



THE EARLY NUTRITION PROGRAMMING PROJECT

Project Number: FOOD-CT-2005-007036

Acronym: EARNEST

(EARly Nutrition programming - long term follow up of Efficacy and Safety Trials and integrated epidemiological, genetic, animal, consumer and economic research.)

NEWSLETTER 3 - SPRING 2007

EARNEST general assembly meeting held in Cambridge, UK on December 14th and 15th 2006

This meeting was superbly organised by Kathy Kennedy and the rest of the team from partner UCLON who are based in London. The timing and venue of the meeting were arranged to coincide with an important meeting being held a few days before by the UK Nutrition Society. This meeting celebrated the hundredth anniversary of the birth of Dr Elsie Widdowson, who is generally regarded as one of the early pioneers of the subject of Early Nutrition Programming; several EARNEST participants attended both meetings.

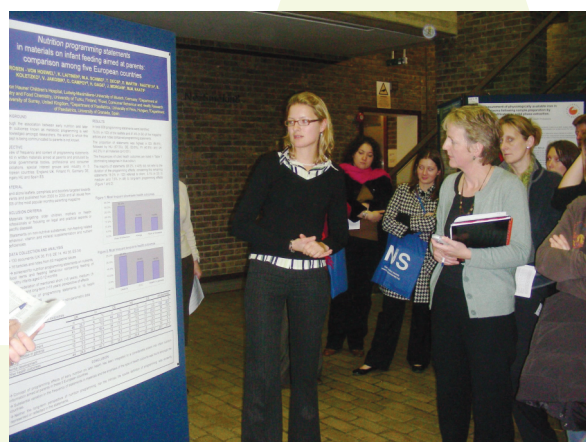
The GA was an exciting meeting, mainly because it was the first time that participants could hear some of the early results from the EARNEST project as well as having time for their Theme discussion meetings and digesting all the information in posters on show.

Professor Guido Moro from Milan showed some Theme 1 results. A mixture of prebiotic oligosaccharides (GOS/FOS) based on the those in human milk, fed to newborn babies, has a bifidogenic effect, plays a role in prevention of allergy, reduces the incidence of infections and strengthens in a natural way the infant's natural defences.

Dr Tamás Decsi summarised some Theme 4 results on a comparison across five European countries. Policy documents include some statements on programming effects, but these are not always supported by reference to the evidence-base. Most of them did not specify the importance of an appropriate nutrition for long long-term health consequences.



Dr Elsie Widdowson, the centenary of whose birth was celebrated at a meeting in Cambridge in December 2006.



Julia von Rosen presenting a poster at the General Assembly Meeting

Professional associations should improve the quality of nutritional recommendations by focusing on rules of evidence-based based medicine and the potential role of early nutrition in preventing various chronic diseases at later stages of life should be more effectively emphasised in future policy documents.

Niels Straub presented the results from Theme 5 on the economic implications of an Early Nutrition Programming on blood pressure in later life. Implications of shifts in the risk distribution were related to risk of morbidity/mortality and put into an economic model which included the identification of relevant costs: direct healthcare costs, direct non-healthcare costs and indirect costs. A cost benefit of LCPUFA enhanced formula was demonstrated over standard formula, but it would take 50 years for this to become apparent. Breast feeding was of course the preferred model from an economic viewpoint as well as a health stance.

The dissemination and exploitation panel (DECP) were meeting for the first time within this GA meeting and so two Panel members were asked to tell us about their own expertise so the other EARNEST participants could see how this would help the whole project.

Professor Frank Furedi spoke about the complexity of understanding consumer thinking. He drew analogies with other early interventions eg vaccinations. Early enthusiasm for the benefits of vaccination has now given way to some misgivings among some groups. Even the concept of breast feeding vs. bottle feeding is complex and related to issues apart from the scientific benefits. Advocates of breast feeding take the moral high ground whereas advocates of bottle feeding believe they are more sophisticated because the mothers are not slaves to their child. Any research project must identify gaps, identify messages, identify channels and identify means of transferring the information.

