

# epigram

MRC Epidemiology Unit news – Autumn 2019

## INNOVATING IN A CHANGING WORLD

Genetic discoveries hint at new  
obesity treatments

Biomarkers offer new way to  
measure diets

Local diets, global challenges

Making sense of evolutions and  
revolutions in our world

## PLUS...

*Modest changes,  
measurable benefits*

*The importance of empathy*

*How can we help children be  
more active?*

*Our research needs you!*

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The MRC Epidemiology Unit is studying the genetic, developmental, behavioural and environmental determinants of obesity, type 2 diabetes and related metabolic disorders, and contributing to the prevention of these disorders.

Read more about the stories in *epigram* – and many others – at [www.mrc-epid.cam.ac.uk](http://www.mrc-epid.cam.ac.uk)

# Welcome

*Professor Nick Wareham, Unit Director*

**T**he world is changing rapidly, and it can be hard keeping up, but in science we have to embrace change and find new ways of tackling old problems.

In this issue of *epigram* you will find many stories about how we are innovating in our research at the Unit. For instance you can read about how the latest in genetics is pointing the way to possible new treatments for obesity and type 2 diabetes. Or how, by using molecular biomarkers, we can better measure the effect of the nutrients found in our food.

Not all change is so high tech, and new research can give us insight into some of the simpler things in life. For instance, research is showing that it really is worth making those small changes to improve our health. And insight from GP surgeries reveals that sometimes what helps is a dose of good old fashioned bedside manner.

As well as my work as a scientist and Director of the Unit, I still practice as a doctor, so I'm lucky to be reminded on a regular basis that what we do is ultimately about people. Not just people who might already be living with type 2 diabetes or other illnesses, but everyone whose health is affected by the world around us. This past year has marked a decade of the Unit-led Centre for Diet and Activity Research (CEDAR), which has been innovative both in its research looking at how populations' health are influenced, and in how we communicate with decision makers to help improve public health practice and policy.



And looking forward, this issue has a story from one of our newer collaborations, the Global Diet and Activity Research Group and Network (GDAR), about how change is coming to Kenya and what this might mean for the health of communities.

The word innovation also has a specific new meaning for us at the Unit: it identifies a growing strand of our work that looks to translate our science into products or services that policymakers, organisations and individuals can make use of to improve their daily decision making or personal health. These innovations will draw on some of the research that has featured in *epigram*, such as nutritional biomarkers, the measurement of physical activity, and online tools to support decisions about how to plan healthier neighbourhoods.

Finally, at the heart of all our research and innovation are our many study volunteers. Collectively you have given hundreds of thousands of hours of your time to help us. For this, we thank you.



# Taking the genetic pathway to new therapies

*Overcoming barriers to developing safe, effective drugs to treat obesity*

**Ever more affordable DNA sequencing technology, combined with the availability of large studies involving tens or even hundreds of thousands of volunteers, is enabling researchers to identify the impact of both common and rare differences in DNA sequences on obesity and type 2 diabetes.**

Obesity leads to millions of deaths worldwide every year, so there is considerable interest in developing drugs that can make it easier to lose weight or maintain weight loss.

## Finding the obesity switches

Scientists have identified more than a hundred genes that play a role in weight regulation. One of the genes found to play a key role in regulating weight is MC4R, which codes for the melanocortin 4 receptor. This receptor acts like a switch in the brain to suppress appetite, and people who have certain rare genetic variants that disrupt this receptor gain weight easily.

This led researchers to propose that drugs that increase the activity of MR4R might reduce appetite. Unfortunately the development of these drugs has been hampered by adverse effects, in particular increases in blood pressure.

To better understand the pathways through which activation of MR4R decreases appetite, a team led by Professor Nick Wareham and Dr Claudia Langenberg at the MRC Epidemiology

Unit, and Professor Sadaf Farooqi and colleagues at the University of Cambridge Metabolic Research Laboratories, looked at the MC4R gene in half a million volunteers from the UK population who have taken part in UK Biobank.

The team found 61 distinct naturally-occurring genetic variants. While some of these variants predisposed people to become obese, others provided protection against obesity and some of its major complications, such as type 2 diabetes and heart disease.

