CEDAR

Centre for Diet and Activity Research

A UKCRC Public Health Research Centre of Excellence

Capacity • Research • Translation

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UK Clinical Research Collaboration — igniting our potential

UNIVERSITY OF CAMBRIDGE
Institute of Public Health

UEA
University of East Anglia

MRC Medical Research Council

About CEDAR

The Centre for Diet and Activity Research (CEDAR) is building understanding of the factors that influence diet and physical activity related behaviours, developing and evaluating interventions, and helping shape public health practice and policy.

We are one of five Centres of Excellence in Public Health Research funded through the UK Clinical Research Collaboration. Hosted by the Institute of Public Health in Cambridge, we are a partnership between the Universities of Cambridge and East Anglia, and the Medical Research Council, specifically the MRC Epidemiology Unit, MRC Biostatistics Unit and MRC Human Nutrition Research Unit.

We are driven by the overall goal of supporting effective interventions to change diet and physical activity behaviours at the population level. Our research can be broadly divided into four areas:

- **Measuring the determinants of behaviour**
  A range of factors, from attitudes and beliefs through to features of the built environment, influence our diet and physical activity behaviours. The collection and analysis of data is at the heart of understanding these factors. CEDAR is working with existing data, adding additional information to established datasets to enable wider questions to be addressed, and is directly funding the collection of new data.
- **Intervention studies**
  CEDAR conducts research into planned public health interventions, those developed more informally as a component of public health practice, and 'natural experiments' in which the impact of evolving or planned changes to the environment, policy and practice can be measured. We are also modelling the wider costs and benefits of public health intervention.
- **Developing research methods**
  CEDAR is contributing to the development of new methods in a number of areas. For example, researchers have been helping pioneer the use of Global Positioning Systems (GPS) in diet and physical activity research.
- **Synthesising the evidence**
  At CEDAR, we believe that public health decisions should be shaped by a synthesis of a broad evidence base. We have completed a number of systematic reviews, on topics as diverse as interventions to promote cycling, the association between access to green space and obesity, and determinants of early weaning in babies.

For more about how we are applying our research findings to influence policy and practice, see page 7.

CEDAR people

A number of leading public health researchers work in and with CEDAR, and we draw on the expertise of a wide range of scientific disciplines including behavioural science, biostatistics, epidemiology, health economics, health geography, and public health nutrition research.

There are now 35 active researchers either funded directly by CEDAR or via affiliated funding, with all research activities closely tied to our objectives.

Our research is supported by specialist expertise in research management, data management, study coordination and communications.

The Director of CEDAR is Professor Nick Wareham.

Building capacity

A key aspect of our work is to build capacity for the future of public health research. We are doing this by attracting new people into the field and by supporting the career paths of young researchers at MPhil, PhD and post-doctoral levels.

We are also helping to build capacity for research within public health practice, and are currently hosting the placement of a public health registrar from the East of England public health training scheme.

A balanced diet

To complement existing strengths in the field of physical activity research, this year we have been strengthening our focus on nutritional public health research.

We have appointed a new Senior University Lecturer, Dr Pablo Monsivais, who has joined us from the University of Washington's School of Public Health and is working on social and economic determinants of diet.

To further expand our portfolio, we have also developed a formal arrangement with Assistant Professor Sara Benjamin Neelon of Duke University, North Carolina, who has interests in dietary behaviours, specifically in infants and young children.

Our website includes profiles of all our researchers and staff:
www.cedar.iph.cam.ac.uk/people

Case Study

Research in a changing world, a natural experimental study

'Natural experiment' is a term given by public health researchers to an opportunity to observe the effects of changes in the environment, policy or practice. Studying these changes to improve understanding of public health has a long history in the UK, one of the most famous examples being the physician John Snow's study of the 1854 Broad Street cholera outbreak in London. This tradition is continued today by CEDAR, which is seeking to make better use of natural experiments in terms of evaluation and learning to inform future public health interventions.

