

Volunteer Times

Summer 2016

Fenland special

Phase 2 gets underway

Interviews

Public meetings in 2016

One in the Biobank

Plus...

A GLINT in our eye

Teenagers GoActive

The Unit at Westminster

Traffic & Health in Glasgow

Baby Milk Study

Sugary drinks & health

Exercise & mortality

VT Contents

Fenland special	Page
Fenland – Message from the Chief Investigator	3
Fenland Phase 2 progress report	4
Can Vitamin D supplements prevent type 2 diabetes?	5
Takeaways and obesity	6
Biobank Validation Study	7
Interview with Ely Site Manager Sandra Bovan	8
Public meetings in 2016	9
New Fenland Study website	9
Baby Milk Study completes recruitment	10
GoActive Study set for Launch	11
News from EPIC -Norfolk	12
EPIC-Norfolk - Replacing sugary drinks	13
EPIC -Europe - Physical activity and mortality	14-15
ADDITION - A decade and counting	16
GLINT feasibility study	17
Traffic and Health in Glasgow	18
MRC Epidemiology Unit in Westminster	19
Are you in a healthy place? MRC Festival	20

Message from Nick Wareham

MRC Epidemiology Unit Director & Fenland Chief Investigator

Back in 2005 we welcomed the first volunteers to the Fenland Study. A decade - and 12,435 participants - later in spring 2015 we completed recruitment.

The depth of information collected from volunteers across Cambridgeshire makes the Fenland Study an internationally important resource for public health research. Its success is a tribute to our study teams in Cambridge, Ely and Wisbech. And it's also to you, our volunteers, who have given up your time to help advance medical science. Thank you!

The complete data set from phase 1 of the Fenland Study is now being readied for analysis, but it has already contributed to important scientific papers, including two which feature later in this newsletter. In the autumn of 2014, we began inviting volunteers back for Fenland Phase 2, with more than 2,000 having now returned for a second visit.

The Fenland Study isn't our only study to reach an important milestone recently. Earlier this spring the GLINT Feasibility Study finished recruitment, and later this



year we will be launching the GoActive physical activity programme for schools.

The knowledge gained from these and other studies underpinned the evidence I presented last year to the House of Commons Health Committee's Inquiry into the impact of physical activity and diet on health, part of our ongoing work to influence public health policy.

Once again, I would like to thank the many thousands of volunteers who have taken part in our studies. Your participation is crucial to the success of our research studies, and your continued support and enthusiasm are much appreciated.

A handwritten signature in black ink that reads "Nick Wareham". The signature is written in a cursive style and is positioned below the main body of text.

Fenland Study enters phase 2

The wind in our sails!

In September 2014 we launched Phase 2 of the Fenland Study.

Recruitment to the first phase of the Fenland Study finished at the beginning of 2015, with 12,435 people from across Cambridgeshire participating.

Over the next four years we are sending invitations to participants who attended an initial Fenland Study visit between 2005 and 2015, to return for a second visit.

The information we are collecting in Phase 2 will be used to study the relationship between changes in objectively measured activity and dietary behaviours and body composition, and subsequent risk of developing type 2 diabetes and other relevant health conditions. It will also help us to understand the determinants of changes in all these factors.

Participation in Phase 2 of the Study involves a single morning visit of three and a half hours, at one of our Research Units at either the Princess of Wales Hospital in Ely, the North Cambridgeshire Hospital in Wisbech or Addenbrooke's Hospital in Cambridge, whichever is most convenient.

As at least four years need to have elapsed

between the first and second visits, we are not inviting all Fenland Phase 1 participants back for a second visit immediately.

During this visit most of the measurements that were carried out during the Phase 1 visit are repeated, and we are also collecting some new information. In Phase 2 we are also inviting some participants to donate a blood sample for the generation of induced pluripotent stem cells (iPSCs), which will be used to investigate pathways that link our genetic profiles with metabolic disease.

So far, almost 2,000 Fenland Study participants have returned for a Phase 2 visit. One of those was Tom Jefford, who kindly agreed to be filmed for an interview that you can watch on our updated Fenland study website at:

www.mrc-epid.cam.ac.uk/research/studies/fenland/

We would like to thank the thousands of volunteers who participated in the Fenland Study over the past decade. By participating they have already made a huge contribution to medical research, and hope that they will be able to join us again for Phase 2 of the study.