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*“...our findings may pave the way for a new generation of weight loss therapies.”*

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To investigate this further, they studied the function of these genetic variants in a number of laboratory experiments. They found that MC4R gene variants linked to higher obesity risk stopped the gene from working, whereas variants that offered protection against obesity kept the gene ‘switched on’.

When they examined the activity of the protective variants more closely in laboratory experiments, they found that MC4R can send signals through a pathway – known as the beta-arrestin pathway – that had not previously been



linked to weight regulation. Genetic variants that sent signals preferentially through this pathway were the ones driving the association with protection against obesity and, importantly, were also associated with lower blood pressure.

Dr Luca Lotta, a member of Dr Langenberg's team and first author on the *Cell* paper, commented: "A powerful emerging concept is that genetic variants that protect against disease can be used as models for the development of medicines that are more effective and safer. Our findings may pave the way for a new generation of weight loss therapies that activate MC4R preferentially via the beta-arrestin pathway"

## Diabetes, glycine and blood pressure

Meanwhile, higher circulating levels of the amino acid glycine have previously been found to be associated with a lower risk of heart disease and type 2 diabetes. Until recently, however, it hasn't been clear if this is due to glycine itself, or how glycine protects against these conditions.

To investigate this, Dr Langenberg and PhD student Laura Wittemans conducted a meta-analysis that combined data from several large scale genetic studies, in total over 80,000 individuals.

They first identified 27 genetic variants that are associated with circulating glycine levels, which together explain more than 15% of the variance in glycine levels. Next, they examined if there was a link between these genetic variants and the risk of heart disease, finding that variants associated with higher levels of glycine also reduced the risk of heart disease, and that this association may be mediated by a blood pressure-lowering effect of glycine.

The researchers also found slightly weaker evidence for a genetic association of glycine with lower risk of type 2 diabetes. Their finding of a strong association between genetically predicted high circulating insulin levels and lower levels of glycine indicates that the association between higher glycine and lower incidence of type 2 diabetes may in fact be due to the effect of high insulin levels on glycine rather than the other way around.

This research highlights how large scale genetic research can help medical researchers to tease out the often subtle and complex relationships between different factors that affect our health, and guide the development of new therapies.

*Original artwork by Willow (Filippo Bruno) representing the effect of different MC4R gene variants on body shape.*

[www.willow-artblog.com](http://www.willow-artblog.com)





# Just what have you been eating?

*Innovative techniques provide more objective information on diets*

**E**pidemiological studies of diet usually rely on study participants self-reporting their consumption through questionnaires. Unfortunately, we often don't remember what we've eaten or know what ingredients are present in particular foods. We might forget or be unaware, for instance, that pastries contain butter or cream which are high in saturated fat.

What scientists need are objective measures that more accurately reflects consumption of particular nutrients. This is where nutritional biomarkers come in. Nutritional biomarkers are certain molecules identifiable in body tissues that are either found in particular foods or produced in the body after consuming them, which have been found to provide a more reliable estimate of nutrient consumption than questionnaires.

The **NIHR Cambridge BRC Nutritional Biomarker Laboratory (NBL)** – headed-up by Dr Albert Koulman and hosted by the Unit – uses advanced analytical technology to develop and maintain new methods to measure nutritional biomarkers. These measures are suitable for a range of research purposes and settings, as part of the Units objective of making advanced methods, tools and processes available for use in local, national and international research, as well as in hospitals and clinics.

## **Dairy and diabetes: is high fat always unhealthy?**

One question that biomarkers have been helping with concerns dairy products and diabetes. Current public health guidelines recommend that we choose dairy products that are low in saturated fat. But recent evidence shows no clear difference between high-fat and low-fat dairy in terms of the risk of developing type 2 diabetes or cardiovascular diseases.

While food manufacturers have created many dairy products, such as yoghurts, that are low in saturated fat, these often contain far more sugar than their high-fat equivalents. So how can we know which is the healthier option?

Professor Nita Forouhi and Dr Fumiaki Imamura from our Nutritional Epidemiology programme have joined forces with Dr Koulman to help answer this question. In a paper published back in 2014 they reported how in the **EPIC-InterAct** study higher levels of odd-chain saturated fatty acids, an established biomarker of dairy consumption, were associated with a lower type 2 diabetes risk.

