhD), 1998.

MURPHY M. (UK) *The role of costimulatory molecules during murine visceral leishmaniasis* (PhD), 1998.

SMELT S. (UK) *The role of B lymphocytes in murine visceral leishmaniasis* (PhD), 1998.



INFECTIOUS DISEASE EPIDEMIOLOGY UNIT

Richard J Hayes MSc	Professor & Head of Unit	<i>Epidemiologist</i>
Paul EM Fine ABVMD MSc PhD	Professor	<i>Epidemiologist</i>
Norman Noah MBBS FRCP FFPHM	Professor	<i>Epidemiologist</i>
Peter G Smith BSc DSc HonMFPHM FMedSci	Professor & Head of Department	<i>Epidemiologist</i>
Christopher LR Bartlett MBBS LRCP MRCS MSc MFPHM FFPHM FRCP	Visiting Professor	<i>Epidemiologist</i>
Roger Feldman BA MD	Visiting Professor	<i>Epidemiologist</i>
Graham Serjeant MB MA MD FRCP	Visiting Professor	<i>Clinical Scientist</i>
Felicity T Cutts MB ChB MD MSc FFPHM MRCP	Reader	<i>Epidemiologist</i>
Andrew J Hall MBBS FRCP MSc PhD FFPHM	Reader	<i>Epidemiologist</i>
Steve Bennett MA MSc PhD	Senior Lecturer	<i>Medical Statistician</i>
Ursula J Blumenthal BA PGCE MSc PhD	Senior Lecturer	<i>Epidemiologist</i>
Simon N Cousens MA DipMathsStat	Senior Lecturer	<i>Medical Statistician</i>
Judith R Glynn BM BCh MA MSc PhD MRCP	Senior Lecturer	<i>Epidemiologist</i>
Heiner Grosskurth MD DTM&MP	Senior Lecturer	<i>Epidemiologist</i>
Laura C Rodrigues MD MSc PhD	Senior Lecturer	<i>Epidemiologist</i>
David A Ross MA BM BCh MSc	Senior Lecturer	<i>Epidemiologist</i>
James AG Whitworth MD MRCP DTM&H	Senior Lecturer <i>(on secondment to MRC Programme on AIDS, Uganda)</i>	<i>Tropical Disease Epidemiologist</i>
Norman T Begg MB ChB DTM&H MFPHM	Honorary Senior Lecturer	<i>Epidemiologist</i>
Diane E Bennett BA Med MD MPH	Honorary Senior Lecturer	<i>Epidemiologist</i>
David WG Brown MBBS MSc MRCPPath	Honorary Senior Lecturer	<i>Virologist</i>
Janet Darbyshire MB ChB MRCP FRCP MSc	Honorary Senior Lecturer	<i>Epidemiologist</i>
Noel OPN Gill MSc MFPHM	Honorary Senior Lecturer	<i>Epidemiologist</i>
Anne M Johnson MA MBBS MRCP MFCM	Honorary Senior Lecturer	<i>Epidemiologist</i>
Elizabeth Miller BSc MBBS MFPHM	Honorary Senior Lecturer	<i>Epidemiologist</i>
Dilys Morgan MB ChB DRCOG MRCP MSc DTM&H MFPHM	Honorary Senior Lecturer	<i>Public Health Physician</i>
Angus Nicoll MA MB ChB MRCP MSc	Honorary Senior Lecturer	<i>Epidemiologist</i>
Andrew J Nunn MSc	Honorary Senior Lecturer	<i>Medical Statistician</i>
Mary E Ramsay MSc MFPHM MRCP MBBS	Honorary Senior Lecturer	<i>Epidemiologist</i>
Mark H Reacher MBBS MPH DPH MD MFPHM	Honorary Senior Lecturer	<i>Epidemiologist</i>
Rosalind E Stanwell-Smith MB ChB MRCOG MFPHM	Honorary Senior Lecturer	<i>Epidemiologist</i>
Anthony V Swan MSc PhD	Honorary Senior Lecturer	<i>Statistician</i>
Patrick G Wall MVB MB BAO BCh MSc MFPHM	Honorary Senior Lecturer	<i>Epidemiologist</i>
John M Watson MSc MBBS MRCP MFPHM	Honorary Senior Lecturer	<i>Epidemiologist</i>
Julius R Weinberg BA BM BCh MRCP DM MSc MFPHM	Honorary Senior Lecturer	<i>Epidemiologist</i>
Neal Alexander DipMathStat CStat PhD	Lecturer	<i>Medical Statistician</i>
Mia Crampin MB ChB MSc DTM&H MFPHM	Lecturer	<i>Epidemiologist</i>
Lee M Dunster BSc PhD	Lecturer	<i>Microbiologist</i>
Alison Grant MBBS MSc PhD MRCP DTM&H	Lecturer	<i>Epidemiologist</i>
Shabbar Jaffar MSc	Lecturer	<i>Medical Statistician</i>
Maria A Quigley BA MSc	Lecturer	<i>Medical Statistician</i>
James E Todd BA MSc	Lecturer	<i>Medical Statistician</i>
David K Warndorff BA MA MD	Lecturer	<i>Epidemiologist</i>
Helen Weiss MSc DPhil	Lecturer	<i>Medical Statistician</i>
Jerry G Wheeler BSc MSc	Lecturer	<i>Medical Statistician</i>
Linda A Williams BSc MA CStat	Lecturer	<i>Medical Statistician</i>
Colin Campbell MSc PhD	Honorary Lecturer	<i>Mycologist</i>
Gavin Churchyard MB BCh FCP MMed	Honorary Lecturer	<i>Clinical Epidemiologist</i>

FUNDING BODIES

Aurum Health Research Ltd
Beit Trust
Colt Foundation
Commission of the European Communities
Department of the Environment
Department of Health
Department for International Development
John Radcliffe Hospital
LEPRA (British Leprosy Relief Association)
Medical Research Council
Merck, Sharp and Dohme
Research Foundation for Microbiology
UNAIDS
The Wellcome Trust
World Health Organization
Wyeth Lederle Ltd

Conor P Farrington MA MSc PhD	Honorary Lecturer	<i>Statistician</i>
Ian Hambleton BA MSc	Honorary Lecturer	<i>Statistician</i>
Christian Lienhardt MD DTM MSc	Honorary Lecturer	<i>Epidemiologist</i>
Paul Milligan MSc PhD	Honorary Lecturer	<i>Statistician</i>
Rumana Omar MSc PhD	Honorary Lecturer	<i>Statistician</i>
Helen A Pickering MA PhD	Honorary Lecturer	<i>Medical Anthropologist</i>
Martin F Schim van der Loeff MSc MD	Honorary Lecturer	<i>Epidemiologist</i>
Brian G Williams BSc PhD	Honorary Lecturer	<i>Epidemiologist</i>
Jane Bruce BSc MSc	Research Fellow	<i>Medical Statistician</i>
Ilona Carneiro BSc DPhil	Research Fellow	<i>Epidemiologist</i>
Tim Clayton BSc MSc	Research Fellow	<i>Medical Statistician</i>
Sian Floyd BSc MSc	Research Fellow	<i>Medical Statistician</i>
Suzanne Fustukian MSc	Research Fellow	<i>Policy Analyst</i>
Stephen Goss PhD	Research Fellow	<i>Molecular Biologist</i>
Louise Linsell BSc MSc	Research Fellow	<i>Medical Statistician</i>
Angela Obasi MBBS MRCP MSc	Research Fellow	<i>Epidemiologist</i>
Anne E Peasey BSc MSc	Research Fellow	<i>Epidemiologist</i>
Rosie Shier BSc MSc	Research Fellow	<i>Medical Statistician</i>
Emilia Vynnycky BA MSc PhD	Research Fellow	<i>Mathematical Modeller</i>
Mike Wansbrough MSc MD DTM&H	Research Fellow	<i>Epidemiologist</i>
Suzanne Wedner MD FCOphth DCH	Research Fellow	<i>Ophthalmologist</i>
Fred N Binka MB MPH PhD	Honorary Research Fellow	<i>Epidemiologist</i>
Paul Dolin BSc MPH PhD	Honorary Research Fellow	<i>Epidemiologist</i>
Maryinez Lyons MA PhD	Honorary Research Fellow	<i>Anthropologist</i>
N Jamie Robinson MSc PhD	Honorary Research Fellow	<i>Epidemiologist</i>
Joanna RM Armstrong Schellenberg BA MSc	Honorary Research Fellow	<i>Medical Statistician</i>
Philippa Cumberland BA MSc	Research Assistant	<i>Medical Statistician</i>
Eleanor Gillam BA	Research Assistant	<i>Epidemiologist</i>
Pramila Vohra BSc MSc CBiol MIBiol	Research Assistant	<i>Immunologist</i>
Philip Broadbent HND	Technologist	
Lyn Bliss	Computing Officer	<i>Programmer</i>
Keith Branson BSc MSc	Computing Officer	<i>Programmer</i>
Andrzej Radałowicz HNC	Computing Officer	
Rekha Soni BA	Unit Secretary (<i>from 01.04.98</i>)	
Jane Wooders BA	Unit Secretary (<i>until 08.02.98</i>)	
Simin Bahrainipur	Secretary	
Muriel Boatin GradICSA	Secretary	
Eileen Dryer PhD	Secretary	
Aleksandra Herbert BA	Secretary	
Linda Pollock	Secretary	

The Unit conducts research on the epidemiology and control of infectious disease of public health importance. Work is carried out both in developing countries and in industrialized countries including the UK. Research ranges from ecological studies of variations in disease frequency in different populations, through observational cohort and case-control studies to define risk factors for disease, to randomized controlled trials to test the impact of specific preventive and curative interventions.

The Unit has major field research programmes in Malaŵi, Tanzania and the UK, and numerous collaborative projects in other countries in Africa, Asia and Latin America. Major interests include HIV and other sexually transmitted diseases, tuberculosis and other mycobacteria, malaria and other tropical parasites, hepatitis, measles and other vaccine-

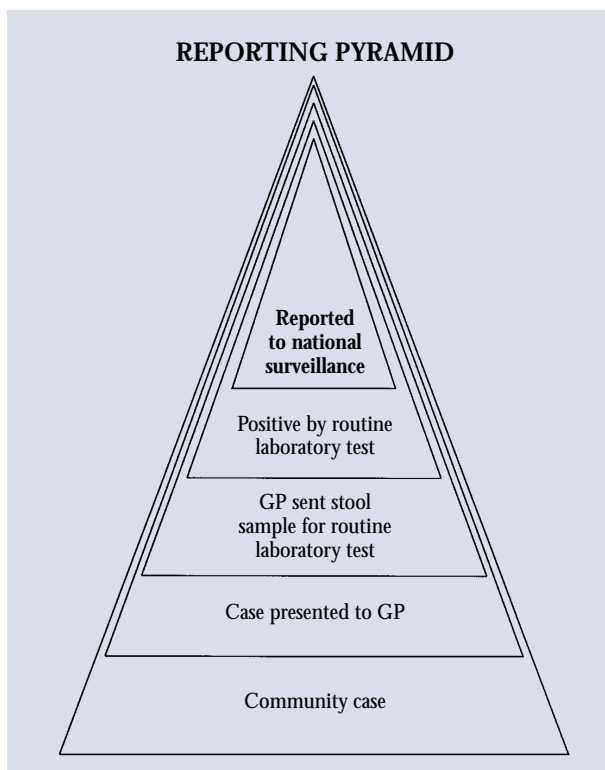
preventable diseases, respiratory diseases and gastro-intestinal infections. Methodological research is carried out on statistical methods, transmission models, genetic epidemiology and immunoepidemiology. The Unit is a WHO Collaborating Centre for the clinical evaluation of vaccines in developing countries.

INFECTIOUS INTESTINAL DISEASE IN ENGLAND

In collaboration with the Public Health Laboratory Service, a study of the incidence of infectious intestinal disease (IID) in the community, the proportion of cases presenting to their general practitioner (GP) and their microbial aetiology was conducted in 70 practices recruited from the MRC General Practice Research Framework. The study, based on 7000 person-years of observation, estimated that 9.4 million cases of IID occur in England each year, of which only 16%



consult a GP. The most frequently detected pathogen in the community was Small Round Structured Virus (SRSV). Other pathogens, notably *Campylobacter*, *Salmonella* and Rotavirus, were more common in cases presenting to GPs. Despite comprehensive laboratory testing, no target pathogen was detected in 45% of GP cases. Only one in every 136 cases in the community was reported through the national laboratory reporting system. The proportion reported varied by pathogen, and was higher for major bacterial pathogens (1 in 3 for *Salmonella*, 1 in 8 for *Campylobacter*) than for viral pathogens (1 in 35 for rotavirus, 1 in 1562 for SRSV). The overall cost of IID in England was estimated to be £743 million per year. Results concerning risk factors for IID will be published later this year.

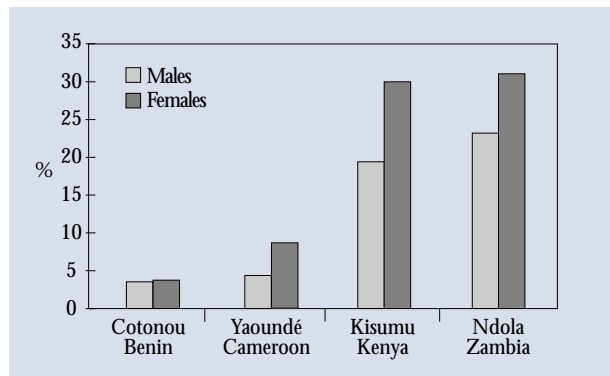


Reporting pyramid for cases of IID occurring in the community.

HETEROGENEITY OF HIV EPIDEMICS IN AFRICAN CITIES

A cross-sectional study to investigate reasons for the large variations in HIV prevalence between different African cities has been carried out in collaboration with the Institute of Tropical Medicine, Antwerp, INSERM Unit 88, CEPED, UNAIDS, and colleagues in four African cities: Cotonou, Benin; Yaoundé, Cameroon; Kisumu, Kenya; and Ndola, Zambia. Standardized instruments, including a detailed questionnaire and testing of blood and urine specimens, were used to collect information on possible risk factors from random population-based samples of 2000 adults and 300 commercial sex workers in each city.

HIV prevalence was much higher in Kisumu and Ndola than in Cotonou and Yaoundé. Overall prevalence was significantly higher in women than men in each city except



HIV prevalence in four African cities.

Cotonou. The difference was most striking among 15-24 year olds, with prevalences among women in Kisumu and Ndola of 30% and 28% respectively. There were no clear differences between high and low prevalence cities in patterns of sexual behaviour, except that the proportion of women reporting sex before age 15 was higher in Ndola and Kisumu. However in the high prevalence cities, most men were uncircumcised, and ulcerative STDs (syphilis and HSV-2) were more prevalent, particularly among young people. It seems likely that factors influencing the transmission probability per sexual contact play an important role in explaining the observed differences in HIV prevalence.

RESEARCH ON MYCOBACTERIAL DISEASES

A major research programme in Malaŵi is investigating the epidemiology of tuberculosis and leprosy and, in particular, reasons for the greater efficacy of BCG against leprosy than against tuberculosis in that environment. In addition to studies of genetic determinants of both diseases (with Professor A Hill, Oxford University), cellular immune responses to BCG are being investigated by analysing cytokine responses of whole blood to mycobacterial antigens, before and after BCG vaccination (with Hazel Dockrell (Immunology Unit) and Professor J Blackwell, (Cambridge University)). A similar study has just been initiated among schoolchildren in the UK, in order to compare responses in a population where BCG is known to protect against tuberculosis.

In Brazil, a major trial of a second dose of BCG vaccine is being conducted in almost 800 schools in two states. The Brazilian study also includes immunological measures comparable to those employed in the Malaŵi and UK studies.

The Unit is also working on mathematical modelling of tuberculosis dynamics. This research has provided important insights into the role of reinfection in populations with high transmission risks, and into the special properties of reproduction number statistics under conditions in which infection risks change over time and reinfection can occur. Unit staff are collaborating with scientists in the Netherlands to model the molecular epidemiology of tuberculosis, with particular reference to problems of estimating the rate of change of the *M. tuberculosis* genome (molecular clock speed).



DATA-DERIVED ALGORITHMS FOR VERBAL AUTOPSIES

The verbal autopsy (VA) is a widely used method for collecting information on cause-specific mortality where medical certification of deaths is incomplete. Trained fieldworkers interview bereaved relatives to elicit information on symptoms experienced by the deceased before death. Causes of death may be assigned by following an expert algorithm. School staff have conducted validation studies in adults and children, which have shown the accuracy of VA to vary by disease and setting.

Further research has explored whether statistical techniques might yield more accurate algorithms than those proposed by clinical experts. Data were drawn from a validation study of 796 adult deaths occurring at hospitals in Tanzania, Ethiopia, and Ghana. The leading causes of death were tuberculosis/AIDS (19%), malaria (11%), meningitis (8%), and cardiovascular disorders (8%). The data-derived algorithms were found to be as accurate as the expert algorithms. Both approaches accurately assigned deaths due to tuberculosis/AIDS and meningitis, but neither worked as well for malaria or cardiovascular disorders.

AEROSOL MEASLES VACCINES

More than one dose of vaccine is necessary for the sustained control of measles. In collaboration with the South African Medical Research Council, the University of Natal, the UK Public Health Laboratory Service, the Mexican Ministry of Health and the Task Force for Child Survival and Development, Atlanta, a randomized trial of the administration of a second dose of vaccine by different routes was conducted in Durban from 1995-8. Schoolchildren aged

5-14 years were randomized to receive standard titre doses of either Schwarz or Edmonston-Zagreb (EZ) measles vaccines either subcutaneously or by aerosol.

Among 992 children followed to one year post-revaccination, antibody levels were highest in the EZ aerosol group. Only 4% of children in this group were seronegative one year post-vaccination, significantly fewer than in the EZ subcutaneous (9%) or Schwarz subcutaneous (14%) groups. The Schwarz aerosol group performed poorly, and its reconstituted vaccine lost potency quickly in the nebulizer. This research has shown that the aerosol route using currently available devices and a suitably stable vaccine is effective and acceptable. It is readily adaptable to mass campaigns, avoiding the risks of unsafe injection practices. Further evaluation of the aerosol route for the delivery of measles and other vaccines is in progress in Mexico.

CREUTZFELDT-JAKOB DISEASE

The Unit continues to collaborate with the National Creutzfeldt-Jakob Disease Surveillance Unit and the Neuropathogenesis Unit in Edinburgh. Unit staff serve on the Spongiform Encephalopathy Advisory Committee (SEAC) and on a subgroup charged with investigating how predictions of future case numbers should be made. Work examining the spatial distribution of variant-CJD cases with respect to meat rendering plants was completed, finding no convincing evidence that residence close to such plants was associated with increased risk of the disease. An analysis of the lifetime residential histories of sporadic and variant CJD cases to look for evidence of clustering prior to disease onset was begun and will be completed shortly. Unit staff continue to conduct routine analyses of surveillance data and case-control data on potential risk factors for CJD.

RESEARCH DEGREE STUDENTS

Zainudin Abdul-Wahab (Malaysia). The epidemiology of HIV infection among injecting drug users in Malaysia.

Ana Luiza de Souza (Brazil). Epidemiology of tuberculosis, BCG and atypical mycobacteria.

Peter K Borus (Kenya). Response to measles vaccine in HIV infected infants.

Benson Chilima (Malawi). Natural history of environmental mycobacteria in Karonga District, northern Malawi.

Tobias F Chirwa (Malawi). Implications of household dynamics for the risk of infection associated with household contact.

Pornthip Chompoon (Thailand). Surveillance and aetiology of *Shigella* infections in Thailand.

Jean-Paul Guthman (France). A case-control study to determine risk factors for acute febrile malaria in the Pura valley, Peru.

Fernando de la Hoz (Colombia). Assessment of effectiveness of a Cuban recombinant hepatitis B vaccine used in the Colombian EPI.

Sukhum Jiamton (Thailand). A randomized trial of micronutrients in HIV-infected Thai patients.

Carol A Joseph (UK). Influenza vaccination uptake studies in England and Wales.

Angela K Karter (USA). Comparative analysis of HIV prevention strategies in sub-Saharan Africa, based on a stochastic microsimulation model.

Irena Klavs (Slovenia). A survey of sexual behaviour and attitudes in Slovenia.

Alessia Melegaro (Italy). Measuring the transmissibility of infections.

Modest Mulenga (Zambia). A clinical trial of artesunate suppositories in moderate and severe malaria.

Simon J Rolfe (UK). Epidemiology of toxoplasmosis in sheep.

Potjaman Sirirayapan (Thailand). Study of HIV and tuberculosis in Thailand.

Katherine Soldan (UK). Examining the prevalence of blood-borne viruses HIV, HBV and HCV in blood donors in England and Wales and estimating the risk of transmission.

Pamela Sonnenberg (South Africa). Tuberculosis in the South African gold mining industry.

Sara LM Thomas (UK). Study of herpes zoster in South-East London to determine the risk associated with ultraviolet light and diet.

Zinthonga Zimba (Malawi). The epidemiology and control of *Trichomonas vaginalis* infection in Malawian men, and its association with seminal HIV excretion.