Can changing infrastructure change behaviour?

Altering transport infrastructure to support active travel such as walking and cycling could help to increase population levels of physical activity. A flagship grant in this area for CEDAR is the Commuting and Health in Cambridge study funded by the National Institute for Health Research (NIHR) Public Health Research programme and led within CEDAR by the MRC Epidemiology Unit.

A key focus of this cohort study of travel behaviour and physical activity has been the launch of the Cambridgeshire Guided Busway. Opened in August 2011 and connecting St Ives and Cambridge, this is the longest guided busway in the world. The study aims to assess whether providing new transport infrastructure has any effect on travel behaviour and physical activity in the commuting population – an example of a natural experimental study.

Dr David Ogilvie, principal investigator on the study says "Whilst the primary motivation for building the guided busway was to reduce congestion rather than to improve public health, we know that using public transport tends to involve at least some physical activity. In the first two months, some 430,000 trips were made on the busway, so the potential for a population-level effect on physical activity is well worth investigating."

In-depth data

Data collection for the study has been ongoing since 2009 and provides a wealth of information about the travel and physical activity behaviours of the local commuting population. Three rounds of data collection are now complete, comprising a total of over 2500 survey responses combined with over 1000 weeks of objective physical activity measurement and over 800 weeks of in-depth household travel diary records.

The study also includes a substantive qualitative research strand. Interviews have been completed with around 70 participants, a participant observation study has recently begun, and several mixed-method analytical projects are in progress.

The first results from this study were published in November 2011. (Panter J, Griffin S, Jones AP, Mackett R, Ogilvie D. *Correlates of time spent walking and cycling to and from work: baseline results from the Commuting and Health in Cambridge study* IJBNPA 2011, 8:124.)

"There are natural experiments going on all around us," says Dr Ogilvie. "If we can improve the way we gather evidence about their effects, the potential impact on policy and practice could be significant."

Photo courtesy: Sean Hickin

CEDAR online

2011 saw the launch of our new website **www.cedar.iph.cam.ac.uk**

Here you can find out more about us and our research, read about the range of expertise held by the people who are part of CEDAR, download useful resources and keep up with our latest news.

You can sign up for the CEDAR email bulletin by visiting the site or emailing the word **'Subscribe'** to **cedar@medschl.cam.ac.uk**

You can also follow CEDAR on Twitter **@CedarUK**

We welcome your feedback on our website and other communications material: please contact us at **cedar@medschl.cam.ac.uk**

Not lost in translation – working with practice and policy

At CEDAR we want our research to be used to develop and evaluate public health interventions, and to be guided by the needs of public health practice.

We have close links with the **Eastern Region Public Health Observatory (erpho)**, and our researchers are already working with public health practitioners and contributing to policy development.

We want to build on this situation, and we have identified four main areas to develop. We are seeking feedback as we conduct this work.

- **Communications and relationship building**
  Ongoing engagement, and the development of databases is providing an evolving picture of the regional public health landscape as it relates to CEDAR's work – information that can be shared with services and policy makers. This is also helping CEDAR develop understanding of public health perspectives on research, and identify opportunities for research translation.
- **Online resources and toolkits**
  Drawing on our research, we are producing Policy and Evidence Briefs, succinct summaries of research aimed at supporting evidence based decision making. We will develop evaluation toolkits, either as standalone products, or part of collaboration with other organisations.
- **Training and workshops**
  We are developing training in the practicalities and methodology of evaluation, to support everyday practice within services. These may be delivered either as standalone workshops or as part of existing courses from organisations such as erpho.
- **Capacity building in evaluation within services**
  This involves supporting secondments of academics into service settings, and vice versa, to encourage sharing of skills and perspectives. A longer term focus could be support for evaluation posts within services, with the potential for direct partnership with organisations in the evaluation of interventions. The goal is to produce knowledge that can be shared and applied in wider public health action.