To produce more definitive evidence, they combined data from **EPIC-InterAct** with that from fifteen other studies that are part of the international **FORCE Consortium**. This enabled them to examine specific biomarkers



of dairy fat consumption in a total of 63,682 adults in twelve countries. All participants were free from type 2 diabetes when the first samples were taken, and 15,158 of them went on to develop it over the follow-up period of up to 20 years.

When the results were published earlier this year the researchers reported that higher concentrations of dairy-fat biomarkers were associated with lower risk of developing type 2 diabetes. People among the top fifth of the concentrations of dairy-fat markers were found to have an approximately 30% lower risk of type 2 diabetes compared with people among the bottom fifth. This lower risk was independent of other major risk factors for type 2 diabetes including age, sex, ethnicity, socioeconomic status, physical activity and obesity.

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*“This research indicates that dairy fat may not be harmful, indeed, it may be beneficial.”*

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Dr Imamura commented: “Our new research highlights how objective assessment using biomarkers can help to increase understanding between dairy consumption and health risks. This research indicates that dairy fat may not be harmful; indeed it may be beneficial.

More work needs to be done to understand the overall health effects of dairy, over and above its fat content. There's not yet enough evidence to change dietary guidelines, which in the UK recommend that saturated fats should make up less than 11% of all calories consumed from food.”



## Trust me I'm... an epidemiologist!

**In 2018 Professor Nita Forouhi appeared with Professor Kay-Tee Khaw of the Department of Public Health and Primary care on BBC2's Trust Me I'm a Doctor, examining the effect of consuming coconut oil on cholesterol levels.**

Many claims are made about the potential health benefits of coconut oil, but there are also concerns about its very high levels of saturated fat.

The trial designed by Professors Forouhi and Khaw measured LDL ('bad') and HDL ('good') cholesterol levels in almost 100 participants before and after they consumed 50 grams a day of either coconut oil, olive oil, or butter for four weeks.

In results later published in **BMJ Open** they found that butter and coconut oil, while both high in saturated fats, had different effects on blood lipids.

Coconut oil consumption was associated with lower LDL cholesterol, and consumption of coconut oil was associated with a healthier overall blood lipid profile than butter. This highlights the need for further research into the more nuanced relationships between different dietary fats and health.

# Moderation in all things

*How modest changes can bring measureable benefits*

**H**igher levels of physical activity are associated with lower risk of death, cardiovascular disease, and certain cancers. But once you hit middle age, can you improve your odds?

Relatively few large scale epidemiological studies have asked what happens if people change their behaviour at this time in life. But several publications by Unit researchers in the past year have done just that. Their findings could be encouraging for all of us.

## Getting older? Get active!

Our researchers analysed data from 14,599 men and women aged 40-79 in the **EPIC Norfolk** study. They were assessed at the start of the study, and then a further three times over an average of seven and a half years. From this point in time, the risk of all-cause, cardiovascular and cancer deaths was assessed for an average of twelve and a half years of follow-up.

Total physical activity was measured in each assessment using questionnaires, and these estimates were then converted to physical activity energy expenditure (PAEE).

The researchers found that for each 1kJ per kilogram per day per year increase in PAEE, the reduction in risk of death was 24% from any cause, 29% from cardiovascular death, and 11% from cancer.

This increase in PAEE is equivalent to being inactive at the start of the study and gradually increasing activity over five years to meet the

minimum physical activity guidelines of 150 minutes per week of moderate-intensity physical activity.

The new findings show that we could potentially prevent nearly half of all deaths associated with physical inactivity if everyone met at least the minimum recommendations for exercise.



## Diabetes? Drink and eat a little less

Two recent publications from the **ADDITION-Cambridge** study highlight how healthy lifestyle changes among people with a new diagnosis of type 2 diabetes may lower their risk of heart disease.

In the first paper, Dr Jean Strelitz and colleagues reported that losing a moderate amount of weight could reduce the risk of cardiovascular diseases including heart attack and stroke – the most common complications of diabetes. The team assessed weight change in 725 people who were newly diagnosed with type 2 diabetes, measuring when they were diagnosed and again one year later.