PUBLICATIONS

- Adegbola RA, Leach A, Mulholland K, Hilton S, Demba E, JAFFAR S, GREENWOOD BM. Antigenuria in Gambian infants following immunization with a *Haemophilus influenzae* type b polyribosylribitol phosphate-tetanus toxoid protein conjugate (PRP-T) vaccine. *Diagnostic Microbiology and Infectious Disease* 1998; 32:15-19.
- Adegbola RA, Mulholland EK, Secka O, JAFFAR S, GREENWOOD BM. Vaccination with a *Haemophilus influenzae* type b conjugate vaccine reduces oropharyngeal carriage of *H influenzae* type b among Gambian children. *Journal of Infectious Diseases* 1998; 177:1758-1761.
- Advisory Committee on Dangerous Pathogens, Spingiform Encephalopathy Advisory Committee, SMITH PG. Transmissible spongiform agents: safe working and the prevention of infection. 1998. The Stationery Office.
- Aikins MK, FOX-RUSHBY JA, D'Alessandro U, Langerock P, Cham K, NEW L, BENNETT S, GREENWOOD BM, MILLS AJ. The Gambian National Impregnated Bednet Programme: costs, consequences and net cost-effectiveness. *Social Science and Medicine* 1998; 46:181-191.
- ALEXANDER NDE, Bockarie MJ, Kastens W, Kazura JW, Alpers MP. Absence of ivermectin-associated excess deaths. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92:342.
- ALEXANDER NDE, Kazura JW, Bockarie MJ, Perry RT, Dimber ZB, Grenfell BT, Alpers MP. Parental infection confounded with local infection intensity as risk factors for childhood microfilaraemia in bancroftian filariasis. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92:23-24.
- Allen SJ, Raiko A, O'Donnell A, ALEXANDER NDE, Clegg JB. Cause of preterm delivery and intra-uterine growth retardation in a malaria endemic region of Papua New Guinea. *Archives of Disease in Childhood Fetal and Neonatal Edition* 1998; 79:F133-F140.
- Alonso PL, Lopez MC, Bordmann G, Smith TA, Aponte JJ, Weiss NA, Urassa H, Armstrong Schellenberg J, Kitua AY, Masanja H, Thomas MC, Oetli A, Hurt N, HAYES RJ, Kilama WL, Tanner M. Immune responses to *Plasmodium falciparum* antigens during a malaria vaccine trial in Tanzanian children. *Parasite Immunology* 1998; 20:63-71.
- Ariyoshi K, Schim van der Loeff M, Cook P, Whitby D, Corrah T, JAFFAR S, Cham F, Sabally S, O'Donovan D, Weiss RA, Schulz TF, Whittle H, Kaposi Sarcoma in the Gambia, West Africa is less frequent in HIV-2 than in HIV-1 infection despite a high prevalence of HHV8. *Journal of Human Virology* 1998; 3:193-199.
- Bartoloni A, CUTTS FT, Guglielmetti P, Brown D, Bandinelli MB, Hurtado H, Roselli M. Response to measles revaccination among Bolivian school-aged children. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 91:716-718.
- Bartoloni A, CUTTS FT, Leoni S, AUSTIN CC, Mantella A, Guglielmetti G, Roselli P, Salazar E, Paradisi F. Patterns of antimicrobial use and antimicrobial resistance among healthy children in Bolivia. *Tropical Medicine and International Health* 1998; 3:116-123.
- Berry N, Ariyoshi K, JAFFAR S, Sabally S, Corrah T, Tedder R, Whittle H. Low peripheral blood viral HIV-2 RNA in individuals with high CD4 percentage differentiates HIV-2 from HIV-1 infection. *Journal of Human Virology* 1998; 1:457-468.
- Bockarie MJ, ALEXANDER NDE, Hyun P, Dimber ZB, Bockarie F, Iban E, Alpers MP, Kazura JW. Randomised community-based trial of annual single-dose diethylcarbamazine with or without ivermectin against *Wuchereria bancrofti* infection in human beings and mosquitoes. *Lancet* 1998; 351:162-168.
- Boerma JT, Nunn AJ, WHITWORTH JAG. Mortality impact of the AIDS epidemic: evidence from community studies in less developed countries. *AIDS* 1998; 12(suppl 1):S3-S14.
- Bojang KA, Obaro SK, D'Alessandro U, BENNETT S, Langerock P, TARGETT GAT, GREENWOOD BM. An efficacy trial of the malaria vaccine SPf66 in Gambian infants - second year of follow-up. *Vaccine* 1997; 16:62-67.
- Bojang KA, Schneider G, Forck S, Obaro SK, JAFFAR S, Pinder M, Rowley J, GREENWOOD BM. A trial of Fansidar® plus chloroquine or Fansidar® alone for the treatment of uncomplicated malaria in Gambian children. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92:73-76.
- BRADLEY DJ, HALL AJ. Our first centenary. *Tropical Medicine and International Health* 1998; 3:603-604.
- Carpenter LM, HIGGINS CD, DOUGLAS AJ, MACONCHIE NES, OMAR RZ, FRASER P, Beral V, SMITH PG. Cancer mortality in relation to monitoring for radionuclide exposure in three UK nuclear industry workforces. *British Journal of Cancer* 1998; 78:1224-1232.
- CHANDRAMOHAN D, MAUDE GH, RODRIGUES LC, HAYES RJ. Verbal autopsies for adult deaths: their development and validation in a multicentre study. *Tropical Medicine and International Health* 1998; 3:436-446.
- CHANDRAMOHAN D, RODRIGUES LC, MAUDE GH, HAYES RJ. Validity of verbal autopsies for assessing the causes of institutional maternal death. *Studies in Family Planning* 1998; 29:414-421.
- CUTTS FT. Advances and challenges for the expanded programme on immunization. *British Medical Bulletin* 1998; 54:445-461.
- CUTTS FT, Steinglass R. Should measles be eradicated? *British Medical Journal* 1998; 316:765-767.
- De Courville E, MABEY DCW, QUIGLEY MA, Jack N, Mahabir B. Risk factors for concordant HIV infection in heterosexual couples in Trinidad. *International Journal of STD & AIDS* 1998; 9:151-157.
- DUNSTER LM. Rift Valley Fever Task Force. Rift Valley Fever - East Africa 1997-1998. *Morbidity and Mortality Weekly Report* 1998; 47:261-264.
- DUNSTER LM, Sanders EJ, Borus P, Tukei PM. Yellow fever in Kenya: the need for a country-wide surveillance programme. *World Health Statistics Quarterly* 1997; 50:178-184.
- FINE PEM. Current status of vaccination for the prevention of tuberculosis. *Proceedings from: Tuberculosis in Africa: the promise of scientific advances September 23-24, 1997.*
- FINE PEM, Sterne JAC, Ponnighaus JM, BLISS L, Saul J, Chihana A, Munthali M, Warndorff DK. Household and dwelling contact as risk factors for leprosy in Northern Malawi. *American Journal of Epidemiology* 1997; 146:91-102.
- FINE PEM, VYNNYCKY E. Effect of heterologous immunity upon the apparent efficacy of (e.g. BCG) vaccines. *Vaccine* 1998; 16:1923-1928.
- Fontanet AL, Messele T, Dejene A, Enqueslassie F, Abebe A, CUTTS FT, de Wit TR, Sahlu T, Bindels P, Yeneneh H, Coutinho RA, Nokes DJ. Age and sex-specific HIV-1 prevalence in the urban community setting of Addis Ababa, Ethiopia. *AIDS* 1998; 12:315-322.
- Freedman AN, Michalek AM, WEISS HA, Zhang ZF, Marshall JR, Mettlin CJ, Asirwatham JE, Petrelli NJ, Caporaso NE. Aspirin use and p53 protein overexpression in colorectal cancer. *Cancer Detection and Prevention* 1998; 22:213-218.
- Gilbert S, Plebanski M, Gupta S, MORRIS J, COX M, Aidoo M, Kwiatkowski D, GREENWOOD BM, Whittle H, Hill A. Association of malaria parasite population structure, HLA, and immunological antagonism. *Science* 1998; 279:1173-1177.
- GLYNN JR. Resurgence of tuberculosis and the impact of HIV infection. *British Medical Bulletin* 1998; 54:579-593.
- GLYNN JR, RODRIGUES LC. Late postnatal mother-to-child transmission of HIV-1. *Lancet* 1998; 352:1630.
- GLYNN JR, Warndorff DK, FINE PEM, Munthali MM, Sichone M, Ponnighaus JM. Measurement and determinants of tuberculosis outcome in Karonga District, Malawi. *Bulletin of the World Health Organization* 1998; 76:295-305.
- GODFREY-FAUSSETT P, Mwinga A, HOSP M, BAGGALEY R, QUIGLEY MA, PORTER JDH. Obtaining informed consent for trials in Africa is possible. *British Medical Journal* 1998; 316:627-628.
- Goncalves G, de Andrade HR, CUTTS FT. Concentracao de IgG anti-sarampo em soros maternos e do cordao umbilical, segundo o estado vacinal das maes. *Medica Portuguesa* 1998; 11:883-892.
- GRANT AD, DE COCK KM. Natural history and spectrum of disease in adults with HIV/AIDS in Africa. *British Medical Bulletin* 1998; 54:369-381.
- GRANT AD, Sibidé K, Domoua K, Bonard D, Sylla-Koko F, Dosso M, Yapi A, Maurices C, Whittaker JP, Lucas SB, HAYES RJ, Wiktor SZ, DE COCK KM, Greenberg AE. Spectrum of disease among HIV-infected adults hospitalised in a respiratory medicine unit in Abidjan, Cote d'Ivoire. *International Journal of Tuberculosis and Lung Disease* 1998; 2:926-934.
- GROSSKURTH H, GILSON LJ, MILLS AJ, HAYES RJ. Cost-effectiveness estimates of the Mwanza sexually transmitted diseases intervention. Authors' reply. *Lancet* 1998; 351:989-990.
- Gyapong JO, WEBBER RH, BENNETT S. The potential role of peripheral health workers and community key informants in the rapid assessment of community burden of disease: the example of lymphatic filariasis. *Tropical Medicine and International Health* 1998; 3:522-528.
- Gyapong JO, WEBBER RH, MORRIS JS, BENNETT S. Prevalence of hydrocele as a rapid diagnostic index for lymphatic filariasis. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92:40-43.
- HALL AJ. Nosocomial infection in developing countries: time to learn. *Tropical Medicine and International Health* 1998; 3:517.
- HALL AJ. Immunity in the tropics: how to achieve a balance? *Tropical Medicine and International Health* 1998; 3:1-2.
- HALL AJ. We have a cancer vaccine - why don't we use it? *Tropical Medicine and International Health* 1998; 3:337-338.
- Harries AD, Nyangulu DS, Kang'ombe C, Ndalama D, GLYNN JR, Banda H, Wirima JJ, Salaniponi FLM, Liomba NG, Maher D, Nunn P. Treatment outcome of an unselected cohort of tuberculosis patients in relation to human immunodeficiency virus serostatus in Zomba Hospital, Malawi. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92:343-347.
- HAYES RJ. Design of human immunodeficiency virus intervention trials in developing countries. *Journal of the Royal Statistical Society Series A* 1998; 161:251-263.
- Ironside JW, Knight RSG, Will RG, SMITH PG, COUSENS SN. New variant Creutzfeldt-Jakob disease is more common in Britain than elsewhere. *British Medical Journal* 1998; 317:352.
- Jaffar S, Jepson A, Leach A, Greenwood A, Whittle HM, GREENWOOD B. Causes of mortality in twins in a rural region of The Gambia, West Africa. *Annals of Tropical Pediatrics* 1998; 18:231-238.
- Kreidl P, Allerberger F, Judmaier F, Auer H, Aspöck H, HALL AJ. Domestic pets as risk factors for alveolar hydatid disease in Austria. *American Journal of Epidemiology* 1998; 147:978-981.
- Landers A, Murdoch IE, Birch J, COUSENS SN, Babalola OE, Lawal B, Abiose A, Jones BR. Blue-yellow colour vision in an onchocercal area of northern Nigeria. *British Journal of Ophthalmology* 1998; 82:510-516.
- Man WD-C, Weber MW, Palmer A, Schneider G, Wadda R, JAFFER S, Mulholland EK, GREENWOOD BM. Nutritional status of children admitted to hospital with different diseases and its relationship to outcome in The Gambia, West Africa. *Tropical Medicine and International Health* 1998; 3:678-686.
- MANGTANI P, Heptonstall J, HALL AJ. Enhanced surveillance of acute symptomatic hepatitis B in England and Wales. *Communicable Disease and Public Health* 1998; 1:114-120.
- MANGTANI P, Silva I. Phyto-oestrogens and breast cancer. *Lancet* 1998; 351:137.
- MAYAUD P, Ka-Gina G, Cornelissen J, TODD JE, Kaatano G, WEST B, Uledi E, Rwakatare M, Kopwe L, Manoko D, Laga M, GROSSKURTH H, HAYES RJ, MABEY DCW. Validation of a WHO algorithm with risk assessment for the clinical management of vaginal discharge in Mwanza, Tanzania. *Sexually Transmitted Infections* 1998; 74:S77-S84.
- MAYAUD P, Ka-Gina G, GROSSKURTH H. Effectiveness, impact and cost of syndromic management of sexually transmitted diseases in Tanzania. *International Journal of STD & AIDS* 1998; 9, suppl 1:11-14.
- MAYAUD P, Uledi E, Cornelissen J, Ka-Gina G, TODD JE, Rwakatare M, WEST B, Kopwe L, Manoko D, GROSSKURTH H, HAYES RJ, MABEY DCW. Risk scores to detect cervical infections in urban antenatal clinic attenders in Mwanza, Tanzania. *Sexually Transmitted Infections* 1998; 74:S139-S146.
- McAdam S, Kaleebu P, Krausa P, Goulder P, French N, Collin B, Blanchard T, WHITWORTH JAG, McMICHAEL AJ, Gotch F. Cross-clade recognition of p55 by cytotoxic T lymphocytes in HIV-1 infection. *AIDS* 1998; 12:571-579.
- Miller E, Goldblatt D, CUTTS FT. Measles vaccination and inflammatory bowel disease. *Lancet* 1998; 351:755-756.
- Momeni AZ, Jalayer T, Emamjomeh M, Khamesipour A, Zicker F, Ghasemi RL, Dowlati Y, Sharifi I, Aminjavaheri M, Shafiei A, Alimohammadian MH, Hashemi-Fesharki R, Naseri K, Godal T, SMITH PG, Modabber F. Randomised, double-blind controlled trial of a killed *L.majors* vaccine plus BCG against zoonotic cutaneous leishmaniasis in Iran. *Vaccine* 1998; 17:466-472.
- Morgan D, Malamba SS, MAUDE GH, Okongo MJ, WAGNER H-UH, MULDER DW, WHITWORTH JAG. An HIV-1 natural history cohort and survival times in rural Uganda. *AIDS* 1997; 11:633-640.
- Morgan D, MAUDE GH, Malamba SS, Okongo MJ, Wagner H-UH, MULDER DW, WHITWORTH JAG. HIV-1 disease progression and AIDS-defining disorders in rural Uganda. *Lancet* 1997; 350:245-250.
- Morgan D, Ross A, Mayanja B, Malamba SS, WHITWORTH JAG. Early manifestations (pre-AIDS) of HIV-1 infection in Uganda. *AIDS* 1998; 12:591-596.
- Morgan D, WHITWORTH JAG, Ross A, Omoding N, Eotu H. Fever in Africa and WHO recommendation. *Lancet* 1997; 350:1549-1550.
- Morris SS, Santos CAST, Barreto ML, COUSENS SN, Strina A, Santos LMP, Assis AMO. Measuring the burden of common morbidities: sampling disease experience versus continuous surveillance. *American Journal of Epidemiology* 1998; 147:1087-1092.
- Murdoch IE, Morris SS, COUSENS SN. People and eyes: statistical approaches in ophthalmology. *British Journal of Ophthalmology* 1998; 82:971-973.
- MWINGA AG, HOSP M, GODFREY-FAUSSETT P, QUIGLEY MA, Mwaba P, Mugala BN, Nyiranda O, Luo N, Pobee JOM, ELLIOTT AM, McAdam KPWI, PORTER JDH. Twice weekly tuberculosis preventive therapy in HIV infection in Zambia. *AIDS* 1998; 12:2447-2457.
- Nokes DJ, Enqueslassie F, Vyse A, Nigatu W, CUTTS FT, Brown DW. Evaluation of oral fluid collection devices for the determination of rubella antibody status in a rural Ethiopian community. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1999; 92:679-685.
- Nokes DJ, Nigatu W, Abebe A, Messele T, Dejene A, Enqueslassie F, Vyse A, Brown D, CUTTS FT. A comparison of oral fluid and serum for the detection of rubella-specific antibodies in a community study in Addis Ababa, Ethiopia. *Tropical Medicine and International Health* 1998; 3:258-267.
- Okongo M, Morgan D, Mayanja B, Ross A, WHITWORTH JAG. Causes of death in a rural, population-based human immunodeficiency virus type 1 (HIV-1) natural history cohort in Uganda. *International Journal of Epidemiology* 1998; 27:698-702.



- Olaleye BO, WILLIAMS LA, D'Alessandro U, Weber MW, Mulholland K, Okorie C, Langerock P, BENNETT S, GREENWOOD BM. Clinical predictors of malaria in Gambian children with fever or a history of fever. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; **92**:300-304.
- Pickering H, Okongo M, Bwanika K, Nnalusiba B, WHITWORTH JAG. Sexual networks in Uganda: casual and commercial sex in a trading town. *AIDS Care* 1997; **9**:199-207.
- Pickering H, Okongo M, Bwanika K, Nnalusiba B, WHITWORTH JAG. Sexual behaviour in a fishing community on Lake Victoria, Uganda. *Health Transition Review* 1997; **7**:13-20.
- Potischman N, WEISS HA, Swanson CA, Gammon MD, Malone KE, Brogan DR, Stanford JL, Hoover RN, Brinton LA. Diet during adolescence and risk of breast cancer in young women. *Journal of the National Cancer Institute* 1998; **90**:226-233.
- ROSS DA. Vitamin A and public health; challenges for the next decade. *Proceedings of the Nutrition Society* 1998; **57**:159-165.
- SHELLENBERG J, Newell JN, Snow RW, Mung'ala VO, Marsh K, SMITH PG, HAYES RJ. An analysis of the geographical distribution of severe malaria in children in Kilifi District, Kenya. *International Journal of Epidemiology* 1998; **27**:323-329.
- Schneider-Schaulies S, DUNSTER LM, Ter Meulen V. Virus infections of the central nervous system. In: Mahy BW, Collier L, eds. *Topley and Wilson's Microbiology and Microbial Infections* 1998;835-871.
- Seidlein Ly, Bojang K, Jones P, JAFFAR S, Pinder M, Obaro S, DOHERTY T, Haywood M, Snounou G, Gemperli B, Cathmann I, Royce C, McADAM KP, GREENWOOD BM. A randomized controlled trial of artemether/benflumetol, a new antimalarial and pyrimethamine/sulfadoxine in the treatment of uncomplicated falciparum malaria in African children. *American Journal of Tropical Medicine and Hygiene* 1998; **58**:638-644.
- Seidlein Ly, JAFFAR S, GREENWOOD BM. Prolongation of the QTc interval in African children treated for falciparum malaria. *American Journal of Tropical Medicine and Hygiene* 1998; **59**:503.
- Sharifi I, Fekri AR, Aflatonian M, Khamesipour A, Nadim A, Mousavi MA, Momeni AZ, Dowlati Y, Godal T, Zicker F, SMITH PG, Modabber F. Randomised vaccine trial of single dose of killed *Leishmania major* plus BCG against anthroponotic cutaneous leishmaniasis in Bam, Iran. *Lancet* 1998; **351**:1540-1543.
- SMITH PG. BSE and CJD. In: Greenwood BA, De Cock KM, eds. *New and resurgent infectious: prediction, detection and management of tomorrow's epidemics*. Chichester: Wiley, 1998;132-139.
- SMITH PG, FINE PEM. BCG vaccination. In: Davies PDO, ed. *Clinical Tuberculosis*. London: Chapman & Hall Medical, 1998;417-431.
- Snow RW, Peshu N, Forster D, Bomu G, Mitsanze E, Ngumbao E, Chisengwa R, SHELLENBERG JR, HAYES RJ, Newbold CI, Marsh K. Environmental and entomological risk factors for the development of clinical malaria among children on the Kenyan coast. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; **92**:381-385.
- Sterne JAC, FINE PEM, Ponnighaus JM, Rees RJW, Chavula D. Delayed-type hypersensitivity to *Mycobacterium leprae* soluble antigens as a test for infection with the leprosy bacillus. *International Journal of Epidemiology* 1998; **27**:713-721.
- Sterne JAC, RODRIGUES LC, Guedes IN. Does the efficacy of BCG decline with time since vaccination? *International Journal of Tuberculosis and Lung Disease* 1998; **2**:200-207.
- Taylor CE, Taylor ME, CUTTS FT. Ethical dilemmas in polio eradication. *American Journal of Public Health* 1998; **88**:1125.
- TESS BH, RODRIGUES LC, Newell M-L, Dunn DT, Lago TD. Infant feeding and risk of mother-to-child transmission of HIV-1 in Sao Paulo State, Brazil. Sao Paulo Collaborative Study for Vertical Transmission of HIV-1. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology* 1998; **19**:189-194.
- TESS BH, RODRIGUES LC, Newell M-L, Dunn DT, Lago TG and the São Paulo Collaborative Study for Vertical Transmission of HIV-1. Breastfeeding, genetic, obstetric and other risk factors associated with mother-to-child transmission of HIV-1 in São Paulo State, Brazil. *AIDS* 1998; **12**:513-520.
- THOMAS SL, Newell M-L, Peckham CS, Ades AE, HALL AJ. A review of hepatitis C virus (HCV) vertical transmission: risks of transmission to infants born to mothers with and without HCV viraemia or human immunodeficiency virus syndrome. *International Journal of Epidemiology* 1998; **27**:108-117.
- Troisi R, WEISS HA, Hoover RN, Potischman N, Swanson CA, Brogan DR, Coates RJ, Gammon MD, Malone KE, Daling JR, Brinton LA. Pregnancy characteristics and maternal risk of breast cancer. *Epidemiology* 1998; **9**:641-647.
- Usen S, Adegbola R, Mulholland K, JAFFAR S, Hilton S, Oparaugo A, Omosigho C, Lahai G, Corrah T, Palmer A, Schneider G, Weber MW, GREENWOOD BM. Epidemiology of invasive pneumococcal disease in the Western Region, The Gambia. *Pediatric Infectious Disease Journal* 1998; **17**:23-28.
- VIVAS-MARTINEZ S, Basanez M, Gullet M, WEISS HA, Botto C, Garcia M, Villamizar J, CHAVASSE DC. Onchocerciasis in the Amazonian focus of Southern Venezuela: altitude and blackfly species composition as predictors of endemicity to select communities for ivermectin control programmes. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; **92**:613-620.
- VYNNYCKY E, FINE PEM. Long-term dynamics of tuberculosis and other diseases with long serial intervals: implications of and for changing reproduction numbers. *Epidemiology and Infection* 1998; **121**:309-324.
- Wagner G, Koram K, McGuinness D, BENNETT S, Nkrumah FK, RILEY E. High incidence of asymptomatic malaria infections in a birth cohort of children less than one year of age in Ghana, detected by multicopy gene polymerase chain reaction. *American Journal of Tropical Medicine and Hygiene* 1998; **59**:115-123.
- Weber MW, Dackour R, Usen S, Schneider G, Adegbola R, Cane P, JAFFAR S, Milligan P, GREENWOOD BM, Whittle HC, Mulholland EK. The clinical spectrum of respiratory syncytial virus disease in The Gambia. *Pediatric Infectious Disease Journal* 1998; **17**:224-230.
- WEISS HA, Troisi R, Rossing MA, Brogan DR, Coates RJ, Gammon MD, Potischman N, Swanson CA, Brinton LA. Fertility problems and breast cancer risk in young women: a case-control study. *Cancer Causes and Control* 1998; **9**:331-339.
- WHITWORTH JAG. Onchocerciasis: hard to say, easy to treat. *Travel Medicine International* 1997; **15**:77-82.
- WHITWORTH JAG. Onchocerciasis. In: Cox FEG, Kreier J, Wakelin D, eds. *Topley and Wilson's Microbiology and Microbial Infections*. London: Arnold, 1998;621-633.
- WILLIAMS L. Eradicating female circumcision: human rights and cultural values. *Health Care Analysis* 1998; **6**:33-35.
- Yirrell D, Pickering H, Palmarini G, Hamilton L, Rutemberwa A, Biryahwaho B, WHITWORTH JAG, Leigh Brown AJ. Molecular epidemiological analysis of HIV in sexual networks in Uganda. *AIDS* 1998; **12**:285-290.

THESES

- GRANT AD. (UK) *Spectrum and natural history of HIV disease in Abidjan, Côte d'Ivoire*. (PhD), 1998.
- ZAMAN SMA. (Bangladesh) *Cohort study of the effect of measles on childhood morbidity in urban Bangladesh*. (PhD), 1998.

1899



1999

PATHOGEN MOLECULAR BIOLOGY AND BIOCHEMISTRY UNIT

Michael A Miles BSc MSc PhD DSc FRCPath	Professor & Head of Unit	<i>Medical Parasitologist</i>	FUNDING BODIES Anglo-Danish Society Biotec Laboratories Biotechnology and Biological Sciences Research Council (BBSRC) British Heart Foundation Commission of European Communities GlaxoWellcome plc The Leverhulme Trust Medical Research Council Public Health Laboratory Service The Royal Society Sir Halley Stewart Trust University of London US National Institutes of Health The Wellcome Trust Wyeth-Lederle Vaccines and Paediatrics
David C Warhurst BSc PhD DSc FRCPath	Professor	<i>Medical Protozoologist/Biochemist</i>	
Wallace Peters MD DSc MRCS DTM&H FRCP Drhc (Paris)	Emeritus Professor	<i>Medical Protozoologist</i>	
John P Ackers MA DPhil	Senior Lecturer	<i>Parasite Biochemist</i>	
Patrik M Bavoil PhD	Senior Lecturer	<i>Molecular Biologist</i>	
C Graham Clark BSc PhD	Senior Lecturer	<i>Protozoologist/Molecular Biologist</i>	
Ursula A Gompels BA MSc PhD	Senior Lecturer	<i>Molecular Virologist</i>	
John M Kelly BSc PhD	Senior Lecturer	<i>Molecular Biologist</i>	
Neil G Stoker BSc PhD	Senior Lecturer	<i>Molecular Biologist</i>	
Francis A Drobniowski MA MBBS MSc DTM&H PhD FLS	Honorary Senior Lecturer	<i>Medical Microbiologist</i>	
Robin A Weiss BSc PhD FRCPath	Honorary Senior Lecturer	<i>Molecular Virologist</i>	
David A Baker BSc PhD	Lecturer	<i>Molecular Biologist</i>	
David J Conway BSc PhD	Lecturer	<i>Molecular Geneticist</i>	
Iain A Frame BSc PhD	Lecturer	<i>Molecular Protozoologist</i>	
David Horn BSc PhD	Lecturer	<i>Molecular Biologist</i>	
Ru-ching Hsia BA PhD	Lecturer	<i>Molecular Biologist</i>	
Tanya Parish BSc PhD	Lecturer	<i>Molecular Biologist</i>	
Martin C Taylor BSc PhD	Lecturer	<i>Molecular Biologist</i>	
Jorge Tovar MSc PhD	Lecturer	<i>Molecular Biologist</i>	
Shane R Wilkinson BSc PhD	Lecturer	<i>Molecular Biologist</i>	
Daniel J Carucci BSc MSc PhD	Honorary Lecturer	<i>Molecular Biologist</i>	
Ipemida S Adagu MSc PhD	Research Fellow	<i>Malariologist/Pharmacologist</i>	
Ruth A Anderson BSc PhD	Research Fellow	<i>Molecular Virologist</i>	
Richard H Binks MSc PhD	Research Fellow	<i>Molecular Parasitologist</i>	
Andrew KI Falconar BSc PhD	Research Fellow	<i>Molecular Immunologist</i>	
Carol French BSc PhD	Research Fellow	<i>Molecular Biologist</i>	
Ruth McNerney CBiol MIBiol	Research Fellow	<i>Molecular Biologist</i>	
Richard SB Milne BSc PhD	Research Fellow	<i>Molecular Virologist</i>	
Farah Movahedzadeh BSc MD PhD	Research Fellow	<i>Molecular Biologist</i>	
Daniel Okenu BSc MSc PhD	Research Fellow	<i>Molecular Biologist</i>	
Caroline Roper BSc PhD	Research Fellow	<i>Molecular Population Geneticist</i>	
Paul Wheeler BSc PhD	Research Fellow	<i>Biochemist</i>	
Imran Ahmed BSc MSc	Research Assistant	<i>Molecular Biologist</i>	
Heather A Macaulay MSc	Research Assistant	<i>Virologist</i>	
Victoria Marsh BSc MSc	Research Assistant	<i>Microbiologist</i>	
Catherine Mee BSc MSc	Research Assistant	<i>Molecular Biologist</i>	
Asha Sidhu BSc MSc	Research Assistant	<i>Microbiologist</i>	
Cheryl Spence BSc	Research Assistant	<i>Molecular Biologist</i>	
Paul Anderson BSc	Technologist		
Caterina Fanello BSc	Technologist		
Claire L Mattick BSc	Technologist		
Abdirashid M Shire MSc	Technologist		
David Thomas BSc	Technologist		
Jane Turner BSc	Technologist		
Dimitrios Anastasiou	Medical Laboratory Assistant		
Alice Johnson	Medical Laboratory Assistant		
Emma J Richardson BA	Unit Secretary		
Caroline L Newman	Secretary		
Veronika Aurens BA	Editorial Assistant		
Wendy Gibson BSc PhD	Visiting Research Fellow	<i>University of Bristol</i>	
M Keith Howard BSc PhD	Visiting Research Fellow	<i>CANTAB Pharmaceuticals Research Ltd</i>	
Christopher J Schofield BSc ARCS PhD	Visiting Research Fellow	<i>Medical Entomologist</i>	
J Russell Stothard MSc DIC PhD	Visiting Research Fellow	<i>Natural History Museum</i>	
Sueli M Vieira BSc	Visiting Research Fellow	<i>Virologist</i>	



Unit staff seek to understand molecular and biochemical processes in pathogens, in the context of devising new strategies for disease control. Research interests include: post-genomic research initiatives; virulence factors and pathogenesis; evasion of immune response; drug resistance; population genetics; recombinant vaccines; development of genetic manipulation techniques; molecular diagnostics, and the transfer of relevant technologies to the disease-endemic areas. Present efforts are focused on malaria; *Mycobacteria* and *Chlamydia*; herpesviruses; trypanosomatid parasites; amoebiasis; and haemorrhagic fever viruses.

