Welcome

… to the 2016 review of activity at the Cambridge Institute of Public Health.

Our mission is to generate knowledge and evidence to improve global public health, using our research, teaching and analysis to promote well-being, prevent disease and reduce health inequalities. Our membership draws together scientists, clinicians and public health professionals in Cambridge. To achieve our goal we also collaborate with leading public health researchers, organisations and policymakers, nationally and internationally.

Receive our latest research findings, event invites and news by signing up to our free email alerts at:

www.iph.cam.ac.uk/news/ciph-e-bulletin

www.iph.cam.ac.uk
@InstPubHealth
The Cambridge Institute of Public Health (CIPH) is a robust partnership of Cambridge-based population health scientists, clinicians and analysts, working to generate evidence and knowledge to improve the health and well-being of the public at local, regional and global levels. I am privileged as Director to work with world leaders in public health research, both within the Institute and beyond; the highlights of their work illustrated in this annual report provide a small insight into the work that we do here at the Institute.

The 2016 annual report focuses on the broad theme of engagement. The research and initiatives presented here demonstrate how the Institute has successfully worked to engage with policymakers, the public and patients. I would like to take this opportunity to focus on the world’s future and the role that we might play. Over the last year the major challenges for global society have become increasingly clear; amongst these are gross inequalities; deteriorating public infrastructure; resource depletion and conflict resulting in mass migration, increasing awareness that assumptions of continuity of energy resources even within rich countries may not be sound; economic crises; and for the UK, Brexit.

An important recent publication from The Academy of Medical Sciences: The Health of the Public Report 2040 (www.acmedsci.ac.uk/policy/policy-projects/health-of-the-public-in-2040/), highlights the radical shifts that we, as a public health research community, must consider. It asks us to question how we can orientate our research excellence to provide globally relevant, substantial and visible contributions that help the global population to work towards a more sustainable future, one which allows more people to experience the maximum health and well-being possible. It is important that we heed this call if we are to play a significant role in the health of the public.

I would also like to highlight our successful ongoing partnership with the University of North Carolina Gillings School of Public Health, which has seen a number of collaborative projects since 2012. This year, we have expanded our portfolio of UNC-UC projects to include a wider range of cross-disciplinary work. The successful partnerships forged by this collaborative effort demonstrate the great benefit that can be gained from combining complementary strengths and we look forward to continuing success in the future.

I do hope you enjoy our annual report.

Professor Carol Brayne, Director
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PublicHealth@Cambridge Network

Dr Paula Frampton

The PublicHealth@Cambridge Strategic Research Network is a multi-disciplinary community for public health research across Cambridge, hosted by the CIPH. The Network connects more than 1000 researchers from diverse disciplines engaged in public health and well-being related research, and also links to local public health practice and service delivery. The aim of the Network is to facilitate collaboration above and beyond that which can be enabled by the CIPH alone.

We work with individual researchers as well as via themed workshops and other events to create a platform for multidisciplinary interaction and support the building of new collaborative approaches.

This year, for example, we have run a workshop bringing together legal and public health researchers to examine the different approaches and challenges around the use of evidence across law and public health. The recent legal challenge to the introduction of standardised packaging of cigarettes was used as an example and the workshop should lead to new research projects bringing together expertise from different fields. Our annual showcase this year focused on the political economy of public health and brought speakers from sociology, public health, law, land economy and anthropology together to think about the economic, political, social and historical forces which shape contemporary public health issues and our responses to them. The Network has also been involved in establishing our new Public Health: Research into Policy project, further details of which can be found on page 6.

— To join the Network or search for funding opportunities or potential collaborative partners, visit our website at: www.publichealth.cam.ac.uk

CIPH-PHE Liaison Programme

Dr Rosalind Parkes-Ratanshi

The University of Cambridge has longstanding linkages to the Public Health structures of the National Health Service and Public Health England (PHE). CIPH was formed of a unique federation of the Minister of State for Health (now implemented through PHE), the Chief Executive of the Medical Research Council and the Vice Chancellor of the University. PHE is therefore at the heart of the University’s largest grouping of Public Health researchers.

This partnership has been fostered via 20 years of co-location of Public Health staff within the CIPH building, active CIPH membership of those staff, financial investment by PHE into CIPH infrastructure and CIPH posts. PHE staff and Cambridge academics also work together to teach on the University of Cambridge MPhil in Public Health, which is a leading training platform for future public health professionals in the UK and across the globe. Through CIPH membership of the NIHR School for Public Health Research, PHE analysts and programme managers are trained by leading academics to design evaluations of public health interventions.

This relationship provides an excellent vehicle for the development of even stronger strategic collaborations and allows for the direct engagement of researchers with policymakers, for example in the areas of dementia and end of life care.

In 2015 Dr Rosalind Parkes-Ratanshi was appointed as Lecturer in CIPH, CIPH-PHE Liaison (a PHE funded post). As part of this role, she is working on a strategic alignment between the two organisations. This year has seen the formalisation of these activities through the CIPH-PHE Liaison Programme. Working through the newly established University of Cambridge-PHE liaison committee, we aim to better understand current and past activities and linkages to inform future collaboration between the organisations.
The University of Cambridge’s world class researchers generate evidence and knowledge to improve public health. Being able to deliver meaningful impact through our research depends on how effectively we can engage with the right external stakeholders. Policymakers form a critical group of stakeholders because they control some of the key levers for the improvement of public health and well-being.

The Public Health: Research into Policy project is highlighting some of the public health policy impact that research from across the University has had, as well as trialling new methods of adding capacity to our engagement with policy and decision-makers.

A steering group composed of academics, former policymakers and communications experts, chaired by Professor Mike Kelly, Senior Visiting Fellow in the Department of Public Health and Primary Care (and former Director of the Centre for Public Health at NICE), guides the project. Work undertaken during the first eight months has included:

— Developing an understanding of public health policy engagement across the University by meeting over 80 University and policy stakeholders, including from Public Health England, the House of Commons Health Select Committee, and local government

— Composing 12 case studies exploring how researchers from across the University, and at different career stages, have engaged with public health policy. These case studies seek to inform and inspire researchers to engage with policymakers and are being published online. Read them at: www.iph.cam.ac.uk/public-health-policy/case-studies

— Selection of end of life care and mental health as policy themes to pursue. The project will now support engagement through activities such as stakeholder mapping, the creation of policy documents and organising engagement events within these themes

— Hosting the How Can Your Research Impact Policy? panel discussion and Q&A, featuring Professor Martin Roland, Dr Julian Huppert and Dr Leila Luheshi. Following this event, we generated a handout of top tips for researchers keen to engage with policy, which is featured on page 7

The project will continue to add capacity to help researchers working within the selected themes and seek to foster public health policy engagement within the University. This project is initially supported by the 2015/16 Higher Education Innovation Fund.

— For further details, please contact Lauren Milden, Public Health Policy Coordinator: lm462@medschl.cam.ac.uk
Top tips: How can your research impact policy?

Key takeaways from the July 2016 panel discussion and Q&A featuring Martin Roland CBE, Emeritus Professor of Health Services Research at the Cambridge Institute of Public Health, Dr Julian Huppert, former MP for Cambridge, and Dr Leila Luheshi, Head of Science at the PHG Foundation.

1. **Timing is critical**
   - While academics often work to deadlines measured in years, policymakers in Whitehall, and the politicians who direct them, sometimes work to deadlines measured in minutes and hours
   - It is more helpful to tell a policymaker about your preliminary findings and to provide useful context from your area of expertise when they are working on a policy, than to provide your complete findings after a policy has been implemented

2. **Recognise why some evidence is better than no evidence**
   - Evidence-based policymaking is not the norm
   - Governments may need to address issues at very short notice, so while there may not be a perfect answer, some evidence is better than none
   - Respond to consultations - you are likely to be more knowledgeable on the subject than the policymakers

3. **Rarely does one piece of research change policy**
   - Often policymakers want your expertise in a given field and your overall wisdom, as opposed to the results of one piece of research

4. **Tailor your communications**
   - Civil servants generally do not have the time, nor the access, to read academic journals
   - Understand what your policymakers are trying to achieve and how they will measure success in order to prepare compelling communications for them
   - Do you have a statistic or anecdote backed by evidence that communicates your findings? Can you summarise your research and where it fits into the relevant landscape in one page?
   - Make use of the media, including social media

5. **Policy is a people business and requires engagement**
   - Make relevant contacts with policymakers and invest in maintaining them - make yourself known as a resource so that they will value your expertise and know to call on it when needed

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This event and summary are part of the Public Health: Research into Policy project. To learn more visit our website at: [www.iph.cam.ac.uk/public-health-policy](http://www.iph.cam.ac.uk/public-health-policy)
Engagement and partnership in Public Health and Primary Care

Department of Public Health and Primary Care
Professor John Danesh

The Department of Public Health and Primary Care (DPHPC) includes several major research groups, such as the Cardiovascular Epidemiology Unit, the Cancer Genetic Epidemiology Unit, the Primary Care Research Unit, the Behaviour and Health Research Unit, and the Cambridge Centre for Health Services Research (many of which are described in separate sections below).

The Department’s overarching goal is to generate evidence that will inform the prevention of premature death and disability, the promotion of health, and the formulation of evidence-based health policy. In recent years, the DPHPC has engaged with selected organisations to accelerate research translation and impact by leveraging major additional resources and/or expertise. Some examples of this work can be seen below.

— Read more department news at: www.phpc.cam.ac.uk

RAND Europe

In 2016, the DPHPC renewed and extended its strategic partnership with RAND Europe (President: Hans Pung), a not-for-profit policy research institute, through the appointment of Professor Mary Dixon-Woods as the RAND Chair in Health Services Research at The Cambridge Centre for Health Services Research.

Professor Dixon-Woods succeeds Professor Martin Roland, who had a hugely successful tenure as the inaugural RAND Professor. The Centre focuses on the development of methods to measure and improve quality and safety of care and to advance health policy.