“It’s interesting to be part of the medical research that will help people to understand about people’s lifestyles and their relationship to diabetes.”

– Tom Jefford, Fenland Phase 2 volunteer

Vitamin D supplements don’t prevent type 2 diabetes

Observational studies have found that people with higher concentrations of circulating vitamin D are at lower risk of developing type 2 diabetes. This evidence has led to speculation that type 2 diabetes is associated with vitamin D insufficiency, and that supplements might help prevent it.

However, because this research was observational, it couldn’t directly examine the cause-effect relationship between the two conditions, and higher Vitamin D levels are also associated with spending time outdoors and higher physical activity levels.

Dr Nita Forouhi and colleagues at the MRC Epidemiology Unit and Queen Mary University set up the Vitamin D Supplementation trial to investigate whether giving vitamin D to people who are at risk of diabetes delays or prevents the development of type 2 diabetes.

They recruited a total of 342 adults at risk of developing type 2 diabetes to the trial, 172 through the Fenland Study, and the rest recruited in London, and randomized them to receive either placebo, vitamin D2 or vitamin D3 monthly for four months.

The researchers found that supplementation with vitamin D2 or D3 had no effect on biochemical markers of type 2 diabetes, suggesting that vitamin D insufficiency does not contribute to type 2 diabetes.

Read the paper at <http://dx.doi.org/10.1111/dom.12625>

Takeaways: the more you pass by the more you're likely to consume

By combining data provided by 5, 442 Fenland Study participants with local authority data on takeaway restaurant location, Unit researchers have shown that people who live and work near a high number of takeaway food outlets tend to eat more of these foods and are more likely to be obese than those less exposed.

Those with the highest combined exposure to takeaway outlets consumed an extra 40g of calorific food a week (equivalent to half a small serving of French fries), and had a BMI on average 1.21kg/m² greater than those least exposed. The association was most pronounced for exposure near people's place of work.

The study found that participants were exposed to an average of 32 takeaway outlets – nine each in their local neighbourhood and on their commute, and 14 within a mile of work. This is likely to explain the stronger link between workplace exposure, food consumption and BMI.

Some local authorities have begun to place restrictions on takeaway outlets, such as exclusion zones around schools and limits on how many hot food takeaways can operate along a high street, in a bid to curb obesity levels. The results of this study suggest that such policies might be effective.

"The foods we eat away from home tend to be less healthy than the meals we prepare ourselves, so it is important to consider how exposure to food outlets selling these high calorie foods in our day-to-day environments might be influencing consumption. Our study provides new evidence that there is some kind of relationship between the number of takeaway food outlets we encounter, our consumption of these foods, and how much we weigh"

- Dr Thomas Burgoine, lead author



More at www.cedar.iph.cam.ac.uk/blog/takeaway-obesity-link/

Biobank Validation Study

UK Biobank is a major national health resource, which has recruited 500,000 people aged between 40 and 69 in 2006 -2010 from across the UK. Participants have undergone measures, provided blood, urine and saliva samples for future analysis, detailed information about themselves and agreed to have their health followed.

Over 100,000 UK Biobank volunteers have had their fitness and physical activity measured objectively using techniques that were specifically designed for use in this study. However, these techniques had not yet been validated against gold standard methods.

In November 2015 we started inviting Fenland Phase 2 volunteers to our Cambridge site to participate in the Biobank Validation Study. Volunteers have been asked to wear wrist-worn movement sensors in their daily life and do a number of tests on an exercise bike during their clinic visits. We then assess how these methods compare to Fenland Study measurements.

Over 70 people have participated in the study so far and have clocked up between them over 34 hours on an exercise bike, the equivalent time it would take to cycle from Cambridge to Edinburgh!

Learn more about UK Biobank at www.ukbiobank.ac.uk/



Interview with Sandra Bovan

Research Site Manger for Ely and Wisbech



How did you first get involved with the Fenland Study?