Dr Lena Grimm then gave advice, particularly to the academic partners, on spotting and protecting possible intellectual property (IP) opportunities within their results. It is important to be careful with dissemination of results if IP rights are to be protected. This advice was timely as the general air of the meeting was one of enthusiasm for a project which is just starting to yield results.

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Report of first DECP meeting

We were delighted to hold the first meeting of our dissemination and exploitation consensus panel (DECP) in Cambridge, UK on December 15th, 2006. Most panel members were able to join us and met each other at a traditional Christmas Dinner in Clare College Cambridge (the carol singers and the Christmas pud were great hits!). These are the names and expertise of our members:

Prof Michiel Korthals (NL-ethicist), Dr Andrée Bronner (F-infant food industry trade association), Professor Frank Furedi (GB-social science), Carole Middleton (GB-Dietetics); Prof. Dr. Hildegard Przyrembel (D-food policy); Dr Lena Grimm (D-Intellectual Property rights) and Dr Jean Michel Antoine (F- food industry). We still have one place to fill we shall probably look for a representative of a patient group.

The Panel were then able to join the final morning of the EARNEST general Assembly meeting and indeed two panel members, Professor Furedi and Dr Grimm gave exceedingly informative presentations to indicate how their expertise was of relevance to the outcomes of the EARNEST project.

At the DECP meeting, our panel heard some of the EARNEST participants give a short overview of their role in the project with particular emphasis on the exploitable products they expected to produce for the different stakeholder groups. The wide expertise of the panel had immediate impact; they suggested stakeholder groups and exploitable products which had not even been envisaged by the EARNEST partners.

Encouraged by Margaret Ashwell and Rhonda Smith, the project's Dissemination and Exploitation leaders, all the participants then tackled Global Future forecasting. They were introduced to the PESTLE technique (standing for political, economic, social, technological, legal and environmental factors) and were asked to think which drivers and trends will impact on all the diverse exploitable products of the Early Nutrition Programming project?

The Panel then discussed their proposed terms of reference for membership and agreed that Prof. Dr. Hildegard Przyrembel should act as the Chair of the group. They will be involved in EARNEST through correspondence and will meet again as a group at the General Assembly meeting to be held in Prague in October 2007.

NICE coverage for EARNEST at Cambridge!

The EARNEST Cambridge meeting not only coincided with the 100th Anniversary of the birth of UK nutrition pioneer Dr Elsie Widdowson but also with the publication of the UK's NICE (National Institute for Health & Clinical Excellence) Guidelines on Obesity.

These news stories, together with the releases EARNEST issued concerning Elsie and the emerging science of early nutrition programming, ensured that our multi-national experts were in great demand by the media.

BBC and ITV television news crews interviewed Prof Mike Symonds and Dr Margaret Ashwell, resulting in lunchtime, evening and following morning television broadcasts. The effects of early nutrition on the future risk of obesity and the importance of a healthy diet during pregnancy and breastfeeding were emphasised.

Mothers filmed at baby & toddler groups said that, though they had been told about the importance of having a healthy diet for themselves and their children, the possible long term consequences of early nutrition on their children's health had not been explained to them.

The TV news items highlighted the increasing problem of childhood obesity in the UK, concluding that the research being done by the Early Nutrition Programming project would contribute substantially to addressing this growing problem.

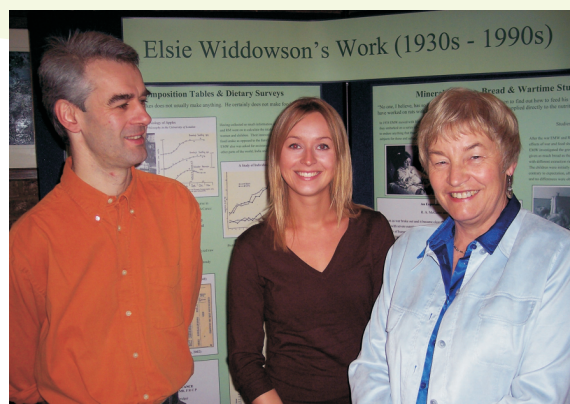
Preliminary research also revealed at Cambridge by Dr Monique Raats and Dr Tamás Decsi regarding inconsistency across five European countries in the information and advice given to mothers on infant feeding and the impact of Early Nutrition Programming also captured the media's attention. This variation is apparent in leaflets and advice from professionals and in magazines, from where mothers take most of their information.