MOLECULAR VIROLOGY

Human herpesviruses (HHV) research focuses on the newly described HHV-6 and HHV-8. These viruses are associated with AIDS-related illness as well as with pathology in the immunocompetent host. The complete genomic sequence for HHV-6 has been established. Post-genomic analyses are in progress to characterize vital components that determine infection, evasion of immunological recognition and persistence in cells normally mediating protective immunity. Genes encoding viral glycoprotein complexes essential for virus infection have been identified. These act by mediating cellular fusion. The site of their interaction has been defined, showing that it is required for a fusin-associated conformation and for detection by antibodies that prevent infection. Recombinant adenovirus technology is being used to investigate further the relationship of glycoprotein complexes to cell fusion in comparisons with the related human cytomegalovirus (HCMV). Novel virus members of the immunoglobulin superfamily have been characterized, which are antigenic and can enhance infection by cellular fusion. New HHV-6 G-protein coupled receptors (GCRs) have also been characterized, which can act as chemokine receptors, may participate in immune evasion and are co-opted by HIV as co-receptors. HHV-6 GCR causes down regulation of specific chemokines, which is important as these ligands initiate an inflammatory response. An HHV-6 specific chemokine-like molecule has been identified and shows regulation by novel splicing. Latency is another strategy to escape host immunity: a potential latency regulator, which can repress virus DNA replication, has been found.

Further collaborative studies in Zambia have demonstrated novel strain variants of HHV-6/-7 and HHV-8. This includes finding unusual childhood infections with the rare AIDS-related variant A of HHV-6 and with a new strain group of HHV-8. The HHV-8b strains identified in infant infections are related to those in HIV-negative childhood endemics of Kaposi's sarcoma (KS) as well as to strains circulating in the now more prevalent AIDS-related epidemic KS.

Research on dengue fever has demonstrated the role of the virus NS1 protein in immune evasion and in disease pathogenesis, identified new candidate vaccine epitopes, and developed systems for screening mosquitoes for infection, genotyping viruses and predicting epidemics (in collaboration

with the Disease Control and Vector Biology Unit (DCVBU)).

BACTERIAL PATHOGENESIS

The global tuberculosis situation is deteriorating, despite revised treatment strategies. The availability of the *Mycobacterium tuberculosis* genome sequence now gives basic information to produce a quantum leap in understanding of biology of the pathogen. The Unit has focused attention on two aspects of efficient genetic approaches to exploitation of the genome sequence.

Firstly, ways have been developed to improve the efficiency of targeted mutagenesis. The ability to knock genes out 'at will', an important way of understanding gene function, has been difficult in *M.tuberculosis*. Pre-treatment of the DNA used to transform *M.tuberculosis* has been shown to increase the rate of homologous recombination, and this has allowed inactivation of an hemolysin gene. The methodology has since been refined to simplify cloning, speed up analysis of transformants, and to produce several more mutants, which are currently being assessed for loss of virulence.

Secondly, a Wellcome Trust-funded collaborative project has begun, based at St George's Hospital, to produce an *M.tuberculosis* microarray. The microarray will consist of all 4000 *M.tuberculosis* genes spotted onto a glass microscope slide. *M.tuberculosis* mRNA hybridized to the slides as fluorescently-labelled cDNA will give an overall picture of transcription. This approach also allows comparison of patterns of transcription under different growth conditions and, in relevant mutants, gives a detailed picture of patterns of gene expression.

The biology of inositol, an essential component of mycobacteria, is also a research interest. The structure of inositol monophosphate phosphatases is being compared with the human homologues (with Dr N McDonald, Imperial Cancer Research Fund).

Research on *Chlamydia* molecular pathogenesis has also entered the post-genomic era and has been focused on two parallel projects: studies of type III secretion in *Chlamydia psittaci* and *C.pneumoniae*, and studies on the role of a gene family (*pmp* genes) in adaptation to environmental conditions in *C.trachomatis*. Recombinants have been generated and their products purified for the purpose of producing antibodies for cell biology studies and for the evaluation of human immune responses to the relevant chlamydial antigens. Professor Byron Batteiger, on a sabbatical from Indiana University, cloned and expressed several of the *pmp* genes from a genital strain of *C.trachomatis*. Counterparts of these genes have also been cloned from an ocular strain. These new tools will allow us to focus on the structure-function relationship of these proteins, their possible role in *Chlamydia* pathogenesis, and their potential in immune protection. Major new funding was obtained to



support and expand research on *Chlamydia*, from BBSRC, Wyeth-Lederle, and the British Heart Foundation.

MALARIA RESEARCH

Studies on the genetics of *Plasmodium falciparum* have confirmed that there is frequent meiotic recombination in natural populations, so that genetic association (linkage disequilibrium) between different polymorphic nucleotide sites declines rapidly with increasing molecular distance between the sites. Mapping of sequence sites under natural selection in antigen genes involves comparisons with non-coding polymorphic microsatellite allele frequencies for statistical purposes. For one major candidate antigen site under selection, evidence is emerging from a large immunoparasitological study of allele-specific protective immune responses. Further work on the population genetics of *Plasmodium* is focused on the full sequence of the small mitochondrial genome, to identify the genetic relationships among haplotypes of *P.falciparum* and the closely-related species *Preichenowi*.

As part of an investigation of the role of cyclic nucleotide signal transduction in *P. falciparum*, several key genes involved in transduction pathways have been isolated. Guanylyl cyclase enzyme activity has been demonstrated in the products of two of these genes (with Pauline Schaap, The Netherlands). This activity is probably associated with a novel, bifunctional integral membrane protein. Gene deletion experiments (with Alan Cowman, Australia) will investigate the biological function of these enzymes as a step towards assessing their potential as drug targets.

It has been shown that a combination of two polymorphisms in *P.falciparum* *Pfmdr-1* and *Cg-2* genes predicts chloroquine resistance with 75% sensitivity and 100% specificity in Zaria, West Africa. This points the way towards using molecular techniques to monitor chloroquine resistance. In a study at a hypoendemic malaria site near Mount Kenya, 23/34 malaria cases requiring hospital admission had Tyr-86 and Tyr-1246 polymorphisms in *Pfmdr-1*. Two polymorphisms in DHPS and three in DHFR, which predict sulfadoxine/pyrimethamine resistance, were also seen in parasite material from these cases. This observation suggests that drug resistance may be an important factor in severe malaria in this epidemic region (with Professor D Gump, Vermont).

AMOEBIASIS RESEARCH

Entamoeba histolytica lacks recognizable mitochondria but contains genes encoding proteins of mitochondrial origin. One of these proteins has been localized to a previously undescribed organelle of putative mitochondrial origin, the mitosome. Most cells contain only one mitosome, as determined by immunofluorescence studies. The importation of proteins into the mitosome has been shown to follow a pathway similar to that seen in mitochondria. The structure and function of the organelle in *E.histolytica* is now being investigated.

TRYPANOSOMATID RESEARCH

The Unit has a strong input into the WHO *Trypanosoma cruzi* genome project. This in part involves the design of techniques that will allow gene function to be studied at a genome wide level, thus fully exploiting the genome sequence data. To this end chromosome-fragmentation vectors have been constructed to identify rapidly essential genes that may serve as targets for new chemotherapeutic agents, and to study chromosome structure and maintenance.

Trypanosomatids are exposed to different environments during their life-cycles. It is essential that they possess mechanisms to respond to these changes; these differentiation steps may be mediated by the adenylate cyclase (ADC) system. In *T.cruzi* ADC conforms to the 'receptor-type' (distinct from that of the host) and is expressed by a complex multigene family. High levels of the catalytic domains have been expressed in *E.coli*, and they are active in the absence of accessory factors. A second approach to studying regulatory mechanisms in *T.cruzi* has been initiated with the isolation of a gene (*bpp1*) that encodes a novel member of the b-propeller family of regulatory proteins.

Interest in oxidative defence of *T.cruzi* is focused on mechanisms of peroxide metabolism. It has been shown that in *T.cruzi* this process is compartmentalized with distinct cytosolic and mitochondrial systems. Transformation-mediated overexpression of peroxiredoxin enzymes confers increased resistance to exogenous peroxides.

The major surface molecules of the invasive forms of *T.cruzi* are a heterogeneous family of mucin-like glycoproteins. The role of the hyper-variable domain of these proteins in immune evasion is being determined. This involves the expression of tagged forms of these proteins in transformed parasites. The function of cruzipain, the major cysteine proteinase of *T.cruzi*, and the possible role that it may have in the pathology of Chagas' disease is also under investigation.

The genetic manipulation of yeast, as a model system, and of trypanosomes, has been used to investigate the molecular control of antigenic variation in the African trypanosome *T.brucei*. Antigenic variation allows these parasites to persist in chronic infections, causing diseases such as sleeping sickness in humans and nagana in cattle. Several mutant strains are being tested for defects in gene expression and in antigenic variation.

A serendipitous discovery demonstrated that the anti-influenza drug rimantadine was highly effective at killing bloodstream forms of *T.brucei*. Rimantadine is therefore a representative of a class of prospective trypanocidal drugs.

Research on trypanosomatid genetic diversity has produced the first experimental evidence of genetic exchange in *T.cruzi*, of naturally occurring hybrids between *Leishmania* species in Peru (in collaboration with DCVBU), and demonstrated that



Old World *L.infantum* and New World *L.chagasi* are indistinguishable at the molecular level, which suggests common approaches to disease control.

INSECT MOLECULAR GENETICS

Microsatellite DNA markers have been developed as a tool for population genetic analysis of *Anopheles arabiensis*. They are being applied to a population in Northern Kwazulu, which retreats in the dry season to a few widely scattered permanent water holes. Using microsatellite data we have looked at population structure and found evidence of limited migration within the region. This suggests that insecticide

treatment of these small and clearly defined dry season foci could limit or even prevent the normal rainy season expansion. This year larvicide was applied during the dry season to selected breeding sites. Microsatellite markers will be used to measure the impact upon local genetic diversity in the vector population.

A new research initiative (in collaboration with Dr CB Beard, CDC, Atlanta) will explore the molecular taxonomy and population genetics of triatomine bugs in the context of expanding vector control programmes for Chagas' disease into northern South America and Central America.

RESEARCH DEGREE STUDENTS

Fernando Abad-Franch (Spain). Epidemiology of *Rhodnius ecuadoriensis*.

Clare L Allen (UK). Organization and expression of the genes encoding the mucin-like glycoproteins of *Trypanosoma cruzi*.

Zubaida D F Al-Suwaidi (Qatar). Investigation of rapid methods for drug susceptibility testing of mycobacteria.

Christina Bakatselou (Greece). Heat shock protein genes of *Entamoeba histolytica*.

Elizabeth V Bromley (UK). Functional analysis of G protein related molecules in *Trypanosoma cruzi*.

Nicola Casali (UK). Molecular genetics of environmental adaptation in *Mycobacterium tuberculosis*.

Nabeela Dhiban (United Arab Emirates). Simultaneous diagnosis of several faecal protozoa by PCR-based methods.

Manoj T Duraisingh (India). Artemisinin-resistance in *Plasmodium falciparum*.

Sandrine Ferrand (France). Glutathione reductase in *Plasmodium falciparum*.

Alexandra K Ingram (UK). VSG expression in *T.brucei*.

Frances C Kasolo (Zambia). Molecular studies of novel herpesviruses and HIV in paediatric infections in Zambia.

Isabel L Mauricio (Portugal). Genetic diversity in the *Leishmania donovani* complex.

Nadine Mozzato Chamay (Italy). Polymorphisms in genes encoding cytokines and proteins involved in transcriptional regulation: importance as disease determinants.

David Muhia (Kenya). Novel targets for antimalarial chemotherapy.

Deborah Nolder (UK). Molecular diversity in the *Leishmania* subgenus *Viannia*.

Sabah Omar (Kenya). Drug resistance in malaria in Kenya.

Christopher M Parry (UK). Molecular identification, characterization and processing of the human herpesvirus-6 protease.

Carey Pashley (UK). Identification of essential mycobacterial genes.

David A Paterson (UK). Use of recombinant adenovirus in characterization of the gH/gL complex and membrane fusion mediated by beta-herpesviruses, human cytomegalovirus and human herpesvirus 6.

Jonathan C P Steele (UK). Anti-plasmodial plants.

Adriana Tami-Hirsch (Venezuela). Malaria among Yanomami and Yekwana ethnic groups.

Mariela Torres-Torres (Colombia). Triatomine molecular taxonomy.

Simon J Turner (UK). The characterization of HHV-6 cis-acting sites in replication and use as a vector for gene expression/therapy studies.

Mehreen Zaki (Pakistan). Identification of polymorphic DNA markers in *Entamoeba histolytica*.

PUBLICATIONS

ACKERS JP. Amebiasis. In: Roitt IM, Delves PJ, eds. *Encyclopedia of Immunology*. London: Academic Press, 1998;77-79.

ACKERS JP. Review of the biology of health and disease. In: Anonymous. *Health Sciences*. London: University of London/London School of Hygiene and Tropical Medicine, 1998;1.1-13.6.

ACKERS JP. Protozoa. In: Anonymous. *Principles of Biology*. London: University of London/London School of Hygiene and Tropical Medicine, 1998;20.1-25.8.

Arias J, Desjeux P, MILES MA. *Manual on visceral leishmaniasis control*. World Health Organization, 1997.

Baveja UK, Bhatia VN, WARHURST DC. *Giardia lamblia*: in vitro sensitivity to some chemotherapeutic agents. *Journal of Communicable Diseases* 1998; 30:84.

BAVOIL PM, HSIA R-C. Type III secretion in *Chlamydia*: a case of deja vu? *Molecular Microbiology* 1998; 28:860-862.

BAVOIL PM, HSIA R-C. Supracriticality and the prion. *Molecular Microbiology* 1998; 28:859-860.

Borst P, Bitter W, Blundell PA, Chaves I, Cross M, Gerrits H, van Leeuwen F, McCulloch R, TAYLOR MC, Rudenko G. Control of VSG gene expression sites in *Trypanosoma brucei*. *Molecular and Biochemical Parasitology* 1998; 94:67-76.

Bouma MJ, Snowdon D, Fairlamb AH, ACKERS JP. Activity of Disulfiram (bis(diethylthiocarbamoyl)disulphide) and Ditiocarb(diethylthiocarbamate) against metronidazole-sensitive and -resistant *Trichomonas vaginalis* and *Tritrichomonas foetus*. *Journal of Antimicrobial Chemotherapy* 1998; 42:817-820.

Bradley DJ, WARHURST DC, Blaze MB, Smith V, Williams JE. Malaria imported into the United Kingdom in 1996. *Eurosurveillance* 1998; 3:40-42.

Cavanagh D, Elhassan IM, ROPER C, Robinson V, Giha H, Holder A, Hviid L, Theander TG, Arnot DE, McBride JS. Longitudinal study of type-specific antibody responses to *Plasmodium falciparum* merozoite surface protein-1 in an area of unstable malaria in Sudan. *Journal of Immunology* 1998; 161:347-359.

CLARK CG. *Entamoeba dispar*, an organism reborn. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92:361-364.

CLARK CG, Silberman JD, Diamond LS, Sogin ML. Molecular systems of the intestinal amoebae. In: Coombs GH, Vickerman K, Sleight MA, Warren A, eds. *Evolutionary Relationships Among Protozoa*. Dordrecht: Kluwer Academic Publishers, 1998;169-180.

Clayton C, Adams M, Almeida R, KELLY JM, et al. Genetic nomenclature for *Trypanosoma* and *Leishmania*. *Molecular and Biochemical Parasitology* 1998; 97:221-227.

Cross M, TAYLOR MC, Borst P. Frequent loss of the active site during variant surface glycoprotein expression site switching in vitro in *Trypanosoma brucei*. *Molecular and Cellular Biology* 1998; 18:198-205.

Curtis J, DURAISINGH MT, WARHURST DC. In vivo selection for a specific genotype of dihydropterote synthetase of *Plasmodium falciparum* by pyrimethamine-sulfadoxine but not chlorproguanil-dapsone treatment. *Journal of Infectious Diseases* 1998; 177:1429-1433.

Dias JCP, SCHOFIELD CJ. Chagas disease: prevention and control. In: Gilles HM, ed. *Handbook of Infectious Diseases*. London: Chapman and Hall, 1998.

Dujardin J-P, Muñoz M, Chavez T, Ponce C, Moreno J, SCHOFIELD CJ. The origin of *Rhodnius prolixus* in Central America. *Medical and Veterinary Entomology* 1998; 12:113-115.

Dujardin J-P, SCHOFIELD CJ, Tibayrenc M. Population structure of Andean *Triatoma infestans* allozyme frequencies and their epidemiological relevance. *Medical and Veterinary Epidemiology* 1998; 12:20-29.

DURAISINGH MT, Curtis J, WARHURST DC. *Plasmodium falciparum*: detection of polymorphisms in the *Dihydrofolate reductase* and *Dihydropterote synthetase* genes by PCR and restriction digestion. *Experimental Parasitology* 1998; 89:1-8.

Elnaeim DA, Ward RD, Hassan HK, MILES MA, FRAME IA. Infection rates of *Leishmania donovani* in *Phlebotomus orientalis* from a focus of visceral leishmaniasis in eastern Sudan. *Annals of Tropical Medicine and Parasitology* 1998; 92:229-232.

García AL, CARRASCO HI, SCHOFIELD CJ, STOTHARD JR, FRAME IA, Valente SAS, MILES MA. Random amplification of polymorphic DNA as a tool for taxonomic studies of triatomine bugs (Hemiptera: Reduviidae). *Journal of Medical Entomology* 1998; 35:38-45.

Giha H, Hviid L, Staalso T, ROPER C, Elhassan IM, Babiker H, Satti GMH, Arnot DE, Theander TG. Seasonal variations in agglutination of *Plasmodium falciparum*-infected erythrocytes. *American Journal of Tropical Medicine and Hygiene* 1998; 58:399-411.

Grobusch MP, ADAGU IS, Krensner PG, WARHURST DC. *Plasmodium falciparum*, in vitro chloroquine susceptibility and allele-specific PCR detection of *Pfmdr1*⁸⁶ polymorphism in Lambarene, Gabon. *Parasitology* 1998; 116:211-217.

Grobusch MP, Alpermann U, Schwenke S, Jelinek T, WARHURST DC. False-positive rapid tests for malaria in patients with rheumatoid factor. *Lancet* 1998; 353:297.

Guarneri AA, Carvalho Pinto CJ, SCHOFIELD CJ, Steindel M. Population biology of *Rhodnius domesticus* Neiva & Pinto, 1923 (Hemiptera: Reduviidae) under laboratory conditions. *Memorias do Instituto Oswaldo Cruz* 1998; 93:273-276.