In 2004 I was working on the ADDITION Study in Peterborough with research nurse Liz White, so when the MRC Epidemiology Unit decided to establish a Fenland Study testing site in Wisbech, Liz and I helped set it up.

What initially attracted you to the Study?

I used to be a practice nurse so have always been interested in health promotion, and I like to know what I can do as an individual to keep healthy. Genetically we can't change things (yet!), but can we help ourselves by making even small changes to the way we live.

What have you enjoyed most about the Study?

Meeting our study participants! We couldn't do the study without them, and they give up quite a chunk of their day. They come fasted, we subject them to 2 blood samples, give them a very sugary drink, throw endless questionnaires at them and then ask them to go on a treadmill – and they still manage to remain cheerful!

What changes have you seen in your time with the Study?

The thing that participants disliked most in Phase 1 was the oral glucose tolerance drink. It was just like a tub of icing sugar which we mixed with warm water. Yuk! We now have an orange-flavoured ready-mixed drink. It's still very sweet but much more palatable.

What do you hope the Study will achieve?

I hope that it will highlight ways we can reduce the levels of type 2 diabetes and obesity, which are at a record high. It's not solely up to individuals though, the food industry and the government must also take responsibility. Although life expectancy has risen, a lot of people are living with multiple chronic conditions which can be attributed to obesity and inactivity. Living longer is something we can aspire to, but I think most of us want to be able to enjoy our later years to the full and not have our lives blighted by avoidable illness.

Fenland Study Public Meetings - Summer 2016

We would like to invite you to attend one of our local Fenland Study Public Meetings. This is your chance to hear about the study so far and our future plans, and to ask questions.

These events will be held during the evenings and are free to attend, although you will need to register for tickets in advance as places are limited. To find out more and register via Eventbrite please see:

Ely, The Maltings, Tuesday 14 June 2016

www.mrc-epid.cam.ac.uk/event/fenland-study-public-meeting-ely/

Cambridge, Churchill College, Tuesday 21 June 2016

www.mrc-epid.cam.ac.uk/event/fenland-study-public-meeting-cambridge/

Wisbech, Thomas Clarkson Academy , Wednesday 06 July 2016

www.mrc-epid.cam.ac.uk/event/fenland-study-public-meeting-wisbech/

You can also register by contacting the Fenland Study Team at:

Email: fenland-meetings@mrc-epid.cam.ac.uk **Freephone:** 0800 085 618

Light refreshments will be provided and all venues have disabled access.

New Fenland Study Website launches!

To help mark the completion of Phase 1 of the Fenland Study and the successful launch of Phase 2 we have created a new Fenland study website.

www.mrc-epid.cam.ac.uk/research/studies/fenland/

The new website includes information about measurements we are taking in Phase 2 , Fenland Study scientific publications, directions and contact information for our testing centres, frequently asked questions and more.

Baby Milk Study completes final 1 year check

What's next?

We would like to thank all 669 families who have taken part in the Baby Milk Study. With their help we have succeeded in meeting our recruitment target and collected enough measurements and questionnaire data to allow us to draw meaningful conclusions about feeding and growth in the first year of life.

At the end of March 2016 we had seen all our families for their 1-year check and began to prepare the study data for analysis. The Baby Milk Study participants have been fantastic at returning questionnaires and coming back to see us, so we have lots of information to work with. So far we have received more than 5400 questionnaires, which is a lot of pages of important information... it should keep us busy for a while!

Our analysis will be complete towards the end of summer, and our study investigators will write up the findings. These reports will be published in medical journals, presented at academic conferences, and sent to other interested parties, so that the findings can be used to inform policy in this important area of child health.

A word from our team!

"I've enjoyed working with such an amazing group of parents and their babies. Listening to their experiences and the challenges they have faced on their journey has been a real insight"

- Karen F (Facilitator)

"Working on Babymilk has been such a joy, I've loved working with such a great team and getting to meet so many lovely families!"

- Sarah (Research Assistant)

www.mrc-epid.cam.ac.uk/research/studies/babymilk/



Our last family to enter the study, mum Louise and baby Lillie, pictured here with research assistant Sarah.



GoActive Study set for launch!