NHS Blood and Transplant

The DPHPC is leveraging NHS Blood and Transplant’s (NHSBT’s) unparalleled capacity to build large-scale population bioresources for chronic disease research in a cost-effective manner in the UK. In recent years, the DPHPC has recruited ~70,000 blood donors into the INTERVAL and COMPARE studies, which have initially addressed questions with the aim to improve the national blood service and, in parallel, created multi-purpose longitudinal bioresources for chronic disease research. This partnership with NHSBT was catalysed in 2012 by the appointment of Dr Emanuele Di Angelantonio as NHSBT Principal Investigator and Honorary Consultant, and then cemented in 2015 with the award of a £4M NIHR Blood and Transplant Research Unit in Donor Health and Genomics (Director: Professor Danesh; Deputy Director: Dr Di Angelantonio).

Industry

The DPHPC collaborates extensively with industry, including large pharma (e.g. AstraZeneca, Biogen, GlaxoSmithKline, Merck, Novartis) and smaller biotechnology companies (e.g. Brainshake, Metabolon, SomaLogic, VITAS). Collaborations with large pharma have focused on therapeutic target prioritisation using integrative human genomic approaches, such as a £1M proteomics collaboration with Merck. The DPHPC collaborates on target identification with “Open Targets” (Director: Dr Jeff Barrett), a public-private initiative involving the Wellcome Genome Campus, GSK, and Biogen. Collaborations with biotechnology companies have focused on adoption at population-scale of novel assay technologies to identify risk factors.
The Wellcome Genome Campus

In collaboration with Professor Nicole Soranzo and others at the Sanger Institute, the DPHPC is conducting 15X whole-genome sequencing in 50,000 participants who have been phenotyped for a variety of traits. The >£10M sequencing costs of this world-leading population-scale genomics effort have been principally funded by the Wellcome Trust and, secondarily, by the National Institute for Health Research. As a further example of work with the Genome Campus, the DPHPC is leveraging the Sanger Institute’s cellular reprogramming pipelines by conducting functional genomic studies using macrophages derived from induced pluripotent stem cells, in collaboration with Dr Daniel Gaffney.

NIHR Biomedical Research Centre

DPHPC scientists play key roles in the Cambridge NIHR Biomedical Research Centre (BRC), the overarching framework that enables human translational research at the Cambridge Biomedical Campus, renewed with £114M of NIHR funding for 2017-2022 (Director: Professor John Bradley CBE). For example, Professor Danesh leads the BRC’s Population & Quantitative Sciences Theme, which is co-led by Professor Sylvia Richardson, Director of the MRC Biostatistics Unit. Professor Nick Wareham, Director of the MRC Epidemiology Unit, leads the Nutrition and Lifestyle Theme of the BRC. Several senior scientists in the DPHPC are co-investigators in the BRC’s disease-focused themes, such as the Cardiovascular and Respiratory and Cancer themes. Funds from the BRC have enabled critical pilot studies (e.g. comparison of several different ‘omic’ technologies) by the DPHPC prior to deployment of separately-funded large-scale assays as well as phenotypic enrichment of population studies, such as support for achieving e-health record linkages. In August 2016, Professor Danesh became the Scientific Director of the NIHR Cambridge BioResource (a resource for genotype-directed deep phenotyping studies to advance understanding of the mechanistic basis of disease), a role which should enhance opportunities to link population and mechanistic studies.

Public and participant involvement

Professor Kay-Tee Khaw

The Department of Public Health and Primary Care, in collaboration with the Medical Research Council Epidemiology Unit, leads several large population-based observational and intervention studies investigating determinants of health and chronic disease; findings from these studies have informed Department of Health public health programmes and contributed to clinical and public health policies and guidelines to prevent disease and maintain health as people age.

One of the largest of these, the European Prospective Investigation of Cancer and Nutrition (EPIC–Norfolk Study), now in its third decade, has a public engagement strategy for communicating research outcomes, raising awareness and public involvement aiming to enhance the quality and impact of research. As part of these activities, a Participant Advisory Panel was formed in 2010 to act as a research consultation group to involve members of the public in the research and to encourage active collaboration in research processes. The creation of this panel was an inclusive partnership between EPIC participants and researchers. The objective of the panel is to inform and improve the way in which research is prioritised, planned, conducted and communicated. In addition, researchers actively engage with the public at science festivals, talks to charitable organisations and local interest groups with the common aim of disseminating research findings and interacting with the general public.
The Cambridge Primary Care Unit (PCU) works to reduce the burden of ill health by:

- Identifying and targeting the behaviours that lead to chronic disease
- Improving early detection of illness
- Improving the delivery of health services in community settings
- Teaching medical students, clinicians, researchers and educators

Our research is organised into five research themes: Behaviour and Health, Cardiovascular Disease and Diabetes, Cancer, Health Services Research and End of Life Care. We are also a highly active teaching environment, contributing to undergraduate and clinical students’ teaching, and the clinical teaching of student doctors. We also run and teach the MPhil in Primary Care Research and train several NIHR Academic Clinical Fellows each year.

The PCU rejoined the NIHR School for Primary Care Research in October 2015, which is a partnership between eight leading academic centres for primary care research in England. Professor Jonathan Mant is Head of Unit and our Group leaders are Dr Stephen Barclay, Dr John Benson, Professor Christi Deaton, Dr Robbie Duschinsky, Professor Simon Griffin, Professor Mary Dixon-Woods, Professor Theresa Marteau, Professor Stephen Sutton and Dr Fiona Walter.

— Read more about our work at: [www.phpc.cam.ac.uk/pcu](http://www.phpc.cam.ac.uk/pcu)

### Academic Clinical Fellowships

Dr Collette Isabel Stadler, PCU, said:

“My research is focused on health inequalities for vulnerable groups, in particular looked-after children. My Academic Clinical Fellowship at the PCU has enabled me to work with Professor Martin Roland and Dr Valerie Dunn (Institute of Psychiatry) exploring the cost to the public purse of looked-after children’s unstable care journeys.”

### Public Health: Research into Policy project - Contributing to NICE guidelines

Dr Robbie Duschinsky, PCU, mobilised international colleagues to ensure draft NICE guidelines that had the potential to impact on the experiences and outcomes of children suspected of being the victims of maltreatment were revised to reflect the most robust and up to date evidence.
The Behaviour and Health Research Unit (BHRU) is funded by the UK Department of Health to contribute evidence to national and international efforts to achieve sustained behaviour change that improves health outcomes and reduces inequalities. We develop evidence on effective ways of changing four sets of behaviours – smoking, excessive consumption of food and alcohol, and physical inactivity.

— Read more about the BHRU: www.bhru.iph.cam.ac.uk

Size matters!

In a recent BHRU study (Pechey et al., 2016, BMC Public Health) conducted in a Cambridge drinking establishment, we found that altering the size of the glass in which wine is served, but keeping the amount of wine served the same, resulted in almost a 10% increase in wine sales.

This research built on an earlier BHRU study (Pechey et al., 2015, PloS One) whereby we found that the same amount of wine was seen as less in larger compared to smaller glasses, and in narrower compared to wider glasses, for larger portions of wine. Our results highlight that while the increase in wine sales is good for establishments, the fortuitous increase in alcohol consumption by the consumer is not so beneficial to health or pocket.

Might e-cig ads re-normalise smoking in children?

Children are now more likely to experiment with e-cigarettes than they are with tobacco cigarettes and there is concern that exposure of children to e-cigarette adverts could be contributing to higher rates of experimentation.

In a recent BHRU study (Petrescu et al., 2016, Tobacco Control), we evidenced that children are less likely to rate e-cigarettes and occasional tobacco smoking harmful or deleterious to health if previously exposed to glamour-type e-cigarette advertisements.

In May 2016, the EU Tobacco Directive changed the regulations on the marketing of e-cigarettes and our results add weight to this decision. However, more research is needed to not only replicate this finding but to also examine both the short and long-term impacts of e-cigarette advertising on children, in what is a relatively new field of research.

Judging nudging

The results of a BHRU study (Petrescu et al., 2016, PloS One) published in June 2016, conducted with over 2000 UK and USA participants, evidenced that highlighting the non-conscious nature of nudges does not alter their acceptability.

However, most of the participants in the study did find interventions, such as reducing size, to be acceptable if they perceive non-conscious nudging to be effective. This result suggests that people are prepared to trade-off dislike of an intervention for achieving a valued goal, such as tackling obesity. Perceived effectiveness was the strongest predictor of acceptability for all interventions across the two samples.
Cardiovascular Group
Professor Jonathan Mant

The work of the Cardiovascular group spans the prevention, diagnosis and management of cardiovascular disease in community settings. Current work includes research on transient ischaemic attack, stroke, diabetes, heart failure, atrial fibrillation and hypertension.

— Read more about the Cardiovascular Group at: www.phpc.cam.ac.uk/pcu/research/research-groups/cvd

Engagement with patients and carers

Professor Jonathan Mant leads the NIHR funded programme of research entitled Developing Primary Care Services For Stroke Survivors. Patient and public involvement (PPI) has been key to the development of a novel intervention to improve care for stroke survivors and their carers living in the community. Input on the development of a new model of care has taken place on a number of levels, including:

— Consultation with a stroke survivors support group in Cambridge facilitated by The Stroke Association and previously by Different Strokes. Around 25 stroke survivors and carers attended on three separate occasions, and were invited to comment and feedback on specific aspects of our research plan. We also invited volunteers to become more involved on a regular basis by sitting on our Intervention Development Group and participating in future workshops. Now, stroke survivors are helping shape the new intervention through the Intervention Development Group and the programme steering committee.

— We attended a Stroke Research Patient and Family Meeting of approximately 20 survivors and carers at King’s College London to present results from a qualitative review of literature. Stroke survivors commented on the availability of services in the community and their needs regarding both psychological and social care. They shared how their experiences resonated with those presented as part of the review results.

— We conducted a PPI group with two stroke survivors and a carer in Bedford that was also attended by a charity worker from the Stroke Association. Survivors and the carer shared their insights on several components of the planned model of primary care, including the use of the checklist and a single point of contact, based on their different experiences of care after stroke. The group also provided opportunity for participants to exchange experiences and learn about different sources of support they received.