People who lost at least 5% of their weight in the year after they were diagnosed had halved their risk of cardiovascular disease after ten years, compared with people who kept the same



weight. They also had significantly lower blood glucose, blood pressure and cholesterol levels. These results couldn't be explained by age, sex, smoking or medication, as these had been taken into account. Previous research in the US had only demonstrated health benefits if study participants lost a tenth of their weight in one year.

Dr Strelitz commented: "Evidence from our study suggests that some people can lose weight after being diagnosed and hence lower their risk of cardiovascular disease, even without a weight-loss support programme. So people with type 2 diabetes may want to consider focusing more attention towards setting moderate weight-loss goals."

The second paper from the **ADDITION-Cambridge** Study reported on 852 study participants who had completed questionnaires on diet, alcohol and physical activity when they were diagnosed with diabetes and again a year later. This made it possible to see what happened if they changed their behaviour soon

after their diagnosis. The participants were then followed for 10 years and their medical records were reviewed to see whether they had developed cardiovascular disease.

Dr Strelitz and colleagues found that those who reduced their alcohol use by at least two units a week (equivalent to roughly one or two pints of beer a week) in the year after their diabetes diagnosis had a 44% lower risk of cardiovascular disease after 10 years. This association was not because of other changes in their behaviour.

People may be more motivated to make lifestyle changes soon after being diagnosed: the researchers found that about half the participants had reduced their alcohol consumption despite not receiving any specific counselling for this behavioural change.

People with a new diagnosis of type 2 diabetes are advised to increase physical activity and eat a balanced diet. This new research suggests they might want to cut their alcohol intake too.

## Final opportunity to take part in the Fenland Study

Did you take part in Phase 1 of the Fenland Study  
between 2005 and 2015?

Would you like to be measured again?

We are now in our final year of asking participants who took part in the  
initial Fenland Study to take part in the second phase.

If you wish to take part in phase 2 please call us on free phone  
**0800 085 6183** or email us at [fenlandstudy@mrcepid.cam.ac.uk](mailto:fenlandstudy@mrcepid.cam.ac.uk) to  
arrange an appointment or to ask any questions.

We hope you will take up the opportunity to support this research.



# This ever-changing world in which we're living...

*Making sense of evolutions and revolutions all around us*

**W**e might think that our behaviours are something we control as individuals, but over the years the evidence has been mounting that much bigger factors are at play. Where we're born and live, the shops we use, the taxes we pay, the roads we travel on: all these things influence the decisions we make, consciously and unconsciously.



This past year marked a decade of the **Centre for Diet and Activity Research (CEDAR)**, which is led by the MRC Epidemiology Unit. CEDAR has been studying how the world around us influences what we eat and how much physical activity we do. CEDAR was born out of a national initiative that funded a network of Public Health Research Centres of Excellence across the UK. These Centres were designed to build academic capacity and infrastructure in public health research, and provide a platform to better engage with policy and practice to improve public health decision making.

## Just some of CEDAR's research insights

- » People who walk or cycle to work could be cutting their relative risk of heart disease or stroke by a tenth, and their relative risk of dying from these diseases by a third.
- » Those living and working near the highest number of fast food outlets are almost twice as likely to be obese as those who encounter the fewest.
- » Spending time close to nature has been linked to a reduced risk of type 2 diabetes, cardiovascular disease, premature death, stress, and high blood pressure.
- » The provision of new, high-quality, traffic-free cycling and walking routes has encouraged more people to get about by foot and by bike.
- » Neighbourhoods that are saturated with these outlets may be particularly unhealthy for people who are socioeconomically disadvantaged.
- » Children's physical activity has high seasonal variation, and they need more support to be active in autumn and winter.
- » Computer modelling science has shown that the health benefits of the London Cycle Hire scheme outweigh the negative impacts from injuries and exposure to air pollution.
- » Diets meeting national recommendations for health are more expensive than less healthy diets, and healthy foods have risen in cost more quickly than unhealthy food.
- » Only half of mothers achieve at least 30 minutes of moderate to vigorous activity a week, and there is a strong association between the amount of activity mothers do and that of their young children.