You can read more about this work, and fill in our survey via our website **www.cedar.iph.cam.ac.uk**, or contact Oliver Francis on:

Email: **ocf26@medschl.cam.ac.uk**
Tel: **01223 746892**

Case Study

SPEEDY children helping our understanding of diet and activity

CEDAR continues to contribute to **SPEEDY** (**S**port, **P**hysical activity and **E**ating behaviour: **E**nvironmental **D**eterminants in **Y**oung people). This population based study focuses on children in schools in Norfolk.

"Behaviour formed in childhood and adolescence can last a lifetime." says Dr Esther van Sluijs, one of the lead investigators on SPEEDY. "The goal of this research is to help us identify specific factors that are associated with diet and physical activity behaviours in children. This information can then be used to help design interventions and policies that promote physical activity and healthy eating in children."

SPEEDY 1, 2 and 3

The two initial data collections within SPEEDY looked at children aged nine and ten, funded by the National Prevention Research Initiative (NPRI), with a follow-up study one year later funded by the MRC Epidemiology Unit. In 2011, the four year follow-up of the SPEEDY cohort was conducted, again funded by the MRC Epidemiology Unit.

This study enables us to examine behaviour during the transition from childhood to adolescence, and captures the important change from primary to secondary school. In addition, the specifically designed questionnaires and use of objective monitors (including global positioning system monitors) will allow a more detailed analysis of the influences on diet and physical activity behaviours during this critical period.

Research in collaboration

"SPEEDY shows the benefits of CEDAR collaborations with other groups," says Prof Andy Jones, another SPEEDY lead investigator. "A number of organisations have supported SPEEDY data collection over the years, and the dataset is now being made available to other researchers."

For example, the SPEEDY 1 dataset now forms part of the International Children Accelerometry Database (ICAD) which has collated data from across the world. Researchers external to CEDAR have been able to use the SPEEDY data to study questions related to their area of interest.

Some findings from SPEEDY

We have conducted work on a new school audit measure that assesses the 'physical activity friendliness' of the **school environment**. Using this and other sources of information, we found that only a few factors in the school environment were associated with time spent in sedentary, moderate or vigorous activity, or with children's weight.

Also, allowing children to play outside in wet weather during school break times is actually associated with lower activity levels than keeping them indoors. These findings have implications for school policy on play and the design of school grounds for wet weather.

Within our work on **active travel,** we have shown that children who actively travel to school, for example by walking or cycling, have higher levels of overall physical activity than those using passive modes of travel such as being driven by car.

A large number of factors all have associations with active travel, including parents' attitude, social support, level of socioeconomic deprivation, density of roads and streetlights, among others. Creating safe environments therefore has a role in promoting active travel and possibly wider physical activity.

We have used information on SPEEDY participants' food to examine the role of school and packed lunches in contributing to the quality of **diet** in children. We found that children who ate a school lunch generally had healthier diets overall than those bringing packed lunches. These findings have important implications for schools food policy and practice.

