



**Our vision** is to be a world-leading school of public and global health, working closely with partners in the UK and worldwide to address contemporary and future critical health challenges.

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**Improving health worldwide**

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Improving health in the UK

## Forewords: Dame Sally Davies & Lord Crisp



**Professor Dame Sally Davies** is [Chief Medical Officer](#), the UK Government's principal medical adviser and Chief Scientific Adviser for the Department of Health.

The urgent challenges we now face in health can only be met by intelligent, co-ordinated responses informed by applied research that builds the evidence base for effective health practice focused on public need.

With the National Institute for Health Research, Policy Research Units, and other partnerships, we are developing a research infrastructure that taps into world-class academic resources.

The London School of Hygiene & Tropical Medicine is a key partner in these initiatives, with the common goal to understand and meet these challenges. Through its long-standing collaborative work with agencies including Public Health England, and its predecessor the Health Protection Agency, NICE, and other NHS and non-governmental health bodies, the School is making many vital contributions to public health in the UK and worldwide.

I am delighted to commend the work of the London School of Hygiene & Tropical Medicine across a wide range of expertise, from fundamental laboratory research in infectious diseases and studies of disease causation, through development and assessment of novel interventions and services, to advising on implementation in real life settings of interventions, service and system reforms, and evaluation that informs policy and practice.



**Nigel Crisp** is an [independent crossbench member of the House of Lords](#) who works mainly on international development and global health. As Chief Executive of the NHS and Permanent Secretary of the UK Department of Health until 2006, he led major reforms in the English health system.

All health systems around the world face similar challenges: whether they are the developed ones of the West or the rapidly expanding ones of India and China.

All need to confront the epidemic of so-called non-communicable diseases; all are vulnerable to the same risks of global pandemics and the health impacts of social and environmental change; and all need to find the best ways to utilise new scientific knowledge and new technologies and engage their populations in health promotion and disease prevention.

The London School of Hygiene & Tropical Medicine has a pivotal role to play. It is extremely well regarded and highly influential globally for its work on public health, intervention development and evaluation, and health services and systems - in developed and developing countries alike.

From the pioneering studies by Richard Doll and Austin Bradford Hill on smoking and lung cancer, research at the School has been central to the development of public health since the inception of the NHS. Jerry Morris's work on physical activity and cardiovascular disease, and subsequently over fifty years at the School, had a major influence on government health policy in areas including smoking, air pollution and health inequalities.

These are areas in which the School's work has continued to grow, and this report shows how new generations of researchers are sustaining this legacy of methodological innovation to evaluate and address contemporary problems.

**Our mission** is to improve health and health equity in the UK and worldwide; working in partnership to achieve excellence in public and global health research, education and translation of knowledge into policy and practice.

## Introduction: working together to improve health



**Baron Peter Piot** is [Professor of Global Health and Director](#) of the London School of Hygiene & Tropical Medicine. He was previously Under Secretary-General of the United Nations, founding Executive Director of UNAIDS, and has published over 500 scientific articles and 16 books on infectious diseases.

At a time of great change and challenge for health systems in the UK and globally, many colleagues at the London School of Hygiene & Tropical Medicine are engaged in a wide range of research programmes which are making vital contributions to health outcomes, practice and policy.

Partnership is key to this work, and over the years we have developed productive and valuable collaborative links with partners in government, the NHS and its executive agencies, Public Health England, local authorities, Royal Colleges, other universities, health policy think-tanks, charities and funders such as the Wellcome Trust and Cancer Research UK.

Today, our School is known as one of the leading centres for research into health services and systems in the UK and globally. Our growing Faculty of Public Health and Policy now leads two Policy Research Units funded by the Department of Health, is partner in a third, and in 2012 became a partner in the School for Public Health Research in England established by the NHS National Institute for Health Research.

Recent work by the Policy Research Unit in Policy Innovation shows how behaviour management techniques, staff and caregiver training and support, are important alternatives to anti-psychotics for managing behavioural and psychological symptoms in patients with dementia. In collaboration with the Royal College of Surgeons, we run their Clinical Effectiveness Unit, and have successfully managed several national clinical audits. We have recently established a similar partnership with the Royal College of Obstetricians and Gynaecologists.

Together with our Faculties of Epidemiology and Population Health, and Infectious and Tropical Diseases, the School's expertise encompasses doctors, epidemiologists, statisticians, sociologists, anthropologists, psychologists, historians, economists and health policy experts.

Over the next three years we are committed to build on our current partnerships and develop new ones. This publication offers a brief overview of some of the work we are doing in the UK, and the ways in which we are making a difference. I hope you will be inspired to join us in this effort.

**Peter Piot**  
Director, London School of Hygiene & Tropical Medicine



## Contents:

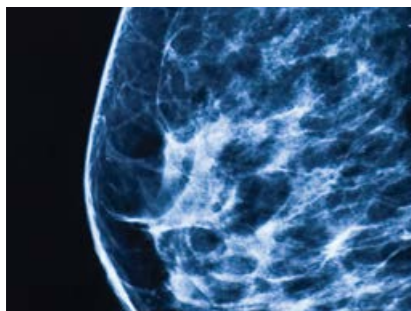
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## Health reform, services & systems improvement

The School leads a number of major research programmes designed to help improve the quality, organisation and management of health services and systems. This encompasses developing methods for assessing the quality of health care providers, evaluating the organisation and delivery of health care, and national and international policies on funding, workforce planning and governance.

### Economic assessments for NICE guidance

The UK's [National Institute for Health and Clinical Excellence \(NICE\)](#) was established in 1999 to provide robust and authoritative recommendations to the NHS on the use of a wider array of health care interventions and treatments. In collaboration with the National Collaborating Centre for Cancer, John Cairns and Alec Miners led a team responsible for the economic assessments contained within all of NICE cancer related guidelines, including those for prostate, early and advanced breast cancer. They continue to serve on the NICE Technology Appraisal Committee, which meets monthly to review evidence on the clinical and cost-effectiveness of health technologies, particularly new drugs. The guidance issued by the committee is vital both for the NHS and also a significant input to decision making in many other countries.