Armed with the evidence generated by CEDAR, our researchers have been engaging with practitioners and policymakers at local, national and international level. Scientists have appeared in front of Parliamentary Select Committees, collaborated with government departments, public health agencies, schools, charities and policy bodies, and worked with the media to increase wider understanding of diet and physical activity research.

CEDAR has also been behind interactive online tools to support decision makers, including the **Propensity to Cycle Tool** (see page 11), and the **Food environment assessment tool** – [www.feat-tool.org.uk](http://www.feat-tool.org.uk).

This interaction with policy and practice that will be particularly central to CEDAR's role in the future.

### **Prominent placement promotes pester power purchases**

A recent piece of CEDAR research has found that removing sweets and crisps from the point of sale in supermarkets is linked to a reduction in the amount of unhealthy food purchased.

How supermarkets display and promote food can influence shoppers' choices in stores. Checkouts are a particularly prominent place for prompting purchases because all customers have to pass through them to pay, and may spend time queuing.

"Many snacks picked up at the checkout may be impulse buys – and the options tend to be confectionary, chocolate or crisps," says CEDAR's Dr Jean Adams. "Several supermarkets have now introduced policies to remove these items from their checkouts, and we wanted to know if this had any impact on people's purchasing choices."

Using data from over 30,000 UK households, researchers looked at how purchases of less healthy common checkout foods brought home changed following the implementation of checkout policies. They found that the implementation of a checkout food policy in a supermarket was associated with an immediate reduction in purchases of around one in six. After a year, shoppers were still purchasing over 15% fewer of the items compared to when no policy was in place.

Next, they looked at data from 7,500 shoppers who recorded food bought and eaten 'on-the-go' during 2016-17 from supermarkets with and without checkout food policies. They found that shoppers made 76% fewer annual purchases of less healthy common checkout foods from supermarkets with checkout food policies compared to those without.

"Evidence like this supports the case for government interventions to improve unhealthy behaviours," says Dr Adams. "One such intervention might be to introduce nutritional standards for checkout food as suggested in the Government's recent Childhood Obesity Plan."



# The kids aren't all right (at staying active)

*In and out of school, we need to find new ways to help children move more*

**A**cross the world, eight out of ten adolescents are failing to meet internationally guidelines that recommend at least an hour a day of moderate to vigorous physical activity. In particular, girls and children from disadvantaged backgrounds are less likely to be physically active.

Given the amount of time children spend in schools, they are often seen as an obvious place to intervene. In the UK, the government's Childhood Obesity Plan focuses on helping pupils in schools to move more, including providing funding using money generated from the tax on sugary drinks introduced in 2018.

Typical school-based interventions might involve activity breaks in lessons or new physical education lessons with specialised teachers. They could also include building new playground equipment or assigning physically active homework. While this all sounds good, research published by the MRC Epidemiology Unit which examined 17 international trials shows that current efforts are not working as intended.

Researchers looked at trials conducted in Europe, Australasia and North and South America. On average, 20 schools and over 450 children were included in each individual study. What the researchers found was not promising. When the results were combined, there was no effect in

increasing the amount of physical activity school children engaged in across the full day.

So what went wrong? One reason could be that interventions may not have been implemented as intended. The programmes often include many components and depend on a range of (already busy) school staff implementing them in a particular way, but to what extent this actually happens is very often unclear, and little is known about what the main barriers are to implementing full programmes as intended.

## Schools in and out

It could also be the case that school-based initiatives boost children's physical activity during school hours, but that this is not maintained outside school. So we need to a wider focus, including children's families, homes and local communities.

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*How can we help all children to cycle as much as they do in the Netherlands or Cambridge?*

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One way we can all be active – young and old alike – is to travel by walking or cycling. Unfortunately, only one in 50 pupils in England cycles to school, even less than the one in 30 of adults who cycle to work. Hostile cycling environments, where riders have to mix with cars, buses, vans and lorries, are off-putting for children – or more accurately, for the adults who decide whether or not their children cycle.

But it doesn't have to be this way. Indeed in the Netherlands, many more children cycle to school.