Dr Raats concluding statement "With increasing mobility of populations across the EC, it would be preferable if this advice and information were consistent," was widely reported.



Photo of some of EARNEST DECP at Cambridge meeting in Dec 2006.

L-R: Margaret Ashwell, Carole Middleton, Michiel Korthals; Hildegard Przyrembel, Rhonda Smith, Andree Bronner.



Prof Mike Symonds and Dr Margaret Ashwell being interviewed by ITV news reporter.

Interview with Sophie Hawkesworth on conducting research in the Gambia

Sophie Hawkesworth joined the MRC International Nutrition Group in June 2005 to work as a Research Assistant on the EARNEST Project. She spent 9 months living in The Gambia running the fieldwork for EARNEST.

What first attracted you to working in the developing world?

There are a lot of health issues of direct public health relevance to the developing world that we still do not know enough about. The area of nutritional programming may be particularly important in this setting where poor fetal nutrition (as evidenced by the prevalence of low birth weight) is widespread.

What are the main differences in doing research in The Gambia compared to in Europe? How have you had to adjust?

Many of the practicalities of conducting research in The Gambia are in fact the same as those in the EU! The main differences relate to study logistics, such as contacting study subjects in a setting where there is no postal service and most families are without access to a telephone. Our fieldworkers in The Gambia are fantastic, and travel across the whole country on motorbikes tracing study subjects for enrolment into our studies despite the appalling roads. We certainly wouldn't be able to conduct our research without the help of our highly motivated local research teams. Also the Gambian subjects tend to be very pro-research - they appreciate that by volunteering they are making a contribution to world health.



What are the main practical difficulties you have to overcome?

During this particular research project we were conducting measurements in rural villages with no access to electricity. We wanted to measure body composition with bioelectrical impedance analysis and managed to power the analyser from the LandRover battery to enable us to do the measurements in the villages.

Is anything easier to do in The Gambia?

Families and communities tend to be more static and cohesive in The Gambia which makes the tracing of subjects easier than in a country such as the UK. And even if a family has moved, the entire village is likely to know where they are! As a result, and despite of difficult field conditions, we have had a very good rate of follow up in both of the cohorts traced within the EARNEST study.

How relevant are findings from Gambian mothers and children to the European situation? What must you bear in mind when translating the results to an EU context?

Our aim is that this research will be able to add to the field of nutritional programming with relevance to maternal and infant nutrition worldwide. There are very few randomised control trials of maternal supplementation in the EU that can be followed up in this way, and so the opportunity to follow cohorts where we can assess directly the effects are rare. The main issue to consider when translating the results to an EU context relate to the main effects of the supplement; for example, protein-energy supplementation during pregnancy is most relevant in undernourished pregnant women, and so the main results from the follow up of this trial may not be directly relevant to most European situations. But the underlying concept of whether maternal nutritional interventions in pregnancy can influence later health are thematic issues with a broad relevance.

One of the work packages is considering how the evidence arising out of Earnest can best be translated into public health advice in EU countries. Are you able to advise Gambian mothers on how their children can avoid the adverse consequences of low birth weight when they grow up and not become "disadapted"? Or does this just add to their worries?

In the rural areas of The Gambia, where we are conducting the majority of this work, it is not yet clear that the issues of 'disadaptation' are as relevant as they may be in more urban settings. During the EARNEST analysis we will be able to study any rural-urban differences in outcome and also take early growth into account. At the present time however we feel that further understanding of the relevance of the programming hypothesis in the context of rural Gambia is required before giving out health messages directly relating to this.