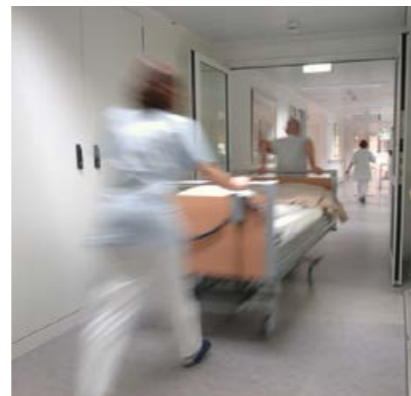
### Policy Research in Commissioning and the Healthcare System

The new [Policy Research Unit in Commissioning and the Healthcare System](#), a partnership between the School with the University of Manchester and the Centre for Health Services Studies at the University of Kent, led by Stephen Peckham and Pauline Allen, works with the Department of Health to inform the development of policy on commissioning, and how it can improve services and access, and increase effectiveness and respond better to patient needs.

Current research programmes include an evaluation of the commissioning strategies and [Impact of Clinical Commissioning Groups](#), empirical research on the use of contractual mechanisms in commissioning, a review on clinical engagement in primary care commissioning. The Unit has also supported the Department of Health Commissioning Policy Group on policy development around Personal Health Budgets, and is exploring the relationship between primary care expenditure, outcomes and overall NHS expenditure, and investigating the use by commissioners of competition and co-operation as strategies in local health systems.

### Improving care through patient reported outcome measures

How can we improve patient care before and after surgery? Nick Black and colleagues designed and developed a pioneering programme, the largest of its kind in the world, to collect and analyse [patient reported outcome measures \(PROMs\)](#). All 250,000 patients undergoing a hip or knee replacement, hernia repair or varicose vein surgery in the NHS in England each year are asked to report their state of health before and after to determine the benefit.



School researchers are now analysing the data to understand and compare the performance of hospitals and make it useful for the public, clinicians, managers and policy-makers.

### Reducing preventable hospital deaths

There are almost 12,000 preventable deaths in hospital in England every year due to problems with care, however this is less than a third of the number previously thought. [According to a recent study published in BMJ Quality and Safety](#), researchers Helen Hogan and Nick Black found the majority of poor care associated with preventable deaths was the result of poor monitoring of the patient's condition, wrong diagnosis or errors in medication or fluid replacement. However, as only 5% of deaths in hospital are preventable, mortality rates are statistically inappropriate as an indicator of care quality, and this has implications for the way care quality is assessed in the NHS.



### National clinical audit: working with Royal Colleges

The School's [Health Services Research and Policy](#) Department has ongoing collaborations with several Royal Medical Colleges to examine the process and outcomes of care within the NHS. [The Clinical Effectiveness Unit at the Royal College of Surgeons of England](#) was established in 1998, while the collaboration with the [Royal College of Obstetricians and Gynaecologists](#) was established in 2006, to undertake projects as part of the Government's [National Clinical Audit and Patient Outcomes](#) programme.

For example, the Mastectomy and Breast Reconstruction audit recently found that one in five women treated in England between 2008-09 had breast reconstruction at the time of their mastectomy, compared to one in nine women in 2006. However, the proportion of women who underwent immediate reconstruction varied widely across different regions of England. A study on caesarean section rates among English NHS hospitals showed that most variation in these rates of caesarean section was associated with emergency caesarean section, which reflects that the variation is due to how clinicians respond to acute situations due to labour rather than the preferences of women.

### School for Public Health Research: Evidence for decision making in local government

With the abolition of Primary Care Trusts, local authorities are now responsible for public health, with guidance from NICE, and this change will potentially have major impacts across England.

As partners in the NIHR-funded [School for Public Health Research](#), we are working with policy-makers and practitioners in local government to develop new evaluative research to support action on social determinants of health. Karen Lock, Mark Petticrew and colleagues are researching how decisions are made and policies implemented across a range of policy sectors including regeneration, housing, transport, crime and alcohol licensing.

As well as exploring how policymakers understand and use evidence, the team is working on methods involving public health, local government and other stakeholders in evaluating their work based on their needs. The aim is to design and conduct research appropriate to local decision making processes, thus increasing the value of research for policy and practice. The School is also a partner in the Mayor of London's 'Fit Cities' initiative.

### Research on diversity of providers to NHS patients

One of the key aspects of the Health and Social Care Act 2013 is the policy of broadening the types of provider of healthcare to NHS patients to include organisations which are not part of the NHS itself; and to encourage those organisations which remain in the NHS to increase their autonomy by becoming NHS foundation trusts.

Pauline Allen, working with colleagues at Bristol and Leeds Universities, is undertaking a series of studies funded by the [National Institute for Health Research \(NIHR\)](#) to examine the extent, nature and effects of increasing the diversity of providers.

Their findings to date suggest that while NHS Foundation Trusts have been able to make service developments more quickly, participation by for-profit organisations has been low. Non-profit organisations including social enterprises have concentrated on particular sectors of care, such as community services and services for minority or marginalised groups.



### Improving the effectiveness of pilot projects

Pilot and demonstration programmes are vital to inform the early stages of policy development. Established in January 2011, the [Policy Research Unit in Policy Innovation Research](#), led by Nicholas Mays, Mark Petticrew and Bob Erens, is



a collaboration between the School and partners including the London School of Economics and Imperial College London. The Unit brings together health and social care research expertise to support and improve evidence-informed policy-making across NHS, social care and public health policy at national level.

The Unit is currently evaluating a range of policy pilot projects including: patient choice of general practice, cold weather alerts for patients with chronic lung disease and direct payments in social care. We are also engaged in methodological work designed to improve the quality and applicability of policy and programme evaluations, such as the identification of comparison groups for quasi-experimental evaluations.

### Engagement and Voice in Commissioning

There is good evidence that patients, particularly those with long term conditions, benefit from involvement in their own care.

The [Engagement and Voice in Commissioning project](#) is a 3-year study funded by the National Institute of Health Research to investigate how patients and the public are involved in local commissioning of services, and how health organisations, including Clinical Commissioning Groups, engage with service users and enable their voices to be heard.

From 2010 to 2013, researchers worked with over 90 patient groups,

commissioners, health care professionals and individual patients in three sites across England, focusing on diabetes, neurological conditions, and rheumatoid arthritis. The team found well-developed strategies and structures for Patient and Public Involvement, however these tend to be driven by the organisational agendas of commissioners and providers. The authors identified the need to acknowledge better expressive narratives of the patient experience alongside purposive-rational relationships between commissioners and patients.