- Haque R, Ali IKM, CLARK CG, Petri WA. Case report of *Entamoeba moshkovskii* infection in a Bangladeshi child. *Parasitology International* 1998; 47:201-202.
- HSIA R-C, Ohayon H, Gounon P, Dautry-Versat A, BAVOIL PM. Altered development and lytic activities induced by page infection of *Chlamydia psittaci*. In: Anonymous *Chlamydial Infections: Proceedings of the Ninth International Symposium on Human Chlamydial Infection*. California: 1998:131-134.
- Jelinek T, Ronn AM, Lemnge MM, Curtis J, Mhina J, DURAISINGH MT, Bygbjerg IC, WARHURST DC. Polymorphisms in the dihydrofolate reductase (DHFR) and dihydropteroate synthetase (DHPS) genes of *Plasmodium falciparum* and in vivo resistance to sulphadoxine/pyrimethamine in isolates from Tanzania. *Tropical Medicine and International Health* 1998; 3:605-609.
- Jelinek T, WARHURST DC. Letter to the editor. *Tropical Medicine and International Health* 1998; 3:249
- Jizhou Y, Lequin H, Shaoqing Z, Bozhao X, WARHURST DC. Analysis of partial sequence of circumsporozoite protein of *Plasmodium vivax* isolates in Hubei Province. *Chinese Journal of Parasitology and Parasitic Diseases* 1998; 15:152-155.
- KASOLO FC, Monze M, Obel N, ANDERSON RA, FRENCH C, GOMPELS UA. Sequence analysis of HHV-8 strains from African HIV-negative childhood endemic Kaposi sarcoma show a close relationship with strains identified in febrile children and high variation in the K1 glycoprotein. *Journal of General Virology* 1998; 79:3055-3065.
- KELLY JM. Gnomonic libraries in cosmid shuttle vectors: construction, screening and their use in transfection experiments. In: Levin M, Degraeve M, Morel C, eds. *Genes and Antigens of Parasites II. Vol 1: The Parasite Genome: A Laboratory Manual*. 1997;
- Li J-L, BAKER DA. Putative protein serine/threonine phosphatase from *Plasmodium falciparum* contains a large N-terminal extension and five unique inserts in the catalytic domain. *Molecular and Biochemical Parasitology* 1998; 95:287-295.
- Lujan HD, Conrad JT, CLARK CG, Touz MC, Delbac F, Vivares CP, Nash TE. Detection of microsporidia spore-specific antigens by monoclonal antibodies. *Hybridoma* 1998; 17:237-243.
- Machado RLD, Garret DO, ADAGU IS, WARHURST DC, Pova MM. Simplified diagnosis of malaria infection: GFM/PCR/ELISA a simplified nucleic acid amplification technique by PCR/ELISA. *Revista do Instituto de Medicina Tropical de Sao Paulo* 1998; 40:333-334.
- McNERNEY R, Harley VS, Vela-Coral MC, STOKER NG. Diagnostic technology appropriate for developing countries. *Revista Espanola de Quimioterapia* 1997; 10:5126
- McNERNEY R, Panaiotov S, Vela-Coral MC, STOKER NG. Low-cost rapid detection of rifampicin resistance. *Revista Espanola de Quimioterapia* 1997; 10:570
- McNERNEY R, Wilson SM, SIDHU AM, Harley VS, AL-SUWAIDI Z, Nye PM, PARISH T, STOKER NG. Inactivation of mycobacteriophage D29 using ferrous ammonium sulphate as a tool for the detection of viable *Mycobacterium smegmatis* and *M.tuberculosis*. *Research in Microbiology* 1998; 149:487-495.
- Nanteza M, KASOLO FC, Monze M, GOMPELS UA. Detecting 'undetected' HIV-1 variants in African children using degenerate polymerase chain reaction and sequence analyses. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92:294-295.
- NOLDER D. Neophyte leishmaniasis in Brazil. *Bulletin of Tropical Medicine and International Health* 1998; 6:1-5.
- PARISH T, Mahenthiralingam E, Draper P, Davis EO, Colston MJ. Regulation of the inducible acetamidase gene of *Mycobacterium smegmatis*. *Microbiology* 1997; 143:267-276.
- PARISH T, STOKER NG. Mycobacteria. Bugs and bugbears. In: PARISH T, STOKER NG, eds. *Mycobacteria Protocols*. New Jersey: Human Press, 1998;1-13.
- PARISH T, STOKER NG, eds. *Mycobacteria Protocols*. New Jersey: Humana Press, 1998;v-472
- PARISH T, STOKER NG. Electroporation of Mycobacteria. In: PARISH T, STOKER NG, eds. *Mycobacteria Protocols*. New Jersey: Humana Press, 1998;129-144.
- PARISH T, WHEELER PR. Preparation of Cell-Free Extracts from Mycobacteria. In: PARISH T, STOKER NG, eds. *Mycobacteria Protocols*. New Jersey: Humana Press, 1998;77-89.
- Peeling RW, Bailey RL, CONWAYDJ, Holland MJ, Campbell AE, Jallow O, Whittle HC, Mabey DCW. Antibody response to the 60-kDa chlamydial heat-shock protein is associated with scarring trachoma. *Journal of Infectious Diseases* 1998; 177:256-259.
- PETRY F, Shirley MW, MILES MA, McDonald V. Characterization of a *Cryptosporidium parvum*-specific cDNA clone encoding an oocyst protein with a repetitive octapeptide sequence motif. *Molecular and Biochemical Parasitology* 1998; 95:21-31.
- Pillai DR, Britten D, ACKERS JP, Ravdin JJ, Kain KC. Sequence of a highly homologous gene to *hgl2* of *Entamoeba histolytica* that is present and expressed in *E. dispar*. *Archives of Medical Research* 1997; 28:19-20.
- Pinto Dias JC, SCHOFIELD CJ. Controle da transmissao transfusional da doenca de de Chagas na Iniciativa do Cone Sul. *Revista da Sociedade Brasileira de Medicina Tropical* 1998; 31:373-383.
- Pova MM, ADAGU IS, Oliveira SG, Machado RLD, MILES MA, WARHURST DC. *Plindr1*^{Asp}1042^{Asp} and ^{Asp}1246^{Asp} polymorphisms, thought to be associated with chloroquine resistance, are present in chloroquine-resistant and -sensitive Brazilian field isolates of *Plasmodium falciparum*. *Experimental Parasitology* 1998; 88:64-68.
- Pung OJ, Spratt J, CLARK CG, Norton TM, Carter J. *Trypanosoma cruzi* infection of free-ranging lion-tailed macaques (*Macaca silenus*) and ring-tailed lemurs (*Lemur catta*) on St. Catherine's Island, Georgia, USA. *Journal of Zoo and Wildlife Medicine* 1998; 29:25-30.
- Reyburn H, Behrens RH, WARHURST DC, Bradley DJ. The effect of chemoprophylaxis on the timing of onset of falciparum malaria. *Tropical Medicine and International Health* 1998; 3:281-285.
- Roger AJ, Svård SG, TOVAR J, CLARK CG, Smith MW, Gillin FD, Sogin ML. A mitochondrial-like chaperonin 60 gene in *Giardia lamblia*: evidence that diplomonads once harbored an endosymbiont related to the progenitor of mitochondria. *Proceedings of the National Academy of Sciences* 1998; 95:229-234.
- ROPER C, Richardson W, Elhassan IM, Giha H, Hviid L, Satti GMH, Theander TG, Arnot DE. Seasonal changes in the *Plasmodium falciparum* population in individuals and their relationship to clinical malaria: a longitudinal study in a Sudanese village. *Parasitology* 1998; 116:501-510.
- SCHOFIELD CJ, Apt W, Sagua H, Panzera F, Dujardin JP. Alary polymorphism in *Triatoma spinolai* and its possible relationship with demographic strategy. *Medical and Veterinary Entomology* 1998; 12:30-38.
- Spice WM, ACKERS JP. Effects of *Entamoeba histolytica* lysates on human colonic mucins. *Journal of Eukaryotic Microbiology* 1998; 45:245-275.
- Stothard JR, FRAME IA, Carrasco HJ, MILES MA. Temperature gradient gel electrophoresis (TGGE) analysis of riboprints from *Trypanosoma cruzi*. *Parasitology* 1998; 117:249-253.
- Stothard JR, FRAME IA, Carrasco HJ, MILES MA. On the molecular taxonomy of *Trypanosoma cruzi* using riboprinting. *Parasitology* 1998; 117:243-247.
- Stothard JR, Yamamoto Y, Cherchi A, Garcia AL, Valente SAS, SCHOFIELD CJ, MILES MA. Preliminary survey of mitochondrial sequence variation in Triatominae (Hemiptera: Reduviidae) using polymerase chain reaction-based single strand conformational polymorphism (SSCP) analysis and direct sequencing. *Bulletin of Entomological Research* 1998; 88:553-560.
- TEMPERTON NJ, WILKINSON SR, Meyer DJ, KELLY JM. Overexpression of superoxide dismutase in *Trypanosoma cruzi* results in increased sensitivity to the trypanocidal agents gentian violet and benzimidazole. *Molecular and Biochemical Parasitology* 1998; 98:176
- TOVAR J, CUNNINGHAM ML, Smith AC, CROFT SL, FAIRLAMB AH. Down-regulation of *Leishmania donovani* trypanothione reductase by heterologous expression of a trans dominant mutant homologue: Effect on parasite intracellular survival. *Proceedings of the National Academy of Sciences* 1998; 95:5311-5316.
- TOVAR J, WILKINSON S, Mottram JC, Fairlamb AH. Evidence that trypanothione reductase is an essential enzyme in *Leishmania* by targeted replacement of the *tryA* gene locus. *Molecular Microbiology* 1998; 29:653-660.
- Tricas JA, PARISH T, Britton WJ, Gicquel B. Inducible expression system permitting the efficient purification of a recombinant antigen from *Mycobacterium smegmatis*. *FEMS Microbiology Letters* 1998; 167:151-156.
- Valente SAS, Fraiha HN, Leao RNQ, MILES MA. Doença de Chagas. In: Leao RNQ, ed. *Doenças Infecciosas e parasitarias; enfoque amazonica Belem*. Instituto Evandro Chagas, 1997;597-610.
- Valente VC, Valente SAS, Noireau F, Carrasco HJ, MILES MA. Chagas disease in the Amazon basin: association of *Panstrongylus geniculatus* (Hemiptera: Reduviidae) with domestic pigs. *Journal of Medical Entomology* 1998; 35:99-103.
- van Leeuwen F, TAYLOR MC, Mondragon A, Moreau H, Gibson W, Kieft R, Borst P. b-D-Galactosylhydroxymethyluracil is a conserved DNA modification in kinetoplastid protozoans and is abundant in their telomeres. *Proceedings of the National Academy of Sciences* 1998; 95:2366-2374.
- VEXENAT JA, Oliaro PL, Fonseca de Castro JA, Cavalcante R, Furtado Campos JH, Tavares JP, MILES MA. Clinical recovery and limited cure in canine visceral leishmaniasis treated with amidosine (paromomycin). *American Journal of Tropical Medicine and Hygiene* 1998; 58:448-453.
- von Seidlein L, DURAISINGH MT, Drakeley CJ, Bailey R, Greenwood BM, Pinder M. Polymorphism of the *Pfmdr1* gene and chloroquine resistance in *Plasmodium falciparum* in The Gambia. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1997; 91:450-453.
- WARHURST DC. Antimalarial drug discovery: development of inhibitors of dihydrofolate reductase active in drug resistance. *Drug Discovery Today* 1998; 3:538-546.
- WARHURST DC. Attempts to improve the scope and effectiveness of malaria treatment at the village level. *Africa Health* 1998; no4:14-15.
- WARHURST DC. Epidemiology of *Entamoeba histolytica* and *E. dispar*. *Advances in Diagnosis and Understanding of Protozoal Enteric Infections* 1998;1-8.
- WARHURST DC. Antimalarial gallium complex. *Drug Discovery Today* 1998; 3:249
- WHEELER PR, ANDERSON PM, Duncan K. Mannosyltransferases in mycobacterial lipoarabinomannan biosynthesis. *Biochemical Society Transactions* 1997; 25:5423
- WHEELER PR, Raynes JG, O'Sullivan GM, Duggan D, McAdam KPWJ. Sulphatide-binding properties are shared by serum amyloid P component and a polyreactive germ-line IgM autoantibody, the TH3 idiotype. *Clinical and Experimental Immunology* 1998; 112:262-269.
- WILKINSON SR, Young M. Physical maps of bacteria and their methods for construction: *Clostridium beijerinckii* NCIMB 8052. In: de Bruijn FJ, Lupski JR, Weinstock GM, eds. *Bacterial genomes: Physical structure and analysis*. Chapman and Hall, 1998;
- Wren BW, Stapler RA, Das SS, Butcher PD, Mangan JA, Clarke JD, CASALI N, PARISH T, STOKER NG. Characterization of a haemolysin from *Mycobacterium tuberculosis* with homology to a virulence factor of *Serpulina hydrosentariae*. *Microbiology* 1998; 144:1205-1211.
- Yan J, Hu L, Zhang S, Xu B, WARHURST DC. Analysis of partial sequence of circumsporozoite protein of *Plasmodium vivax* isolates in Hubei province. *Chinese Journal of Parasitology and Parasitic Diseases* 1997; 15:152-155.

THESES

- KASOLO FC. (Zambia) *Molecular studies of novel herpesvirus and HIV in paediatric infections in Zambia*. (PhD). 1998.
- PARRY CM. (UK) *Molecular identification, characterization and processing of the human herpesvirus-6 protease*. (PhD). 1998.

DEPARTMENT OF PUBLIC HEALTH AND POLICY

HEAD OF DEPARTMENT

Professor Nicholas A Black MD FFPHM DCH DRCOG (*from 1.5.98*)**Professor Charles EM Normand** BA DPhil (*to 30.4.98*)

DEPARTMENTAL ADMINISTRATOR

Douglas Brooker (*from 4.12.98*)**Hong-Yoke Lim** BA (*to 3.12.98*)

DEPARTMENTAL SECRETARY

Cari Caldwell (*from 1.12.98*)**Karen Jelf** (*from 1.5.98 to 30.11.98*)**Samantha Mann** (*to 30.4.98*)

COMPUTING TEACHING OFFICER

Barbara Neville BA BSc

COMPUTING OFFICERS

Mick Hussey BA MSc**Caroline Fernyhough** BSc

TEACHING SECRETARY

Gwenda Hoare

VISITING PROFESSORS

Sir Donald Acheson

KBE MA DM MD DSc LLD FRCP FRCS FFPHM FFO

Sheila Adam MD FFPHM MRCP**Rasaratnam Balarajan** MBBS DPH MSc FFPHM**Jack Cuzick** BSc MSc PhD**Alain C Enthoven** BA MPhil PhD**David Fine** BA MHA**Spencer Hagar** MB ChB DPH PhD MA MFCM FFPHM**Nicholas Mays** BA HonFFPHM**Richard Smith** BSc MB ChB MSc

EMERITUS PROFESSORS

Jerry Morris CBE MA HonDSc HonMD HonFFPHM**Patrick Vaughan** MD FRCP FFPHM

The Department houses the largest multidisciplinary group in Europe conducting public health and health policy research. All the relevant disciplines are well represented – 19 epidemiologists, 12 public health physicians, 7 statisticians and mathematicians, 21 economists, 12 policy analysts, and 38 from other social sciences including anthropology, sociology, history, psychology, demography and geography. In addition, key health care professions (doctors, nurses, pharmacists) are represented. This wide range of disciplines is reflected in the research methods used which include qualitative (such as documentary analysis, in-depth interviews and non-participant observation) and quantitative techniques (such as randomized trials, predictive modelling and psychometrics).

Staff are as concerned about their research being of relevance to practice and policy as it being of high academic quality. This is reflected in the many diverse ways staff collaborate with other organizations – government departments both in the UK and overseas, non-governmental organizations, professional associations (such as the Royal Colleges), health service providers, and international bodies (such as the World Bank, WHO, and the European Commission). In addition, members of the Department provide advice on a consultancy basis to many organizations around the world.

A feature of the Department's research is a keen interest and involvement in methodological issues. This includes: the development and testing of health outcome and risk adjustment measures; techniques for geographical analyses; the development of health indicators for specific diseases and community-based indicators for environmental health; costing methods and economic evaluation techniques; comparison of randomized and non-randomized evidence;

methods for assessing the quality of non-randomized studies; the use of consensus development methods; modelling incident need from prevalence data and the amount of population health gain from preventive and curative interventions; and methods for evaluating health promotion.

Another common thread that runs through all four units in the Department is concern about the interface between scientific research and practice or policy. This is being explored both historically and through several contemporary projects both in developed and developing countries.

There were several major initiatives during 1998. First, we are contributing to the second National Survey of Sexual Attitudes and Lifestyles in the UK. Second, staff organized a highly successful international meeting on 'Reforming Health Sectors' (the School's 8th Annual Public Health Forum). Third, the importance of the economic aspects of infectious disease was recognized in the establishment of an inter-departmental Collaborative Centre for Economics of Infectious Diseases. Fourth, the establishment of the Department of Health-funded National Centre for Health Outcomes Development jointly with the University of Oxford. Fifth, the launch of the European Observatory on Health Care Systems, jointly with several organizations including WHO and the World Bank. Finally, our longstanding programme of research on, and audit of, surgery was consolidated with the establishment of the Clinical Effectiveness Unit at the Royal College of Surgeons of England. Future initiatives include developments in primary care research, health impact assessment and risk analysis, and studies of globalization.

The Department continues to grow. During 1998 our staff



included 5 professors, 3 readers, 20 senior lecturers and 22 lecturers. In addition there were 46 research fellows, 7 research assistants, 36 administrative and clerical staff, and 5 staff carrying out computing tasks. Ben Armstrong took over as Head of the Environmental Epidemiology Unit and Helen Dolk acted as Research Degree Director for six months.

The research degree programme also continues to expand. Apart from 16 members of staff, we had 88 students from 38 countries registered for higher research degrees, including 3 DrPH (Doctor of Public Health) students. During the year, three PhDs were awarded and the theses titles are included in each Unit's list of publications.

1899



1999

ENVIRONMENTAL EPIDEMIOLOGY UNIT

Ben Armstrong BA MSc PhD

Tony C Fletcher MA MSc PhD

Helen Dolk MA PhD

Carolyn Stephens MA MSc PhD

Paul Wilkinson BM Bch MRCP MSc

Deborah LC Chee
MB ChB MRCP MRCPsych MSc

Christopher A Grundy MSc

Caroline Hunt BA dts MSc

Megan Landon BA MSc

Giovanni Leonardi MSc MB ChB

Simon Lewin MSc MB ChB

Simon Stevenson MSc

Peter H Walls MSc PhD

Sam Pattenden BEd DipCompSci

Jessica Mercer BSc

Frances Allsop

Senior Lecturer & Head of Unit

Senior Lecturer

Senior Lecturer

Senior Lecturer

Senior Lecturer

Honorary Lecturer

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Senior Computing Officer

Computing Officer

Unit Secretary

Course Secretary

Statistician

Epidemiologist

Epidemiologist

Policy Analyst

Epidemiologist

Epidemiologist

Geographer

Epidemiologist

Epidemiologist

Epidemiologist

Policy Analyst

Epidemiologist

FUNDING BODIES

BC Cancer Agency

British Council for the
Prevention of Blindness

British Heart Foundation

British Lung Foundation

Colt Foundation

Commission of the
European Communities

Department of Health

Foundation for the Study of
Infant Deaths

Health Education Authority

Joseph Rowntree Foundation

National Asthma Campaign

NHS Executive

Nuffield Foundation

Nuffield Institute of Health

Occupational Health
Services, AIVO Canada

Public Health Laboratory
Services

Singapore Eye Research
Institute

University of Surrey

The Wellcome Trust

World Bank

The Unit carries out research in environmental epidemiology and environmental health policy. Through the epidemiological study of groups subject to putative environmental health risks, we seek to evaluate whether the risks are real, and if so to quantify them. We also aim to inform the development of environmental health policy by studying perceptions of risks and attitudes towards them, and by undertaking health risk assessments of policy implications based on current knowledge. Further, we develop methods pertinent to research in this field. Unit staff have a wide variety of skills, reflecting the interdisciplinary nature of much of our research. These include epidemiology, statistics, policy analysis, anthropology, computing, and geographic information systems.

EXCESS WINTER MORTALITY AND HOUSING

It has long been known that in Britain mortality in winter months is some 20% higher than the rest of the year. The

reasons for this, however, are poorly understood. The fact that the winter excess is higher in Britain than that in many countries with colder winters suggests that many of these premature deaths are avoidable. In a series of studies, researchers in the Unit are investigating the specific conditions under which excess of winter mortality is high. In recently completed research, it was found most of the winter excess was explained directly by cold temperatures, with daily mortality rising by some 2% for every degree centigrade that mean maximum daily temperature in the preceding two weeks dipped below 19°. This is consistent with our earlier finding that people living in homes without central heating had greater risk of death in winter. Ongoing research seeks to identify more precisely the relationship between temperature and mortality, and the way in which housing factors affect it.

AIR POLLUTION

Air pollution, a central concern in environmental health, is



the subject of several of the Unit's projects. In particular, the Unit co-ordinates a six-country Central European Study of Air Pollution and Respiratory Health, together with colleagues from RIVM in Bilthoven and the Agricultural University in Wageningen. Preliminary combined analyses show higher rates of respiratory symptoms in countries with higher levels of air pollution, but within country analyses are much less consistent. Full analyses using multilevel modelling techniques, currently under way, are investigating these contrasting patterns.

An investigation of leukaemia rates in enumeration districts in south-east England in relation to estimated emissions of benzene was completed. Initial results showed a strong positive association. However, careful analysis showed this to be influenced by a few 'clusters' of cases with residential addresses very close to major hospitals. Checking showed that these were in fact unlikely to be real addresses and removal of them from analyses showed a much weaker association – an experience with wide implications for this method.

ENVIRONMENTAL HEALTH POLICY

It is well known that environmental changes will affect countries differently, necessitating different policies for different regions. It is also well known that policy contexts differ internationally and that policymakers will react differently to environmental health research. Researchers from the Unit, in collaboration with the Stockholm Environment Institute and contributors from a number of developing countries, examined the impacts of environmental change on human health in African, Caribbean and countries that are signatories to the Lomé Convention. Results indicated that food security and unhealthy living environments are key issues of environmental change in such countries. The review guides environment and health practitioners and policy makers on strategies to achieve intersectoral agendas.

Also completed was a policy study on the use of environmental health information in the development of policies to reduce inequalities in health. This suggests the strategic importance of study design and dissemination of

research on inequalities – and patience. Further, in collaboration with the Robens Institute and the Ministry of Health in Uganda, the Unit has assisted in the development of methods of monitoring urban water supply that focus on priority groups from a health perspective.

CONGENITAL MALFORMATIONS

The Unit continues its work looking at the risk of congenital anomalies among residents living near hazardous waste landfill sites. The first results (showing a 33% excess risk among those living close to the sites) were published in 1998, generating huge media and public interest and debate as to what the appropriate policy reaction should be. Research on the geographical distribution of anophthalmia/micropthalmia was also published (showing no localized clustering but an excess in rural areas), and this work continues. We have also looked at the prevalence of various adverse perinatal outcomes in relation to economic status – a focus of interest for other research in the Unit. One project found that the level of deprivation of the area in which a mother lives predicts low birthweight even after allowing for individual social class, suggesting that the economic circumstance of a neighbourhood contributes to maternal health. We have started work on the epidemiology of hypospadias, in response to observations that the prevalence of hypospadias has been increasing and that this may be associated with exposure to endocrine-disrupting chemicals. This work analyses existing surveillance data on hypospadias in UK and Europe.

LEUKAEMIA AND MAGNETIC FIELDS

Members of the Unit have been responsible, in collaboration with Canadian researchers, for the analysis of a large Canadian case-control study of childhood leukaemia. First results show, in contrast to some earlier reports from the USA and Scandinavia, that in Western Canada and Quebec children living in strong magnetic fields were no more likely to contract leukaemia than those living in weaker fields. This is despite the fact that field levels were rather higher in this study than others. The study will play an important part in several reviews of this question currently under way or planned.

RESEARCH DEGREE STUDENTS

Araceli Lorraine Busby (UK). Clustering and geographical variation in anophthalmos/micropthalmos.

Romulo Paes De Sousa (Brazil). Environmental epidemiology and policy.

Iliana Del Rio-Gomez (Mexico). Organochlorines and endometriosis.

Hyacinth Thorne Domonic Roberts (Grenada). Infectious waste management.

Miguel San Sebastian (Spain). Health impact of oil companies in Ecuador.

Mi-A Son (Korea). Occupational epidemiology.

Ronald Dollete Subida (Philippines). Environmental risk assessment.

Yih-Jian Tsai (Taiwan). Hazards exposure.

Ferdinando Emanuele Vegni (Italy). Respiratory disease and air pollution.

Martine Vrijheid (Netherlands). Risk of congenital malformations.



PUBLICATIONS

- Archibold RA, Sayer JW, Ray S, WILKINSON P, Ranjadayalan K, Timmis AD. Frequency and prognostic implications of conduction defects in acute myocardial infarction since the introduction of thrombolytic therapy. *European Heart Journal* 1998; **19**:893-898.
- ARMSTRONG BG. Effect of measurement error on epidemiological studies of environmental and occupational exposures. *Occupational and Environmental Medicine* 1998; **55**:651-656.
- BUSBY A, DOLK HM. Local research ethics committees' approval in a national population study. *Journal of the Royal College of Physicians of London* 1998; **32**:142-145.
- BUSBY A, DOLK HM, Collin R, Barry Jones R, Winter R. Compiling a national register of babies born with anophthalmia/microphthalmia in England 1988-94. *Archives of Disease in Childhood Fetal and Neonatal Edition* 1998; **79**:F168-F173.
- Dixon J, Sanderson CFB, Elliott P, WALLS PH, Jones J, Petticrew MP. Assessment of the reproducibility of clinical coding in routinely collected hospital activity data: a study in two hospitals. *Journal of Public Health Medicine* 1998; **20**:63-69.
- DOLK HM. Rise in prevalence of hypospadias. *Lancet* 1998; **351**:770
- DOLK HM, BUSBY A, ARMSTRONG BG, WALLS PH. Geographical variation in anophthalmia and microphthalmia in England, 1988-94. *British Medical Journal* 1998; **317**:905-910.
- DOLK HM, VRIJHEID M, ARMSTRONG BG, Abramsky L, Bianchi F, Garne E, Nelen V, Robert E, Scott JES, Stone D, Tenconi R. Risk of congenital anomalies near hazardous-waste landfill sites in Europe: the EUROHAZCON study. *Lancet* 1998; **352**:423-427.
- Kenyon S, Suliman A, Maccallum PK, Ranjadayalan K, WILKINSON P, Timmis AD. Clinical characteristics determining the mode of presentation in patients with acute coronary syndromes. *Journal of the American College of Cardiology* 1998; **32**:2018-2202.
- Martuzzi M, GRUNDY C, Elliott P. Perinatal mortality in an English health region: geographic distribution and association with socio-economic factors. *Paediatric and Perinatal Epidemiology* 1998; **12**:263-276.
- Parkes J, DOLK HM, Hill N. Does the Child Health Computing System adequately identify children with cerebral palsy? *Journal of Public Health Medicine* 1998; **20**:102-104.
- Sayer JW, Gutteridge C, Syndersombe-Court D, WILKINSON P, Timmis AD. Circadian activity of the endogenous fibrinolytic system in stable coronary artery disease: Effects of beta-adrenoreceptor blockers and angiotensin-converting enzyme inhibitors. *Journal of the American College of Cardiology* 1998; **32**:1962-1968.
- STEPHENS C. The policy implications of health inequalities in developing countries. In: Strickland SS, Shetty PS, eds. *Society for the Study of Human Biology Symposium 39 - Human biology and social inequality*. Cambridge: Cambridge University Press, 1998:288-307.
- STEPHENS C. Environmental health and environmental equity. Guest commentary. In: *World Resources 1998-99*. Oxford: Oxford University Press, 1998:106-107.
- Thorogood M, ARMSTRONG BG, Nichols T, Hollowell J. Mortality in people taking selegiline: observational study. *British Medical Journal* 1998; **317**:252-254.
- WILKINSON P, GRUNDY C, LANDON M, STEVENSON S. GIS in public health. In: Gatrell A, Loytonen M, eds. *GIS and Health*. Taylor & Francis, 1998:179-189.