GoActive is an exciting new physical activity programme for Year 9 students, designed by researchers from the MRC Epidemiology Unit and the Centre for Diet and Activity Research (CEDAR).

GoActive increases physical activity by encouraging students to work together and support each other, improving their confidence, and even the quality of their friendships. We worked directly with students and teachers to develop GoActive, and have further refined the programme after testing in local secondary schools.

We're thrilled to announce plans to evaluate GoActive in an additional 16 Cambridgeshire schools (starting in September 2016), exploring how effective it can be in increasing physical activity for Year 9 students. If you'd like more information (or would like your school to be involved), please visit our website:

www.goactive-uk.com





News from EPIC - Norfolk

The European Prospective Investigation into Cancer and Nutrition (EPIC) study is one of the largest cohort studies in the world, with more than half a million participants recruited across 10 European countries, and looks at how genetic, behavioural and environmental factors affect health and disease.

The 30,000 EPIC-Norfolk participants are men and women recruited from 35 GP practices in Norfolk, who were aged between 40 and 79 when they first joined the study (1993-97). They have been contributing information about their diet, lifestyle and health through questionnaires and health checks for over two decades, and the aim is to provide data-based evidence for health policies to prevent or delay disease onset and maintain health and independence in older people.

The study has recently completed a fourth phase (2012-16), focussing on physical activity and sedentary behaviours as key potentially modifiable determinants of functional capability in older people. The fifth phase will begin shortly and the remaining EPIC participants will be approached over the next two years to attend the unit at the Norwich Community Hospital. The overall aim of this phase is to undertake a follow up assessment of existing participants and obtain repeat measurements to determine the factors that influence the ageing process and risk of disease and disability. This information will inform the development of possible interventions to improve health and quality of life as individuals age.

More at www.srl.cam.ac.uk/epic/



Replacing one sugary drink per day could cut risk of type 2 diabetes

Drinking water or unsweetened tea or coffee in place of one sugary drink per day can reduce the risk of type 2 diabetes, according to research from the EPIC-Norfolk Study. The analysis undertaken by Dr Laura O'Connor and colleagues at the MRC Epidemiology Unit indicates that for each 5 per cent increase of a person's total energy intake provided by sweet drinks, the risk of developing type 2 diabetes may increase by as much as 18 per cent.

After accounting for a range of important factors including total energy intake, the researchers found that the risk of developing type 2 diabetes increased by approximately 22 per cent for each extra serving per day of soft drinks, sweetened milk beverages and artificially sweetened beverages habitually consumed. Consumption of fruit juice and sweetened tea or coffee was, however, not related to diabetes. The higher risk of diabetes associated with consumption of both soft drinks and sweetened milk drinks remained after further accounting for body mass index and waist girth as markers of obesity. The link with artificially sweetened beverages consumption disappeared after accounting for markers of obesity, which is likely explained by their greater consumption by those who were already overweight or obese.

The authors also found that if study participants had replaced a habitual daily serving of soft drinks with water or unsweetened tea or coffee, the risk of diabetes could have been cut by 14 per cent. However, consuming artificially sweetened beverages instead of any sugar-sweetened drink was not associated with a statistically significant reduction in type 2 diabetes, when accounting for baseline obesity and total energy intake.

"The good news is that our study provides evidence that replacing a habitual daily serving of a sugary soft drink or sugary milk drink with water or unsweetened tea or coffee can help to cut the risk of diabetes, offering practical suggestions for healthy alternative drinks for the prevention of diabetes."

- Dr Nita Forouhi, senior author

More at www.mrc-epid.cam.ac.uk/blog/replacing-sugary-drink/

Lack of exercise may be responsible for twice as many deaths as obesity

Analysis of data from the European Prospective Investigation into Cancer and Nutrition (EPIC) Study has revealed that a brisk 20 minute walk each day could be enough to reduce an individual's risk of early death.

To measure the link between physical inactivity and death, and its interaction with obesity, researchers analysed data from 334,161 men and women across Europe participating in EPIC. Between 1992 and 2000, the researchers measured height, weight and waist circumference, and used self-assessment to measure levels of physical activity.