## Public health, lifestyle & environment

Health is profoundly affected by behavioural and environmental factors which operate at individual, community and population scales. While the extent to which health outcomes and inequalities are the result of societal pressures or personal choice is open to political debate, increasingly sedentary lifestyles, car use and over-nutrition have caused growth in obesity and related health problems.

The challenges are huge, yet there are interventions which are known to be effective, for example on tobacco, sugar, fat and alcohol reduction, and increased physical activity. Public health evaluations related to these, sexual health, the built environment and air quality, are rapidly expanding areas of work at the School. In order to evaluate such complex social interventions, it is vital to ensure that methodologies are sound, and that the outcomes of local trials can be efficiently scaled up.

### Txt2stop rolled out as national smoking cessation programme

Smokers are twice as likely to succeed in quitting when they receive encouraging text messages, according to the findings of a major randomised controlled trial led by Caroline Free, Senior Lecturer in Epidemiology at the School and a London GP.

The [txt2stop study](#) examined the long-term effects of specially-designed mobile text messages on 5,800 volunteer participants, and confirmed reported cessation after six months by testing saliva.

Published in *The Lancet*, the study was named Research Paper of the Year by the Royal College of General Practitioners and Novartis, the Medical Research Council and Bupa Foundation Healthy Lives Prize. Free worked with the Department of Health to roll out the programme as a service to smokers across England, and since the launch of the service in January 2012, more than 50,000 people have received smoking cessation support. The results of the trial have led researchers in Sweden, USA, India and Italy, and the World Health Organization to develop local smoking cessation support programmes delivered by text message.



### What works in weight control?

The effectiveness of local interventions by GPs was recently demonstrated in the [Camden Weight Loss programme](#). Kiran Nanchahal and colleagues from the School worked in partnership with GPs and health centres to conduct a randomised controlled trial of a one-to-one lifestyle intervention delivered in UK general practice to overweight and obese patients.



Following 381 adult participants over a year, the team monitored changes in weight, body fat, blood pressure and heart rate. They found that a clinically important level of weight loss was achieved by a higher proportion of intervention participants, who also reported higher level of satisfaction with support received. However, they concluded that primary care interventions are unlikely to be sufficient to tackle the obesity epidemic; effective population-wide measures are also necessary.



### The Olympics and regeneration in East London

What is the long-term [legacy for health of the London 2012 Games](#) and associated urban regeneration? A major five-year project led by Steven Cummins with colleagues at Queen Mary, University of London and University of East London, will explore whether and how social factors for health and well-being among local residents have improved as a result of new facilities, job opportunities, transport infrastructure, green spaces and other improvements to promote healthy living.

Funded by NIHR, the [Olympics and Regeneration in East London \(ORIEL\) project](#) began early in 2011, with researchers collecting baseline data from around 3,000 children (aged 11-12) and their parents. Participants were followed up early in 2013, six months after the Games. Focusing on health, well-being, physical activity, socioeconomic factors and residents' perceptions of the impact of local changes, the findings are being compared with data collected from nearby urban areas outside the Olympic regeneration zone. The participants will be followed up again early in 2014 and will form a cohort for a longitudinal study of how any socio-economic and health impacts are sustained over time.



### Transport and health

Increasing regular physical activity is a key public health goal. One strategy is to change the physical environment to encourage walking and cycling, requiring partnerships with the transport and urban planning sectors.

The School's [Transport and Health Group](#) has recently worked on several high-profile studies for the World Health Organization on road traffic injury prevention, and for the UK Department for Health on accident prevention strategy. With Transport for London they have conducted three studies into road safety, focusing respectively on deprivation, minority ethnic groups, and evaluation of traffic calmed 20mph zones.

Other recent projects have included an international collaboration, funded by the Wellcome Trust, to provide evidence on the health effects of climate change mitigation for the 2009 UN Climate Change conference in Copenhagen and a study funded by Camden Primary Care Trust and Transport for London focused on cycle commuting.

**On The Buses:** What are the effects of free bus travel for older people and for young people on health and wellbeing? The Transport and Health group at the School, in collaboration with the Institute for Child Health and University of Leeds, has evaluated the impacts of the scheme on public health. Overall, the studies found a range of positive effects on the wellbeing of both age groups through increased mobility, independence, social interaction and physical activity.

**LANTERNS study launched to shed light on safety:** Many councils in England and Wales are switching off or dimming street lights at night in order to save money and energy, and reduce light pollution. The Transport and Health group is currently collecting and analysing data on locations of crimes and road traffic crashes across the country to provide evidence of the impact of reduced street light schemes on these important public health outcomes.

### Air pollution linked to increased deaths following heart attacks

Patients recovering from heart attacks are [less likely to survive if they live in an area with high levels of road traffic pollution](#).

Comparing air pollution data with the records of over 150,000 acute coronary patients in England and Wales, researchers Cathryn Tonne and Paul Wilkinson found that death rates after leaving hospital were higher among patients who lived in areas with increased exposure to particulate matter emissions from road traffic and industry.

Published in the *European Heart Journal* in Feb 2013, the results show that patients living in London had the highest exposure to air pollution levels, and that patients from poorer backgrounds were more at risk. Overall, they estimated that exposure accounts for 12% of early deaths among the group - around 4,800 people.



### Walking and cycling: WHO health economic assessment tool (HEAT)

How can policy makers put a value on the health benefits of active travel? Economic evaluation is an important factor in the decision to fund any new transport scheme, but without good techniques for assessing the health benefits of cycling and walking, these are widely under-valued.

Harry Rutter and colleagues have developed a transparent, [easy to use and reliable tool for transport planners](#) and economists to properly incorporate the health benefits of walking and cycling into transport appraisals. The approach has been adopted by the UK Department of Transport in its official appraisal guidance, and it is being considered in a number of other countries including Sweden.

### Drugs, alcohol and tobacco, past and present

Drug use and addiction, particularly alcohol and tobacco, have been with us throughout history and today pose major public health challenges worldwide. The School's [Centre for History in Public Health](#) conducts influential work in this area and is currently involved in the wide-ranging EU framework initiative on addiction. Virginia Berridge leads the Addiction through the Ages project, researching approaches to and concepts of addiction. In June 2013, the Centre is hosting an international conference on the history of alcohol and drugs at the School.