So, what if British children were as bike-happy as the Dutch?

Unit researchers have led a team with researchers at the Universities of Westminster and Leeds to develop the **Propensity to Cycle Tool (PCT)** – [www.pct.bike](http://www.pct.bike). Using this tool, together with data from the National School Census and the Dutch travel survey, researchers have shown that if children in England cycled to school at the same rates as the Dutch (for trips of the same distance and hilliness), more than two in five children would do so.

As well as the *Go Dutch* scenario, the PCT team have created a *Go Cambridge* scenario for schools. This gives the level of cycling if everywhere else in England had the same likelihood of cycling to school (allowing for hilliness and distance) as children do in Cambridge, where 30% cycle to school. This is much more ambitious than the current government target but less than the *Go Dutch* scenario.

If children in Cambridge can cycle this much, how can we make this leap for everyone else? “School streets” are one such policy, restricting car access at school times and leaving streets clear for children to walk, cycle and play without fear of traffic. And more ambitious interventions may be needed. For instance, London’s mini-Holland programme (in Enfield, Kingston, and Waltham Forest) has involved closing some neighbourhoods to motor traffic. The scheme is already resulting in increases in walking and cycling.



# Kisumu: from hypermarket to household

*How will changes in the food environment affect communities in Kenya?*

**N**on-communicable diseases such as type 2 diabetes, heart disease and cancers are a global challenge. In fact they are more common in many low and middle income countries than in high income countries. In the lower income nations, most people with these diseases are of working age, which can leave families destitute and harm development.

The MRC Epidemiology Unit is playing its part in addressing this challenge through its coordination of the **Global Diet and Activity Research Group and Network (GDAR)**. This is a partnership between the Unit and researchers in Kenya, Cameroon, South Africa and the Caribbean, funded through the NIHR Global Health Research initiative.

Development is bringing rapid change to people's diets. Across Africa, supermarkets are proliferating, which means a sudden increase in the variety of foods available – both healthy and unhealthy. In Kisumu in Western Kenya, the planned opening of a hypermarket within a new shopping Mall is providing an opportunity to explore the impacts of such a change.

Researchers are studying the area in Kisumu where the hypermarket is located, as well as a comparison area in the nearby town of Homa Bay. This comparison will help more accurately establish which changes in Kisumu can be attributed to the presence of the hypermarket. The study involves surveying households, including a questionnaire and body measurements; conducting interviews with government and private sector stakeholders



and shoppers; holding focus groups with local residents; and undertaking an audit of food shops and stalls in the area.

In November 2018, researchers from Cambridge visited Kisumu to link up with the Kenyan team who are leading the study. The joint research team engaged in field work to assess the study sites, and met with policymakers and community partners in Kisumu and Homa Bay. These meetings included representatives from across different sectors with an interest in the research: health, education, planning and development, agriculture, fisheries, waste and water, faith groups, and even the *boda boda* (motorbike taxi) sector.

This engagement is a mark of the potential wide-ranging infrastructural impact of the Mall, and also of the many different uses that the study data could be put to. For instance, the Homa Bay County Health Department is developing population medical cover, for which accurate income, dietary, and physical activity data is of great importance. And the methodology used in the study to code food outlets has been taken up by the County trade directors, who plan to apply it in their own mapping procedures.



As well as laying the groundwork for the future dissemination of the study results, this engagement work has been crucial in gaining local support for data collection. In the spring of 2019 the study team recruited field workers from the community to undertake this work. Nyanza Province, which includes Homa Bay and Kisumu, has high levels of unemployment. The study provided short term employment and, because all field workers received intensive training, improved onward employment prospects.

The training has also provided the community with individuals experienced in conducting research and with enhanced knowledge of health issues – something welcomed by the County authorities who have their own data collection needs.

Recruiting field workers locally has also made data collection much more efficient. Field workers were visiting areas and households they knew and were known in, creating trust and overcoming any resistance to the survey. This enabled the study to survey 400 households, map 2000 food outlets, conduct eight focus groups and 40 stakeholder interviews across the two sites.

