



Maternal & Fetal Health Research Group

Since 2005, the Maternal and Fetal Health Research Group (MFHRG), led by Professor Fionnuala McAuliffe has been internationally recognised for its research in prenatal diagnosis and prenatal ultrasound, diabetes and nutrition in pregnancy.

Group Head

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The MFHRG, based at the National Maternity Hospital, Holles St. coordinates national and international collaborative research into maternal nutrition and diabetes and its effects on adverse pregnancy and neonatal outcomes. The group comprises researchers with backgrounds ranging from clinical obstetrics, paediatrics, and dietetics to economics. All of this research has been funded by grants from the Health Research Board (HRB), National Maternity Hospital, Holles St. and European Union.

In September 2012, results from the 'Low glycaemic index diet in pregnancy to prevent macrosomia' (ROLO) study were published in the British Medical Journal. This was a large RCT of 800 women which assessed whether the implementation of a low GI diet in pregnancy reduced the incidence of macrosomia. Whilst this diet had no effect on birthweight, it had a positive effect on maternal gestational weight gain and glucose intolerance. Achievements of the ROLO study were recognized in February 2012 with first prize at the 33rd annual meeting of the society of maternal and fetal medicine held in San Francisco.

The ROLO kids study is a longitudinal follow-up study to the original ROLO randomised control trial. Mothers and children from the ROLO study are being followed up at 6 months, 2 years and 5 years of age in order to determine whether maternal nutrition/low GI diet in pregnancy had an effect on child-

hood weight or adiposity but also to study the growth and development of a cohort of Irish children and the effect of environment on growth and adiposity. Anthropometry, lifestyle and eating habits are being examined.

Women with a BMI of greater than 25 kg/m² have a higher risk of developing Gestational Diabetes. A low glycaemic index diet in pregnancy has shown to lower glucose intolerance. As a natural progression from the ROLO study, the Pregnancy Exercise and Nutrition research study (PEARS) was designed to assess the impact of a low glycaemic index (GI) dietary and exercise intervention compared to regular lifestyle on the incidence of gestational diabetes at 29 weeks in an overweight and obese pregnant population. This is a randomized controlled trial of 500 women of which recruitment is ongoing.

The Probiotics in Pregnancy (ProP) study is a double-blind, placebo-controlled randomised trial which is investigating the effects of a probiotic capsule intervention on maternal fasting glucose and other indices of maternal metabolism including insulin, c-peptide, lipids and CRP. There are two separate cohorts of pregnant women; 1. obese women who receive the intervention prior to screening for gestational diabetes (GDM) 2. women diagnosed with GDM. Recruitment and follow-up of the obese cohort is now complete (N=138) and publication of results are pending. Recruitment of the GDM cohort is ongoing, with a target of 100 women.



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My major research interests are in perinatal
nutrition, diabetes and obesity in pregnancy. We
have developed an internationally competitive
research programme in this area and recently
completed a large randomised controlled trial of a
low glycaemic index diet in pregnancy. A number
of other clinical intervention trials are on-going at
present including birth cohort follow up studies. I
am a member of a large research consortium in
European funded through PF7 on early nutrition.

I am one of the key academics instrumental in
application for a multidisciplinary research centre
Children and Human Development Research Cen-
tre (CHD-RC) in University College Dublin which
brings together the College of Health Sciences and
College of Life Sciences.

National and international collaborators:

- Prof Fiona Alderdice, Queen's University Belfast
Prof Zarko Alfirevic, University of Liverpool
Dr Ted Barker, University of London
Dr Lorraine Brennan, UCD Institute of Food and Health
Prof Steve Carrington, UCD School of Veterinary Medicine
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Associated researchers:

- Dr Jean Donnelly, PhD
Dr Maria Kennelly, PhD
Terri Levine, PhD
Karen Lindsay, PhD
Dr Fiona Martyn, MD
Mary Moran, PhD
Orna O'Brien, MSc
Dr Jennifer Walsh, PhD

Grants:

- Title: ROLO kids
Funder: European Union FP7-KBBE-2011-5 CP-IP
Start/End Dates: Feb 2012-Feb 2017
Amount: €13,613,501 across 30 Consortium members, FMcAuliffe portion €459,500
- Title: Heart function in offspring of Diabetic mothers
Funder: UCD College of Life Sciences
Start/End Dates: 01-JUL-05 / 30-JUN-15
Amount: €15,000
- Title: Randomised control trial of low glycaemic index diet to prevent macrosomia'.
Funder: HRB
Start/End Dates: 2008-2014
Amount: HRB Health Research Centre for diet, nutrition and diabetes. Total €4,900,000, FMcAuliffe portion €487,500
- Title: Early environmental determinants of physical and mental health at school entry
Funder: HRB
Start/End Dates: 2011-2014
Amount: €300,000
- Title: Metabolic profiles in women at risk of macrosomia
Funder: National Maternity Hospital Medical Fund
Start/End Dates: 2011-2012
Amount: €40,000
- Title: Pregnancy exercise and nutrition research study – smart phone app development
Funder: Atlantic Philanthropies
Start/End Dates: 2012
Amount: €12,000
- Title: Economics of childbirth
Funder: National Maternity Hospital Medical Fund
Start/End Dates: 2012 - 2013
Amount: €25,000
- Title: Probiotics in pregnancy, a randomised control trial PROPs
Funder: National Maternity Hospital Medical Fund
Start/End Dates: 2012 - 2013
Amount: €70,000
- Title: Does promoting increased awareness of decreased fetal movements prevent stillbirths?
Funder: Chief Scientist Office, Scottish Government Health Directorates, Scotland
Start/End Dates: 2012 - 2015
Amount: £220,000, FmcAuliffe co-applicant

Publications:

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15. Higgins M, McAuliffe FM, Mooney EE. Clinical associations with a placental diagnosis of delayed villous maturation: a retrospective study. *Pediatr Dev Pathol* 2011, **14**:273-279.
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17. Kent EM, Breathnach FM, Gillan JE, McAuliffe FM, Geary MP, Daly S, *et al.* Placental pathology, birthweight discordance, and growth restriction in twin pregnancy: results of the ESPRiT Study. *Am J Obstet Gynecol* 2012, **207**:220.e221-225.
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