The History Centre also conducts research on public health and health services. A new Wellcome investigator award to Alex Mold focuses on the role of 'the public' in public health since World War II, while Martin Gorsky is investigating The Wellcome Library's digitised Medical Officer of Health reports. The Centre runs a popular series of public health history walks and film screenings, and its research has various impacts on policy through briefings for local government, and nationally through evidence to the Parliamentary Committee on Health.

# Infectious disease monitoring & control

While we have achieved great success in infectious disease control through improved hygiene, sanitation and widespread use of antibiotics, we are now experiencing the emergence of new resistant strains of bacteria, as well as the resurgent threat of pandemic viruses. The UK, and particularly its major cities, are now global, and increased movement of people, both through migration or tourism, is exposing more people to pathogens.

The School is a leading centre for research in infectious disease worldwide, and in London is now engaged in a partnership with University College London to develop the new [Bloomsbury Research Institute](#), a centre for translational research with a mission to seek new diagnostic tools, treatments and vaccines, and focus on hospital-acquired infections, which cause thousands of deaths and are a growing challenge to hospitals in the UK.



### Mapping Disease: The legacy of John Snow

John Snow (1813–1858) is an iconic figure in epidemiology and public health, best known for his pioneering work tracing the source of a deadly outbreak of cholera to a water pump in Soho, London. In collaboration with the Wellcome Trust, the International Epidemiological Association and the John Snow Society, the School is running a [programme of events throughout Spring 2013](#) to celebrate his achievements and the new research that continues his legacy. Speakers include Lord May, Sir Mark Walport and Ben Goldacre, Wellcome research fellow in epidemiology at the School.

### TB: evaluating effectiveness of BCG vaccines at population and immunological level

The BCG (Bacillus Calmette-Guerin) vaccine has been used to prevent Tuberculosis since 1953. Until autumn 2005, the BCG vaccine was routinely given to all 13-year old schoolchildren in the UK, and more recently it has been offered in infancy. However, it is not known how long the protection afforded by the BCG vaccine lasts, particularly in different age and population groups, hindering the development of evidence-based policies for immunisation.

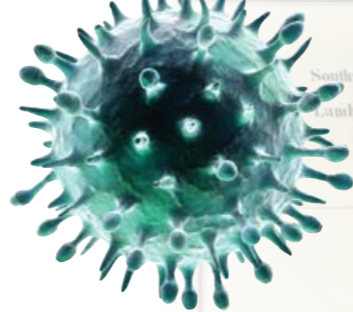
Working with the Health Protection Agency, a team at the School, led by Laura Rodrigues and Punam Mangtani, are conducting two national observational studies to evaluate how long the BCG vaccine given at either ages has an effect on preventing ill-health.

They are also assessing factors affecting effectiveness of the delivery of BCG vaccine and have recently published in *BMJ Open* a survey of how BCG vaccine policy is working at the local level.

Hazel Dockrell and colleagues at the School's immunology and infection department have been studying immune responses induced by BCG vaccination in the UK for over 15 years. Initially they compared immunity induced in UK adolescents with that induced by BCG in northern Malawi. Since 2005, BCG has been given to infants in areas with a rate of TB over 40/100,000. They found that vaccinated infants in two London boroughs (Redbridge and Waltham Forest) have much stronger T-cell responses

following BCG vaccination than infants in Malawi. This work is contributing to the global effort to develop biomarkers that could be used in TB vaccine trials and is funded by two EU research consortia.

The group is also using patients being tested for helminth worm infections in London to study how these infections might affect immunity to TB. Researchers are working with patients presenting to the Hospital for Tropical Diseases at University College Hospital both before and after treatment of their worm infections. These parasites induce regulatory T cells that have a negative impact on immunity to TB, but treatment allows recovery of these responses. Visit our [TB Centre website](#)



### Shaping policy on vaccines and immunisation

John Edmunds and colleagues in the [Centre for the Mathematical Modelling of Infectious Diseases](#) have been working with the Health Protection Agency for several years, predicting the course of epidemics and the impact of vaccination programmes. This work has informed UK policy on pandemic influenza, and many UK-specific policy decisions through the [Joint Committee on Vaccination and Immunisation](#), chaired by Andy Hall. Recent examples include the effectiveness and cost-effectiveness of pneumococcal conjugate vaccines, rotavirus vaccination, and the decision to introduce annual influenza vaccination in children.

### Hospital for Tropical Diseases & Malaria Reference Lab

The School has been host to the [UK Malaria Reference Laboratory](#) since its inception in the 1970s. It works with Public Health England to gather malaria samples and collate national data on the travel histories and prophylaxis use patterns among UK travellers with malaria. This then informs treatment and prophylaxis policy recommendations made to travel clinics and health workers across the country.

Infectious diseases do not recognise national borders, and scientists at the School are working with colleagues at the [Hospital for Tropical Diseases](#), Public Health England and the Blood Transfusion Service to maintain vigilance so that blood donations used to treat patients across the UK are free from a range of parasites. These include the causative agents of malaria, trypanosomiasis, leishmaniasis, babesiosis, toxoplasmosis and Chagas' disease.



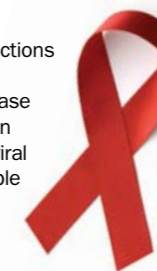
### Hand-washing and health

Val Curtis, director of the School's Hygiene Centre, leads the UK campaign for [Global Handwashing Day](#), which has had a major impact on awareness of hygiene issues in recent years. In 2012, a nationwide study carried out by researchers from the School and partners from Queen Mary, University of London, investigated levels of bacterial contamination on the hands, credit cards and currency of various sample sizes in East and West London, Birmingham and Liverpool. They found that 11% of hands, 8% of cards and 6% of notes showed gross contamination—where the levels of bacteria detected were equal to what you would expect to find in a dirty toilet bowl, and these results were widely reported in global media.



### Ensuring efficiency in HIV therapy

Around 3,500 new HIV infections occur each year in the UK, and this continues to increase despite intensive prevention efforts. Effective antiretroviral therapy (ART) enables people to live with HIV, but care is expensive – an estimated £1.75 billion in future drug costs alone. People on ART with a low viral load have markedly reduced infectiousness, but the extent of this is uncertain. Working in partnership with UCL, funded by the NIHR, Alec Miners is a co-investigator on the [ASTRA project](#) with the aim of establishing the links between sexual risk behaviour and attitudes to HIV transmission. The overall objective is to assess the effectiveness and cost-effectiveness of immediate rather than deferred ART treatment from a UK NHS perspective.