Winner of the SPEEDY prize draw: Jodie Roberts with mum Ellen Roberts

Other highlights from 2011

- CEDAR investigators have contributed to the **new physical activity guidelines** published by the four UK Chief Medical Officers, and to several **NICE** public health guidance groups including those on prevention of diabetes and obesity.
- CEDAR Investigators were part of a collaborative study commissioned by the Department of Health that produced ***Assessing the Evaluability of Complex Public Health Interventions: Five Questions for Researchers, Funders, and Policymakers***. This tool is for structuring dialogue and decisions about what interventions should be evaluated, when to evaluate them and how evaluation might be used.
- CEDAR members contributed to the **MRC guidance** ***Using natural experiments to evaluate population health interventions*** which was published in July. This guidance aims to help producers, users, funders and publishers of evidence understand how and when natural experiments can be used to good effect.
- CEDAR PhD student Kathryn Hesketh was awarded a three month internship with the **Behavioural Insights Team in the Cabinet Office Strategy Unit**. Kathryn contributed to their work in addressing policy questions using theories from behavioural economics, as well as gaining perspectives on policy development.
- In July CEDAR and the Eastern Region Public Health Observatory held a workshop on ***Evaluating Real Life Interventions***. This focused on how to overcome barriers and improve opportunities for improving the evaluation of public health interventions in the East of England region. Over 80 senior staff from the NHS, Local Authorities, and other bodies concerned with public health attended, and the outputs are helping to shape our research translation work (see page 7).
- CEDAR members contributed evidence to the ***House of Lords Science and Technology Select Committee*** enquiry on behaviour change.
- During the school summer term, the **SPEEDY-3** study team carried out 102 measurement visits across 45 Norfolk secondary schools. The team also gave assemblies and science lessons on lifestyle and health at 12 Norfolk schools.
- Lead **Baby Milk study** (see page 12) researcher Dr Rajalakshmi Lakshman met with all the East of England Infant Feeding Coordinators to share the latest evidence on the feeding guidelines and growth charts.

- CEDAR researchers supported the evaluation of **Activ8**, an after-school club organised by the Cambridge School Sports Partnership to encourage inactive children to engage with non-traditional sports.
- CEDAR researchers also supported the evaluation of **EnergiZe** a programme run by NHS Cambridgeshire that offers families a fun way to help children manage their weight by improving fitness, physical activity levels, nutrition and self-esteem.
- In total in 2011 CEDAR members published **over 40 papers in peer-reviewed journals** and presented at **over 30 conferences and institutions** as far afield as Belfast, Istanbul, Rio de Janeiro and Melbourne.

Case Study

Baby milk and healthy weight in infancy

UK surveys show that more than one in five children are overweight or obese by the time they start school. Nutrition and growth during infancy can also have long term effects on eating behaviours and risks of obesity in later life.

Assessing early intervention

Through systematic reviews of the evidence and a new trial, CEDAR and MRC Epidemiology Unit researchers are learning more about how we might prevent obesity by intervening during infancy. Very little research had previously looked at how best to protect the health of bottle fed babies, who often gain weight rapidly and tend to be at higher risk of childhood obesity. Our researchers have therefore identified formula milk feeding as an area for intervention.

"Although around 80 per cent of mums start to breastfeed their baby, within six weeks some 78 per cent of mums are supplementing breastfeeds with some bottle feeds," says CEDAR investigator Dr Raj Lakshman. "Evidence still suggests that breastfeeding is the best way of ensuring optimal health for mother and baby, but the needs of bottle feeding mothers need to be better answered to avoid risks to their babies' health."

Our first systematic review in this area looked at how parents decide on quantities and frequency of formula milk feeds. It also revealed that mothers who bottle feed reported many negative emotions such as guilt, uncertainty, anger and a sense of failure for not breastfeeding. Mothers further reported that they did not receive enough information and support from healthcare professionals when it came to bottle feeding, and mistakes in feed preparation were common. Indeed, our second systematic review identified that improving the quality of the advice given by healthcare providers appeared to be important in helping parents follow infant feeding guidelines.

A randomised controlled trial

Building on the learning from the systematic reviews, our researchers worked with mothers and healthcare professionals to develop a feeding programme which aims to support families who use formula milk in order to achieve a healthy pattern of growth and weight gain for the babies.

The infant feeding programme is being tested in a randomised controlled trial. One group is being given advice and support to follow the new guidelines for formula milk feeding. The other group is being given routine advice about formula milk feeding and weaning. These two approaches can then be compared to test the feasibility and effectiveness of the new feeding programme. The babies in the two groups will be followed up during the first 12 months of life.

The results of the study will inform infant feeding guidelines in the UK and will help us understand the links between infant feeding, behaviour, growth and future obesity risk.

CEDAR publications, May – November 2011

Details of all our publications from 2008 – 2011 can be found on our website **www.cedar.iph.cam.ac.uk**

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