The second round of data collection will take place a year after the hypermarket has opened, enabling researchers to see what effect its presence has had on local communities. The study team are hopeful that the groundwork laid so far will mean that when the final results are available, they will be put to work in supporting decisions that will serve the health of Kisumu and Homa Bay – and beyond.



**In healthcare, empathy refers to care that incorporates understanding of the patient's perspective, shared decision making between patient and practitioner, and consideration of the broader context in which illness is experienced.**

It's an important concept that is emphasised in policy, codes of practice, national clinical guidance and medical training. There is some evidence that greater practitioner empathy enhances patient satisfaction, can improve some measures for cardiovascular disease risk in the short term, and is associated with higher patient motivation in self-management of disease. However, the impact of empathy on longer term health outcomes has until now not been clear.

Researchers at Cambridge followed individuals across 49 general practices in the UK as part of the **ADDITION-Cambridge** study to examine the association between primary care practitioner (GP and nurse) empathy and incidence of cardiovascular disease events (such as heart attack and stroke) or death.

Twelve months after diagnosis, 628 patients assessed their GP's empathy and their experiences of diabetes care over the preceding year using the consultation and relational empathy (CARE) questionnaire. This covers 10 areas including how good the practitioner was at making the participant feel at ease, letting them tell their story, and helping them to take control. Of the participants who completed the questionnaire, just under one in five (19%) experienced a cardiovascular disease event, and a similar number (21%) died during follow up from causes including cancer and heart attack over the next decade.

Those patients reporting better experiences of empathy in the first 12 months after diagnosis

had a significantly lower risk (40-50%) of death over the subsequent 10 years compared to those who experienced low practitioner empathy. They also tended to have a lower risk of cardiovascular disease events, although this was not statistically significant.

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*"These more human elements of healthcare may be important in their long-term health outcomes."*

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Dr Hajira Dambha-Miller, an honorary fellow with the MRC Epidemiology Unit and NIHR Clinical Lecturer in General Practice at the University of Oxford said: "In trying to manage the growing burden of chronic preventable disease, we're increasingly moving towards precision healthcare, target-driven care and technology-based assessment, while at the same time focusing less on the human, interpersonal empathic aspects of care. Our findings suggest that these more human elements of healthcare early in the course of diabetes, may be important in their long-term health outcomes."

There are several possible explanations for the results. Patients with lower levels of anxiety or those with an optimistic outlook (and who are more likely to report better perceptions of care), are also likely to live for longer. It is also possible that GPs with empathic, patient-centred skills may be more likely to succeed in promoting positive behavioural change such as medication adherence or physical activity. Practitioner empathy may also reflect the doctor's listening ability and the trust of the patient in disclosing what is really wrong so that it can be addressed.



A close-up photograph of two hands held open, palms up, against a dark background. The hands are positioned symmetrically, with fingers slightly spread. The skin tone is a warm, light brown. The wrists are visible, showing dark blue ribbed cuffs. The background is dark and out of focus, with a hint of a light-colored surface below the hands.

# Once more with feeling

*The importance of empathy  
in clinical encounters*



# Epidemiology on tour

## *A year in public engagement*

The communities we work with are vital to our research. Public engagement is therefore a central part of the Unit's work, providing opportunities for everyone to discover our research, discuss its implications with our scientists, and learn about the varied career options that science offers.

Over the last year we've tried to reach further with our engagement, and connect with communities across East Anglia.

## Cambridge Science Festival 2019

Every year the Unit takes part in the **Cambridge Science Festival**. In April we joined the Biomedical Campus event held at the Cambridge Academy for Science and Technology.

Our main stand explored concepts of genetic and behavioural health risk, while Dr Gail Goldberg from the **MRC Nutrition and Bone Health Research Group** took part in the Meet the Scientists event, with the help of skeleton models, scans, and bone samples.

Dr Barbora Hroch from the **NIHR Cambridge BRC Nutritional Biomarker Laboratory** guided children through the activity *Sherlock Holmes and mystery of protein intake*, which examined the role of proteins in human body and what happens when people volunteer for nutritional research.