### Flusurvey, pandemic flu surveillance

[UK Flusurvey is run by the School](#) as part of InfluenzaNet, the Europe-wide programme to monitor the activity of 'flu-like illness, with the aid of volunteers via the internet.

While reports of seasonal flu are still at a low level, early analysis of data collected so far from the 2012-13 survey reveals that reports of flu-like illness are highest among children, and that women report more flu-like symptoms than men overall. With over 5,000 people taking part in the weekly survey, [Flusurvey.org.uk](#) allows people to report their symptoms directly and the data are supplied to the Health Protection Agency (now Public Health England) national surveillance programmes.

### Global events and mass gatherings medicine

David Heymann was awarded a [Research Councils UK Podium Award](#) for exceptional research contribution, for work on mass gatherings and infectious disease prevention in advance of the London 2012 Games, with Brian McCloskey, London Regional Director and Olympics lead at the Health Protection Agency. The School recently hosted a speaker meeting and public panel discussion on the health and medical issues around global mass gatherings and major sporting events.

Partners and participants included Chatham House, the Institute of Global Health Innovation at Imperial College London, the Health Protection Agency, The London 2012 organising committee, and the World Health Organization. David Heymann and colleagues in Europe, Asia and the USA are now working on developing health policies concerning mass gatherings, and how international collaboration can increase resilience in future.



## Non-communicable diseases: diagnosis & care

The increasing burden of non-communicable diseases such as cancers, cardiovascular disease, diabetes and mental illness, poses an enormous threat to populations and health systems across the globe. The School's diverse expertise in non-communicable disease prevention and control was in 2012 brought together in the [Centre for Global Non-Communicable Diseases](#), to strengthen and promote research contributing to health policy. The School also hosts the Cancer Research UK Cancer Survival Group, and within the Department of Social and Environmental Health Research, there is a programme of research examining effects of air pollution on cardiovascular disease outcomes, and elucidating environmental links between socio-economic factors and heart disease.

### Factors affecting lung cancer survival

Lung cancer survival in the UK is lower than in six comparator countries, according to a new international study carried out by the [Cancer Research UK Survival Group](#) at the School. While Sweden had the highest rate of one-year survival from the most common form of the disease (non-small cell lung cancer) at 46%, the UK ranked lowest at just 30%.

The research, for the International Cancer Benchmarking Partnership, included over 57,000 patients, looking at their stage at diagnosis and what proportion of them lived for more than a year. The study suggests that late [diagnosis contributes to low survival](#) - only one in seven patients were diagnosed at the earliest stage of the disease in both the UK and Denmark, compared with one in five elsewhere. The group has recently found that late-stage breast cancer survival is also lower for women in the UK than other comparable countries, and there have been calls for an investigation into whether treatment meets international standards.

### Dementia and quality of life: working with patients and carers

The estimated 800,000 people with dementia in England is expected to increase rapidly as the population ages. Until we can effectively prevent and treat dementia, there is a pressing need to determine the most effective and cost-effective ways of caring for people with dementia and their lay carers. From June 2013, Sarah Smith and Nick Black in the School's Health Services



Research & Policy Department, working with [The Alzheimer's Society](#), are leading a programme to develop ways of routinely assessing the quality of life of patients and their carers. Then, in two nationwide studies, they will evaluate memory assessment services (memory clinics) and the impact of stopping the use of anti-psychotic drugs - treatment that is no longer seen as appropriate.

### Vitamin D to prevent morbidity and mortality

A growing body of evidence suggests that high doses of vitamin D decrease cancer incidence and mortality as well as cardiovascular mortality. Julian Peto and colleagues are initiating a randomised feasibility study of 1,600 people registered with a GP practice to precede a much larger [VIDAL \(Vitamin D and Longevity\) Trial](#) of 20,000 people aged 65-84. Outcome measures will be cause-specific mortality and cancer incidence, hospital admissions ascertained by flagging or tracing in national record systems, and reasons for any hospital admissions.

### Dietary salt and cardiovascular disease

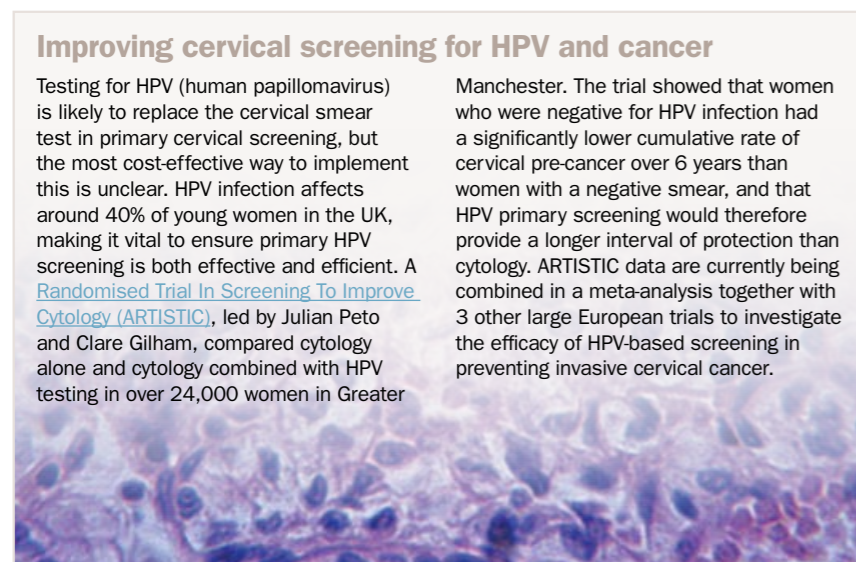
The number of people in England adding salt to food at the table fell by more than a quarter in five years, according to work by Alan Dangour and colleagues, [published in Jan 2013 in the British Journal of Nutrition](#). The researchers looked at salt intake from 1997-2007 in large nationally-representative samples of more than 6,000 adults living in England. They found that since the campaign launched in 2003, the proportion of people reporting that they add salt at the table dropped from 32.5% to 23.2% in the following five years. Women were less likely to add salt at the table, as were those from younger age groups, higher income households and non-white ethnic groups.



