



Developing a Child Cohort Research Strategy for Europe

**“Birth Cohort Research in Europe –
Present and Future Strategic Priorities”**

2nd CHICOS Workshop

Turin, 24-25th May 2012

Congress Venue:

**“Centro Incontri della Regione Piemonte”
Corso Stati Uniti, 23 - Torino**



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Index

Programme	3
List of Delegates	5
CHICOS Partner Descriptions	8
CHICOS Scientific Advisory Board	10
Abstracts	12
Maps	19

Programme

DAY 1, 24 May

Chair: Franco Merletti, University of Turin, Italy

- 9:00 – 9:30** **Welcome and introduction** (*Franco Merletti – University of Turin, Italy; Martine Vrijheid – CREAL, Barcelona, Spain*)
- 9:30 –10:00** **The birth cohort study boom in Europe. New opportunities for research collaboration** (*Anne-Marie Nybo Andersen – University of Copenhagen, Denmark*)
- 10:00 –11:00** **Recommendations and Strategic Priorities for European Birth Cohort Research – Summary** (*Camilla Stoltenberg – Norwegian Institute of Public Health, Oslo, Norway; Vincent Jaddoe – Erasmus Medical Center, Rotterdam, The Netherlands*)
- 11:00-11:30** **Coffee break**
- 11:30 –12:45** **Parallel sessions for the case-studies on birth outcomes**
- Room 1: Fish consumption in pregnancy and birth outcomes
 - Room 2: BMI, total/visceral fat mass or fat distribution and cardiovascular risk factors
- 12:45-13:45** **Lunch**

Chair: Manolis Kogevinas, CREAL, Barcelona, Spain

- 13:45-14:45** **Keynote lectures**
- Economic determinants of child health and cognitive development in Europe (*Daniela del Boca – University of Turin, Italy*)
 - Birth cohort research in Central and Eastern Europe - current stage and future directions (*Wojciech Hanke, – Nofer Institute of Occupational Medicine, Łódź, Poland*)
- 14:45-15:30** **Understanding the Relationship between birth cohort research and policy** (*Patricia Lucas – University of Bristol, UK; Ilse Flink – Erasmus Medical Center, Rotterdam, NL*)
- 15:30-16:00** **Coffee Break**
- 16:00-18:00** **Parallel sessions for the case-studies**
- Room 1:
 - Early growth (birth weight, catch up growth) and wheezing/asthma
 - Maternal complications in pregnancy, caesarean section and

wheezing and asthma

- Room 2:
 - Light drinking during pregnancy in relation to preterm delivery and birth weight
 - Socioeconomic inequalities and preterm delivery

20:00 **Workshop Dinner: Hotel NH Ambasciatori, Corso Vittorio Emanuele II, 104**

DAY 2, 25 May

Chair: Liesbeth Duijts, Erasmus Medical Center, Rotterdam, The Netherlands

9:00 – 10:15 **Results of the chicos cases studies**

- BMI, total/visceral fat mass or fat distribution and cardiovascular risk factors (*Sumaiya Patel - University of Bristol, UK*)
- Early growth (birth weight, catch up growth) and wheezing/asthma (*Liesbeth Duijts - Erasmus Medical Center, Rotterdam, The Netherlands*)
- Maternal complications in pregnancy, caesarean section and wheezing and asthma (*Franca Rusconi – University of Turin, Italy*)
- Light drinking during pregnancy in relation to preterm delivery and birth weight (*Katrine Strandberg Larsen – University of Copenhagen, Denmark*)
- Socioeconomic inequalities and preterm delivery (*Gry Poulsen – University of Copenhagen, Denmark*)

10:15-11:45 **Coffee break**

10:45-11:30 **Results of the chicos cases studies (continued)**

- Selected maternal occupations and fetal health: (*Martine Vrijheid – CREAL, Barcelona, Spain*)
- Prenatal environmental exposures (PCBs, DDE) and birth outcomes (*Jens-Peter Bonde; Bispebjerg University Hospital; Copenhagen, Denmark*)
- Fish consumption in pregnancy and birth outcomes (*Leda Chatzi – University of Crete, Greece*)

11:30 – 13:00 **General discussion and Conclusions**

End of the meeting

13:45 – 15:15 SAB / PEC meeting (for CHICOS partners)





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“Birth Cohort Research in Europe – Present and future Strategic Priorities”



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CHICOS Partner Descriptions

Partner 1 and Coordinator: Centre for Research in Environmental Epidemiology (CREAL) representing *INMA ‘Childhood and Environment cohort study’*.

Principal Investigator: Martine Vrijheid

Researchers: Maribel Casas, Mark Nieuwenhuijsen, Jordi Sunyer

INMA is a research network of several Spanish groups which objective is to study the more relevant environmental pollutants in the air, water and diet during the pregnancy and beginning of life, and their effects in the growth and development. The project includes data of 3,873 children collected between 1997 and 2008.

Partner 2: University of Copenhagen (UCPH) representing the *Danish National Birth Cohort (DNBC)* and *Birthcohorts.net*.