The participants were then followed up over 12 years. The researchers found that twice as many of the 21,438 deaths that occurred within the follow-up period could be attributable to lack of physical activity compared with the number of deaths attributable to obesity.

The researchers found that the greatest reduction in risk of premature death occurred in the comparison between inactive and moderately inactive groups.

When assessed by combining activity at work with recreational activity; just under a quarter (22.7%) of participants were categorised as inactive, reporting no recreational activity in combination with a sedentary occupation. The authors estimate that doing exercise equivalent to just a 20 minute brisk walk each day – burning between 90 and 110 kcal ('calories') – would take an individual from the inactive to moderately inactive group and reduce their risk of premature death by between 16-30 per cent.

The impact was greatest amongst normal weight individuals, but even those with higher BMI saw a benefit.

"Helping people to lose weight can be a real challenge, and whilst we should continue to aim at reducing population levels of obesity, public health interventions that encourage people to make small but achievable changes in physical activity can have significant health benefits and may be easier to achieve and maintain."

- Professor Nick Wareham, Director of the MRC Epidemiology Unit

“This is a simple message: just a small amount of physical activity each day could have substantial health benefits for people who are physically inactive.”

- Professor Ulf Ekelund



ADDITION - a decade and counting

The ADDITION study has now been running for well over a decade. Starting in 2001, we invited 33,539 people from GP surgeries in Cambridgeshire, Essex, Hertfordshire and West Suffolk for a finger prick blood test to screen for diabetes. 24,654 people kindly volunteered, and of these 867 people were diagnosed with diabetes.

Half of these 867 participants were in GP practices which delivered standard care for diabetes following national guidelines. The other half were in practices which had received additional training and educational resources to encourage them to provide more intensive treatment designed to reduce the risk of cardiovascular disease for their patients.

Nearly 90% of the people taking part returned for a follow-up health check around one year later, and 80% came back for five-year follow-up. We are making steady progress with the 10 year follow up of participants in order to assess the longer term effects of screening and treatment, with about 50% of questionnaires that were sent out completed and returned.

A big thank you to all the ADDITION volunteers for taking the time to complete these for us!

Modelling the impact of early diabetes diagnosis

Does screening and earlier diagnosis and treatment result in a better health outcome years later for people with undiagnosed type 2 diabetes?

Researchers used data from the ADDITION-Europe study together with the Michigan Model for type 2 diabetes, which simulates the progression of diabetes and its complications, to estimate the risk of cardiovascular events such as stroke, heart attack or heart bypass surgery over ten years. They found that early screening reduced the risk of cardiovascular event from 25.9 per cent to 18.4 per cent.



More at: www.mrc-epid.cam.ac.uk/blog/early-detection-type-2-diabetes-mortality/

Volunteers recruited for GLINT feasibility study

Can metformin prevent cardiovascular disease?

The Glucose Lowering in Non-diabetic hyperglycaemia Trial (GLINT) is a multi-centre trial run jointly by the University of Cambridge MRC Epidemiology Unit, the University of Oxford Diabetes Trials Unit (DTU) and the University of Leicester Diabetes Centre.

Currently most people become aware that they have cardiovascular disease (CVD) when they experience a heart attack or stroke. Therefore, finding and treating people at high risk before they have an event is an important strategy. Elevated blood glucose levels define diabetes. However, even in people without diabetes, higher than desirable glucose levels are associated with increased CVD risk.

We know that early intensive treatment of blood glucose with a well-established, safe and cheap tablet (metformin) is effective at reducing CVD in people with diabetes, and may also reduce cancer risk. Metformin can also delay the onset of diabetes among the larger numbers of people with high glucose levels - hyperglycaemia - who do not have diabetes. However, it is unknown whether metformin can prevent CVD in this group.

GLINT aims to determine if metformin can prevent the development of CVD in people who are at high CVD risk and have slightly elevated blood glucose levels, but do not have diabetes. To test the practicalities of the various aspects of the trial, a feasibility study is now underway in Cambridge, Leicester and Norwich. Recruitment to this feasibility phase of GLINT was completed in November 2015, with 122 volunteers recruited via the MRC Epidemiology Unit and a further 127 via the Leicester Diabetes Centre. We are currently collecting follow-up data by questionnaire to participants and their GPs.