### Improving cervical screening for HPV and cancer

Testing for HPV (human papillomavirus) is likely to replace the cervical smear test in primary cervical screening, but the most cost-effective way to implement this is unclear. HPV infection affects around 40% of young women in the UK, making it vital to ensure primary HPV screening is both effective and efficient. A [Randomised Trial In Screening To Improve Cytology \(ARTISTIC\)](#), led by Julian Peto and Clare Gilham, compared cytology alone and cytology combined with HPV testing in over 24,000 women in Greater

Manchester. The trial showed that women who were negative for HPV infection had a significantly lower cumulative rate of cervical pre-cancer over 6 years than women with a negative smear, and that HPV primary screening would therefore provide a longer interval of protection than cytology. ARTISTIC data are currently being combined in a meta-analysis together with 3 other large European trials to investigate the efficacy of HPV-based screening in preventing invasive cervical cancer.



# Sexual health, equality & access

With increasing rates of sexually transmitted infections, sexual activity and teenage pregnancies, understanding the factors shaping sexual behaviour is more important than ever for improving young people's sexual health and wellbeing.

## National Survey of Sexual Attitudes and Lifestyles

In the mid-1980s, little was known about the sexual attitudes and lifestyles of people in Britain. In 1987, Kaye Wellings and colleagues founded the [National Survey of Sexual Attitudes and Lifestyles \(Natsal\)](#). The first survey in 1990 provided data which were used to help predict and prevent further transmission of HIV in Britain. The second survey in 2000 looked at changes in behaviour over the previous decade and had a broader remit, exploring patterns and trends in reproductive health and including

biomedical measures enabling estimates of the prevalence of Chlamydia in the population for the first time.

The third national survey, in 2010, conducted by the School in partnership with the National Centre for Social Research and University College London, and funded by the Medical Research Council, the Economic and Social Research Council and the Wellcome Trust, is considerably more ambitious. The sample spans an age range

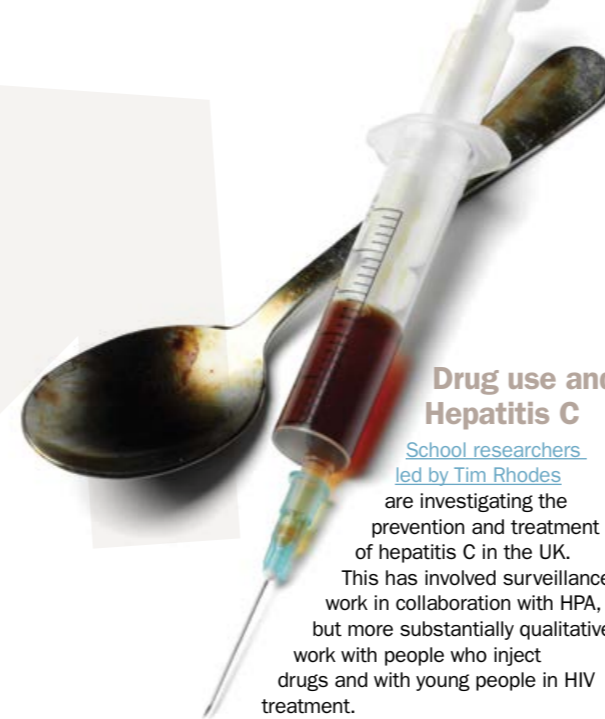
of 16-74, the study incorporates a qualitative component, and biomedical measures include not only testing for an expanded range of sexually-transmitted infections but also the measurement of testosterone in the general population, using a uniquely validated salivary assay. The first tranche of papers, published in December 2013, will be followed by a comprehensive dissemination strategy aimed at providing information with which to shape policy to improve sexual health.

## Migration, trafficking & access to services

Thousands of people from all over the world are trafficked to the UK for forced sex work, domestic servitude, and labour in agriculture, manufacturing and service industries. Trafficked men, women and children frequently experience extreme physical, psychological and sexual violence and social marginalisation, and many suffer from acute and long-term health problems, and little is currently known about their healthcare needs, how they access NHS services and how to help healthcare professionals respond.

Cathy Zimmerman and her colleagues at the School's [Gender, Violence and Health Centre](#) are leading research in this challenging field. They conducted multi-country research on the health of trafficked women and adolescents, which generated the first-ever data on the health risks and outcomes associated with trafficking. Dr Zimmerman is the author of the World Health Organization's Recommendations for Interviewing Trafficked Women, and other international resources for law enforcement, service providers and health professionals.

The Centre is working with partners from King's College London's Institute of Psychiatry and the South London and Maudsley NHS Foundation Trust on [PROTECT \(Provider Responses, Treatment, and Care for Trafficked People\)](#), a major research programme on human trafficking funded by the Department of Health. This will provide evidence to inform the NHS response to human trafficking, specifically in the identification and referral of trafficked people, and safe and appropriate care to meet their health needs.



## Drug use and Hepatitis C

[School researchers led by Tim Rhodes](#)

are investigating the prevention and treatment of hepatitis C in the UK.

This has involved surveillance work in collaboration with HPA, but more substantially qualitative work with people who inject drugs and with young people in HIV treatment.

A key finding is that hepatitis C protective practices were motivated not necessarily by harm reduction messages or concerns about hepatitis C acquisition, but by more immediate pragmatic concerns, such as avoiding drug withdrawal and maintaining venous access and care. These findings signal the need for a shift in harm reduction research and intervention from a risk and deficit focus to one that attends to the pragmatic concerns and everyday practices of people who inject drugs which may have preventive effects.

A WHO-funded study in the UK explores the systemic and structural factors shaping treatment engagement, and points towards the delivery of hepatitis C treatment in drug and alcohol settings rather than hospitals, as a means of building trusting relationships between patients and providers.

## HIV Prevention England, monitoring and evaluation

[Sigma Research](#) is one of six partners making up [HIV Prevention England](#), funded by the Department of Health. It runs the Gay Men's Sex Survey and Bass Line, two well-established periodic community surveys assessing the HIV prevention needs of gay men and African communities respectively. Sigma has also led the development of Making it Count and The Knowledge, the Will and the Power – the HIV prevention frameworks that have guided UK HIV prevention work with gay men and African communities in recent years.