Great insight and understanding has been gained from the range of PPI work undertaken by the group, enabling the development of a shared philosophy for the new intervention, as well as providing feedback on our ideas.
The Clinical Nursing Research Group (CNRG) conducts research focusing on improving outcomes in people with long-term conditions, and builds research capacity and capability among nurses, midwives and allied health professionals in Cambridge University Hospitals NHS Foundation Trust and the School of Clinical Medicine.

The Clinical Nursing Research Group is led by Professor Christi Deaton, Florence Nightingale Foundation Professor of Clinical Nursing Research.

– Read more about CNRG at: [www.phpc.cam.ac.uk/pcu/research/research-groups/cnrg](http://www.phpc.cam.ac.uk/pcu/research/research-groups/cnrg)

During the past year, we have engaged actively with patients and the public. We have been working with our colleagues in Respiratory Medicine and the East of England Pulmonary Rehabilitation network to increase referral to and uptake of pulmonary rehabilitation (PR). Prior to submitting a Research for Patient Benefit grant application, Dr Frances Early and Dr Ian Wellwood sought input from PR participants and patient support groups (Breathe Easy and Hunts Breathe for Life). Forty-seven people attended across six meetings to tell us about their perceptions of PR and provide input to our research plans. Patients were passionate about the benefits of PR and keen to support increased access. Patients told us they wanted more and improved information about PR and preferred to receive it from trusted sources in primary care. They stressed the importance of primary care routes for enrolling research participants and said that locating the study in primary care was important. Nineteen individuals have expressed interest in continuing involvement with the research.

Professor Christi Deaton serves on the advisory board of the NIHR Brain Injury Health Technology Co-operative, and has been very involved in the development of Patient and Public Involvement (PPI) activities. She contributed to the development of the PPI strategy, was instrumental in obtaining funding for a PPI operational lead (whom she co-supervises), and supports the PPI workshops, surveys and registry development. The Brain Injury Healthcare Technology Co-operative is surveying patients and carers, and holding events where they can discuss unmet needs and potential solutions that can be developed and tested.

We have submitted evidence and information to the All-Party Parliamentary Group on Heart Failure (using examples from our research) and attended the All-Party Parliamentary Group’s launch of the Report on Heart Failure in September. Professor Deaton serves as a volunteer on numerous advisory groups, committees, and task forces of the British Heart Foundation and the European Society of Cardiology, both of which are engaged in influencing/advising healthcare policy nationally and within the European Union.

We also participated in the Cambridge ‘Big Weekend’ (June 2016) for the public, where we displayed and discussed our research, took blood pressures (n = 140), talked about the importance of being physically active, and provided information about heart and lung conditions.
Cambridge Centre for Health Services Research
Professor Mary Dixon-Woods and Jon Sussex

The Cambridge Centre for Health Services Research (CCHSR) is a collaboration between the Health Services Research Group at the University of Cambridge and healthcare researchers at RAND Europe. The leadership of the Cambridge team changed in May 2016 in anticipation of Professor Martin Roland’s retirement in August, and we welcomed Professor Mary Dixon-Woods as the new co-director of CCHSR alongside Jon Sussex (RAND Europe).

— Read more about CCHSR at: www.cchsr.iph.cam.ac.uk

Tele-First for Cambridge Institute of Public Health

In April 2016, Dr Jenny Newbould and colleagues held a learning event as part of the Tele-First: Telephone Triage as an Alternative to Face-to-Face Contact in General Practice project. As part of this project, funded by the NIHR Health Services and Delivery Research Programme, CCHSR researchers are examining the impact of telephone consultations on staff, patients, use of primary and secondary health care services and the cost consequences of the approach.

The event was attended by GPs and Practice Managers from five GP practices that are using telephone triage approaches. The research team reported findings from the study so far, and facilitated a discussion of the extent to which the emerging findings resonated with people’s own experience of telephone triage. The event also gave practice staff the opportunity to meet counterparts from other practices who were using telephone triage approaches, and to share their experiences with them and learn about the challenges and successes at other practices. A second learning event is planned for the end of the project.

Improving the public reporting of organisational variations in care

Dr Yoryos Lyratzopoulos and colleagues worked with NHS England to improve the reporting of the Cancer Patient Experience Survey (CPES). Based on our previous research, hospital reports from that survey now account for the characteristics of patients served by different hospitals, allowing better understanding of links between ethnicities, age, cancer type and more critical patient evaluations. Parallel reporting of both actual and adjusted hospital performance, as is now used in the CPES, can make it easier for practitioners to engage with the survey data for improvement work.

Explaining government decision-making to the public

In March 2016, a mother released images of her two-year old daughter covered in a severe meningococcal rash, who later died from the disease. The pictures received widespread attention and led to a public campaign to extend vaccination to older age groups, with over 800,000 signing a Government petition. The Government’s response was that it would not be cost-effective to do so.

This story was covered extensively in the national and local press. For a local angle in Cambridgeshire, the BBC and Cambridge TV interviewed Dr Ed Wilson from the Centre to explain the process behind the Government’s decision (www.cambridge-tv.co.uk/Meningitis-Vaccine). He explained the principles guiding the decision: that resources are finite and the NHS has a duty to maximise the health of the population via those resources. The Government judged that the added health benefit of extending the vaccination programme would be exceeded by the loss of health benefit from services cut-back to pay for it, and so chose not to extend the campaign.
Wider connections: the CCHSR blog and HealthEconomics@Cambridge network

As part of our commitment to communicating research and expertise to diverse audiences, we run a successful blog (www.cchsr.iph.cam.ac.uk). Reaching around 12,000 unique visitors a year, its posts are diverse but generally provide accessible summaries of recently completed research. For example, a recent blog outlined the findings from an interview study exploring doctors’ attitudes to patient experience surveys (www.cchsr.iph.cam.ac.uk/2736).

The blog also offers comments on news and policy, and tips on aspects of the research process, including how to think about dissemination (www.cchsr.iph.cam.ac.uk/2760).

The blog provides a forum for every member of CCHSR to communicate their work and thoughts in a less formal way than the more usual routes of academic journals and published reports. After three and a half years of blogging as a group, it has become a core component of our engagement and dissemination plan, and will continue to evolve.

The HealthEconomics@Cambridge network, coordinated by Dr Ed Wilson, brings together people from the University and from across Cambridgeshire who have an interest in health economics. This year has seen membership grow to 107, and the network continues to offer a regular seminar series for its members (www.publichealth.cam.ac.uk/health-economics-cambridge) and information about training opportunities and conferences.

Rand Europe Community Hospitals Project

This year, healthcare researchers at RAND Europe continued their research to improve care practices within the NHS – for example by training “flow coaches” to improve efficiency in healthcare settings, and by examining the impact and influence of the establishment of Communities of Practice (self-organised groups of stakeholders who share a passion for improvement and strive to be better practitioners).

A key area of the research has focused on what the NHS could learn from international experiences of using community hospitals to manage care. Community hospitals in England have usually been local hospitals in which GPs and nurses provide care. Often, they cater for rural populations who face difficulties accessing the larger, general hospitals, which are located in more urban areas. Because of a globally ageing population and advances in health service organisation and technologies, different types of community hospitals have now developed. It is important to understand these models better, how they work, and how they might be used in the NHS.

Experience of community hospitals in other countries may provide important insights. The team therefore reviewed existing research, and carried out detailed studies of five countries (Australia, Finland, Italy, Norway and Scotland), including interviews with experts in each. Researchers visited four community hospitals – in Finland, Italy and Scotland – interviewed staff, observed daily activities and analysed documents.

The findings show that community hospitals provide a wide range of services. They can bring together different parts of health, social and community care, but the way this is done varies within and across different countries. Community hospitals can provide effective care and are valued by patients and their families, but there is limited evidence to understand these benefits against the costs of community hospitals. Community hospitals could make an important contribution as the NHS develops new ways of working but there are a number of challenges, including how they should be staffed, the degree of local control and how communities can best be involved.
Using patient-reported data to increase understanding of diagnostic pathways

The UK’s poor performance in cancer survival is well-known. Although overall survival figures have improved for most cancers, the gap with other European countries has narrowed little, if at all. Rapid diagnostic pathways have been established, coupled with national guidance on selection of patients for testing. Nevertheless, the incidence of both symptoms that could be cancer and cancer itself is increasing as our population ages, and the public expectation of being tested for possible cancer is high.

We already know that countries with a strong divide between primary and secondary care perform less well. We also know that there are marked differences between patients and between cancer types in the time from first noticing a symptom to first presenting to their GP, and the time from first presentation to healthcare and cancer diagnosis; higher GP propensity to test or refer for suspected cancer in primary care is associated with better survival, and may reduce inequalities.

The SYMPTOM studies have provided more granular evidence around these diagnostic pathways for possible lung, colorectal and pancreatic cancer. We collected patient data using questionnaires as they were referred from primary care, and combined these with data from their primary care and hospital records. We found that healthcare professionals, as well as patients, responded less promptly to some cancer symptoms than others, and that longer times to diagnosis were evident among people with mental health and other comorbid conditions.

Some clear implications for policymakers and clinicians emerged: awareness campaigns could consider messages that reflect the importance of multiple rather than single symptoms, GPs could consider concurrent rather than sequential investigations, and all healthcare professionals should beware of misattributing potential symptoms of cancer in those with self-reported anxiety and/or depression. The findings add further evidence to the Independent Cancer Taskforce’s recent call for ‘a significant increase in diagnostic capacity, giving GPs direct access to key investigative tests, and the testing of new models which could reduce the burden and expectation on GPs.’

Primary Care Cancer Research

Dr Fiona Walter

Led by Dr Fiona Walter, GP and Principal Researcher in Primary Care Cancer Research, the group works on the role of primary care in cancer prevention, diagnosis and follow-up care. Current research focuses on understanding patient pathways to diagnosis and interventions to improve timely diagnosis of the skin cancer melanoma, oesophageal-gastric, pancreatic, brain, lung and colorectal cancer. We also have new work developing and implementing risk-stratified approaches and genetic advances into cancer detection in primary care.