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SOME RECENT PUBLICATIONS BY EARNEST MEMBERS

Agostoni C, Goulet O, Kolacek S, Koletzko B, Moreno L, Puntis J, Rigo J, Shamir R, Szajewska H, Turck D; ESPGHAN Committee on Nutrition. Fermented infant formulae without live bacteria. *J Pediatr Gastroenterol Nutr.* 2007 Mar;44(3):392-7.

Koletzko B, Larque E, Demmelmair H. Placental transfer of long-chain polyunsaturated fatty acids (LC-PUFA). *J Perinat Med.* 2007 Feb;35 Suppl 1:S5-S11.

Olsen SF, Osterdal ML, Salvig JD, Weber T, Tabor A, Secher NJ. Duration of pregnancy in relation to fish oil supplementation and habitual fish intake: a randomised clinical trial with fish oil. *Eur J Clin Nutr.* 2007 Feb 7; [Epub ahead of print]

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Olsen SF, Mikkelsen TB, Knudsen VK, Orozova-Bekkevold I, Halldorsson TI, Strom M, Osterdal ML. Data collected on maternal dietary exposures in the Danish National Birth Cohort. *Paediatr Perinat Epidemiol.* 2007 Jan;21(1):76-86.

Mace K, Shahkhalili Y, Aprikian O, Stan S. Dietary fat and fat types as early determinants of childhood obesity: a reappraisal. *Int J Obes (Lond).* 2006 Dec;30 Suppl 4:S50-7.

Taylor PD, Poston L. Developmental programming of obesity. *Exp Physiol.* 2006 Dec 14; [Epub ahead of print]

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Langley-Evans SC, Lilley C, McMullen S. Maternal protein restriction and fetal growth: lack of evidence of a role for homocysteine in fetal programming. *Br J Nutr.* 2006 Sep;96(3):578-86.

Martin RM, Holly JM, Davey Smith G, Gunnell D. Associations of adiposity from childhood into adulthood with insulin resistance and the insulin-like growth factor system: 65-year follow-up of the Boyd Orr Cohort. *J Clin Endocrinol Metab.* 2006 Sep;91(9):3287-95. Epub 2006 Jun 20.

Mikkelsen TB, Osler M, Olsen SF. Validity of protein, retinol, folic acid and n-3 fatty acid intakes estimated from the food-frequency questionnaire used in the Danish National Birth Cohort. *Public Health Nutr.* 2006 Sep;9(6):771-8.

Mostyn A, Sebert S, Litten JC, Perkins KS, Laws J, Symonds ME, Clarke L. Influence of porcine genotype on the abundance of thyroid hormones and leptin in sow milk and its impact on growth, metabolism and expression of key adipose tissue genes in offspring. *J Endocrinol.* 2006 Sep;190(3):631-9.

RELEVANT MEETINGS

2007

Early Nutrition Programming Project International Conference

Early Nutrition and Health Outcome in Later Life: Obesity and Beyond

Budapest, Hungary. 20-21st April 2007

www.metabolic-programming.org/Budapest2007

15th European Congress on Obesity

Budapest, Hungary. 22-25th April 2007

www.eco2007.org

40th ESPGHAN Annual Meeting

Barcelona, Spain. 9 -12th May, 2007

www.espghan2007.org

International Conference on Fetal Programming and Developmental Toxicity

Torshavn, Faroe Islands. 20-24th May 2007

www.pptox.dk

17th ECOG Workshop

Athens, Greece. 5-7th July 2007

www.childhoodobesity.net

10th European Nutrition Conference

Paris, France. 10-13th July 2007

www.fens2007.org

5th International Congress on Developmental Origins of Health and Disease

Perth, Australia. 6-9th November 2007

www.dohad2007.org

2008

16th European Congress on Obesity

Geneva, Switzerland. 14-17th May 2007

www.iaso.org

3rd World Congress on Pediatric Gastroenterology, Hepatology and Nutrition

Iguassu Falls, Brazil. 16-20th August 2008

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