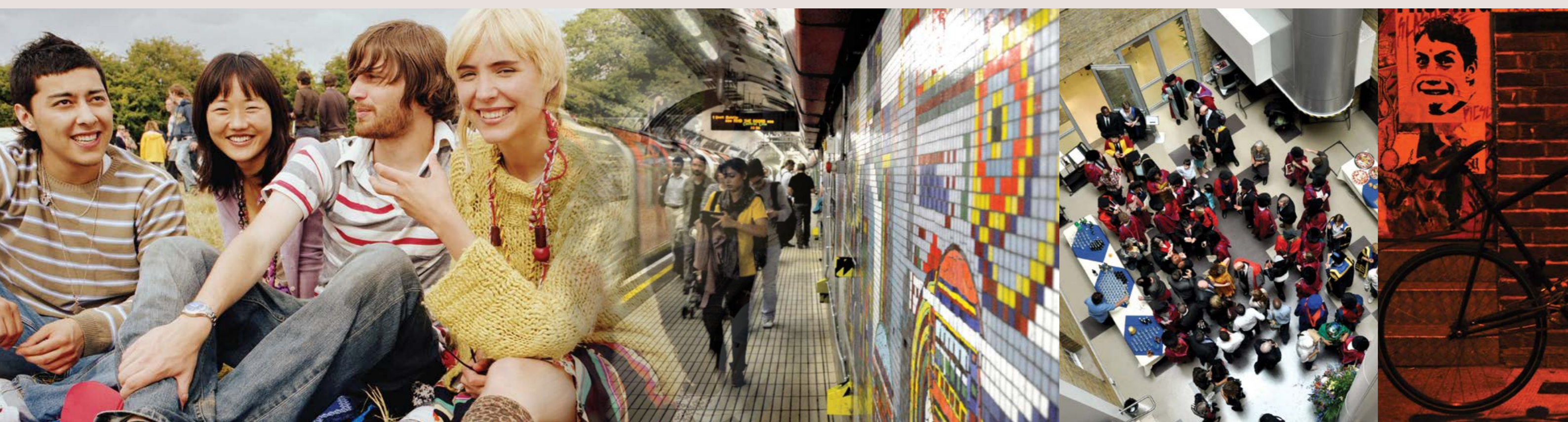
Within HIV Prevention England, Sigma focuses on monitoring and evaluating activities carried out by 40 Local Delivery Partners. These range from condom distribution and the placement of advertising to lobbying and local authority engagement. In some cases, it will be possible to analyse what works before and after intervention, and in other cases, behavioural surveys provide insights into how knowledge, attitudes and behaviour change as a result of these interventions.

The School is also a partner in the [European Men who have Sex with Men \(MSM\) Internet Survey \(EMIS\)](#) a joint project of academic, governmental, non-governmental, and online media partners from 35 European countries to inform interventions for gay, bisexual, and other men who have sex with men, a group highly affected by HIV and other sexually transmitted infections.

## Sex and health: what young people think and do

[The sixteen18 project](#), conducted by Cicely Marston, Ruth Lewis and Kaye Wellings examines a broad range of practices, including mutual masturbation, oral sex, vaginal and anal intercourse. Based on interviews with 130 young men and women aged 16-18 in England, the study aims to understand where, when and with whom young people would expect different practices to occur, and what those practices mean to them.

The study's findings show continuing inequities in sexual interactions between young men and women, with young women's coercion into anal intercourse a particular problem. They also show how young people's ideas about what practices are 'risky' are often at odds with those of health professionals. Young women, for example, often see vaginal intercourse as a less risky option, despite the higher likelihood of pregnancy and sexually-transmitted infections transmission.



# Looking ahead: reform & innovation

## Translational research on infectious diseases

The School is engaged in a major partnership with University College London to develop a world-leading centre for translational research on infectious diseases. With over 200 scientists currently working in translational and clinically applied infection research, the [Bloomsbury Research Institute](#) is already one of the largest concentrations of infectious disease researchers in Europe.

The Institute's mission is to seek new diagnostic tools, treatments and vaccines for pathogens ranging from the 'big three killers' HIV, TB and malaria, to neglected diseases including sleeping sickness, dengue fever and leishmaniasis, for which new diagnostics and treatments are urgently needed. It will also focus on the growing problem of hospital-acquired infections, which cause thousands of deaths in the UK and globally.



## Electronic Healthcare Records revolutionising research

The increasing availability of Electronic Healthcare Records is revolutionising health research. The School has a diverse programme of work using the UK [Clinical Practice Research Datalink](#), a large collection of primary care medical records, and other data such as Hospital Episode Statistics and Medicare data from the USA.

Researchers led by Liam Smeeth and Harriet Forbes have used these records to show how statins, widely used cholesterol-lowering drugs, also reduce the risk of death among people with pneumonia. Linking medical records with temperature data, they demonstrated that a substantial short term risk of myocardial infarction is associated with colder outdoor temperatures. Ongoing work includes the long-term outcome of weight-loss surgery using Hospital Episode Statistics data; links between commonly prescribed drugs and cancer risk; and investigating the roles of temperature and pollution on exacerbations of chronic obstructive pulmonary disease.

The School is playing a key role in a new [Centre for Health service and Academic Partnership in Translational E-Health Research \(CHAPTER\)](#), co-ordinated by UCL Partners to harness the power of computerised data to improve patient care and public health.

## Climate change and health in the UK

The UK government has set specific targets for greenhouse gas emissions to lower the risk of dangerous climate change. [Previous research at the School](#) has shown that important health co-benefits could result from strategies targeting the domains of transport, built environment, and agriculture, for example through reduced fine particulate air pollution or a 'low-carbon' healthy diet.