— Find out more at: www.phpc.cam.ac.uk/pcu/research/research-groups/cancer-group

The role of primary care in cancer control
The Clinical Practice Research Datalink (CPRD) is an anonymised database of the primary care records of five million current UK patients. It is linked to an increasing range of other clinical “big data” such as Hospital Episode Statistics (HES), death certification records, and disease registries in areas such as cancer and heart disease. Over 1,500 articles have been published using CPRD, and the number increases every year. The database not only supports the design of large observational studies, but can also support interventional studies.

CPRD at Cambridge is a multidisciplinary team, based in the Primary Care Unit, which aims to increase the quantity and quality of CPRD-based research across the University. Recent student doctor projects, for example, have included work on defining chronic kidney disease, diabetes and atrial fibrillation and investigating the quality of the coded data within CPRD. Ongoing research project topics include stroke, atrial fibrillation, cancer, end of life care, Parkinson’s disease, autism, dementia, multi-morbidity and depression. The team welcomes interest from researchers and students across all six Schools of the University.

— Read more about CPRD at Cambridge at:
www.phpc.cam.ac.uk/pcu/cprd_cam
Teaching in primary care for medical students

General Practice Education Group
Dr John Benson

The General Practice Education Group (GPEG) organises teaching in primary care for medical students at the University of Cambridge. The Group delivers a significant part of the Cambridge medical course. We provide student placements for clinical teaching with the invaluable support of nearly 140 GP practices and expert seminar teachers across the Eastern Region and we are supported by researchers in the Primary Care Unit’s diverse academic primary care research community. In addition, we deliver seminars about aspects of primary care and offer Student Selected Components in General Practice. The clinical courses in Ethics and Law, Palliative Care and Professionalism are currently led and administered by members of GPEG.

— See more about GPEG at: www.phpc.cam.ac.uk/pcu/education-and-training-overview/opportunities-for-teaching

Opportunities for student doctors

“Student doctors who opt to carry out their Student Selected Component (SSC) in the Primary Care Unit, or with a General Practice, have access to a wide range of challenging opportunities and a wealth of experience. Possibilities range from research to underpin early diagnosis of cancer in primary care to tackling health inequalities through pro-active work with traveller communities. Students will be working with some of our most dynamic GP teachers and primary care researchers, possibly leading to a first author publication.”

— Dr John Benson, Senior Lecturer in General Practice, Director of GPEG, September 2016

In 2016, Kathryn Dixon, student doctor at Cambridge, audited GP records to examine vaccine uptake in a Traveller community, with Dr Tanya Blumenfeld, finding that Traveller communities have significantly lower uptake of vaccinations compared to the general population.

Medical Education Research Group

The Educational Research Group has this year published some of the final papers from the long-running DiME study, which has surveyed several cohorts of Cambridge medical students annually to evaluate their levels of empathy and attitudes to palliative care. Results so far show reports that medical students become less empathetic as their course progresses are greatly exaggerated: both here in Cambridge and in a range of other medical schools, it seems that, in modern medical courses, empathy stands up well to the rigours of learning to practice as a doctor.

— See: BMC Medical Education DOI: 10.1186/s12909-016-0603-7

Developing our clinical teaching

2015 saw the introduction of a new Clinical School curriculum, with a further increase in General Practice teaching to 20 weeks across the course. This will be followed by a large increase of student numbers because, from 2017, all Cambridge medical students will remain here in Cambridge for their Clinical studies. To cope with this, the GPEG team has expanded with the appointment of three hub coordinators and administrators, to strengthen links with GP teachers around the region.

Encouraging students to consider General Practice as a career

“Since the inception of the NHS in 1948, the specialty of General Practice has been central to the provision of healthcare in the UK. General Practitioners use the biopsychosocial model to deliver high quality, evidence-based management of a multitude of acute and chronic conditions, and control access to secondary services. General Practice combines the challenges of a truly generalist, patient-centred approach and those of running a business. It remains a highly fulfilling career, with continuity of care ensuring that specialists in General Practice develop enduring relationships with their patients. GPs can also develop individual interests, by becoming GPs with a special interest in particular areas of medicine, or become involved in research or commissioning, for example.”

— Dr Kinnary Martin, GPEG

Cambridge continues to receive excellent student feedback about our teaching in General Practice and has capacity to recruit even larger numbers of students. With this in mind, GPEG has appointed Lucy Lloyd to manage communications across our initiatives aimed to increase eventual student choice of General Practice as a career. These include a new elective course in Primary Care Research methods and support for GP teachers to showcase the attractions of General Practice as a career destination – as well as its undoubted challenges.
The MRC Epidemiology Unit studies the genetic, developmental and environmental determinants of obesity, type 2 diabetes and related metabolic disorders, and contributes to their prevention. It has research programmes that cover a diverse portfolio of study areas across the lifecourse – from genetics and development, through physical activity and nutrition, to disease prevention and treatment in later life.

The Unit also leads CEDAR, the Centre for Diet and Activity Research (see page 25). Together, the Unit and CEDAR engage with policy, practice and the public to bring evidence to bear on public health action, and further develop their research to meet public health need.

— Read more about the MRC Epidemiology Unit at: www.mrc-epid.cam.ac.uk/news

Evaluating policy, rewarding impact

The effect on our health of the large amount of sugar in our diet has been a prominent topic in the news in recent years, with heated debates about what political and public health action might be effective and acceptable to reduce its harm.

Following pressure from across the public health community, the Chancellor of the Exchequer announced a levy on the soft drinks industry in March 2016. But, without other simultaneous measures, will it work to reduce consumption? In collaboration with researchers at Oxford University and the London School of Hygiene and Tropical Medicine, Unit scientists are conducting an evaluation of the levy to assess whether, how and in whom it has an impact on health.

This new research follows our contributions to a number of policy and evidence dialogues in this area, which have been recognised as an exemplar of creating research impact. For instance, the Unit’s Nutritional Epidemiology Group has been building evidence, raising awareness, and contributing to policy dialogues about the health effects of sugar, fat and foods. The Group has been advancing understanding of this area using detailed epidemiological investigations of the diet of large populations, combining traditional subjective methods with new approaches that use objective measurement. The Group, led by Dr Nita Forouhi, together with colleagues in the Unit, has engaged at a national and international level with policy and guidance bodies, as well as using the media to improve understanding of the issues, with the potential for a direct impact on people’s health. In June 2016, they won the University of Cambridge award for Best Impact for this work.

The Unit’s broad range of policy influence was also demonstrated by its strong overall showing across the Impact Awards. It submitted five nominations which showcased the impact being achieved across diet, physical activity, travel and education with local, national and international bodies.
Fenland Study reaches out again

The Fenland Study investigates the interaction between environmental and genetic factors in determining obesity, type 2 diabetes, and related metabolic disorders. The study is unique in the level of detail it collects about the health and lifestyle of participants, and the objective measurement techniques used in the screening.

Phase one of the study finished in 2015, with more than 12,000 volunteers from across Cambridgeshire taking part, and Phase two is well underway. Over the coming years, we are inviting participants for a return visit so that we can learn more about the relationships between changes in physical activity and diet, body composition and disease risks. So far more than 2,500 have already returned for a Phase two visit.

In summer 2016 we held a series of public meetings for Fenland Study Volunteers and their friends and families. We visited Ely, Wisbech and Cambridge City to tell them about new findings from Phase one of the Study and progress in Phase two.

The focal point of each of the meetings was a presentation on progress so far, key scientific findings and our plans for future research. This was followed by a longer panel discussion where volunteers had the opportunity to ask questions about the study and its implications. Volunteers were also able to meet and talk with researchers and the wider Fenland Study team before and after the meeting.

Venues were packed out for the meetings, with over 550 people attending over three evenings. This high level of interest was also reflected in the many excellent questions and often lively debate during the discussions, which provided researchers with many opportunities to explain the strengths of the Fenland Study and how the knowledge it is generating can contribute to informing policies to improve health.
Epidemiology in action

Don’t stop moving – Unit Director looks beyond the science of physical activity

As well as our longstanding contribution to the Cambridge Science Festival, and our event at the newly established MRC Festival of Medical Research (see page 23 in CEDAR section), the MRC Epidemiology Unit has been reaching out beyond science engagement events. In October 2016, Unit Director Professor Nick Wareham spoke at the Cambridge Festival of Ideas to explore whether the digital world is friend or foe in fighting a sedentary future.

Physical inactivity is a 21st Century epidemic. We have created a world where we move less and we sit more – from our drive to work, to our office desks, to our evening spent on the sofa. Taking the long view of history and epidemiology, Professor Wareham spoke about technology’s role in this: fostering a shift away from manual work, creating countless labour saving devices, and building a world of the omnipresent display screen. Many of these changes have brought great benefits, but they also create significant health risks that are spreading throughout the world.

In light of this, Professor Wareham explored whether technology might also come to our rescue. Recent years have seen digital innovations that are aimed at getting us moving again, whether it’s a simple text message to prompt behaviour change, or wearables technologies that measure and feed back on the user’s every movement and vital sign. Indeed, we are witnessing the growth of a new movement, ‘the quantified self’, that seeks personal knowledge and self-improvement through tracking with technology.

In a lively and thought-provoking session, Professor Wareham examined what this means for the individual, and what all these data might mean for a more quantified society – technically, politically and ethically.
The Centre for Diet and Activity Research

Professor Nick Wareham

The Centre for Diet and Activity Research (CEDAR) is studying how the physical, social and economic environment influences what we eat and how much we move around. By better understanding these behaviours, we can support the development of public health interventions, and work with policymakers and practitioners to help shape a healthier world. Led by the MRC Epidemiology Unit, CEDAR is one of five Centres of Excellence in Public Health Research funded through the UK Clinical Research Collaboration, and is a partnership between the University of Cambridge, the University of East Anglia and MRC Units in Cambridge.

— Read more CEDAR news at: www.cedar.iph.cam.ac.uk/news

Online tools taking evidence into action

CEDAR has a well-established strategy to foster knowledge exchange between academics and decision makers, from lay summaries of research, through policy-facing events, to ongoing collaborations with public health and policy bodies. An area of recent growth has been the development of online tools that support decision makers in achieving public health action.