1899



1999

HEALTH POLICY UNIT

Anthony Zwi MBBCh DOH DTM&H MSc FFPHM PhD+	Senior Lecturer & Head of Unit	<i>Public Health Physician</i>	FUNDING BODIES ABT Associated Inc Andrew Mellon Foundation British Academy Camden and Islington Health Authority Commission of the European Communities Department for International Development (DFID) Economic and Social Research Council Harvard School of Public Health John Snow Inc London Borough of Camden Nuffield Trust Royal College of Surgeons Swedish International Development Cooperation Agency The Wellcome Trust Womankind Worldwide World Bank World Health Organization
Anne Mills MA DHSA PhD	Professor	<i>Health Economist</i>	
Patrick Vaughan MD FRCP FFPHM	Emeritus Professor	<i>Health Care Epidemiologist</i>	
Gill Walt BSc PhD	Reader	<i>Health Policy</i>	
Susan Foster MA PhD	Senior Lecturer	<i>Health Economist</i>	
Julia Fox-Rushby BSc PhD	Senior Lecturer	<i>Health Economist</i>	
Lucy Gilson MA PhD	Senior Lecturer	<i>Health Economist</i>	
Barbara McPake BA PhD	Senior Lecturer	<i>Health Economist</i>	
John Porter MBBS MRCP MPH FFPHM FAFPHM DA DCH	Senior Lecturer	<i>Public Health Physician</i>	
Stephen Tollman BSc BA MA MBBCh MPH	Honorary Senior Lecturer	<i>Public Health Physician</i>	
Dyna Arhin MBBCh Dip HSA MSc PhD	Lecturer	<i>Health Economist</i>	
Sara Bennett BA MPhil	Lecturer	<i>Health Economist</i>	
Ruairi Brugh DCH DipObs MSc MFPHMI MD	Lecturer	<i>Public Health Physician</i>	
Hilary Goodman BA MA	Lecturer	<i>Health Policy</i>	
Lilani Kumaranayake BA MA PhD	Lecturer	<i>Health Economist</i>	
Kelley Lee-Gilmore BA MPA DPhil	Lecturer	<i>Health Policy</i>	
Peter Lloyd-Sherlock BA MA PhD	Lecturer	<i>Health Policy</i>	
Jessica Ogden BA MA PhD	Lecturer	<i>Social Anthropologist</i>	
Dinesh Sethi MD CP MD MSc MFPHM	Lecturer	<i>Public Health Physician</i>	
Charlotte Watts BA MSc PhD	Lecturer	<i>Epidemiologist/Health Policy</i>	
Celia Palmer MSc BM	Honorary Lecturer	<i>Public Health Physician</i>	
Kent Buse MSc PhD	Research Fellow	<i>Health Policy</i>	
Suzanne Fustukian BA MSc	Research Fellow	<i>Health Policy</i>	
Kara Hanson BA MPhil MA	Research Fellow	<i>Health Economist</i>	
Gerard Howe BA MSc	Research Fellow	<i>Health Policy</i>	
Guy Hutton BA MSc	Research Fellow	<i>Health Economist</i>	
Sally Lake BA MSc	Research Fellow	<i>Health Economist</i>	
Natasha Palmer BA MSc	Research Fellow	<i>Health Economist</i>	
Gabrielle Ross BA MA MPH	Research Fellow	<i>Health Policy</i>	
Wayne Thompson BSc MSc DPhil	Research Fellow	<i>Mathematician</i>	
Peter Vickerman BA DPhil	Research Fellow	<i>Mathematician</i>	
Suzanne Watts BSc RGN	Research Fellow	<i>Nurse</i>	
Annabel Bowden MA BSc	Research Assistant	<i>Geographer</i>	
Catherine Goodman BA MSc CDipAF	Research Assistant	<i>Health Economist</i>	
Susannah Mayhew PhD MA BA	Research Assistant	<i>Health Policy</i>	
Damian Walker BSc MSc	Research Assistant	<i>Health Economist</i>	
Tamsin Kelk BA	Assistant Editor		
Christine Rivett-Carnac	Editorial Assistant		
Linda Amarfo BA	Secretary		
Joanne Bent	Course Secretary		
Jane Cook	Secretary		
Patricia Foley	Course Secretary		
Nicola Lord	Programme Secretary		
Jane Moore	Secretary		
Lucy Paul BSc	Unit Secretary		
John Chalker BA MBBCh DTM&H MSc	Visiting Research Fellow	<i>EU, Good Pharmacy Practice</i>	
Stephen Lanjouw BA MSc MA	Visiting Research Fellow	<i>Health Policy</i>	
Viroj Tangcharoensathien MD DipHA PhD	Visiting Research Fellow	<i>Ministry of Public Health, Thailand</i>	

The Unit aims to inform and strengthen the development and implementation of health policy and to increase understanding of the process of policy development. Areas of expertise include health policy analysis, health systems

research and health economics, with an emphasis on low- and middle-income countries. Staff come from disciplines ranging from sociology, social policy and political science, to anthropology, mathematical modelling and epidemiology.



There are four substantive areas of activity: health economics and financing, infectious disease policy, globalization, and conflict and health. Our cross-cutting concerns focus on poverty and inequity, public health problems and interventions, the policy implications of ageing populations, gender and the role of the for-profit private health care sector.

INFECTIOUS DISEASES POLICY GROUP

The impetus for the group arose from a concern that despite knowledge that health reflects a complex interaction between biology, culture and human activity, emphasis is often put solely on the biological dimension. The group brings together what we know about these other influences to explore the interaction of biological with socio-cultural factors. By developing this approach we can better understand common obstacles to effective policy including poverty, inequity, environmental decline, limited access. This knowledge can be used to enhance the relationship between individuals and communities with health structures, as well as to devise practical solutions to infectious disease problems.

During the year, group members have been involved in developing a wide range of research activities on various dimensions of infectious disease policy, including the transfer of policies from the international to the national level, new partnerships in the control and treatment of infectious diseases, and the acceptability and accessibility of services.

DFID HEALTH ECONOMICS AND FINANCING PROGRAMME

1998 marked the final year of the second phase of this programme. Notable successes included a successful triennial review by the funder, DFID and the award of a contract for another 5-year programme, 1999-2004. This ensures the medium-term future of a large volume of activities, supported in addition by a variety of other funders.

Anne Mills organized the School's 8th Annual Public Health Forum *Reforming Health Sectors*, which drew together researchers, policy makers and practitioners to review the increased knowledge of health sector reform issues that has accrued over the last 10 years. Around 200 participants from almost 50 countries attended, including many of our collaborators who participated as speakers. In association with the Forum the Unit ran workshops on health care financing reform in Latin America, on donor co-ordination and on post-conflict health sector recovery.

Work on equity and user fees has featured strongly in the programme. A study was completed of the Thai system for exempting the poor from health care fees, one of the very few systems which is thought to work reasonably well. The study evaluated its performance and, drawing lessons from features which were conducive to effectiveness, this work should be of value to other countries.

The economics of malaria is an increasingly important part of

our work. We completed research on improving knowledge about the cost-effectiveness of control measures in order to inform the international Roll Back Malaria programme. Using modelling, we were able to demonstrate that highly cost-effective interventions are available. The for-profit private sector in low- and middle-income countries is a focus of our research, both from a health economics perspective looking at regulation and social marketing and from a public health perspective, to evaluate the potential for improving the quality of care delivered by private providers for public health priority diseases. Substantial progress was made in finalizing 'HIV Tools', which is developing methods to assess the cost-effectiveness of different HIV prevention strategies. Programme staff moderated a Web-based discussion on the cost-effectiveness of HIV prevention, which attracted global interest and improved our understanding of the value of new technologies for communication.

CONFLICT AND HEALTH

The Unit provides the base for promoting research and teaching on the impact of conflict on health and health systems, the role of public health in humanitarian emergencies and in post-conflict recovery. There is a considerable gap between research and policy in this area and we have much to offer in partnership with governments, NGOs, donors and where feasible, affected communities. Teaching modules have been developed with academic institutions in Spain and Britain to reflect key policy concerns with conflict and the international humanitarian response.

Work on reproductive health and conflict was completed which emphasized the centrality of involving affected communities in influencing the response to humanitarian emergencies and chronic conflicts. A related project explored the emergence of policy regarding reproductive health in emergencies. An ongoing project, with World Bank support, aims to build planning and policy-making capacity in countries emerging from periods of conflict. Emphases were on promoting equity, identifying information needs for policy-making, building human resource capacity, and developing NGO-state relationships.

Particular effort has focused on understanding the evidence-base upon which public health responses to humanitarian emergencies should be based; to this effect a partnership with Medical Emergency Relief International (MERLIN) was established, funded by the Andrew Mellon Foundation. This initiative will collate evidence regarding public health practice in emergencies and will work towards deriving good practice and effective mechanisms of implementing these through linking academic and NGO practitioners.

GLOBALIZATION

A number of projects around globalization and health have been initiated. The Nuffield Trust funded two projects aimed at informing UK policy of the impacts of globalization on health including one focusing on public health measures



concerned with transborder health risks. A second project, *Global health: a local issue* is a policy review bringing together senior policy makers and researchers to consider the implications of globalization for health in the UK.

WHO's Tobacco Free Initiative has funded the development of a political mapping study in middle- and lower-income countries that will provide a better understanding of the political environment at country level, where the proposed Framework Convention on Tobacco Control will seek to have

its greatest impact. Unit staff are contributing to a Rockefeller Foundation/WHO/Society for International Development initiative, *Globalization: Rethinking equity and health*, and the development of a WHO work programme on globalization and health, both of which will yield new agendas for research and policy. We are collectively writing a book entitled *Crossing boundaries: health policy in a globalizing world* which explores how globalization affects the nature and process of health policy making.

RESEARCH DEGREE STUDENTS

Mohammad Amin (Bangladesh). An analysis of the private sector health care market and its regulation in Bangladesh

Eddas Bennett (USA). Cost-effectiveness of local health authorities in South Africa.

Mrigesh Bhatia (India). Economic evaluation of malaria control in Surat, India: bednets vs residual insecticide spray.

Joao Costa (Brazil). Health demands from an industrial complex and the development of a private health care market in the Metropolitan Region of Salvador, Bahia State, Brazil.

Nile El Wardani (USA). Defining the role and function of the WHO country representative: a worldwide survey (a study in the changing roles of international agencies and their influence on national policy and programme implementation).

Ibrahim Elziq (UK). Assessment of the health insurance needs of the Palestinian people.

Alejandra Gonzalez-Rossetti (Mexico). Political dimensions in health sector reform.

Mir Ajmal Hamid (Pakistan). Regulation of the private health care sector in Pakistan.

Charles Hongoro (Zimbabwe). An evaluation of decentralization of health services in Zimbabwe: the rationale, process, impact and public sector efficiency.

Niyada Kiatying-Angsulee (Thailand). Model for auditing and improving drug authority in registration and regulation of pharmaceuticals in the country: the case study of Thailand.

Nassor Kikumbih (Tanzania). Estimating public gain from an insecticide-treated net programme: The case of Kilombero sugar factory.

Julia Kilbourne (USA). Kenyan horticulture workers: policy implications and strategies for attaining healthier conditions.

Masahide Kondo (Japan). Equity under prepayment financing scheme in rural sub-Saharan Africa.

Sukhontha Kongsin (Thailand). Policies to mitigate the economic and social impact of HIV/AIDS morbidity and mortality on households in northern Thailand.

Stanley Lalta (Trinidad). Privatization in the Jamaican health sector: case study of contracting hospital support services.

Jwo-Leun Lee (Taiwan). Health insurance.

Jongkol Lertindumrong (Thailand). The evaluation of health reform: the case of civil servant medical benefit scheme in Thailand.

Xingzhu Liu (China). The impact of doctor payment reform on the efficiency of hospital services: a case study in PR China.

David McCoy (Malaysia). Health systems organizations and management in the context of decentralization.

Omer Mensah (Benin). The financing of health programmes in Benin: the national malaria programme and the Bamako Initiative.

Mario Mosquera (Colombia). Interface between health services and communities within the health sector reform in Colombia.

Mercy Mugo (Kenya). Economic evaluation of school-based interventions in control of helminth infections in Kenya.

Thelma Narayan (India). National programme on TB in India: policy development and implementation.

Obinna Onwujekwe (Nigeria). Economic analysis of a community-controlled system for financing and delivering an incremental health package for the control of onchocerciasis and malaria in onchocerciasis-endemic areas of south-eastern Nigeria.

Junko Otani (Japan). Health policy for societies with rapidly ageing populations.

Manisri Puntularp (Thailand). Economic evaluation of malaria volunteers in Thailand.

Kent Ranson (Canada). The consequences of health insurance for the informal sector: Three non-governmental, non-profit schemes in Gujarat.

Sandra Reyes-Frausto (Mexico). Policies for the elderly in Mexico.

Steven Russell (UK). Ability to pay for health care.

Nordin Saleh (Malaysia). The privatization of medical screening for foreign workers in Malaysia.

PUBLICATIONS

Adler M, FOSTER SD, GROSSKURTH H, Richens JE, Slavin H. *Guidelines for STD control in developing countries*. London: Department for International Development, 1998.

Aikins MK, FOX-RUSHBY JA, D'Alessandro U, Langerock P, Cham K, New L, BENNETT S, Greenwood BM, MILLS AJ. The Gambian National Impregnated Bednet Programme: costs, consequences and net cost-effectiveness. *Social Science and Medicine* 1998; 46:181-191.

Anand S, HANSON K. DALYs: Efficiency versus equity. *World Development* 1998; 26:307-310.

Barten F, FUSTUKIAN S, Haan S. Occupational health needs of workers. In: Williams C, ed. *Environmental Victims: New risks, new injustice*. London: Earthscan Publications, 1998.

Beattie A, Doherty J, GILSON LJ, Lambo E, Shaw P. *Sustainable Health Care Financing in Southern Africa: papers from an EDI Health Policy Seminar held in Johannesburg, South Africa, June 1996*. Washington: World Bank, 1998.

BENNETT S, MILLS A. Government capacity to contract: health sector experience and lessons. *Public Administration and Development* 1998; 18:307-326.

Broomberg J, MILLS A. To purchase or provide. Should governments contract out hospital care? *Development Research Insights* 1998; 27.

BRUGHA RF, Heptonstall J, Farrington P, Andren S, Perry K, Parry J. Risk of hepatitis A infection in sewerage works. *Occupational and Environmental Medicine* 1998; 55:567-569.

BRUGHA RF, Swan AV, Hayhurst GK, Fallon MP. A drug misuser prevalence study in a rural English district. *European Journal of Public Health* 1998; 8:34-36.

BRUGHA RF, ZWI AB. Improving the quality of private sector delivery of public health services: challenges and strategies. *Health Policy and Planning* 1998; 13:107-120.

BRUGHA RF, ZWI AB. Sexually transmitted diseases. *Lancet* 1998; 352:649-650.

BUSE K. Globalisation and the changing roles of international health organisations. In: *Anonymous Health in the Commonwealth: Challenges and Solutions*. Frome: Kensington Publications, 1998:14-17.

BUSE K. External assistance to Bangladesh's health and population sector. In: United Nations ACC Inter-Agency Task Force on Basic Social services, ed. *Coordinating External Assistance to the Social Sector: Lessons from Bangladesh, Kenya and Peru*. New York: UNFPA, 1998:4-44.

BUSE K, Gwin C. World Bank and global cooperation in health: the case of Bangladesh. *Lancet* 1998; 351:665-669.

Creese A, BENNETT S. Rural risk-sharing strategies. In: Schieber G, ed. *Innovations in health care financing: proceedings of a World Bank Conference, March 10-11, 1997*. Washington, DC: World Bank, 1998:163-182.

Forjuoh SN, ZWI AB. Violence against children and adolescents: international perspectives. *Pediatric Clinics of North America* 1998; 45:415-426.

Forjuoh SN, ZWI AB, Mock CN. Injury control in Africa: getting governments to do more. *Tropical Medicine and International Health* 1998; 3:349-358.

FOSTER SD. Reducing uncertainty in infectious disease control - the role of health economics research. In: GREENWOOD BA, DE COCK KM, eds. *New and resurgent infections: prediction, detection and management of tomorrow's epidemics*. Chichester: Wiley, 1998:173-181.

FOSTER SD, PHILLIPS M. Economics and its contribution to the fight against malaria. *Annals of Tropical Medicine and Parasitology* 1998; 92:391-398.

Frank J, Gwin C, Michaels B, Suwanwela C, WALT G. *Rx for Global Health Cooperation beyond 2000. Report on the Conference on Global Health Cooperation Beyond 2000*. Washington: ODC, 1998.

GILSON LJ. In defence and pursuit of equity. *Social Science and Medicine* 1998; 47:1891-1896.



- Grosskurth H, GILSON LJ, MILLS AJ, HAYES RJ. Cost-effectiveness estimates of the Mwanza sexually transmitted diseases intervention. Authors' reply. *Lancet* 1998; 351:989-990.
- HANSON K, Berman P. Private health care provision in developing countries: a preliminary analysis of levels and composition. *Health Policy and Planning* 1998; 13:195-211.
- Herdman M, FOX-RUSHBY JA, Badia X. Model of equivalence in the cultural adaptation of HRQL instruments: the universalist approach. *Quality of Life Research* 1998; 7:323-335.
- Irwig L, Zwarenstein M, ZWI AB, Chalmers I. A flow diagram to facilitate selection of interventions and research for health care. *Bulletin of the World Health Organization* 1998; 76:17-24.
- Kirigia JM, FOX-RUSHBY JA, MILLS A. Cost analysis of Kilifi and Malindi public hospitals in Kenya. *African Journal of Health Sciences* 1998; 5:79-84.
- Kirigia JM, Snow RW, FOX-RUSHBY JA, MILLS AJ. The cost of treating paediatric malaria admissions and the potential impact of insecticide-treated mosquito nets on hospital expenditure. *Tropical Medicine and International Health* 1998; 3:145-150.
- KUMARANAYAKE L, Peppercall J, GOODMAN H, MILLS A. Costing Guidelines for HIV/AIDS Prevention Strategies. UNAIDS Best Practice Collection B Key Materials, [online]. Available by search from http://158.232.21.5/Revised/Cube_frame.html [Accessed 2nd July 1999]
- KUMARANAYAKE L, WATTS CH. Cost-effectiveness estimates of the Mwanza sexually transmitted diseases intervention. *Lancet* 1998; 351:989-90
- KUMARANAYAKE L, WATTS CH. Cost-effectiveness of STD treatment for HIV prevention, Mwanza study. *Lancet* 1998; 348.
- LEE K. Shaping the future of global health cooperation: where can we go from here? *Lancet* 1998; 351:899-902.
- LEE K. *Historical Dictionary of the World Health Organization*. Scarecrow Press, Inc. 1998;vii-333.
- LEE K. Finding a better way for humanitarian action - creating a global institutional framework, a rejoinder. *Security Dialogue* 1998; 29:113-117.
- LEE K, Lush L, WALT G, Cleland J. Family planning policies and programmes in eight low-income countries: a comparative policy analysis. *Social Science and Medicine* 1998; 47:949-959.
- McGuiness D, Koram K, BENNETT S, Wagner G, Nkrumah FK, Riley E. Clinical case definitions for malaria: clinical malaria associated with very low parasite densities in African infants. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92:527-531.
- MILLS A. Operational research on the economics of insecticide-treated mosquito nets: lessons of experience. *Annals of Tropical Medicine and Parasitology* 1998; 92:435-447.
- MILLS A. Health policy reforms and their impact on the practice of tropical medicine. *British Medical Bulletin* 1998; 54:503-513.
- MILLS A. Health care reforms in developing countries. *Informing and Reforming* 1998; 5:2-5.
- MILLS A, Broomberg J. *Experiences of contracting: an overview of the literature*. Geneva: World Health Organization, 1998.
- MILLS AJ. Operational research on the economics of insecticide-treated mosquito nets: lessons of experience. *Annals of Tropical Medicine and Parasitology* 1998; 92:435-447.
- MILLS AJ. Health policy reforms and their impact on the practice of tropical medicine. *British Medical Bulletin* 1998; 54:503-513.
- MILLS AJ. To contract or not to contract? Issues for low and middle income countries. *Health Policy and Planning* 1998; 13:32-40.
- Mugford M, HUTTON G, FOX-RUSHBY JA. Methods for economic evaluation alongside a multicentre trial in developing countries: a case study from the WHO Antenatal Care Randomised Controlled Trial. *Paediatric and Perinatal Epidemiology* 1998; 12:75-97.
- Needham DM, GODFREY-FAUSSETT P, FOSTER SD. Barriers to tuberculosis control in urban Zambia: the economic impact and burden on patients prior to diagnosis. *International Journal of Tuberculosis and Lung Disease* 1998; 2:811-817.
- OTANI J. International sex tourism in Asia and vulnerability to HIV/AIDS. *Technology and Development* 1998; no 11:39-47.
- PALMER CA, ZWI AB. Women, health and humanitarian aid in conflict. *Disasters* 1998; 22:236-249.
- Pannarunothai S, MILLS A. Researching the public/private mix in health care in a Thai urban area: methodological approaches. *Health Policy and Planning* 1998; 13:234-248.
- PORTER JDH, OGDEN JA. Social inequalities in the re-emergence of infectious disease. In: STRICKLAND SS, SHETTY PS, eds. *Society for the Study of Human Biology Symposium 39 Human biology and social inequality*. Cambridge: Cambridge University Press, 1998;96-113.
- Ramsay ME, BRUGH RA, Brown DWG, Cohen BJ, Miller E. Salivary diagnosis of rubella: a study of notified cases in the United Kingdom, 1991-4. *Epidemiology and Infection* 1998; 120:315-319.
- SETHI D, ZWI AB. Challenge of drowning prevention in low and middle income countries. *Injury Prevention* 1998; 4:162.
- Thaver I, Harpham T, McPAKE BI, Garner P. Private practitioners in the slums of Karachi: what quality of care do they offer? *Social Science and Medicine* 1998; 46:1441-1449.
- Thaver IH, Harpham T, McPAKE BI, Garner P. Private practitioners in the slums of Karachi: what quality of care do they offer? *Social Science and Medicine* 1998; 46:1441-1449.
- WALT G. Implementing health care reform: a framework for discussion. In: Saltman R, Figueras J, Sakellariades C, eds. *Critical challenges for health care reform in Europe*. Buckingham: Open University Press, 1998;365-384.
- WALT G. Globalisation of international health. *Lancet* 1998; 351:434-437.
- WATTS CH, Shrader E. How to do (or not to do)... The genogram: a new research tool to document patterns of decision making, conflict and vulnerability within households. *Health Policy and Planning* 1998; 13:459-464.

REPORTS

- BENNETT S, Creese A, Monasch R. *Health insurance for people outside formal sector employment current concerns* ARA Paper No 16, WHO, Geneva, 1998.
- BENNETT S, Miller Franco L. *Public sector health worker motivation and health sector reform: a conceptual framework*. PHR Applied Research Technical Paper, PHR, Bethesda, 1998.
- BENNETT S, MILLS A, RUSSELL S, Supachutikul A, Tangcharoensathien V. *The health sector in Thailand*. Working Paper in Role of Government series, University of Birmingham, Birmingham, UK, 1998.
- BENNETT S, Muraleedharan VR. *Reforming the role of government in Tamil Nadu health sector*. Working Paper in Role of Government series, University of Birmingham, Birmingham, UK, 1998.
- BENNETT S, Ngalande Banda EE, Teglgard O. *Public and private roles in health. A review and analysis of experience in sub-Saharan Africa*. Current Concerns ARA Paper no. 6. WHO/ARA/CC/97.6 1998.
- GILSON L, RUSSELL S, Rauyajin O, Boonchote T, Pasandhanathorn V, Chaisenee P, Supachutikul A, Nuan-anan Tantigat N. *Exempting the poor: A review and evaluation of the low income card scheme in Thailand*. PHP Departmental Publication no.30, London, London School of Hygiene and Tropical Medicine, 1998.
- GILSON L, Schneider H. *ISDS Evaluation and Research Framework*. ISDS Technical Report No. 4. Durban: Health Systems Trust, 1998.
- HANSON K, KUMARANAYAKE L, Thomas I. *Supplying subsidised contraceptives: Economic rationale and programme issues for promoting sustainability*. Report for DFID, 1998.
- HANSON K, KUMARANAYAKE L, Thomas I. *Supplying subsidised contraceptives: Economic rationale and programme issues for promoting sustainability*. Background paper for DFID. London: Options Consultancy Services, August 1998.
- HANSON K, MCPAKE B. *Country experiences with implementing autonomous hospitals policies*. London School of Hygiene and Tropical Medicine, mimeo, July, 1998.
- HANSON K. *Implementing health sector reforms in africa: a review of eight country experiences*. New York: UNICEF, Division of Evaluation, Policy and Planning, Programme Division, 1998.
- HOWE G, Barry AJ. *Aid co-ordination and aid effectiveness: a review of country and regional experience*. Paris, Development Centre, OECD, 1998.
- KAHN K, TOLLMAN S. *Technical Report - The INDEPTH Network: A comparative perspective on field sites in Africa, Asia, Latin America, and the Middle East*. November 1998. Monograph available from the INDEPTH secretariat, Accra and Johannesburg.
- Kalyalya D, LAKE S, Milimo J. *Promoting equity within cost-sharing schemes: Report of the Zambia case study*. Report to UNICEF New York, 1998, 57pp.
- KUMARANAYAKE L. *Economic aspects of health sector regulation: strategic choices for low and middle income countries*. LSHTM Public Health and Policy Departmental Publication. No. 29. ISSN.0962-6115. 1998.
- KUMARANAYAKE L. *Regulation in the health sector: issues for the Middle-East region*. Presented at the World Bank Mediterranean Development Forum, Morocco, September 1998.
- KUMARANAYAKE L. *Quasi-markets, markets and incentive regulation in the health sector: perspectives from low and middle-income countries*. Presented at the Quasi-Markets Research Seminar, UK, April 1998.
- LEE K. *Globalisation of health care. A briefing paper*. Paper prepared for Third Trilateral on Globalisation of Health Care, The Nuffield Trust, September 1998.
- LEE K. *Globalisation and health policy: A review of the literature and proposed research and policy agenda*. Background Paper, Seminar on Global Governance and Social Policy, Globalism and Social Policy Programme (GASPP), Helsinki, Finland, May 1998.
- LEE K. *Globalisation and health policy: A review of the literature and proposed research and policy agenda*. Discussion Paper, London School of Hygiene & Tropical Medicine, 1998.
- LEE K. *Globalisation and health policy: A review of the literature and proposed research and policy agenda*. Background paper for Globalisation and Health in the Americas, University of Texas, Galveston, USA, October 1998.