Our intention is to complete a large-scale trial, of approximately 12,500 participants, to demonstrate the effectiveness and cost-effectiveness of metformin in preventing cardiovascular events such as heart attack or stroke over five years in people with non-diabetic hyperglycemia.

More at www.mrc-epid.cam.ac.uk/research/studies/glint

Traffic and Health in Glasgow

As part of a wider initiative in urban regeneration, a new five-mile section of the M74 motorway was opened in Glasgow in 2011. This 'natural experiment' provides an opportunity to evaluate a major change in the urban environment, which may have positive or negative effects on the health and wellbeing of those living nearby.

The study seeks to increase our understanding of how and why changing characteristics of the urban environment affects how people feel about living in their neighbourhoods, where they go in those neighbourhoods, and how active they are. This is important because there is currently little clear public health evidence to guide decisions about investing in expensive urban regeneration projects of this kind. Our research will help inform future policy and planning in other parts of the UK where population growth is anticipated or urban redesign is proposed.

We are now building on our 2005 baseline study by investigating changes in travel behaviour, physical activity, perceptions of the neighbourhood environment, wellbeing, and road traffic casualties in a follow-up study which took place between 2013 and 2015.

In 2013, we completed a postal survey of adults living close to the new motorway, as well as adults living in two matched comparison areas of the city: one where there has been a motorway since the 1960s, and one with no motorway. Between 2014 and 2015, we invited some participants to spend a week wearing unobtrusive monitors (accelerometers and GPS receivers) to provide objective data about their activity patterns, because we are particularly interested in where people go and how this may have been affected by the changes in their neighborhood environment. We also interviewed a smaller number face-to-face to explore their experiences, and audited the study areas to ascertain exactly how the environment has changed. Finally, we investigated whether the new motorway had influenced local road traffic accidents by analysing an existing traffic accident database.

Analysis of data for all parts of the study is currently underway, and final results are due to be published later in 2016.

More at www.cedar.iph.cam.ac.uk/research/directory/traffic-health-glasgow/

To Westminster, and beyond...

In February 2015, Unit Director Professor Nick Wareham was invited to give expert testimony to the House of Commons Health Committee's inquiry into the impact of physical activity and diet on health. This followed a written submission from the Unit and the Centre for Diet and Activity Research (CEDAR), which brought together a critical mass of our research in this area.



The resulting report from the Health Committee contained a number of citations of our research and drew significantly on the ideas and arguments we presented. Together with other recent policy documents, the Committee Report is influencing government obesity policy development. This is just one prominent example of how we seek to inform policy and practice with the latest epidemiological and public health evidence.

How we aim for impact

As well as making sure that our evidence is 'Open Access' to anyone who wants to see it, we produce frequent policy-focused summaries of our research. Our work with the media also helps shape wider understanding of important health issues.

We provide evidence to a range of policy bodies, from Public Health England to the Department for Transport, NHS England to the Local Government Association. In a number of cases we have been developing closer collaborations to bring our expertise to bear on policy questions. We are also using innovative interactive approaches to help inform decision making. We are soon to launch an online tool to support town planners in making decisions about where to invest in cycling infrastructure, and we are developing another online tool that will support local government in efforts to create healthier food environments.

- Find our submission to the Health Committee and other bodies at:

www.cedar.iph.cam.ac.uk/resources/evidence-submissions

- Read more about how we're engaging with policymakers at:

www.mrc-epid.cam.ac.uk/take-part/practice-policy/

Are you in a healthy place?

Food, travel, and our neighbourhoods



The places where we live, study and work can all shape our behaviours and ultimately our health. But how healthy are our neighbourhoods in Cambridgeshire and beyond? Join science writer and broadcaster Kat Arney and researchers from the MRC Epidemiology Unit in Cambridge to find some answers and pose some questions for future research. Bring your questions, opinions and smartphones – and take away a new perspective on where you live.

When: Wednesday 22 June 2016, 17:30 - 19:30.

Where: University Centre, Cambridge CB2 1RU

More details and reservations at www.mrc-epid.cam.ac.uk/event/mrcfestival/

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Contact us

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