## Peterborough Life Lab

We travelled to Cathedral Square in Peterborough in September 2018 to take part in the **European Researchers Night Life Lab**, speaking with more than two hundred stand visitors over two days. The *Fortune Telling Molecules* wheel of fortune activity explained disease risk and our use of biomarkers (see page 5).

Meanwhile, *Welcome to the Snackingtons* invited people to explore two fictional neighbourhoods illustrating our food environment influences what we eat. You can visit the Snackingtons at [www.mrc-epid.cam.ac.uk/snackington](http://www.mrc-epid.cam.ac.uk/snackington)



## Big Science Fun at the Big Weekend

The Big Weekend on Parker's Piece in July has become an established part of Cambridge's summer, and we took part in the **University of Cambridge Fun Lab** tent. With so much going on at the Big Weekend we needed activities that got people's attention.

Our *Sugar Cube Challenge* – with its rows of lights that illuminate as our younger visitors peddled their way to 10 Kcal as fast as possible – certainly did that! There was a queue for almost the whole afternoon!



## Cambridge Festival of Ideas – Improving our diets: more freedom or more control?

In October 2018 Dr Jean Adams and Dr Thomas Burgoine from CEDAR theme joined a **Cambridge Festival of Ideas** panel to discuss *Improving our diets: more freedom or more control?* In a packed lecture theatre attendees joined a lively discussion of issues such as whether or not public health policies restrict our individual liberty and what measures might be most effective in getting us all to eat more healthily.

A recording of the event is available online as part of our new podcast *The Confidence Interval* (see back page).

## All aboard the MRC Festival science bus!

For the 2019 **MRC Festival of Medical Research** we teamed up with colleagues in the **MRC Metabolic Diseases Unit** to bring our science to 200 Year 9 pupils at **Ely College** and **North Cambridge Academy**, as well as the local Brownies and Guides groups – all with a little help from a 1965 Routemaster Bus.

Pupils tried the *Fortune Telling Molecules* wheel, tested their fitness using different methods employed by our Field Epidemiology team, and ran gels to identify the genes that make some dog breeds prone to obesity.



## Listen with confidence!

*The Confidence Interval* is a new, occasional podcast from the MRC Epidemiology Unit – talking science, people and public health.

Listen to conversations with our scientists discussing topics including genetics, science careers, why we eat what we do, and how all these things are changing.

Find out how to subscribe at [www.mrc-epid.cam.ac.uk/news/podcast/](http://www.mrc-epid.cam.ac.uk/news/podcast/)



Glucose Lowering through Weight Management

## Recruiting now! The GLoW study

*Have you been diagnosed with type 2 Diabetes in the last 3 years?*

*Would you like support to improve your health?*

The GLoW (Glucose Lowering through Weight Management) study is looking for people to take part in a study comparing two different programmes that aim to help people with type 2 diabetes lower their blood glucose and improve their health. The two programmes are a diabetes education programme (DESMOND) and diabetes education + weight management programme (including free attendance at Weight Watchers for 6 months)

We will measure the impact of the programmes over one year, via 3 health checks, short questionnaires and physical activity monitoring.

To take part you must be over 18 years old, have a Body Mass Index (BMI) over 25 kg/m<sup>2</sup>, have been diagnosed with type 2 diabetes in the last 3 years, and have not yet attended a group-based diabetes education session. To learn more about taking part, please call or email the study team:

Email: [GLOW.study@mrc-epid.cam.ac.uk](mailto:GLOW.study@mrc-epid.cam.ac.uk) Tel (freephone): 0800 783 4611

[www.mrc-epid.cam.ac.uk/research/studies/glow](http://www.mrc-epid.cam.ac.uk/research/studies/glow)

## Stay in touch

For enquiries about studies or to let us know of a change to your contact details please get in touch using:

Telephone: 01223 330315 Email: [studyhelp@mrc-epid.cam.ac.uk](mailto:studyhelp@mrc-epid.cam.ac.uk)

For specific studies, please use the details at [www.mrc-epid.cam.ac.uk/take-part/study-contacts](http://www.mrc-epid.cam.ac.uk/take-part/study-contacts)

All other contact details can be found at [www.mrc-epid.cam.ac.uk/contact](http://www.mrc-epid.cam.ac.uk/contact)

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