THESIS

- NARAYAN T. (India) *A study of policy processes and implementation of the National Tuberculosis Programme in India*. (PhD), 1998.

1899



1999

HEALTH PROMOTION RESEARCH UNIT

Margaret Thorogood BSc PhD	Reader & Head of Unit	<i>Epidemiologist</i>	FUNDING BODIES Andrew Mellon Foundation Camden & Islington Community Health Services NHS Trust Commission of the European Communities Department of Health Department for International Development Drug Safety Research Unit Ealing, Hammersmith & Hounslow Health Authority Economic and Social Research Council Health Education Authority Home Office International Life Sciences Institute Leverhulme Trust Medical Research Council Merck Sharp & Dohme NHS Executive Nuffield Foundation The Terrence Higgins Trust The Wellcome Trust West London Health Promotion Agency World Health Organization
Virginia Berridge BA PhD FRHistS	Professor	<i>Historian</i>	
Klim McPherson MA PhD	Professor	<i>Epidemiologist</i>	
Jerry Morris CBE MA HonDSc HonMD HonFFPHM FRCP DPH	Emeritus Professor	<i>Public Health Physician</i>	
Gillian Hundt MA MPhil PhD	Senior Lecturer	<i>Anthropologist</i>	
Helen S Lambert BA MA DPhil	Senior Lecturer	<i>Anthropologist</i>	
Kaye Wellings BA MA MSc	Senior Lecturer	<i>Sociologist</i>	
Kathy Kahn MBBCh MPH	Honorary Senior Lecturer	<i>Public Health Physician</i>	
Bernie Merkel BA MA PhD	Honorary Senior Lecturer	<i>Health Policy Analyst</i>	
Rachel Jewkes MSc MBBS MFPHM MD	Honorary Senior Lecturer	<i>Public Health Physician</i>	
Mark McCarthy MA MBBChir MSc PhD FRCP	Honorary Senior Lecturer	<i>Public Health Physician</i>	
Astier Almedom BA DPhil	Lecturer	<i>Anthropologist</i>	
Stuart Anderson BSc MA MRPharmS MCPP	Lecturer	<i>Historian/Pharmacist</i>	
Jenny Stanton BA PGCE MA PhD	Lecturer	<i>Historian</i>	
Yolande Coombes BA PhD	Lecturer	<i>Geographer</i>	
Dominique Florin BA MA MBBS MSc MRCCGP	Honorary Lecturer	<i>Public Health Physician</i>	
Sue Rodmell BA DHEd MSc MFPHM	Honorary Lecturer	<i>Sociologist</i>	
Imogen Sharp BSc MSc MFPHM	Honorary Lecturer	<i>Director, NFCHD Prevention</i>	
Hilary Whent BA MSc	Honorary Lecturer	<i>Health Information Officer</i>	
Geraldine Barrett BA MSc	Research Fellow	<i>Sociologist</i>	
Susan Beckerleg BSc PhD	Research Fellow	<i>Anthropologist</i>	
Pat Branigan BA MSc	Research Fellow	<i>Anthropologist</i>	
Annie Britton BA MSc	Research Fellow	<i>Epidemiologist</i>	
Mark Bufton BA PhD	Research Fellow	<i>Historian</i>	
Melvyn Hillsdon PGDip	Research Fellow	<i>Epidemiologist</i>	
Roslyn Kane RGN BSc MSc	Research Fellow	<i>Demographer</i>	
Gert Knerer MA MSc	Research Fellow	<i>Epidemiologist</i>	
Kelly Loughlin MA PhD	Research Fellow	<i>Historian</i>	
Wendy Macdowall BSc MSc DTM&H	Research Fellow	<i>Social Scientist</i>	
Angus Malcolm	Research Fellow	<i>Communications</i>	
Dalya Marks BA MSc	Research Fellow	<i>Social Scientist</i>	
Alison Metcalfe BSc	Research Fellow	<i>Epidemiologist</i>	
Kirsti Mitchell BA MSc	Research Fellow	<i>Social Scientist</i>	
Bhash Naidoo BEng MSc	Research Fellow	<i>Epidemiologist</i>	
Katie Paine MA MSc	Research Fellow	<i>Sociologist</i>	
Salah Al-Zaroo BSc MA PhD	Research Assistant	<i>Continuing Educationalist</i>	
Rolla Khadduri BA MSc	Research Assistant	<i>Social Scientist</i>	
Hannah Kuper BA	Research Assistant	<i>Epidemiologist</i>	
Janette Dobbins BSc MSc	Data Manager		
Janet Gardner	Unit Secretary		
Katie Andrew	Secretary		
Deborah Curle BA MSc	Secretary		
Christine Hutton BSc	Course Secretary		
Ingrid James	Secretary		
Sarah Scutt	Secretary		
Tuyet Nguyen	Clerical Assistant		
Sarah Basham BSc MBBS	Visiting Research Fellow	<i>General Practitioner</i>	
Berry Beaumont MB BCh MRCCGP MFPHM	Visiting Research Fellow	<i>General Practitioner</i>	
Peter McCartney MSc MBBS	Visiting Research Fellow	<i>General Practitioner</i>	

The Unit is a multidisciplinary group bringing together expertise in epidemiology, anthropology, sociology, social history, economics and computer modelling. The aims of the Unit are to conduct research to inform health promotion policy, to evaluate health promotion initiatives and to

emphasize and analyse the links between research, policy and practice in this area. Our interest in approaches to the evaluation of health promotion has resulted in a forthcoming book arising out of a series of Unit workshops on the subject to which many Unit members have contributed



(M Thorogood and Y Coombes(eds) *Evaluating health promotion*. OUP, 1999. ISBN 0192631091).

SEXUAL HEALTH

The AIDS Public Health Information Exchange continues to bring together materials and assessments from AIDS education programmes in different countries in the European Union and the former Soviet bloc, facilitating the exchange of ideas and information. Studies are under way examining HIV testing in Europe and HIV prevention interventions for gay men. In the UK, the National Survey of Sexual Attitudes and Lifestyles (NSSL II) is in progress and analysis of the data will begin in 2000. Studies are being undertaken on variations in the prevalence of teenage conceptions in Europe and on population estimates of unintended conceptions in the UK. The portrayal in the media of sexual health issues is being investigated. Ethnographic research in India on sex work and the local context of an HIV-prevention project has been completed and another study on men who have sex with men is in preparation.

A multidisciplinary team has developed and piloted SASHI (Situational Analysis for Sexual Health in India) which was a method of collecting socio-behavioural and epidemiological information needed to design interventions for STD/HIV prevention and control. A user-friendly implementation package is nearing completion.

WOMEN'S HEALTH

In the Middle East, the Unit has been co-ordinating a regional network to maximize Arab maternal health (the MAMAH network). Two studies have aimed to evaluate and improve maternal and child health services to Palestinians in Gaza and Bedouin Arabs in the Negev. One output will be a book which discusses the nature and function of research in the shadow of the peace process.

In Bangladesh, an anthropological study is exploring the factors affecting quality of care in obstetric facilities. Meanwhile, the Unit has been collaborating with the Drug Safety Research Unit, University of Southampton, on a large case-control study of the risk of heart attacks in users of modern oral contraceptives. This has shown that the risk associated with such use is small, but that cigarette smoking considerably increases a young woman's risk.

CHRONIC DISEASE PROBLEMS

The Health Gain project (jointly with the Health Services Research Unit) explores the effectiveness and resource implications of strategies for reducing the burden of chronic disease, in particular cardiovascular disease and cancers. Studies within this project include two trials of exercise promotion, a study of the costs involved in coronary heart disease prevention and treatment, an exploration of the potential benefits of using disease-specific contracts for commissioning cancer treatment services, and a meta-analysis of dietary interventions in the population. An evaluation of a

community intervention to increase awareness of the health effects of smoking and to reduce the prevalence of smoking in the Turkish-speaking community in Camden and Islington, was carried out. The core of the project is computer modelling to produce useful predictions of the relative cost-effectiveness of interventions.

A cost-effectiveness analysis of different approaches for screening for familial hypercholesterolaemia is being conducted. It compares the effects of population versus cascade (case finding) strategies and a clinical versus a genetic diagnosis. There is considerable potential to reduce the mortality and morbidity from this condition through early diagnosis and treatment. Cause-specific mortality attributable to current alcohol consumption levels in the UK is being calculated. The effects of age, gender, beverage type and pattern of consumption are being incorporated into the estimates.

Many of these issues of chronic disease are the province of primary health care which is central to UK government health policy. There is an emerging primary care group in the Unit consisting of three local general practitioners whose main interests are in managing coronary heart disease and drug misuse. Other research on drug misuse in the Unit includes an historical study, an evaluation of a dance/drugs project, and a prison research project to guide the introduction of harm reduction measures designed to reduce transmission of HIV and other effects of unsafe injecting. The latter has provided the research component to a pilot study of the provision of disinfecting tablets in prisons.

Members of the Unit are collaborating with the Department of Community Medicine, University of Witwatersrand, South Africa on an anthropological and epidemiological study of the health burden of hypertension, diabetes and stroke in rural South Africa. In Europe, a case study approach is being used to develop a model of 'best practice'. Major achievements in relation to health indices in specific areas, alcohol for example, are related to contributory factors.

SCIENCE AND POLICY

The relationship between research and policy is central to many activities in the Unit and staff seek to disseminate their findings to policy makers and others. The nature of the science/policy relationship and its change over time is the focus of an historical programme of work set in the UK in the post-war period. Its case studies are smoking; illicit drugs; nutrition policy and especially the relation between diet and heart disease; renal dialysis and intensive care; and the role of the media. Our concern is how a scientific 'fact' becomes a policy 'truth' and the complex web of expertise, activism, economic, cultural and political factors which determine the inter-relationship. Other research is on the oral history of community and hospital pharmacy. The history group also held a conference which brought together historical and contemporary interests in public health research.

INEQUALITIES IN HEALTH

A project on the meaning of socio-economic position in relation to ethnicity and health status has the aim of developing valid comparative methods for measurement of socio-economic position within and between different ethnic groups. Qualitative and survey research among Afro-

Caribbeans, South Asians and whites, together with secondary analysis of existing data sets, is being undertaken in collaboration with colleagues at Bradford and Bristol universities. The history group is also looking at the issue of inequality from an historical perspective.

RESEARCH DEGREE STUDENTS

Paul Boyce (UK). Sexual behaviour in India.
Julie Bronson (USA). Nutrition in the Bahamas.
Gillian Burn (UK). Worksite health programmes.
Tony Cutler (UK). Cost of the NHS.
Catrin Evans (UK). Commercial sex work and sexual health in India.
Carmen Garcia-Pena (Mexico). Chronic diseases and ageing.
Fadia Hasna (Jordan). Reproductive health in the Middle East.
Melissa Hersh (USA). Law and ethics in biomedical research.

Ariel King (USA). Pharmaceutical policy in South Africa.
Margaret Leppard (UK). Obstetric care in a Bangladesh.
Efstratia Simou (Greece). HIV/AIDS.
William Stewart (UK). HIV/AIDS education in China.
Helena Tuomainen (Finland). Nutritional behaviour comparative study.
Ann-Karin Valle (Norway). Inequity in health.
Emma Wilkinson (UK). The value of health promotion to business.
Kate Wood (UK). Sexual, reproductive health in South Africa.

PUBLICATIONS

Abu Saad I, Abu Saad K, LEWANDO-HUNDT G, Forman MR, Belmaker I, Berendes HW, Chang D. Bedouin Arab mothers' aspirations for their children's education in the context of radical social change. *International Journal of Educational Development* 1998; **18**:347-359.

ANDERSON SC. Appendix 8.1 - Innovation sequences in pharmaceuticals I: Chemically related groups. In: Sutton J, ed. *Technology and Market Structure: Theory and History*. MIT Press, 1998;569-571.

ANDERSON SC. Appendix 8.2 - Innovation sequences in pharmaceuticals II - A tabulation of top 50 drugs. In: Sutton J, ed. *Technology and Market Structure: Theory and History*. MIT Press, 1998;572-582.

ANDERSON SC. April 15, 2041 - The President's bicentennial address. *Pharmaceutical Journal* 1998; **261**:423

ANDERSON SC. Today's National Health Service - rather different from 1948. *Pharmaceutical Journal* 1998; **261**:NHS12-NHS15.

ANDERSON SC. British hospital pharmacy - achievements and challenges. *Pharmaceutical Journal* 1998; **260**:G18-G20.

ANDERSON SC. Heroes: 50 years of shaping community pharmacy practice. *Community Pharmacy* 1998; **July**:16

Appleby PN, THOROGOOD M, Mann JI, Key TJ. Low body mass index in non-meat eaters: the possible roles of animal fat, dietary fibre and alcohol. *International Journal of Obesity* 1998; **22**:454-460.

BEAUMONT B, McCARTNEY P. An evidence-based medicine journal club for general practitioners. *British Journal of General Practice* 1998; **48**:934-935.

BECKERLEG S. Après la juridiction de Mushimiwa: l'autorité communale dans un village bajuni. In: Le Guennec-Coppens F, Parkin DM, eds. *Autorité et pouvoir chez les Swahili*. Karthala, 1998;161-169.

BERRIDGE VS. AIDS and British drug policy: a post-war situation? In: Bloor M, Wood F, eds. *Addictions and problem drug use: issues in behaviour, policy and practice*. London: Atheneum Press, 1998;85-106.

BERRIDGE VS. From cradle to grave: fifty years of the NHS. *Journal of the Royal Society of Medicine* 1998; **91**:229-230.

BERRIDGE VS. British drug policy: a post-war situation? In: Waal H, ed. *Patterns on the European drug scene: an exploration of differences: report based on the COST A6 project; evaluation of action against drugs in Europe, Working Group 1: evaluation of policies, policy changes and societal response to policies*. Oslo: National Institute for Alcohol and Drug Research, 1998;27-32.

BERRIDGE VS. Science and policy: the case of postwar British smoking policy. In: Lock S, Reynolds LA, Tansey EM, eds. *Ashes to ashes: the history of smoking and health*. Amsterdam: Rodopi, 1998;143-163.

BERRIDGE VS. Commentary: AIDS and drug policy: the 1970s or the 1990s? *Drugs: education, prevention and policy* 1998; **5**:319-321.

BERRIDGE VS. Exploring the differences: contributions to research on drug policies. In: Waal H, ed. *Patterns on the European drug scene: an exploration of differences*. Oslo: National Institute for Alcohol and Drug Research, 1998;86-93.

BERRIDGE VS. Drogues illicites et médicament psychotropes en Grande-Bretagne: histoire d'une frontière incertaine. In: Ehrenberg A, ed. *Drogues et médicaments psychotropes: le trouble des frontières*. Paris: Éditions Esprit, 1998;101-123.

BERRIDGE VS. Doctors and the state: the changing role of medical expertise in policy-making. *Contemporary British History*. *Frank Cass Journal* 1998; **11**:66-85.

BERRIDGE VS. Science and policy: the case of postwar British smoking policy. *Clio Medica* 1998; **46**:143-162.

BERRIDGE VS. *Opium and the people. Opiate use and drug control policy in the nineteenth and early twentieth century England*. London: Free Association Press, 1998;vi-419

BRANIGAN P, Foxley C. Study safely: an exercise in partnership. *Drug Link* 1998; **July/August**:16-17.

BRANIGAN P, WELLINGS K. Dance drug education in clubs: evaluation of the London Dance Safety Campaign. *Health Education Journal* 1998; **57**:232-240.

BRANIGAN P, WELLINGS K. Acceptance of the harm minimisation message in London clubs and tubes. *Journal of Epidemiology and Community Health* 1998; **52**:678

Briggs A, Sculpher MJ, BRITTON A, Murray D, Fitzpatrick R. Costs and benefits of primary total hip replacement. How likely are new prostheses to be cost-effective? *International Journal of Technology Assessment in Health Care* 1998; **14**:743-761.

BRITTON A, McKEE CM, BLACK NA, McPHERSON K, SANDERSON CFB, Bain C. Choosing between randomised and non-randomised studies: a systematic review. *Health Technology Assessment* 1998; **2**.

BRITTON A, McKEE CM, LEON DA. *Cardiovascular disease and heavy drinking: a systematic review*. London: PHP Publishing, 1998;1-vi, 92

BRITTON A, THOROGOOD M, COOMBS Y, LEWANDO-HUNDT G. Search for evidence of effective health promotion. *British Medical Journal* 1998; **316**:703-704.

CAMPBELL OMR, LEWANDO-HUNDT G. Profiling maternal health in Egypt, Jordan, Lebanon, Palestine and Syria. In: Barlow R, Brown JW, eds. *Reproductive health and infectious disease in the Middle East*. Ashgate Publishing Ltd, 1998;22-44.

Davey Smith G, MORRIS JN, Shaw M. Editorial: Independent inquiry into inequalities in health. *British Medical Journal* 1998; **317**:1465-1466.

Fitzpatrick R, Shortall E, Sculpher MJ, Murray D, Morris R, Lodge M, Dawson J, Carr A, BRITTON A, Briggs A. Primary total hip replacement surgery: a systematic review of outcomes and modeling of cost-effectiveness associated with different prostheses. *Health Technology Assessment* 1998; **2**.

FLORIN DA. Influencing national policy: public health medicine and coronary heart disease prevention by general practitioners. *Journal of Public Health Medicine* 1998; **20**:80-85.

Goodrich J, WELLINGS K, McVey D. Using condom data to assess the impact of HIV/AIDS prevention interventions. *Health Education Research* 1998; **13**:267-274.

Hardman AE, MORRIS JN. Walking to health. *British Journal of Sports Medicine* 1998; **32**:184-186.

Heinemann LAJ, Lewis MA, Spitzer WO, THOROGOOD M. Thromboembolic stroke in young women: a European case-control study on oral contraceptives. *Contraception* 1998; **57**:29-37.

Hemminki E, BRITTON A, Hataa E, McPHERSON K. Time trends of cardiovascular mortality and post-menopausal hormone use in Finland. *European Journal of Public Health* 1998; **8**:217-221.

Hillsdon M. Promoting physical activity: Issues in primary health care. *International Journal of Obesity* 1998; **22**:S52-S54.

KANE R, WELLINGS K. Teenage conceptions in Europe: an international review of prevalence and associated factors. *Journal of Epidemiology and Community Health* 1998; **52**:688-689.

Key TJ, Fraser GE, THOROGOOD M, Appleby PN, BERAL VJ, Reeves G, Burr ML, Chang-Claude J, Frenzel-Beyne R, Kuzma JW, Mann JI, McPHERSON K. Mortality in vegetarians and non-vegetarians: a collaborative analysis of 8300 deaths among 76,000 men and women in five prospective studies. *Public Health Nutrition* 1998; **1**:33-41.

KHADDURI R. From political 'Solidarity' to HIV solidarity: The empowerment of the HIV community in Poland. *Journal of the European Public Policy Network on HIV and AIDS* 1998; Winter, 1998.

LAMBERT HS. Methods and meanings in anthropological, epidemiological and clinical encounters: the case of sexually transmitted disease and human immunodeficiency virus control and prevention in India. *Tropical Medicine and International Health* 1998; **3**:1002-1010.

LEWANDO-HUNDT G. Abstract of feminism, patriarchy, nationalism and women in 'fin-de-siècle' Slovakia. Nora Weber in Nationalities Papers, 25(1) 1997 pp35-65. *Studies on Women Abstracts* 1998; **16**:522

LEWANDO-HUNDT G. Editorial: Disseminating Research. *Social Sciences in Health* 1998; **4**:209-210.

MACDOWALL W. Major review of HIV testing policy in Europe. *Journal of the European Public Policy Network on HIV and AIDS* 1998;10-11.

MACDOWALL W. AIDS Public Education in Europe. *Sexual Health Programme Newsletter*. London: School of Hygiene and Tropical Medicine 1998.

McCARTNEY P, THOROGOOD M. Secondary prevention of ischaemic heart disease: use of aspirin is still neglected. *British Journal of Cardiology* 1998; **5**:245-246.

McKee CM, BRITTON A. The positive relationship between alcohol and heart disease in eastern Europe: potential physiological mechanisms. *Journal of the Royal Society of Medicine* 1998; **91**:402-407.

McKee CM, BRITTON A, BLACK NA, McPHERSON K, SANDERSON CFB, Bain C. Choosing between randomised and non-randomised studies. In: BLACK NA, Brazier J, Fitzpatrick R, REEVES B, eds. *Health services research methods. A guide to best practice*. London: BMJ Books, 1998;61-72.

Michael RT, Wadsworth J, Feinleib J, Johnson A, M., WELLINGS K. Private sexual behaviour, public opinion, and public health policy related to sexually transmitted diseases: a US - British comparison. *American Journal of Public Health* 1998; **88**:749-754.

MITCHELL K, WELLINGS K. First sexual intercourse: anticipation and communication. Interviews with young people in England. *Journal of Adolescence* 1998; **21**:717-726.

1899



1999

MITCHELL K, WELLINGS K. Ambiguity and ambivalence in sexual encounters: barriers to condom use? *Journal of Epidemiology and Community Health* 1998; 52:678-679.

MITCHELL K, WELLINGS K. *Talking about sexual health*. Health Education Authority, 1998;

NAIDOO B, Chambers J. Using the PREVENT model in Birmingham. *Journal of Epidemiology and Community Health* 1998; 52:683.

STEVENS W, Hillsdon M, THOROGOOD M, McArdle D. Cost-effectiveness of a primary care based physical activity intervention in 45-74 year old men and women: a randomised controlled trial. *British Journal of Sports Medicine* 1998; 32:236-241.

THOROGOOD M. Oral contraceptives and thrombosis. *Current Opinion in Hematology* 1998; 5:350-354.

THOROGOOD M. Coronary heart disease: prevention. In: Sadler MJ, ed. *Encyclopedia of human nutrition*. Academic Press, 1998;464-472.

THOROGOOD M. Stroke and steroid hormonal contraception. *Contraception* 1998; 57:157-167.

THOROGOOD M. Combining diet with physical activity in the treatment of obesity. *Journal of Human Nutrition and Dietetics* 1998; 11:239-242.

THOROGOOD M, ARMSTRONG BG, NICHOLS T, Hollowell J. Mortality in people taking selegiline: observational study. *British Medical Journal* 1998; 317:252-254.

THOROGOOD M, Hannaford PC. Influence of oral contraceptives on the risk of multiple sclerosis. *British Journal of Obstetrics and Gynaecology* 1998; 105:1296-1299.

THOROGOOD M, NAIDOO B, STEVENS W, Hillsdon M, KNERER G, McCARTNEY P, Marks D. *Health Gain News*. Health Gain News 1999;(Abstract).

WELLINGS K, BRANIGAN P. *Evaluation of the study safely campaign*. London: London School of Hygiene and Tropical Medicine, 1998;1-42.

WELLINGS K, MITCHELL K. Risks associated with early sexual activity and fertility. In: Coleman J, Roker D, eds. *Teenage Sexuality, Health, Risk and Education*. Harwood Academic Publishers, 1998;81-100.

Ziebland S, THOROGOOD M, Yudkin P, Jones L, Coulter A. Lack of willpower or lack of where-withal? "Internal" and "external" barriers to changing diet and exercise in a three year follow-up of participants in a health check. *Social Science and Medicine* 1998; 46:461-465.

REPORTS

ALMEDOM AM, Esak L, Gebrehiwot E, Habtemichael B, Isaac G, Saleh MM, Tewolde T, Tesfamichael B. *Hygiene Evaluation in Zobas Maekel and Debub, Eritrea*. A Report prepared for UNICEF and the Eritrean Government Ministry of Health, January 1998.

BECKERLEG S. *Hidden history, secret present: The origins and status of African Palestinians*. A Report prepared for The Nuffield Foundation, November 1998.

BRANIGAN P and WELLINGS K. *Evaluation of the study safely campaign*. Report prepared for the Central Drugs Control Unit, May 1998.

BRITTON A, McKee M, Leon D. *Cardiovascular disease and heavy drinking: A systematic review*. A report prepared for the Department for International Development 1998. LSHTM report No.28.