The Propensity to Cycle Tool (PCT: www.pct.bike) is funded by the Department for Transport and developed by a team of researchers led by the Public Health Modelling group from CEDAR. It is freely available and open source, and is helping planners understand the huge potential for increasing cycling in England, as well as pinpointing specific areas and routes where cycling might grow most. The tool uses Census data about journeys to work, and with an interactive map it offers different scenarios to show town and transport planners which areas and routes may have the highest potential for commuter cycling in the future. The tool takes into account not only journey distances but also how hilly routes are – important factors that influence whether a particular journey is likely to be cycled.

In our diet work, researchers from our Social, Economic and Neighbourhood Determinants of Diet group have been working with data scientists to develop an interactive web-based tool for exploring and quantifying neighbourhood food environments. The Food Environment Assessment Tool (FEAT) provides detailed, up to date information about the density of retail food outlets, from supermarkets to fast food takeaways, at five levels of geographic scale, from county to postcode level. Planning and public health professionals in Local Authorities will be able to use FEAT to better understand the food environments of their populations, and to plan interventions to make our towns and cities healthier.

— FEAT is supported by the ESRC Impact Acceleration Account.
Epidemiology in action

Students get in the picture to GoActive

Physical activity levels drop off during adolescence, and stay low in adulthood, which can increase the risk of long-term health problems in adulthood. GoActive is a new NIHR-funded programme designed to increase physical activity in secondary school students. The programme includes the whole of Year nine, and encourages students to try new physical activities with their friends. The programme has already completed a successful pilot in four schools, and CEDAR researchers are now working with 16 schools across East Anglia to evaluate the programme in a cluster randomised controlled trial.

Involving young people has been at the heart of GoActive. In developing the intervention, Dr Kirsten Corder and Dr Helen Brown worked closely with teenagers, teachers and parents to identify and develop activities and approaches that could encourage all students to be active. They have also organised numerous development and dissemination activities, including deliberative dialogue workshops with a variety of stakeholders, including schools, county councils, and government agencies.

To help with recruitment and to introduce the programme to schools, researchers worked with teenagers to develop an introductory video. A workshop was used to develop the script, where students appraised language, tone, imagery, and style to make sure the film would be accessible, clear and enjoyable. Students also provided ongoing input during filming and editing. The finished video provides a student-led introduction to GoActive, which explains various scientific concepts in an accessible and entertaining way. The video also demonstrates measurements in a reassuring way, which is particularly important because this can be an awkward process for adolescents taking part in research.

As well as the introductory video, the researcher and students have developed dynamic 60-second video clips of specific GoActive activities that students and teachers can use to motivate students to try each activity.

— Learn more about GoActive and watch the video at www.goactive-uk.com
Are you in a healthy place? Travel, food and our neighbourhoods

To complement our strong track record of bringing our evidence to bear on public policy, we used the inaugural MRC Festival of Medical Research in 2016 as an opportunity to bring more public voices into our policy and research conversations.

Are You in a Healthy Place? Travel, Food and Our Neighbourhoods was an evening where members of the public could mingle with our scientists and, through interactive presentations, explore how our neighbourhoods influence our physical activity and diet.

Dr David Ogilvie, leader of the Physical Activity and Public Health group, addressed how our environments affect our travel choices. He presented findings from the Commuting and Health in Cambridge study, and attendees discussed what it might be that makes Cambridge a city with such high levels of cycling. Using interactive software, we were able to poll audience members via their smartphones, and get real time responses to the questions raised by the presentation, with the results projected for all to see and discuss.

Next Dr Tom Burgoine, from the Social, Economic and Neighbourhood Determinants of Diet group, revealed research that showed how food outlets shape our diet, weight and health. Showing the Food Environment Assessment Tool, Tom discussed how social deprivation, geography and food choice are intertwined, and challenged the audience’s perception of how saturated with takeaways their own neighbourhoods were.

At the end of the evening, the interactive software meant we could see how audience attitudes had shifted during the evening: although many came along already persuaded that where we live and work influences our health, we were able to convince quite a few more. In return, our researchers enjoyed the opportunity to discuss their research in depth with members of the public and gained insights into how people perceive the role of scientific evidence in guiding public policy.

Wordcloud generated by attendees using online polling tool in response to the question: "Why do you think more far more people cycle in Cambridge than in most other towns?"
The MRC Biostatistics Unit (BSU) is one of the largest groups of biostatisticians in Europe, and a major centre for research, training and knowledge transfer, with the mission ‘to advance biomedical science and human health through the development, application and dissemination of statistical methods’.

“Statistics is applicable in all aspects of medicine, epidemiology and public health,” says Professor Sylvia Richardson, Director of the MRC BSU in Cambridge since 2012, “It is fundamental for designing clinical trials, modelling disease programmes, asserting the influence of the genetic make-up of our health, as well as evaluating the effectiveness of public health policies.”

Our current and recent research has delivered innovative methodology in important biostatistics research areas, such as statistical genomics, longitudinal analysis, complex evidence synthesis, and clinical trial design, which as illustrated in our research highlights below, has direct impact and influence on clinical practice and public health.

— Find out more about the Unit and keep up to date with our latest news and events at: www.mrc-bsu.cam.ac.uk

**Statistics for public health**

**MRC Biostatistics Unit**
Professor Sylvia Richardson

**Statistical methods to influence HIV policy guidelines**

Robust monitoring of human immunodeficiency virus (HIV) disease burden is crucial for the planning of care provision and the implementation and evaluation of public health policies to ultimately reduce disease transmission.

The disease burden includes the proportion (prevalence) living with HIV, and the proportion of infections remaining undiagnosed, in both the general population and specific groups at high risk of infection. Quantifying the size of the infected and diagnosed portion of the epidemic is particularly important. Undiagnosed individuals cannot benefit from the highly effective treatments available and they unknowingly continue to spread the disease.

Dr Daniela De Angelis and her research team at the BSU provide much needed estimates on HIV burden. Their novel Multi-parameter Evidence Synthesis (MPES) approach to estimation of HIV burden continues to be the chosen method to obtain UK official annual HIV prevalence estimates (HIV in the UK – Situation Report 2015: Incidence, Prevalence and Prevention, Public Health England). BSU works with Public Health England to provide evidence for the annual reports on the state of the HIV epidemic in the UK.

**Platform trial designs for improving patient outcomes**

Targeted treatments are being developed for many types of cancer. These treatments target biological pathways known to be associated with the development of tumours.

Often, targeted treatments will work very well in patients whose tumour carries certain mutations but poorly in others. New trial designs that take this variation in effect into account are of great interest.

Dr James Wason and colleagues at BSU have been working on improving the design of clinical trials that test targeted treatments. By testing multiple treatments in the same trial (in a so-called ‘platform’ trial), and using adaptive trial approaches (Wason et al, Br J Cancer, 2015 Sep 1;113(5):699-705) patients in the trial will be more likely to receive a treatment that works well for them. The BSU is currently collaborating with the Department of Oncology to apply this novel trial design in real phase II cancer trials.
Modelling progression of dementia

With the launch in August 2016 of the MRC/NiHR-funded Deep and Frequent Phenotyping study (D&FP) in Alzheimer’s disease, the MRC Biostatistics Unit is now involved in three interlinked major collaborations in dementia research. The other two collaborations are the Dementias Platform UK (DPUK) and the European Prevention of Alzheimer’s Disease Consortium (EPAD).

The D&FP study is a UK multi-centre, non-interventional repeated measures observational study which involves the most thorough and rigorous series of tests to detect Alzheimer’s disease ever performed. The study involves approximately 250 volunteers whose time and effort will make a huge difference in the future diagnosing and treating of the disease. It is designed to generate a biomarker set (combining both novel and more established markers) for proof of concept in prodromal (early-stage) Alzheimer’s disease, with the hope of dramatically improving the success rate of clinical trials for Alzheimer’s disease. It leverages the existing infrastructure and resources of DPUK and is nested within EPAD’s combined registry, cohort and adaptive trial programme.

At present there is a high rate of failure for treatments being tested for Alzheimer’s disease. This is probably because these treatments were tested on those who already have irreparable damage to the brain. By identifying persons in the very early stages of disease through use of biomarkers present then, it is likely that treatments will be more effective in slowing or arresting further progression of the disease.

Our involvement in all three projects is focused on the modelling of the progression of the disease through use of the biomarkers and cognitive function outcomes. It is hoped that, through BSU’s work, a better understanding of the natural history of the disease will result and that identification of novel biomarkers will be realised. This will be used to inform clinical trial design and recruitment, as well as for treatment management and monitoring of patients with dementia. Our involvement is led by Director, Professor Sylvia Richardson (in DPUK), Professor Fiona Matthews (DPUK), Dr Adrian Mander (in DPUK and EPAD) and Dr Brian Tom (in DPUK, EPAD and D&FP).
Evaluation of health policies to improve decision-making

Decisions taken by the health service should consider the health effects and costs of different policies in the short and long-term, using all available and relevant data. Decision-analytic models are used to combine diverse sources of data and compare estimates of relevant quantities, such as expected years of life gained for a population, between alternative policies.

The work of Dr Chris Jackson and colleagues at the BSU involves statistical methods and their application in these models. Their methodological work concerns how uncertainty about model assumptions or inputs is handled. In recent work they have shown how short-term and long-term survival data from different sources can be combined, and in ongoing work they are developing Value of Information methods to determine what further evidence should be collected to improve decision-making.

Dr Jackson is currently the statistician in a team commissioned by Public Health England to evaluate the policy of NHS Health Checks for 40-74 year olds. In this project, microsimulation modelling is used to represent progression of cardiovascular risk factors, multiple chronic diseases and treatments, and to determine how potential changes to the policy would affect outcomes for the UK population.

Motivating new interventions for patients with lupus nephritis

In a series of studies of lupus nephritis, conducted under the support of the Systemic Lupus International Collaborating Clinics research organisation, BSU scientists including Professor Vern Farewell undertook statistical analyses of data from over 1800 patients with lupus. It was established that almost 40% of lupus patients develop lupus nephritis and that the condition is associated with a substantial risk of end stage renal disease and death. This highlights the need for new treatment strategies.

In addition, the expected improvement and deterioration in renal outcomes for patients with lupus nephritis was characterised using multi-state model methods and software developed at the BSU. It was found that these outcomes are associated with identifiable risk factors.