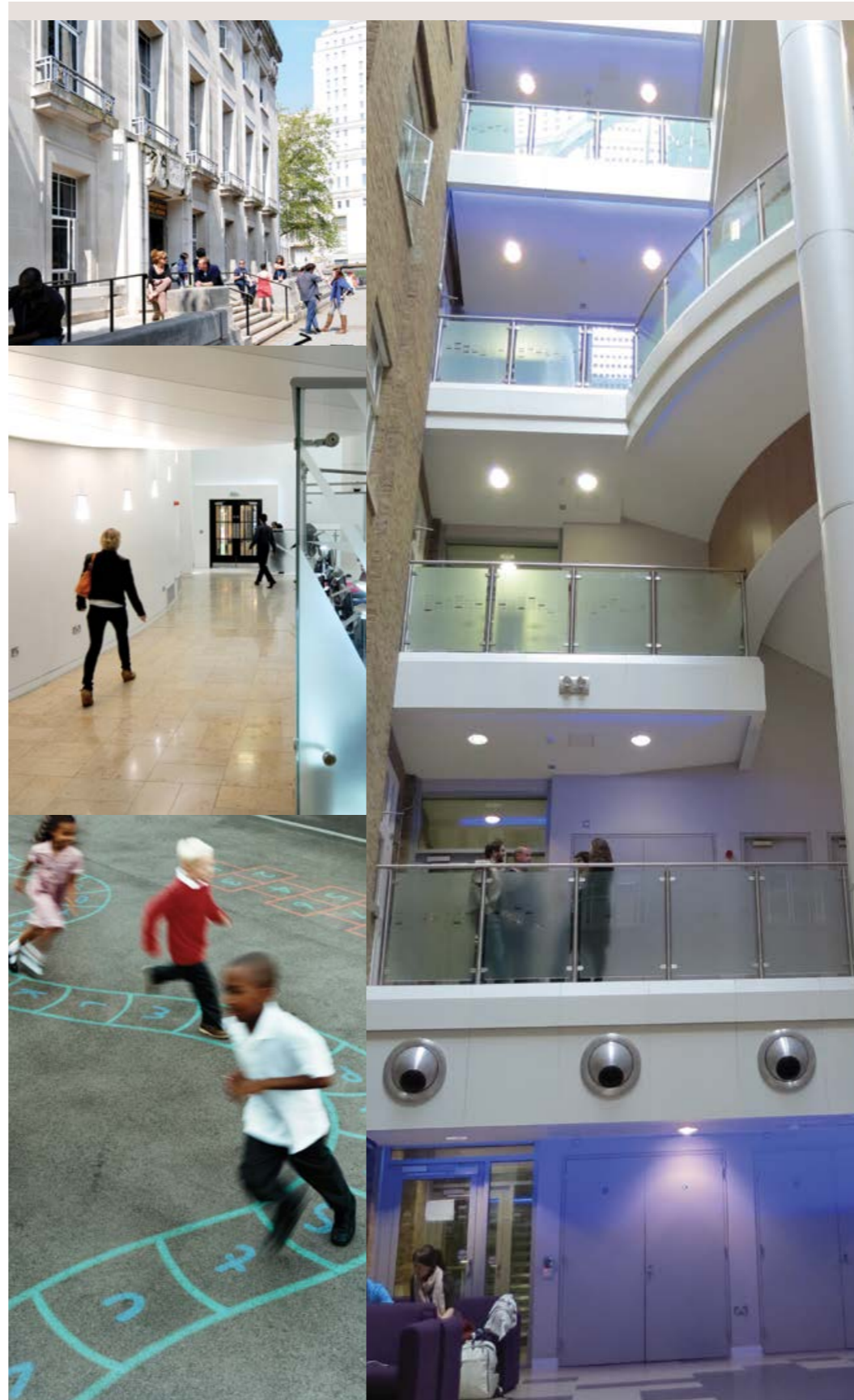
A recent study assesses the full general equilibrium economy-wide macroeconomic effects of health co-benefits from three similar UK strategies to meet locally specific 2030 greenhouse gas emission targets. The method for measuring averted healthcare costs was published in *The Lancet* in 2012.

Three scenarios were modelled: increased active travel in urban England and Wales, partial replacement of dietary saturated fat with polyunsaturates of plant origin and an assumed UK-wide improvement in home insulation and ventilation control. For all scenarios, the macroeconomic effects of health co-benefits are positive.

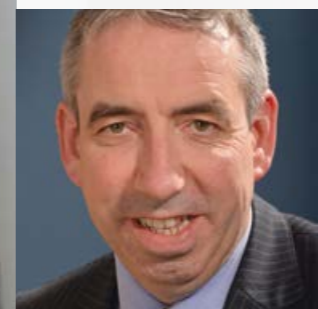
Overall, substantial savings on health-care costs represent the main contributing factor (around £19 billion over 20 years). Increased labour supply also contributes positively.

## Methodological research and innovation

If research is to be helpful for decision makers it is important that potential limitations with it are well understood. A recent ESRC study, led by Richard Grieve, aimed to extend current understanding of the relative merits of different analytical methods for [reducing selection bias in health economic evaluations](#). Outputs have included a checklist for appraising alternative statistical approaches and workshops attended by researchers working in academia, the pharmaceutical industry and the governmental sector.



**Professor David Heymann** is chair of Public Health England, Head of the Centre on Global Health Security at Chatham House, and professor of epidemiology of infectious disease at the School. He has worked in the area of public health for over 35 years, for the US Centers for Disease Control and Prevention and with the World Health Organization.



**Duncan Selbie** is Chief Executive of Public Health England. He has worked in the NHS since 1980, in posts including Director General of Programmes and Performance, and Chief Executive roles at Hospital Trusts and Strategic Health Authority.

## The future of public health

[Public Health England \(PHE\)](#) offers a real opportunity to integrate public health leadership for England at national level across all aspects of health. There has been strong leadership in a number of specific areas, but never before in a single organisation with a remit to advocate for change wherever it is needed.

PHE will strengthen primary prevention and public health in England in respect of communicable diseases, environmental hazards, and long term chronic conditions. It will also help to address the underlying causes of ill health including social determinants, which are beyond the scope of traditional health services. We will therefore be working hard to support local government in its new responsibilities for local health leadership.

The London School of Hygiene & Tropical Medicine covers the full range of scientific disciplines relevant to public health, and we at PHE will draw on all these disciplines in our work, including basic epidemiology, molecular and social science, through to applied health services research, economics and behavioural science. Research within PHE will be anchored in academic environments as a means of ensuring peer review and expertise, ensuring our scientists are at the cutting edge of knowledge, as we continue to provide reference laboratory services for all major pathogens to the United Kingdom and, through our WHO Collaborating Centres, the world.

Operationally, PHE will bring together the expertise developed in surveillance, outbreak alert and response and chemical/nuclear safety with the challenges associated with promoting healthy lifestyles as a means of lengthening life without disability. Climate change and its effects are also a major concern, and the expertise of the School in this area will be vital.

Public Health England has a leading role within the wider public health system. It will share its expertise and evidence with its partners – particularly in local government, the NHS, Clinical Commissioning Groups, and the voluntary and community sector – and this offers even more opportunity for vital collaboration. We are proud that many of our scientists have academic appointments at the School, and our partnership projects will help ensure we build our capacity to meet the challenges ahead with confidence.

## Support our work

For more information about [supporting our work](#) in the UK, please contact:

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