MITCHELL K, WELLINGS K. *Developing appropriate sexual terminology*. A report prepared for the Health Education Authority April 1998.

MITCHELL K, WELLINGS K. *Talking about sexual health*. A report prepared for the Health Education Authority 1998.

Rifkin SB, LLEWANDO-HUNDT G, Draper AK. *Review of Participatory Approaches in Health Promotion and Health Planning*. A report prepared for Health Education Authority 1998.

THOROGOOD M. *Lessons for Community Nursing from Coronary Heart Health Research*. In: Evidence-based healthcare and the promotion of coronary heart health: a conference report prepared for the West London Health Promotion Agency & Thames Valley University, 1998.

WHO Scientific Group on Cardiovascular Disease and Steroid Hormone contraception, THOROGOOD M et al. *Cardiovascular disease and steroid hormone contraception: Report of a WHO Scientific Group*. WHO Technical Report Series 877. A report prepared for the World Health Organization 1998. (Geneva).

THESIS

KINGMA MMF (Switzerland) *Economic policy: incentive or disincentive for community nurses?* (PhD), 1998.



HEALTH SERVICES RESEARCH UNIT

Colin FB Sanderson
MA MSc PhD HonMFPHM

C Martin McKee
MD MSc FRCP FRCPi FFPHM

Nicholas A Black
MD FFPHM DCH DRCOG

Charles E Normand
BA DPhil HonMFPHM

Jennifer A Roberts
MSc PhD HonMFPHM

Aileen E Clarke
MD MSc MRCP FFPHM

Naomi Fulop
MPH PhD HonMFPHM

Judith Green MSc PhD

Donna L Lamping
BA PhD HonMFPHM

Anne Marie Rafferty
BSc MPhil DPhil RGN DN

Barnaby C Reeves BA DPhil MSc

Azim Lakhani MB ChB MA FFPHM

Ian Bassett MBBS MSc MFPHM

Jennifer Dixon
MB ChB MSc DCH MFPHM

Irene J Higginson
BMedSci BM BS PhD MFPHM

Yi Mien Koh MBBS MSc MFPHM

Leila Lessof
MB BS DMRD MFCM FFPHM

Lucy Moore
MB MCh MSc DCH MFPHM

Norman Melia MB BS MSc MRCP

John P Browne BA PhD

Siobhan Cotter BSc MSc PhD

Renée Danziger BA MSc DPhil

Nicholas Graves MA

Andrew Hutchings BSc MSc CPFA

Rosalind Raine
BSc MSc MBBS MFPHM

Michael Traynor MA PhD RGN HV

Reinhold Gruen MD MSc

Josep Figueras MBBS MSc MPH PhD

Judith Healy DipSocStudies BA MSW PhD

Parul Desai BA MSc PhD

Susan J Langham MSc PhD

Elias Mossialos

David Murray BSc MSc

Rebecca Rosen MD MSc DCH MFPHM

Mark Stott
BA MB BChir MA MRCP DRCOG MSc
MFPHM

Rod S Taylor BSc PhD

Martin Hensher BA MSc

Pauline Allen MA MSc

Vanita Bhavnani BA MSc

Stefan Cano BSc

Laurent Chenet MSc CSCT

Shirley Crawshaw
MA MSc MBBS DCH DRCOG MRCP
MFPHM

Eugenia Cronin BSc

Mary Dooley BSc MPH RN

Hannah-Rose Douglas BSc MA

Julian Elston BSc MSc

Sue Gammerman BA

Senior Lecturer & Head of Unit

Professor

Professor &
Head of Department (from 1.5.98)

Professor &
Head of Department (to 30.4.98)

Reader

Senior Lecturer

Senior Lecturer

Senior Lecturer

Senior Lecturer

Senior Lecturer

Senior Lecturer

Director, National Centre for
Health Outcomes Development

Honorary Senior Lecturer

Honorary Senior Lecturer

Honorary Senior Lecturer

Honorary Senior Lecturer

Honorary Senior Lecturer

Information Officer

Lecturer

Lecturer

Lecturer

Lecturer

Lecturer

Distance Learning Course Manager

Honorary Senior Lecturer

Honorary Lecturer

Honorary Lecturer

Honorary Lecturer

Honorary Lecturer

Honorary Lecturer

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Research Fellow

Operational Researcher

Public Health Physician

Public Health Physician

Economist

Economist

Public Health Physician

*Health Services Management
& Policy*

Sociologist

Psychologist

Nursing Policy Analyst

Epidemiologist

Public Health Physician

Public Health Physician

Public Health Physician

Public Health Physician

Public Health Physician

Public Health Physician

Public Health Physician

Psychologist

Pharmacist

Political Scientist

Economist

Statistician

Public Health Physician

Nursing Policy Analyst

Public Health Physician

Public Health Physician

WHO

Public Health Physician

Economist

Economist

Lawyer/Economist

Social Psychologist

Health Psychologist

Demographer/Physician

Public Health Physician

Economist

Sociologist

Economist

Public Health Specialist

Public Health Specialist

FUNDING BODIES

Audit Commission

British Association of Plastic Surgeons

British Telecom plc

Bromley Health Authority

Commission of the European Communities

Department of the Environment

Department for International Development (DFID)

Department of Health

Economic and Social Research Council

European Investment Bank

Government of Hungary

Government of Norway

Government of Spain

Know-How Fund

Medical Research Council

NHS Executive

Nuffield Trust

Public Health Laboratory Service

Royal College of Surgeons of England

The Wellcome Trust

World Bank

World Health Organization

UNICEF

1899



1999

Annette King BSc	Research Fellow	<i>Sociologist</i>
Ian Pell MA	Research Fellow	<i>Systems Analyst</i>
Rosalind Plowman BA MSc	Research Fellow	<i>Nurse</i>
Sara Schroter BA MSc	Research Fellow	<i>Health Psychologist</i>
Warren Stevens BA MSc	Research Fellow	<i>Economist</i>
Vincent O'Brien BA	Business Support Officer	
Debby Stanley	Unit Secretary	
Karen Alford	Secretary	
Elena Gregoryeva	Secretary	
Kate Hutton BSc	Course Secretary	
Joanne Lucas BSc MSc	Course Secretary	
Vivien Mazur BA BSc	Secretary	
Jenny Stanley	Secretary	
Paula Stanley	Course Secretary	
Susan van Rooyen BA	Visiting Research Fellow	<i>British Medical Journal</i>
Yong-Ik Kim	Visiting Research Fellow	<i>Seoul National University, Korea</i>

The Unit aims to provide rigorous evidence to be used to improve the effectiveness, efficiency, equity and humanity of health care, largely through better decision-making, service delivery and organization. Our approach is multidisciplinary, uses quantitative and qualitative methods, and involves the range of organizational levels from direct providers of care to international policy-makers. It is underpinned by methodological development and work on the dissemination of research and new technologies. The context is mainly middle- and high-income countries.

Close contacts with decision-makers are essential, and many academic staff have joint or honorary appointments with the NHS. Senior staff contribute to expert advisory committees at regional, national and international levels, through the Royal Colleges, Department of Health and other national bodies, WHO, the European Union and the World Bank. Most of this advice relates to determining research priorities or to strengthening the influence of research on policy.

HEALTH OUTCOMES

Methodological studies continue on the development and validation of instruments for assessing health outcomes. With earlier work now completed on patient-assessed measures of outcome in prostatectomy, menorrhagia, maternity services, neurological disability, chronic venous diseases and ocular disease, progress is now being made on measures of outcome in coronary revascularization, plastic surgery, multiple sclerosis and sino-nasal surgery. At a more macro level, the shortage of indicators of the quality of ambulatory care has led to the development of a set of 'Ambulatory-Care-Sensitive' conditions. The hypothesis is that low admission rates for this set of conditions is indicative of good quality ambulatory care, and vice versa.

The National Centre for Health Outcomes Development (formerly the Central Health Outcomes Unit) moved from the Department of Health and is now based jointly at the School and the University of Oxford. It is a key source of

information on health and health outcomes at many levels for the NHS in England and for the Government. Its work includes: analysis, publication, dissemination and evaluation of existing indicators and proxy measures of health outcomes; development and evaluation of new indicators; development of an electronic Clinical and Health Outcomes Knowledge Base; commissioning developmental projects to fill in key gaps; and promotion of the use of such knowledge for planning, management and monitoring interventions to improve health and for policy development. In this last context, the Centre is funding a project based jointly in the Unit and at Southampton University to develop a microsimulation model. This will support the evaluation of policy options in the field of services for coronary heart disease, and contribute to the next round of the NHS National Service Framework.

EFFECTIVENESS, EFFICIENCY AND EQUITY

Evaluation studies continue to be a major activity in the Unit. Current work includes: the evaluation of the costs and benefits of dialysis in the elderly; the cost-effectiveness of primary care in the prevention of heart disease; decision-making in prophylactic oophorectomy; outcomes in surgery for stress incontinence; and the diagnosis and management of vestibular dysfunction. Studies of equity and access address treatment for end-stage renal failure in Romania, the use of health care in Chile, and the effect of gender on use of diagnostic and therapeutic interventions in England.

The Royal College of Surgeons' Clinical Effectiveness Unit (CEU) was established in 1998 as a collaboration between the College and the School. Its primary focus is the collection of high quality data describing surgical treatment and health outcomes. These data are used for clinical audit, and for developing prognostic indicators that can be used *inter alia* as a basis for case-mix adjustment when making inter-hospital comparisons. The CEU hopes to play a major role in the work of the National Institute of Clinical Excellence.



RESEARCH EVIDENCE AND CLINICAL PRACTICE

Whilst actively developing critiques of evidence-based medicine, staff have undertaken systematic reviews of: the effectiveness of groin hernia surgery; consensus development methods for creating clinical guidelines; randomized versus non-randomized designs for health care evaluation; cardiovascular disease and heavy drinking; outcomes in intensive care; and models of care for A&E. Other studies have included a randomized trial of blinding and unmasking in peer review of manuscripts and the development of a national consensus on priorities for intensive care research in the UK.

The Centre for Policy in Nursing Research, a joint initiative with the Royal College of Nursing (RCN), provides a co-ordinated strategy for research in nursing, midwifery and health visiting and disseminates 'good' research practice. Current and future work includes setting research priorities in conjunction with the RCN and other key stakeholders, a bibliometric analysis of nursing research activity, the dissemination of nursing research by policy-makers and practitioners, and capacity-building approaches by research funding and commissioning organisations. The Centre is also involved in research on nursing roles and a cross-national study of hospital restructuring and patient outcomes.

SERVICE DELIVERY AND ORGANIZATION OF HEALTH CARE

Studies include: an evaluation of *The Health of the Nation*; an evaluation of partnerships for health strategy in the new NHS; a comparison of integrated and non-integrated trusts; managed markets; the contracting process; inter-agency working in injury reduction; and the management of epidemiological emergencies that cross borders in Europe. These studies are part of a broader agenda of research into service delivery and organization which will be developed further in the future.

ECONOMICS OF INFECTIOUS DISEASE

Completed studies include the socio-economic aspects of salmonella, intervention strategies for hepatitis B and C, hospital-acquired infection and *E. coli* O157. Further studies are well advanced in intestinal infectious disease, lower respiratory tract infections and syphilis prevention. Economic aspects of surveillance and the impact of contractual arrangements on the public health function are also being addressed. Ongoing work includes studies of the risks of infectious disease in managed markets, hepatitis C in haemophilia patients, and interventions to delay the onset of liver diseases associated with hepatitis C. The Collaborative Centre for Economics of Infectious Diseases, a joint initiative with the School's Department of Infectious and Tropical Diseases and the Public Health Laboratory Service and several national and international organizations, was established during 1998.

CENTRAL AND EASTERN EUROPE

The Unit has a major focus on health and health care in Eastern Europe, through the European Centre on Health of Societies in Transition (ECOHOST), a WHO Collaborating Centre created jointly with the Department of Epidemiology and Population Health. ECOHOST is undertaking a wide range of studies across the region encompassing the health consequences of German reunification, studies of nutrition and smoking patterns in, among others, the Baltic republics, Russia and Bulgaria, trends in mortality in the former Soviet Union, and birth outcomes and injury policy in several countries undergoing transition. ECOHOST also hosts part of the European Observatory on Health Care Systems, jointly with the WHO, the World Bank, the European Investment Bank, the London School of Economics and the Governments of Spain and Norway. This is producing a series of detailed overviews of health care systems in Europe and analytic studies of issues such as the future role of the hospital.

RESEARCH DEGREE STUDENTS

Oscar Arteaga (Chile). Relationships between public and private health care in Chile.

Dina Balabanova (Bulgaria). Financing the health care system in Bulgaria – models for development.

Jane Brooks (UK). University education for nurses.

Elizabeth Butters (UK). Testing outcome measures in the routine practice of HIV/AIDS community palliative care services.

Arthur SC Chern (Singapore). The market for physicians in Singapore.

Lesley Duff (UK). Measuring satisfaction with maternity services for women from ethnic minorities.

Steven Farmer (USA). A comparative international study of interventions during the last year of life for elderly patients with advanced disease.

Alison Frater (UK). Reducing the burden of breast cancer in England and Wales.

Peter Gaal (Hungary). Financial incentives, physician behaviour and health care reforms in Hungary.

Cesar Gattini (Chile). Equity and efficiency in the provision of care in decentralized public health services.

Richard Hatchett (UK). Nursing history.

Duangtip Hongsamoot (Thailand). Inspection: a vehicle to improve use of medicines in private pharmacies.

Jeremy Hobart (UK). Measurement of neuro-rehabilitation outcomes.

Gabor Hoffer (Hungary). Priority setting for public health services in Hungary.

Sang-Hyo Kim (S.Korea). Health services in Korea.

Susan Law (UK). Setting priorities in the NHS.

Richard Lewis (UK). Reorganization of primary care in London.

Diane Morin (Canada). Comprehensive geriatric assessment.

Ellen Nolte (Germany). Explaining the health divide in east and west Europe: the German situation.

Catherine Pope (UK). The practice of surgery.

Aziz Rahman (Bangladesh). Evaluation of primary care development in Bangladesh.

Mala Rao (UK). Development of a measure of quality of care for older people in general practice.

Balazs Rekassy (Hungary). Reforming Hungarian primary health care.

Magda Rosenmoller (Germany). Critical success factors of technical assistance projects in the health sector in central and eastern Europe.



Franco Sassi (Italy). Economic appraisal and technology diffusion.

Serdar Savas (Turkey). Contracting in health care.

Andreea Steriu (Romania). Management of end stage renal failure in Romania.

Ruth Stern (UK). Can communities be effective partners?

Rosanna Tarricone (Italy). Economic evaluation of treatment for depression.

Roqayyah Taqi (Kuwait). Improving asthma medical documentation for paediatric patients presenting to emergency room in Kuwaiti hospitals.

Zsuzsa Varvasovszky (Hungary). Alcohol policy and prevention in Hungary.

Susan Volker (UK). Palliative care.

PUBLICATIONS

- Abi-Aad G, RAINE R. Planning for action. *Nursing Times* 1998; **94**:46
- ALLEN P. Socio-legal analysis of the NHS internal market. In: Ferguson B, Posnett J, Sheldon T, eds. *Concentration and choice in health care markets*. London: Churchill Livingstone, 1997.
- Balabanova D, Bobak M, McKEE CM. Patterns of smoking in Bulgaria. *Tobacco Control* 1998; **7**:383-385.
- Bartlett W, ROBERTS J, Le Grand J, eds. *A revolution in social policy: Quasi-market reforms in the 1990s*. Bristol: Policy Press, 1998.
- BLACK NA. Impact of surgery for stress incontinence on morbidity. Authors' reply. *British Medical Journal* 1998; **317**:144
- BLACK NA. Potential biases were not taken into account in study of waiting times. *British Medical Journal* 1998; **316**:149
- BLACK NA. The new NHS: commentaries on the white paper. Encouraging responsibility: different paths to accountability. Clinical governance: fine words or action? *British Medical Journal* 1998; **339**:1479-1480.
- BLACK NA. Assessing the appropriateness of medical care. *New England Journal of Medicine* 1998; **339**:1479-1480.
- BLACK NA. R&D has always had NHS funding but now it's more democratic. *Health Services Journal* 1998; **9** April, p18.
- BLACK NA. Why we need more observational studies to evaluate the effectiveness of health care. In: Abel U, Koch A, eds. *Non-randomized comparative clinical studies*. Dusseldorf: Symposium Publishing, 1998.
- BLACK NA, BOWLING A, GRIFFITHS JM, Pope C, Abel PD. Impact of surgery for stress incontinence on the social lives of women. *British Journal of Obstetrics and Gynaecology* 1998; **105**:605-612.
- BLACK NA, Brazier J, Fitzpatrick R, REEVES B eds. *Health services research methods: a guide to best practice*. London: BMJ Books, 1998.
- BLACK NA, GRIFFITHS JM, POPE CJ, BOWLING A, Abel P. Impact of surgery for stress incontinence on morbidity: cohort study. *British Medical Journal* 1998; **315**:1493-1498.
- BLACK NA, JOHNSTON A. Volume and outcome in hospital care: evidence, explanations and implications. In: Stewart R, ed. *Management of healthcare*. Aldershot: Ashgate, 1998.
- BLACK NA, MURPHY M, LAMPING DL, McKEE CM, SANDERSON CFB, Askham J, Marteau TM. Consensus development methods for creating clinical guidelines. In: BLACK NA, Brazier J, Fitzpatrick R, REEVES B, eds. *Health services research methods: a guide to best practice*. London: BMJ Books, 1998;199-211.
- BLACK NA, van Rooyen S, Godlee F, Smith R, Evans S. What makes a good reviewer and a good review for a general medical journal? *Journal of the American Medical Association* 1998; **280**:231-233.
- BRITTON A, McKEE CM, BLACK NA, McPherson K, SANDERSON CFB, Bain C. Choosing between randomised and non-randomised studies: a systematic review. *Health Technology Assessment* 1998; **2**:(13):1-124.
- Cheek CM, BLACK NA, Devlin HB, Kingsnorth AN, Taylor RS, Watkin DFL. Groin hernia surgery: a systematic review. *Annals of the Royal College of Surgeons of England* 1998; **80**:suppl.1.
- CHENET L, LEON DA, McKEE CM, Vassin S. Deaths from alcohol and violence in Moscow: socio-economic determinants. *European Journal of Population* 1998; **14**:19-37.
- CHENET L, McKEE CM. Down the road to deregulation. *Alcohol and Alcoholism* 1998; **33**:337-340.
- CHENET L, McKEE CM, LEON DA, Shkolnikov VM, Vassin S. Alcohol and cardiovascular mortality in Moscow: new evidence of a causal association. *Journal of Epidemiology and Community Health* 1998; **52**:772-774.
- CLARKE A. Public health at the crossroads. *Epidemiology and Infection* 1998; **120**:112-113.
- COTTER S. Which way to formulary drug selection? *Pharmaceutical Journal* 1998; **260**:752
- CRONIN E, NORMAND CEM, Henthorn JS, Hickman M, Davies SC. Costing model for neonatal screening and diagnosis of haemoglobinopathies. *Archives of Disease in Childhood Fetal and Neonatal Edition* 1998; **79**:F161-F167.
- DANZIGER R. HIV testing and HIV prevention in Sweden. *British Medical Journal* 1998; **316**:293-296.
- DANZIGER R. HIV testing for HIV prevention: a comparative analysis of policies in Britain, Hungary and Sweden. *AIDS Care* 1998; **10**:563-570.
- Dixon J, SANDERSON CFB, Elliott P, Walls PH, Jones J, Petticrew MP. Assessment of the reproducibility of clinical coding in routinely collected hospital activity data: a study in two hospitals. *Journal of Public Health Medicine* 1998; **20**:63-69.
- DOWNES SH, BLACK NA. The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. *Journal of Epidemiology and Community Health* 1998; **52**:377-384.
- Emberton M, REEVES BC. From surgical audit to clinical effectiveness. *Annals of the Royal College of Surgeons of England* 1998; **80**:265-268.
- Fletcher AE, Bulpitt CJ, Tuomilehto J, BROWNE JP, Bossini A, Kawecka-Jaszcz K, Kivinen P, O'Brien E, Staessen J, Thijs L, Vanska O, Vanhanen H. Quality of life of elderly patients with isolated systolic hypertension: baseline data from the Syst-Eur Trial Investigators. *Journal of Hypertension* 1998; **16**:1117-1124.
- Free C, McKEE CM. Meeting the needs of black and minority ethnic groups. *British Medical Journal* 1998; **316**:380.
- GREEN J. Commentary: grounded theory and the constant comparative method. *British Medical Journal* 1998; **316**:1064-1065.
- GREEN J. Bodies in protest: Environmental illness and the struggle over medical knowledge. *American Journal of Sociology* 1998; **104**:281-282.
- GREEN J, Britten N. Qualitative research and evidence based medicine. *British Medical Journal* 1998; **316**:1230-1232.
- GREEN J, Hart L. Childrens views of accident risks and prevention: a qualitative study. *Injury Prevention* 1998; **4**:14-21.
- GREEN J, Thorogood N. *Analysing health policy: sociological approaches*. London: Longman, 1998.
- GRIFFITHS JM, BLACK NA, Pope C, STANLEY J, BOWLING A, Abel PD. What determines the choice of procedure in stress incontinence surgery? The use of multilevel modeling. *International Journal of Technology Assessment in Health Care* 1998; **14**:431-445.
- Henderson NJ, Crawford PJM, REEVES BC. Randomised clinical trial of calcium alginate and cotton swabs in the control of blood loss following the extraction of deciduous teeth under general anaesthetic. *British Dental Journal* 1998; **184**:187-190.
- HUTCHINGS A, GRIFFITHS JM, BLACK NA. Surgery for stress incontinence: factors associated with a successful outcome. *British Journal of Urology* 1998; **82**:634-641.
- Imamura K, BLACK NA. Outcomes of total hip replacement in Japan and England. Comparison of two retrospective cohorts. *International Journal of Technology Assessment in Health Care* 1998; **14**:762-773.
- Imamura K, BLACK NA. Does comorbidity affect the outcome of surgery? Total hip replacement in the UK and Japan. *International Journal for Quality in Health Care* 1998; **10**:113-123.
- Kadir I, Izzat MB, Birdi I, Wilde P, REEVES BC, Walsh C, Bryan AJ, Angelini GD. Hemodynamic performance of the 21mm St Jude BioImplant prosthesis using dobutamine doppler echocardiography. *American Journal of Cardiology* 1998; **81**:599-603.
- Kanavos P, McKEE CM. Macroeconomic constraints and health challenges facing European health systems. In: Saltman R, Figueras J, Sakellariades C, eds. *Critical challenges for health care reform in Europe*. Buckingham: Open University Press, 1998;23-52.
- Kwan C, Sylva KD, REEVES BC. Day care quality and child development in Singapore. *Early Child Development and Care* 1998; **44**:69-77.
- LAMPING DL, Constantinovici N, Brown E, Harris S, Roderick P, Henderson L, GRUEN R, Victor C, NORMAND CEM, Steriu A. Clinical Outcomes, Quality of Life (QoL) and costs in elderly dialysis patients: results from the North Thames Dialysis Study (NTDS). *Journal of the American Society of Nephrology* 1998; **9**:217.
- LAMPING DL, ROWE PA, BLACK NA, Lessof L. Development and validation of an audit instrument: the prostate outcomes questionnaire. *British Journal of Urology* 1998; **82**:49-62.
- LAMPING DL, ROWE PA, CLARKE AE, BLACK NA, Lessof L. Development and validation of the menorrhagia outcomes questionnaire. *British Journal of Obstetrics and Gynaecology* 1998; **105**:766-779.
- Langham S, Soljak M, Keogh B, Gill M, Thorogood M, NORMAND CEM. Cardiac waiting game: are patients prioritised according to clinical need? *Health Services Management Research* 1998; **10**:216-224.
- Leydon GM, Lawrenson R, Meakin R, ROBERTS JA. Cost of alternative models of care for primary care patients attending accident and emergency departments: a systematic review. *Journal of Accident and Emergency Medicine* 1998; **15**:77-83.
- McKee CM. Road to Samarkand: Implementing health care reform in Central Asia. *Eurohealth* 1998; **4**:72-74.
- McKee CM. Allocating the WHO's resources rationally. *British Medical Journal* 1998; **316**:1403-1404.
- McKee CM. Putting flesh on the bones of epidemiology. *Journal of Public Health Medicine* 1998; **20**:235-236.
- McKee CM. Price of anti-smoking support? *Practice Nurse* 1998; **15**:189-193.
- McKee CM. All change at WHO? A personal perspective. *Eurohealth* 1998; **4**:22-23.
- McKee CM. An agenda for public health research in Europe. *European Journal of Public Health* 1998; **8**:3-7.
- McKee CM. Debating public health. *European Journal of Public Health* 1998; **8**:271.
- McKee CM. Does the WHO have a role in Europe? *British Medical Journal* 1998; **316**:1402-1403.
- McKee CM. European added value in public health research. In: Kohler L, Barnard K, eds. *EU and Public Health*. Goteborg: Nordic School of Public Health, 1998;27-40.
- McKee CM. How the cardiovascular burden of illness is changing in eastern Europe. *Evidence-based Cardiovascular Medicine* 1998;39-41.
- McKee CM, Aiken L, RAFFERTY AM, Sochalski J. Organisational change and quality of health care: an evolving international agenda. *Quality in Health Care* 1998; **7**:37-41.
- McKee CM, Bobak M, Rose R, Shkolnikov VM, CHENET L, LEON DA. Patterns of smoking in Russia. *Tobacco Control* 1998; **7**:22-26.
- McKee CM, Bojan F. Reforming public health services. In: Saltman R, Figueras J, Sakellariades C, eds. *Critical challenges for health care reform in Europe*. Buckingham: Open University Press, 1998;135-154.
- McKee CM, BRITTON A. The positive relationship between alcohol and heart disease in eastern Europe: potential physiological mechanisms. *Journal of the Royal Society of Medicine* 1998; **91**:402-407.
- McKee CM, BRITTON A. Alcohol and heart disease in Russia: resolving the paradox. *Eurohealth* 1998; **4**:64-65.
- McKee CM, BRITTON A, BLACK NA, McPHERSON K, SANDERSON CFB, Bain C. Choosing between randomised and non-randomised studies. In: BLACK NA, Brazier J, Fitzpatrick R, REEVES B, eds. *Health Services Research Methods A Guide to Best Practice*. London: BMJ Books, 1998;61-72.
- McKee CM, Figueras J, CHENET L. Health sector reform in the former Soviet Republics of Central Asia. *International Journal of Health Planning and Management* 1998; **13**:131-147.
- McKee CM, LEON DA. Alcohol and socio-economic stress. In: *World Health Report 1998*. Geneva: World Health Organization, 1998;
- McKee CM, Mossialos E. Impact of managed care on clinical research. *Pharmacoeconomics* 1998; **14**:19-25.
- McKee CM, SANDERSON CFB, CHENET L, Vassin S, Shkolnikov VM. Seasonal variation in mortality in Moscow. *Journal of Public Health Medicine* 1998; **20**:268-274.