This work established that new therapeutic interventions for lupus nephritis must meet or exceed these expectations and provides the basis for the design of future clinical trials.
Changes in the level of diseases in the population can be impacted by changes in the level of newly occurring diseases or changes in the relationship between the disease and survival. These differences can be investigated using longitudinal data from epidemiological research.

For dementia, where the Cognitive Function and Ageing studies have shown a decrease in the prevalence of dementia, this may be due to either less new dementia occurring or a decrease in the length of survival after dementia has developed.

The Cognitive Function and Ageing Studies are a large epidemiological investigation where all individuals have been assessed for the presence of the dementia syndrome. The study has undertaken both a baseline wave and a longitudinal follow-up wave which enables us to investigate the number of new dementia cases (incidence) occurring in the population and to see whether this has decreased in line with the prevalence.

Professor Fiona Matthews and her colleagues found that the incidence of dementia had decreased within the general population over time - an effect that was seen more in men than women. There was still a strong age effect and dementia was also found to occur more often in deprived communities.

These findings show that the reduction in prevalence is probably due to less dementia occurring in the population, rather than a decrease in survival for those with dementia.

There is a continued need to attempt to reduce dementia within more deprived communities and this research will enable policymakers to prioritise funding to those most in need.
Following restructure and refocus, MRC Human Nutrition Research became the MRC Elsie Widdowson Laboratory (MRC EWL) on 1 September 2016, retaining the remit to conduct nutrition research and surveillance to improve the health of the population and to inform nutrition policy and practice. At MRC EWL we also provide specialist expertise and facilities in human nutrition science for groups engaged in discovery research and in national diet and nutrition surveillance.

— Find out more at: [www.mrc-ewl.cam.ac.uk](http://www.mrc-ewl.cam.ac.uk)
National Diet and Nutrition Surveys

Led by Polly Page, MRC EWL is responsible for the dietary assessments, biochemical analyses and reporting for the rolling National Diet and Nutrition Surveys (NDNS) programme. Our impacts this year include four co-authored government reports in the NDNS series.

The latest NDNS report (years five and six combined) provides data on the dietary intake and nutritional status of a representative sample of the UK population in 2012-2014. These data provide Government with key information on whether the population is meeting nutrient recommendations, and monitors the impact of public health nutrition policies and initiatives. Headline results show some indication that non-milk extrinsic sugars intake is declining in younger children, but fruit and vegetable intake remains static and below recommendations for most age groups. For the first time in NDNS, iodine status has been measured. The results showed that all age/sex groups in the Survey met the WHO criteria for assessing adequate intake in a population.

As part of the NDNS series, individual surveys of dietary salt intake (as measured by urinary sodium) in England, 2014, Scotland, 2014, and Northern Ireland, 2015 were also published this year. These devolved nation-specific data provide valuable comparisons and help refine regional public health initiatives. In addition, trend analyses suggest that salt intakes have declined over the last 10 years in line with government initiatives but that, on average, consumption remains above the recommended target intake of 6g per day.

UK Scientific Advisory Committee on Nutrition

The Scientific Advisory Committee on Nutrition (SACN) advises the UK governments on nutrition and related health matters. Dr Ann Prentice (Nutrition and Bone Health Group and Director of MRC EWL) has been the Chair of SACN since 2010 and a longstanding member of SACN and its working groups including the sub-group on Maternal and Child Nutrition (SMCN). Dr Jules Griffin (Lipid Signalling and Profiling Group) is a member of SACN’s Working Group on Saturated Fats. Through them, MRC EWL’s scientific knowledge and expertise is channelled to provide balanced and evidence-based opinion.

SACN keeps a watching brief on the diet and nutritional status of the nation through reports from NDNS and other surveys, and identifies areas for risk assessment when research evidence suggest potential areas of concern, such as iodine.

During 2016-17, along with other considerations, work on the following SACN/SMCN reports have been progressed: Vitamin D; Military Energy Dietary Reference Values; Potassium-Based Sodium Replacers (joint with Committee on Toxicity); Saturated Fats: Complementary Feeding of Infants. SACN has also continued to discuss the outcome of the Committee’s advice on carbohydrates, especially in relation to free sugars, and on folic acid.

— Find out more at www.gov.uk/government/groups/scientific-advisory-committee-on-nutrition
Delivering the benefits of biomedical and digital health technologies

PHG Foundation

Dr Hilary Burton

The PHG Foundation is a multi-disciplinary policy think-tank founded on public health principles. An ambitious programme for 2015-16 has driven our mission to help decision-makers deliver the benefits of biomedical and digital health technologies for more personalised, effective and sustainable healthcare to patients and populations.

— Read more about the Foundation’s work at: www.phgfoundation.org

Engaging with health policymakers and practitioners

This year saw the launch of the new All-Party Parliamentary Group (APPG) on Personalised Medicine, for which PHG Foundation provides the secretariat. This position has presented a further opportunity for us to nurture new relationships with parliamentarians from both Houses excited by the potential science and technology offer for health.

Then Life Sciences Minister George Freeman MP opened the APPG’s inaugural event in March, at which over 100 parliamentarians and stakeholders crowded into the Attlee Suite of Portcullis House in Westminster. Along with our expert perspectives on personalised medicine, we also showcased selected innovative healthcare products at the launch to raise awareness of new technologies that are already helping deliver better, more tailored healthcare, from patient-controlled record systems to medical 3D-printing.

Our Healthcare Futures series encourages the public and policymakers to make sense of the array of emerging health-related technologies. The series builds on thorough research to produce succinct overviews, presented in blogs and infographics, of areas as diverse as blockchain and machine learning, synthetic biology and stem cell therapy, the microbiome and epigenome. They set out for non-experts which technologies are really ‘hot’ and which (once we’ve cut through the hype) are not.

We have also played a significant role in Genomics England’s ‘Big Conversation’ engagement programme on the potential of genomics and issues likely to arise in its implementation within health services. Through the APPG, we held a special event at the House of Lords attended by more than fifty parliamentarians and expert stakeholders, which focused on assessing the purpose and progress of the 100,000 Genomes Project and the implications for patients and the NHS.

Similarly, we were commissioned to bring together leaders from Genomics England and NHS England with senior clinicians from a range of specialties (including those with an interest in genomic medicine or professional development) as part of our Genomics in Mainstream Medicine workstream. A report on the clinicians’ views and concerns on implementation of genomics across the NHS will inform Genomics England’s planning. We have also worked with clinicians, the Royal College of Physicians and Health Education England to produce and release a series of specialty-specific resources on genomics.
The data debate

As technology advances, increased data access and connectivity seem to present as many problems as they do opportunities. The UK – and European – policy arena has been highly exercised by data security and usage, and we are an active voice in that debate.

Published in December 2015, our joint report Data Sharing to Support UK Clinical Genetics and Genomics Services, produced in close collaboration with the Association for Clinical Genetic Science, was commended in the National Data Guardian (NDG) review on data security, consent and opt-outs. The NDG subsequently asked PHG Foundation to lead the first evidence session emerging from the review, exploring the legitimacy of genomic data sharing for clinical use, in October 2016.

PHG Foundation’s legal and regulatory team has also been a principal player in the Wellcome Trust-led consortium to ensure that European legislation, whilst safeguarding individuals’ data, enables rather than impedes the uptake of existing and novel genetic testing technologies.

Draft EU legislation, the General Data Protection Regulation, aimed to address legitimate concerns as technology enables the movement of data across jurisdictional boundaries, and might then be used for purposes for which it was not intended. However, as originally drafted it would have been disastrous for genomic medicine. Progressing the regulation has taken four years of sometimes intense negotiation, but the EU were successfully influenced to reach a final agreement with a much more positive approach for research. Again with the Wellcome Trust, we have been similarly active in campaigning on proposed amendments to the EU In Vitro Devices Diagnostic Regulation, with a final decision due shortly.

Finally, our work on implementing genomic technologies to combat infectious diseases continues to stimulate considerable interest. Since publishing our Pathogen Genomics Into Practice report in 2015, we have been working closely with the Microbiology Society on data sharing to aid surveillance and curtail outbreaks, a fruitful collaboration marked with a lively lunchtime panel session we ran at their annual conference.
NIHR CLAHRC East of England

Professor Peter Jones

NIHR Collaboration for Leadership in Applied Health Research and Care East of England (CLAHRC EoE) is now in its third year of a five-year applied health and social care research programme. We are an inclusive organisation, engaging stakeholders to help shape research questions and work together in the co-production of peer-reviewed research evidence. This enables us to develop and conduct research which is relevant across the NHS and wider healthcare systems and to translate these findings into improved outcomes for patients and service users.

— Read more about NIHR CLAHRC EoE at: www.clahrc-eoe.nihr.ac.uk

Residents Research Active in Care Homes

In England, there are about three times as many beds in care homes (both residential and nursing homes) as there are in NHS hospitals. Care homes are the main providers of long-term care for older people and work with the NHS to support this frail population. The Residents Research Active in Care Homes (RReACH) study has demonstrated that it is possible to involve care home residents in the identification and review of research priorities in care homes, generating wide interest across the research community and those involved and working with, and for, care homes. The study has generated guidance for involving care home residents in PPI activities and encouraging wider resident engagement in shaping services. This guidance is now available on the NIHR Enabling Research in Care Homes (ENRICH) website (enrich.nihr.ac.uk/) and the findings have also been used for patient and public involvement, masterclass and Masters-level teaching sessions. The sharing of the study’s research findings has also led to a reported increase in resident involvement in participation in staff interviews, and has the potential to lead to increased resident involvement in an NIHR review of funding proposals.
Consensus is growing that the current 17/18 age cut-off for leaving Child and Adolescent Mental Health Services (CAMHS) may not be optimal, as it is a time where young people have to negotiate the multiple physical and psychosocial changes demanded of them during adolescence. Preparation for leaving CAMHS is recommended as the key to positive transition but the details of what this might involve are scant.

The Transitions study engaged young service users and leavers, NHS practitioners from three NHS trusts, and researchers, who collaborated to explore what CAMHS transition preparation might involve and to co-devise a practical CAMHS Transition Preparation Programme (TPP).