1899



1999

- McKee CM, SETHI D. Globalisation and health: why worry? *Public Health Physician* 1998; 9:7-8.
- McKee CM, Sheldon T. Measuring performance in the NHS. *British Medical Journal* 1998; 316:322.
- Mossialos E, McKee CM. Interpreting the 1997 Amsterdam Treaty. *European Health Reform* 1998; 7:8-10.
- Mossialos E, McKee CM. Amsterdam Treaty and the future of European health services. *Journal of Health Services Research and Policy* 1998; 3:65-67.
- Mossialos E, McKee CM, RAFFERTY AM, Olsen N. A new chapter in public health: Britain's changing relationship with the European Union. *Journal of Epidemiology and Community Health* 1998; 52:606-607.
- Mugford M, Howard S, O'Neill C, Dunn A, Zelisko M, NORMAND CEM, Malek M, Hey E, Halliday H, Tarnow-Mordi W. Limited comparability of classifications of levels of neonatal care in UK units. *Archives of Disease in Childhood Fetal and Neonatal Edition* 1998; 78:F179-F184.
- MURPHY MK, SANDERSON CFB, BLACK NA, Askham J, LAMPING DL, Marteau TM, McKEE CM. Consensus development methods, and their use in clinical guideline development. *Health Technology Assessment* 1998; 2i, 1-iv, 88.
- Murphy MFG, STEVENS W, Green ES, Allison P, Smith D. Universal leukocyte depletion of blood components. *Infusion Therapy and Transfusion Medicine* 1998; 25:305-311.
- NORMAND CEM. Ageing and care of the elderly in a mixed economy of care: Challenges for nursing and nursing research. *Nursing Times Research* 1998; 3:245-246.
- NORMAND CEM. Commentary: ten popular health economic fallacies. *Journal of Public Health Medicine* 1998; 20:129-132.
- Odom D, McKee CM. European Journal of Public Health from infancy to young adulthood. *European Journal of Public Health* 1998; 8:102-105.
- RAFFERTY AM. Pride and prejudice: Mona Grey history of nursing inaugural lecture, University of Ulster. *Nursing Standard* 1998; 12:16.
- RAFFERTY AM. Exploring a route to leadership in nursing research. *Nursing Times Research* 1998; 3:313.
- RAFFERTY AM. Writing, researching and reflexivity in nursing history. *Nurse Researcher* 1998; 5:5-16.
- RAINE R. Evidence based policy: rhetoric and reality. *Journal of Health Services Research and Policy* 1998; 3:251-253.
- Redfern S, STEVENS W. Nursing development units: their structure and orientation. *Journal of Clinical Nursing* 1998; 7:218-226.
- REEVES BC, MacLehose RM, Harvey IM, Sheldon TA, Russell IT, Black AMS. Comparisons of effect sizes derived from randomised and non-randomised studies. In: BLACK NA, Brazier J, Fitzpatrick R, REEVES B, eds. *Health services research methods: a guide to best practice*. London: BMJ Books, 1998;73-85.
- Roberts TE, Mugford M, NORMAND CEM, ELBOURNE D, Field D, Grant A, Harris C, Johnson A, Wrotchford A. Economic evaluation and randomised controlled trial of extracorporeal membrane oxygenation: UK collaborative trial. *British Medical Journal* 1998; 317:911-916.
- ROBINSON M, THOMPSON E, BLACK NA. Why is evaluation of the cost effectiveness of audit so difficult? The example of thrombolysis for suspected acute myocardial infarction. *Quality in Health Care* 1998; 7:19-26.
- ROBINSON M, THOMPSON EM, BLACK NA. Model for estimating the cost-utility for clinical audit. The example of thrombolysis for suspected acute myocardial infarction. *International Journal of Technology Assessment in Health Care* 1998; 14:161-171.
- SANDERS D, Kravitz J, LEWIN S, McKEE CM. Zimbabwe's hospital referral system: does it work? *Health Policy and Planning* 1998; 13:359-370.
- SANDERSON CFB, McKEE CM. Commentary: how robust are rankings? The implications of confidence intervals. *British Medical Journal* 1998; 316:1705.
- Sochalski J, Aiken LH, RAFFERTY AM, Shamian J, Muller-Mundt G, Hunt JM, Giovannetti P, Clarke HF. Building multinational research: Nurses find one design for many independent replications. *Reflections* 1998; Third Quarter:20-23.
- Stevens A, Milne R, BLACK NA. Researching health services. In: BLACK NA, Brazier J, Fitzpatrick R, REEVES B, eds. *Health services research methods: a guide to best practice*. London: BMJ Books, 1998.
- STEVENS W, Hillsdon M, THOROGOOD M, McArdle D. Cost-effectiveness of a primary care based physical activity intervention in 45-74 year old men and women: a randomised controlled trial. *British Journal of Sports Medicine* 1998; 32:236-241.
- TRAYNOR M. Survey looks at problems in university nursing research. *Nursing Times* 1998; 94:66-67.
- TRAYNOR M, RAFFERTY AM. Academic bandwagon. *Nursing Standard* 1998; 12:16.
- TRAYNOR M, RAFFERTY AM. Context, convergence and contingency. *Journal of Health Services Research and Policy* 1998; 3:195-196.
- van Rooyen S, Godlee F, Evans S, Smith R, BLACK NA. Effect of blinding and unmasking on the quality of peer review: a randomised trial. *Journal of the American Medical Association* 1998; 280:234-237.
- Varvasovszky Z, McKee CM. Analysis of alcohol policy in Hungary. Who is in charge? *Addiction* 1998; 93:1815-1827.
- Walberg P, McKEE CM, Shkolnikov VM, CHENET L, LEON DA. Economic change, crime, and mortality crisis in Russia: regional analysis. *British Medical Journal* 1998; 317:312-318.
- Weil O, McKEE CM. Setting priorities for health in Europe: are we speaking the same language? *European Journal of Public Health* 1998; 8:256-258.

REPORTS

- BRITTON A, McKEE CM, Leon DA. *Cardiovascular disease and heavy drinking: a systematic review*. London: PHP Publishing, 1998.
- DANZIGER R. *An epidemic like any other? HIV prevention in an age of liberal democracy*. Final Report to the Economic and Social Research Council, September 1998.
- Duff La, LAMPING DL, Ahmed LB. *Development of an interview questionnaire to measure satisfaction with maternity care in women from the Bangladeshi community in England*. Final report to North Thames Research and Development Programme, February, 1998.
- ECOHST/LSHTM. *Childhood Injuries: A priority area for the transition countries of Central and Eastern Europe and the Newly Independent States*. Final Report September 1998.
- GREEN J. *Evidence and policy in accident alliances*. Final report for NHSE North Thames Organisation and Management Group, June 1998.
- FULOP N et al. *The Health of the Nation: a policy assessed*. London: The Stationery Office, 1998.
- FULOP N, Edwards N, KING A, Street A. *Organisational factors and quality of health care: a comparison of integrated and non-integrated acute and community health services*. Interim report to North Thames Regional Office, Organisational and Management R&D Group, October 1998.
- FULOP N, ELSTON J, HENSHER M, McKEE M, Walters R. *An evaluation of the implementation of a national public health strategy: lessons for our healthier nation*. Preliminary report to the Department of Health, March 1998.
- LAMPING DL, Henderson L, Constantinovic N, Harris S, GRUEN R, Roderick P, Brown E, Victor C, NORMAND C, Steriu A. *The North Thames Dialysis Study (NTDS): The costs and benefits of dialysis in the elderly*. Final report to North Thames Research and Development Programme, April 1998.
- LAMPING DL, SCHROTER S for the VEINES Group. *Measuring quality of life and symptoms in chronic venous disorders of the leg: Development and psychometric evaluation of the VEINES-QOL/VEINES-SYM questionnaire*. Final report, December 1998.
- PLOWMAN RM, GRAVES N, Griffin M, ROBERTS JA, Swan A, Cookson BC, Taylor L. *The socio-economic burden of hospital acquired infection*. Final report to the Department of Health, London, 1997.
- REEVES BC. *Report to the British Council, India Unit, ASAG, DATS*. Project for the development of Community Eye Health in India, funded by the Overseas Development Agency of the UK. International Centre for Eye Health, London, 1998.
- TRAYNOR M, RAFFERTY AM. *Nursing research and the higher education context a second working paper*. Centre for Policy in Nursing Research, London School of Hygiene & Tropical Medicine, March 1998.

THESIS

- VARVASOVSKY Z. (Hungary) *Alcohol policy and prevention in Hungary*. (PhD). 1998.



HOW TO BECOME A RESEARCH STUDENT AT THE SCHOOL

The London School of Hygiene & Tropical Medicine provides training in research at three levels: as a component of the taught MSc courses, at the post-doctoral level to Research Fellows, and most particularly to doctoral students doing their PhD or DrPH research based at the School. This brief account is for readers of the Research Report who are particularly interested in one of the areas of work described and who may wish to pursue research training to doctoral level at the School. There are both formal and informal aspects of exploring this further. The formal aspects concern possession of the entrance requirements, having a source of funding, and completing a formal application to the School. The Deputy Registrar (*e-mail: registry@lshtm.ac.uk*) at the School can provide information on these matters and an application form. The address, fax and telephone numbers are given inside the front cover of this

Report. If you have the appropriate qualifications and a deep interest in a specific area of research, when submitting your official application it is also good to write informally, with your research proposal, to the appropriate Unit Head or staff member, to explore whether the School is the best base for your research and whether an appropriate supervisor is both available and has a vacancy.

It is a requirement for students to spend a minimum of nine months at the School, three of which must be at the beginning of the period of study and three at the end. In the case of laboratory work, it is common for the whole PhD to be carried out at the School. Many students in epidemiological and other subjects, however, do the field collection of data in the country relevant to their project.

HOW TO BECOME A POST-DOCTORAL RESEARCH FELLOW

For those with doctoral qualifications, the varied Units within the School provide an excellent base for post-doctoral study in the many areas related to public health; the range of expertise and active seminar programmes provide a stimulating and broadening research atmosphere. Research Fellow posts may arise on grants held by staff members. These are advertised in the appropriate journals. Other post-doctoral researchers may

gain fellowships from their governments or other funding agencies. There is no single formal route to post-doctoral work; many contacts begin with scientific correspondence concerning research results or at a seminar or scientific meeting. Those interested should write initially to the Head or an appropriate member of the Unit doing the research of particular interest.

BUILDING HEALTH RESEARCH CAPACITY GLOBALLY

The needs of the world for good health research are very great, and, especially in developing countries, there is a lack of institutional capacity, funds and trained research workers. While the research capacity and productivity of the London School of Hygiene & Tropical Medicine is substantial, it is minute in relation to current global needs for health research. The School is therefore particularly concerned to help build research capacity throughout the world, particularly in developing countries, and more recently in Central Europe. It does this in several ways. The most important is by training research workers through its MSc, doctoral and post-doctoral programmes. Its alumni now number many thousands and occupy key positions in organizations involved in health research throughout the world.

Traditionally, the School has felt free to collaborate with sister institutions worldwide and has not needed to have formal agreements on this. Scientists with common interests, or former students, all provide a necessary and sufficient basis for research collaboration and for helping to build research

capacity. But some overseas institutions, for reasons that may be bureaucratic or pragmatic and to facilitate flows of funds, need a more formal agreement with the School and this has been entered into with several institutions. The School increasingly finds itself involved in formal links to consolidate more spontaneous and informal contacts.

School staff have also played key roles in the increasing global moves to foster indigenous health research capacity in developing countries. Staff have been members of the research strengthening group of the WHO/UNDP/IBRD Special Programme for Research and Training in Tropical Diseases; and have played active roles in the Commission on Health Research for Development and its successors, in the work of UNICEF and of the World Bank to build research capacity and with many international organizations to help countries solve their own health research problems. The School is committed to this process of building research capacity and welcomes suggestions on how it can assist.

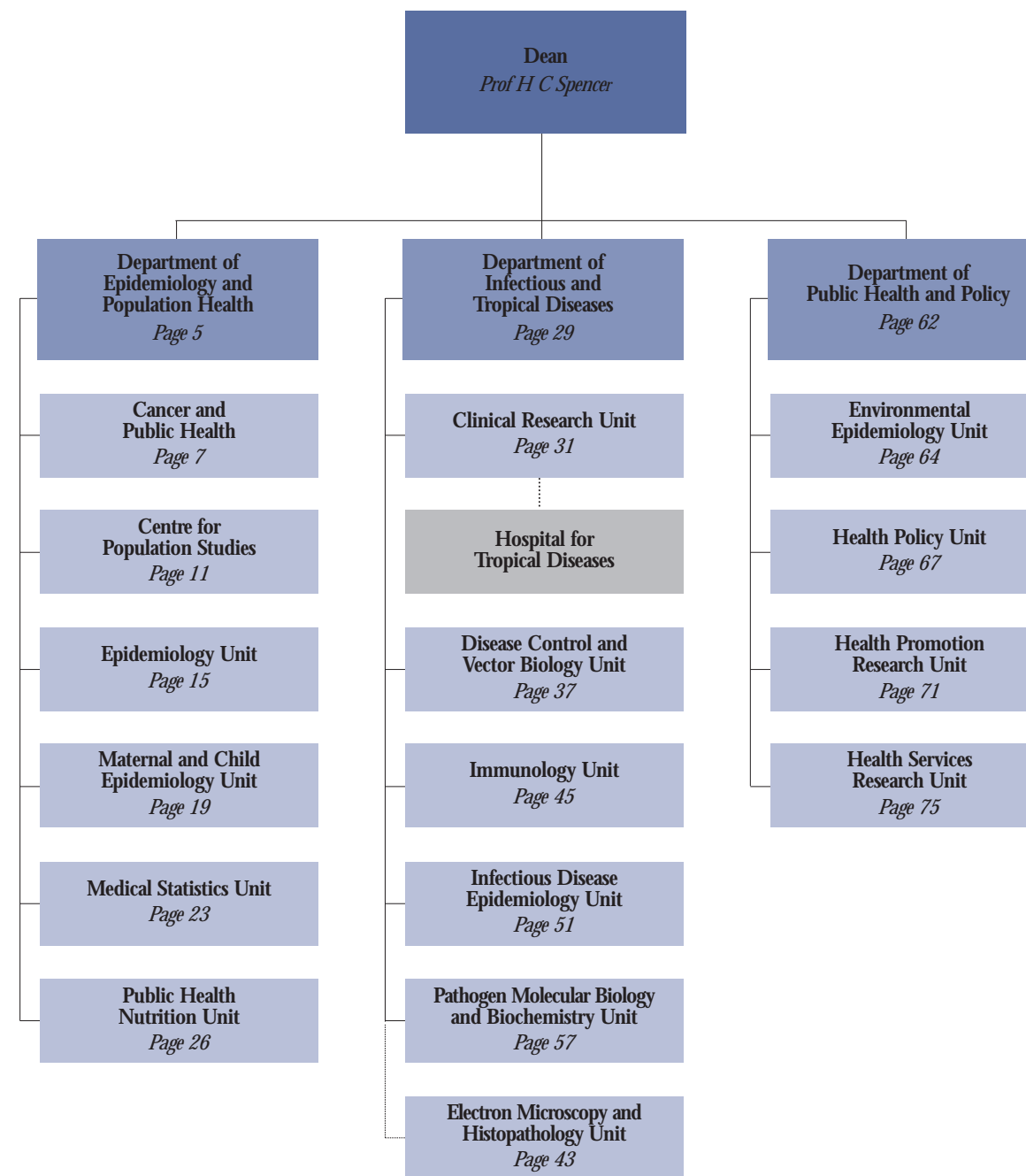


INDEXES

The School's approach to research is both multi-disciplinary and international. Moreover, there are several topics of such wide public health importance that they are studied by several Units. These pictorial indexes are intended to help the reader to identify Units interested in a particular topic, discipline or country, where that is not apparent from the Unit's

title. For example, a reader interested in demography would first look at the report from the Centre for Population Studies and then perhaps look at demography in the *Outline Index to Disciplines* and under appropriate topics in the *Outline Index to Research Interests of Units*.

ORGANIZATION



OUTLINE INDEX TO REGIONS

This table shows the main regions of the world (using the World Bank categories) with which each Unit is currently involved.

UNITS		Established Market Economies	Middle Eastern Crescent	Primary Socialist Economies	India	China	Other Asia and Islands	Latin America and the Caribbean	Sub-Saharan Africa
EPIDEMIOLOGY AND POPULATION HEALTH	Cancer and Public Health	●	●			●	●		
	Centre for Population Studies	●				●	●	●	
	Epidemiology	●	●	●					
	Maternal and Child Epidemiology	●	●			●			
	Medical Statistics	●					●		
	Public Health Nutrition	●	●				●	●	●
INFECTIOUS AND TROPICAL DISEASES	Clinical Research			●	●	●	●	●	
	Disease Control and Vector Biology	●	●	●	●	●	●	●	●
	Electron Microscopy & Histopathology	●							
	Immunology		●		●	●	●	●	●
	Infectious Disease Epidemiology	●		●	●	●	●	●	●
	Pathogen Molecular Biology and Biochemistry	●	●	●			●	●	●
PUBLIC HEALTH AND POLICY	Environmental Epidemiology	●					●	●	
	Health Policy	●	●		●	●	●	●	●
	Health Promotion Research				●	●	●	●	
	Health Services Research	●	●				●	●	

KEY

- Project/Field Work
- Research Students and/or Post-Doctoral Fellows

OUTLINE INDEX TO DISCIPLINES

A few of the School's Units are concerned with particular disciplines, such as the Medical Statistics Unit, but often the focus is on a particular problem and several disciplines are involved. Also, there are, for example, medical statisticians in several Units. This index shows where staff with different disciplinary backgrounds are to be found.

UNITS		Anthropology	Biochemistry	Cell Biology	Clinical Medicine	Clinical Physiology	Computing	Cytochemistry	Demography	Development Studies	Ecology	Economics	Education	Electron Microscopy	Entomology	Environmental Engineering	Epidemiology	Genetics	Geography	Histopathology	History	Immunology	International Relations	Law	Mathematics	Microbiology	Molecular Biology	Nursing	Nutrition	Oncology	Operational Research	Parasitology	Pharmacology	Pharmacy	Policy Analysis	Political Science	Population Biology	Psychiatry	Psychology	Public Administration	Public Health	Social Policy	Sociology	Statistics	Virology								
EPIDEMIOLOGY AND POPULATION HEALTH	<i>Cancer and Public Health</i>			•	•											•	•										•	•										•	•	•													
	<i>Centre for Population Studies</i>	•			•		•											•														•											•	•	•								
	<i>Epidemiology</i>				•	•												•	•									•																	•								
	<i>Maternal and Child Epidemiology</i>	•		•	•			•	•									•							•	•				•								•							•	•	•						
	<i>Medical Statistics</i>				•													•																											•	•							
<i>Public Health Nutrition</i>	•			•													•	•																											•	•							
INFECTIOUS AND TROPICAL DISEASES	<i>Clinical Research</i>				•												•		•		•					•	•																					•					
	<i>Disease Control and Vector Biology</i>	•		•					•	•		•			•	•		•	•							•	•																				•	•	•	•			
	<i>Electron Microscopy & Histopathology</i>			•																•							•																										
	<i>Immunology</i>		•	•	•			•												•		•					•	•																						•			
	<i>Infectious Disease Epidemiology</i>	•		•	•													•	•							•	•	•																				•	•				
<i>Pathogen Molecular Biology and Biochemistry</i>		•	•		•									•			•	•								•	•										•												•				
PUBLIC HEALTH AND POLICY	<i>Environmental Epidemiology</i>	•				•										•	•																																	•			
	<i>Health Policy</i>	•		•	•					•		•	•					•									•												•												•		
	<i>Health Promotion Research</i>	•		•	•					•		•	•					•											•																							•	
	<i>Health Services Research</i>					•												•									•																								•		



OUTLINE INDEX TO RESEARCH INTERESTS OF UNITS

This table shows the main topics of research interest to the Units within the School.

UNITS	HEALTH & PUBLIC HEALTH													APPROACHES								HEALTH SYSTEMS RESEARCH											NON-COMMUNICABLE DISEASES																		
	Adult Health	Ageing & Health	Child Health	Contraception & Health	Environment & Health	Fertility	Maternal Health	Morbidity	Mortality	Nutrition & Health	Population Trends	Sexual and Reproductive Health	Social Inequality	Women's Health	Disease Control	Education & Health	Epidemiology	Evaluation	Health Promotion	Interventions Trials	Laboratory Studies	Mathematical Models	Mechanistic Research	Molecular Biology	Statistics	Tissue Medicine	Comparative Health Systems	Economics	Family Planning Research	Financing	Health Care Services	Health Policy Analysis	Health Systems Reform	Human Behaviour	International Organizations	Medical Plants	Political Economy	Primary Health Care	Professional Roles	Small Area Studies	Urban Design	Cancer	Diseases	Heart Disease	Injuries	Mental Health	Respiratory Disease	Radiation	Screening	Stroke	Death Certification
EPIDEMIOLOGY AND POPULATION HEALTH	[Grid with squares and triangles representing research interests]																																																		
INFECTIOUS AND TROPICAL DISEASES	[Grid with squares and triangles representing research interests]																																																		
PUBLIC HEALTH AND POLICY	[Grid with squares and triangles representing research interests]																																																		

UNITS	COMMUNICABLE DISEASE AGENTS																		VECTORS					COMMUNICABLE DISEASE PROCESSES											DRUGS			VACCINES																	
	Acute Respiratory Infections	Cholera Disease	Chlamydia / Trachoma	Cholera	Cryptosporidiosis	Diphtheria	Diarrhoeal Diseases	Espstein Barr Virus	Filariae	HIV / AIDS	Hepatitis	HSV 1 and 2	Human Hepatitis B	Leishmaniasis	Leprosy	Malaria	Meningitis	Molluscids	Mycobacteriosis	Neisseria	Opportunistic Infections	Rabies	Schistosomiasis	Sexually Transmitted Diseases	Typhus	Tuberculosis	Typhoid	Zoonoses	Ecology	Insecticide Application	Mosquitoes	Mosquitoes	Snails	Diagnosis	Genetic Diversity	Genetic Susceptibility	Immunity	Immunochemistry	Immunology	Infectivity	Inflammation	Latency	Oncogenesis	Pathogenesis	Prevention	Quality Improvement	Treatment	Drug Design	Drug Mode of Action	Drug Resistance	Pharmacology	Pharmacology	Pharmacology	Pharmacology	Development
EPIDEMIOLOGY AND POPULATION HEALTH	[Grid with squares and triangles representing research interests]																																																						
INFECTIOUS AND TROPICAL DISEASES	[Grid with squares and triangles representing research interests]																																																						
PUBLIC HEALTH AND POLICY	[Grid with squares and triangles representing research interests]																																																						

KEY
 ■ Main Interest
 ▲ Minor Interest