Findings revealed CAMHS transition to be a time of anxiety and uncertainty for many young people. Young people called for shared decision-making and flexible, holistic transitions, whilst parents called for services that offered more support and time to help young people prepare.

The young people involved in this study have begun drafting a TPP, outlining a raft of information requirements to give young people the confidence they need to flourish during the transition. Two of the NHS partners have committed to developing the work beyond the end of the study. We hypothesise that this new transition protocol and the preparation materials will enable young people to leave CAMHS when they are ready, informed and confident which, in turn, is likely to impact positively on their future mental health management and health-seeking behaviours. This work highlights the importance of close collaborative working between service users and their families, clinicians and researchers, in the co-production of research, ensuring it is embedded within practice.

Will I meet my new team beforehand?

I want to be able to trust people … why can’t I?

Is there someone I can talk to before I get to adult services?

Would my parent be able to come to adult services with me?

What if I’m not ready to leave?
NIHR School for Public Health Research at Cambridge

Professor Carol Brayne and Dr Louise Lafortune

The NIHR School for Public Health Research (SPHR) at the Cambridge Institute of Public Health (SPHR@Cam) aims to build practice and policy relevant evidence to improve population health and inequalities. Several of our projects have entered the phase of influencing public health practice and policy locally and nationally.

— Read more about NIHR SPHR at Cambridge at: www.iph.cam.ac.uk/nihr-sphr

Age-Friendly Cities project

Central to the contributions from Cambridge to the SPHR Ageing Well Programme has been a focus on the age-friendliness of cities and communities.

Together with colleagues from the University of Liverpool, Dr Stefanie Buckner, Dr Calum Mattocks and Dr Louise Lafortune have developed an evaluation tool that can be used by cities seeking to become more age-friendly. Following its successful application in Liverpool, the tool is currently being pilot-tested in other cities in England. It is also being drawn on locally to inform the planning of new communities in Cambridgeshire with the aim of ensuring their age-friendliness.

Public Involvement in Research into Ageing and Dementia advisory group

Researchers in the Public Health of Ageing Research Unit have been seeking advice from a range of patient and community groups over recent years. This has led to a regular Public Involvement in Research into Ageing and Dementia (PIRAD) advisory group to support research in progress and in development. Alzheimer’s Society Research Network volunteers in this region, together with members of Dementia Compass, a local voluntary organisation, helped us to establish this group. This was prompted by a public meeting about our research into dementia, frailty and end of life care for older people.

Through links with the patient and public involvement networks of Cambridge University Hospitals, Cambridgeshire and Peterborough Foundation Trust, NIHR SPHR and Public Health England, others have joined ‘PIRAD’ meetings and the group currently has a dozen members who meet three times a year with staff and students from the research team. The group’s varied programme of activities includes commenting on proposed new projects, advising on ethical approaches and discussing implications of emerging research findings, all contributing to aspects of research from improving study design to widening dissemination.

— If you are interested in getting involved, please contact Jane Fleming: jane.fleming@phpc.cam.ac.uk
As part of the Cognitive Health Theme of the NIHR SPHR Ageing Well Programme and NIHR CLAHRC East of England, we conducted three rapid evidence reviews to inform the development of the National Institute for Health and Care Excellence (NICE) guideline on mid-life approaches to prevent or delay onset of dementia, disability and frailty (NICE 2015; Lafortune 2016; Kelly 2016).

Building on that work, three new systematic reviews of the scientific literature look at the effectiveness of interventions to promote healthy behaviours and cognitive health in older adults, and the barriers and facilitators of behaviour change in this population. PHE has asked the CIPH research team to develop an evidence-based resource for commissioners and local authorities based on the reviews’ key findings. The overarching aim of the systematic evidence reviews is to identify which interventions to promote healthy behaviours and cognitive health in older adults are the most effective and cost-effective.

The resource is intended for local authority commissioners and clinical commissioning groups to provide a steer as to what types of interventions they should focus on to help the uptake and maintenance of healthy behaviours and promote cognitive health among older adults living in the community.

It is also intended for providers of lifestyle behaviour change programmes to support the development of evidence informed prevention packages for older adults. Finally, it is produced in a way that makes it accessible to managers and practitioners with public health as part of their remit, working in the public, private and third sector.

— The new report will be published in November 2016.
The Cognitive Health in Later Life (CHILL) project was a three-stage piece of work to scope out the feasibility of identifying perceptions and beliefs around health, and barriers and facilitators to change via community engagement approaches which communicate and respond to research knowledge. The project focuses on risk factors for dementia in mid-life and is based in a medium-sized town in Fenland, a district of Cambridgeshire faring worst in the county for a number of health outcomes and indicators.

**Stage one**
In early 2016, researchers carried out ‘vox pop’ interviews in various places across the town, asking people what Cognitive Health meant to them, if anything, and exploring what residents knew about protective factors against dementia in later life. People were asked if they had questions about risk of dementia, and did they want to know more? Many did, but there were also a minority who did not.

**Stage two**
Following interest stimulated by the vox pops and targeted publicity via local Social Media, a small group of residents met together at a workshop, beginning with a presentation of the research evidence on modifiable risk factors in mid-life for dementia (and other illnesses and disabilities). As an introductory ‘asset-mapping’, the group then worked together to look at what is available in the town to support good brain health, and overall health, as people get older. They also used a SWOT analysis to look at some of the things that were not so good in supporting health, and where there may be opportunities to do more.

During a second meeting, the group started to think about what kinds of things might stop people from making changes that could benefit their brain health, using a ‘body map’ to help group external and internal factors.

**Stage three**
While Stage two had begun to stimulate thoughts around next steps or things that might be developed with follow-up work, the earlier vox pops showed that some people want practical suggestions, tweaks and tips to integrate into everyday life. In the final part of the scoping project, we went to to the Town’s Summer Fayre with a unique, yet very much practical, way of presenting some of the messages on risk.

Further details of the project can be found at: [www.iph.cam.ac.uk/our-research/unc/chill](http://www.iph.cam.ac.uk/our-research/unc/chill)
Population Dementia Risk Reduction

Olawale Olanrewaju

One of the objectives of the Population Dementia Risk Reduction (PDRR) project is to create capacity to support pilots of promising interventions for dementia prevention which are applicable within real world settings. The Public Health of Ageing Research Unit led by Professor Carol Brayne has engaged various public and patient groups between July 2015 and June 2016 to explore the potential reach, adoption and implementation of dementia risk reducing behaviour interventions for future trials.

These groups comprised of patients, caregivers, professional carers and members of the public interested in dementia research, were recruited from dementia PPI groups at the Institute and Cambridgeshire and Peterborough NHS Foundation Trust. Richard Milne also conducted a series of deliberative workshops of participants from the Cognitive Function and Ageing Studies to examine the acceptability and feasibility of interventions for healthy brain ageing and dementia risk reduction. In February 2016, the Institute was represented at a national engagement event organised by Public Health England to advance the position of the Blackfriars Consensus (Lincoln, P et al 2014 Lancet 383, (9931):1805-1806). Stakeholders included major national policymakers, higher education institutions (HEI’s) and funders involved in dementia risk reduction research. Actions that were agreed and currently being implemented include mapping of dementia risk reduction related activities in UK-HEI’s, which should highlight known gaps in research and priorities for further research and policy.
Public Health England

Professor Aliko Ahmed

Public Health England (PHE) is the executive agency, sponsored by the Department of Health, to protect and improve the nation’s health and well-being, and reduce health inequalities. Public Health England has had a longstanding established relationship with CIPH. As part of the unique federation, PHE provides significant support towards the achievement of the CIPH mission “to generate knowledge and evidence to improve global public health, using our research, teaching and analysis to promote well-being, prevent disease and reduce health inequalities.”

In addition to the continued infrastructural support of CIPH, PHE has been engaged in the following specific CIPH programmes over the last year:

1. Knowledge and Intelligence Service, East of England with Dr Siân Evans
2. Field Epidemiology Service with Dr Mark Reacher
3. Clinical Microbiology & Public Health Laboratory with Dr Nick Brown

More details of which follow in this report.

Since 2015, Professor Aliko Ahmed has been directly involved in efforts and initiatives to establish a strong platform for research translation within CIPH, and has provided technical support for relevant funding bids.

PHE staff also continue to support teaching in public health at both undergraduate and postgraduate level.
Public Health England
Field Epidemiology Service
Dr Mark Reacher

The Field Epidemiology Service (FES) supports Public Health England Centres and partner organisations by leading on the surveillance of infectious diseases and the application of epidemiological methods to inform public health action.

We do this in two main ways: firstly by providing a flexible expert resource, available as and when needed, to undertake epidemiological investigations for key health protection work, and secondly through the collection, analysis, interpretation and dissemination of surveillance information to PHE Centres, local health partners, service providers and commissioners of services.

Within the FES network, excellence and innovation is encouraged, we foster academic collaborations and take an active part and lead in research, development and training. You can contact your local FES team at efeu@phe.gov.uk.

Events
As part of our engagement work, FES Cambridge organises a number of different events for stakeholders from training days to one-day conferences.

In November 2015, we facilitated a one-day symposia entitled ‘Increasing HIV testing and reducing late HIV diagnosis across the East of England’, in collaboration with the East of England PHE Centre. Individuals diagnosed at a late stage of HIV infection have higher rates of morbidity and mortality and the proportion of individuals diagnosed late in the East of England (51.8% in 2015) is significantly higher than that seen nationally (40.3%). The one-day event provided national updates and opportunities to showcase local work and share good practice.

Incidents and outbreaks
FES routinely monitors surveillance information (e.g. collected from hospital microbiology laboratories and clinics) to identify any unusual changes that may be of concern. When an outbreak is identified we assist in the investigation and response.

FES contributes to investigations involving anything from common food poisoning outbreaks to national and international public health incidents.

During the past year we have been involved in a number of investigations. These include:

— An outbreak of high level azithromycin-resistant gonorrhoea in England
— A UK-wide Notification Exercise to contact patients who had had surgical procedures carried out by a healthcare worker with Hepatitis C
— An investigation into a national outbreak of Escherichia coli O157 PT34 associated with consumption of mixed salad products

Reports
A whole range of epidemiological reports were produced in the last year covering topic areas such as healthcare associated infections, tuberculosis, vaccine preventable diseases, sexually transmitted infections and HIV. These reports are disseminated to various stakeholders including local authorities, clinical commissioning groups and hospital trusts.

Research
FES provides a rapid research and development function to answer questions that need a rapid response to inform public health action and evaluate public health interventions.

The service collaborates with other colleagues in PHE, NHS and academia to develop the evidence-base for health protection, and it can provide support to staff in PHE centres and local government in generating research outputs from their routine work and share good practice.

— For example: Excess Mortality Attributable to Clostridium difficile and Risk Factors for Infection in an Historic Cohort of Hospitalised Patients Followed Up in the United Kingdom Death Register
New leadership

Professor Peter Bradley has taken on the role as Public Health England’s (PHE) Director of Knowledge & Intelligence. During 2015/16, as part of a wider review of PHE structure, the Knowledge and Intelligence Service was redesigned with the introduction of six national knowledge and intelligence work streams.

Developing Public Health Data Science

Dr Julian Flowers, former Director of the East of England Knowledge and Intelligence Team, now heads up PHE’s new Public Health Data Science service. Aims for the service include building a more comprehensive public health information system by consolidating core datasets and other major data assets and building data and data science partnerships with other public sector bodies and academia.

Building workforce capacity and capability

Dr John Battersby has taken on a new role as Training and Workforce Lead for Knowledge & Intelligence within PHE. Notable areas of work over the last year have included a cross PHE collaboration to develop the curriculum for a Scientific Training Programme in Applied Epidemiology (under the banner of Modernising Scientific Careers).
Monitoring care for people with Autism and Learning Disabilities

Dr Gyles Glover has continued to lead PHE work in the national learning disabilities observatory team. The team continues to work in helping monitor local care for people with autism and learning disabilities. The team works closely with partners in the University of Lancaster Centre for Disability Research and a third sector organisation, the National Development Team for Inclusion (NDTI). The NDTI continues to run the advisory group of people with learning disabilities and family carers which provides a key steer to our work.

— A fuller account of the work of the Learning Disabilities Observatory team will be in the PHE annual report which will appear later in the year on the Learning Disabilities Observatory website at: www.improvinghealthandlives.org.uk

Supporting effective local public health action

During 2015/16, a new Local Knowledge and Intelligence Service (LKIS) was developed with the aim of supporting and advocating for effective local public health action through the delivery of high quality tools and products, analysis, expert advice and training. LKIS works as a distributed national service with nine teams working locally as part of an integrated function at PHE Centre level. The LKIS team in the East of England (LKIS East) is headed by Dr Siân Evans.

LKIS services are delivered in partnership with other teams in PHE and with partners in the public health system. LKIS East has a stakeholder group, the Area Liaison Group, which brings together health intelligence leads across local authorities in the region, together with other partners to help identify shared knowledge and intelligence priorities.

www.iph.cam.ac.uk
Public Health England Clinical Microbiology & Public Health Laboratory

Dr Nick Brown

The PHE Clinical Microbiology & Public Health Laboratory based in Addenbrooke’s Hospital provides the clinical microbiology services for acute NHS Trusts in Cambridge, Papworth, Huntingdon and Stevenage, as well as the surrounding GP practices.

It is the PHE Regional Laboratory for the East of England and also provides some specialist services to centres outside the immediate catchment area. Its core business is the diagnosis and management of people with infection. Staff work closely with the PHE Field Epidemiology Service and other partners within the new PHE National Infection Service, as well as the University of Cambridge.

In 2015 several members of the scientific staff in the Public Health England (PHE) Clinical Microbiology & Public Health Laboratory at Addenbrooke’s Hospital, volunteered to support the Ebola diagnostic services in Sierra Leone. The personal experiences of two of these staff are outlined below.

PHE laboratory staff deployment to Sierra Leone 2015

Setting up the Ebola testing laboratories

In early 2015, I was meant to go to Sierra Leone with PHE and work on a Cholera project. However, just before I was due to travel, all flights to Sierra Leone were cancelled because of the Ebola outbreak. A few weeks later, I was notified of a request from PHE for people to work on the Ebola project. We were to be part of installing and starting the first laboratory within an Ebola treatment centre. For me, there was the excitement of the laboratory work, but also a passion for giving something back as well.

The working practices in Sierra Leone were very different to the UK, because of unreliability of basic infrastructure, such as electricity and running water. We had to ship out most of the equipment from the UK. We got it there and functioning...but if the electricity goes out what can you do? You have to have back-up plans in place to be able to do things manually. Databases went down and we lost information. Paper copies were used to duplicate records, but it was about being resourceful in very difficult circumstances and situations.

In a typical day, I received samples from people who were ill or suspected to be infected with Ebola. Most often we tested blood or urine; sometimes a swab from the body, particularly if they were deceased. We had to receive the sample wearing appropriate personal protective equipment and make sure that we had the necessary information to enable the results to be tracked at Command Centre. Once we had received the sample into the laboratory, we had to work with it in a very contained manner so that we were not likely to cause injury or spread infection to ourselves. We had a buddying system, so there was always somebody around to help you at the various stages of the work.
Leone reaching zero – deployment in Sierra Leone during the latter stages of the Ebola outbreak 2015

Due to other commitments, I was not deployed to Sierra Leone until the beginning of June 2015, despite having completed my training in March the same year. As a Team Leader, I was to look after 11 other scientists and manage the laboratory at the Mateneh Ebola Treatment Centre outside the country’s second largest city, Makeni, in the Northern Province. It’s worth noting that I was part of a continuing deployment of staff from PHE Cambridge to Sierra Leone. To-date we’ve sent nine members of staff at various times to the three PHE laboratories there.

Makeni had not had any new cases of Ebola for approximately six weeks when we arrived and our deployment period was likewise Ebola-free. However, the workload was steadily increasing due to the policy of screening all dead bodies for Ebola, regardless of what the person had died of. The work was (and continues to be) vital to the government aim of reaching zero new cases, with any positives arising from the screening process being carefully and rigorously followed up. In one instance just two positive “dead swabs” resulted in 2,000 contacts that had to be traced and then observed or quarantined.

The pressures we faced included long working hours, six-day weeks, seven-hour shifts with no break, a day that started at 6am and finished (supposedly) at 10pm, time pressures as results were often being waited on so that patients could be moved or treated for other diseases and poor internet or phone connections. We rapidly learnt to be adaptable and ready to leap into a jeep to take a USB stick of patient results back to our compound in order to be able to email it swiftly to the hospitals and epidemiologists waiting for these data. We packed ice blocks around the overheating biochemistry machine and used copious amounts of duct tape to mend everything from fans to holes in roofs. We had our share of dramas – one of our team had appendicitis and was rushed to the capital for an emergency operation – and adventures – wheels falling off vehicles, trips to orphanages, Ebola-free villages, schools, and numerous response centres. The rainy season was starting and water flooded everywhere, driving some of our less favourite furry friends into the catering tent and accommodation. We got used to all the insects and managed to deal calmly with the one poisonous snake that was discovered in our compound.

New challenges may include screening survivors as there is much uncertainty about whether the virus might remain for long periods of time in other body fluids. Some of the latest vaccine trials look good. Prospective treatments are also promising in some instances, and offer hope for the management of future outbreaks. It is not a case of if, but when, another outbreak will occur. However, not only is there now a large cohort of foreign laboratory workers trained and confident about working with the virus but there are also plans afoot to ensure there more national scientists are trained up to lead a response. The UK Government, via PHE, are developing legacy plans to provide diagnostic services in three centres across Sierra Leone, with the first being developed at Makeni.

— Marie Blackman-Northwood, Senior Biomedical Scientist
— Dr Jane Greatorex, Senior Research Scientist
The Cambridge Institute of Public Health is an institution within the Faculty of Clinical Medicine at the University of Cambridge.

**Director**
The Director is the administrative head of the Institute, responsible for the direction of public health study and research. Professor Carol Brayne was reappointed in 2013 for a second five year term.

**Executive Committee**
The Institute is steered by the Executive Committee

**Professor Carol Brayne**
Director of Cambridge Institute of Public Health

**Professor Aliko Ahmed**
Centre Director, Public Health England
East of England

**Dr Hilary Burton**
Director of PHG Foundation

**Professor John Danesh**
Head of the Department of Public Health and Primary Care

**Dr Julian Flowers**
Head of Public Health Data Science Service

**Dr Christine Hill**
Deputy Director CLAHRC East of England

**Professor Kay-Tee Khaw**
Professor of Clinical Gerontology

**Professor Jonathan Mant**
Head of the Primary Care Unit

**Ms Emma Marron**
Business and Operations Manager, Department of Public Health and Primary Care & Cambridge Institute of Public Health

**Professor Ann Prentice**
Director of MRC Elsie Widdowson Laboratory and Head of Nutrition and Bone Health Group

**Dr Mark Reacher**
Consultant Epidemiologist, Eastern Field Epidemiology Unit, Public Health England

**Professor Sylvia Richardson**
Director of the MRC Biostatistics Unit

**Professor Nick Wareham**
Director of the MRC Epidemiology Unit
Committee of Management

The Committee was inaugurated in 2014 to promote research and teaching in the field of public health.

Professor Peter Jones  
Deputy Head, School of Clinical Medicine,  
University of Cambridge

Professor Carol Brayne  
Director of Cambridge Institute of Public Health

Professor Cyrus Cooper  
Director of the MRC Lifecourse Epidemiology Unit,  
University of Southampton

Ms Sue Dunkerton  
Director of the Knowledge Transfer Network,  
Innovate UK

Dr Caroline Edmonds  
Secretary to the School of Clinical Medicine,  
University of Cambridge

Professor Pim van Gool  
Professor of Neurology at the Academic Medical  
Centre (AMC), University of Amsterdam

Professor Bernie Hannigan  
Director of Research & Development,  
Public Health England

Dr Tony Jewell  
Chair of Wales for Africa Health Links Network,  
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Our overarching mission is to improve the public’s health, using our research, teaching and analysis to promote well-being, prevent disease and reduce health inequalities.

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