Principal Investigator: Anne-Marie Nybo Andersen

Researchers: Mete Juhl, Mads Kamper-Jorgensen, Laust Hvas, Mortensen Katrine Strandberg-Larsen

The *DNBC* was established to investigate the long-lasting impact of exposures at time of conception, which influence fetal growth, cell divisions and organ functioning, on health and disease susceptibility. Data collection started in 1996 and the project covered all regions in Denmark in 1999. In October 2002, the goal of 100.000 recruitments was achieved. The cohort expanded its initial data collection with a 7-year follow-up, which was completed in August 2010. At the same time the 11-year follow up was launched.

Partner 3: University of Crete (UoC) representing the *RHEA* study.

Principal Investigator: Leda Chatzi

Researcher: Vicky Lebentakou, Vassiliki Melaki, Vicky Patelarou

The *RHEA* study commenced data collection in February 2007 amongst female residents of Heraklion, Greece, including epidemiological data and biological materials. *RHEA*'s objective is to evaluate early life exposures in relation to reproductive outcomes and outcomes in later life.

Partner 4: Università Degli Studi Di Torino (UNITO) representing the *NINFEA* study.

Principal Investigator: Franco Merletti

Researchers: Lorenzo Richiardi, Emanuele Pivetta, Milena Maule, Claudia Galassi

NINFEA is an internet-based multi-purpose mother-child cohort set up to investigate the effects of exposures acting during pre-natal and early post-natal life on infant, child and adult health. Italian women with access to the internet were recruited during pregnancy and completed questionnaires during the pregnancy at, six and 18 months after delivery. Topics include several exposures and some outcomes. Follow-up starting at age 4 is being conducted every 2 years via ad-hoc short online questionnaires, in addition to linkage to population registries.

Partner 5: Erasmus Universitair Medisch Centrum Rotterdam (Erasmus MC) representing *Generation R*.

Principal investigators: Vincent Jaddoe, Hein Raat

Researchers: Liesbeth Duijts, J de Jongste, Ilse Flink, Esther Hafkamp, Albert Hofman, Eric Steegers, Mirjam Struijk, Ineke Vogel, Anne Wijtzes

The *Generation R* study is a prospective cohort study from fetal life until young adulthood in a multi-ethnic urban population. The study is designed to identify early environmental and genetic causes of normal and abnormal growth, development and health from fetal life until young adulthood. In total, 9.778 mothers with a delivery date from April 2002 until January 2006 were enrolled in the study. Of all eligible children at birth, 61% participate in the study. A large part of this study cohort consists of ethnic minorities. Follow-up happens at age five through a visit to the research centre.

Partner 6 Nasjonalt Folkehelseinstitutt (NIPH) representing the *Norwegian birth cohort study (MoBa)*.

Principal Investigator: Camilla Stoltenberg

Researchers: Per Magnus, Elisabeth Hagen, Merete Eggesbo

MoBa is an ongoing pregnancy cohort study, aiming to include 100.000 pregnancies by 2008. The study is based on questionnaires to the mother and father, with biological specimens being collected from mother, father and child. The main purpose of the study is to find causes of serious diseases in mothers and children. The questions cover environmental factors, such as medication, nutrition, infection and work exposure. Genetic factors and the interplay between genes and the environment will be studied, for which paternal blood samples are being collected to enable association studies between genes and diseases.

Partner 7: University of Bristol (UNIVBRIS) representing *The Avon Longitudinal Study of Parents and Children (ALSPAC)*.

Principal Investigators: Debbie Lawlor, Patricia Lucas

Researchers: George Davies-Smith, Jean Golding, John Henderson, Katerina Koutra, Sumaiya Patel, Swantje Schmidt

ALSPAC – also known as Children of the 90s - is a long-term health research project. More than 14.000 mothers enrolled during pregnancy in 1991 and 1992, and the health and development of their children has been followed in great detail ever since. More than 14.000 pregnant women were recruited with estimated dates of delivery between April 1991 and December 1992. These women, the children arising from the index pregnancy and the women's partners have been followed up since then and detailed genetic and environmental data collected throughout childhood. *ALSPAC* is a two-generational resource available to study the genetic and environmental determinants of development and health.

Partner 8: National School of Public Health (NSPH) representing *RHEA*.

Principal Investigator: Manolis Kogevinas

Leader of the Crete-based *RHEA* study and co-founder of www.birthcohorts.net.

CHICOS Scientific Advisory Board

European child health research - Prof Arja Rimpelä (apologies)

Arja Rimpelä is Professor of Public Health at School of Public Health (TSPH), University of Tampere. Her previous post was Professor of Community Health at the Nordic School of Public Health (NHV), Gothenburg Sweden (1994 – 1996). Before that she worked at the University of Oulu where she was appointed in 1992 as Professor of Public Health. She worked as a Director of Education at NHV (1995) and as a Director at TSPH (1996 – 99). Before 1991 she had research and teaching posts at the Departments of Public Health, Universities of Helsinki and Tampere and worked as an epidemiological researcher at the Finnish Cancer Registry followed by postdoctoral training at the London School of Hygiene and Tropical Medicine. Her education is in medicine (M.D. 1978, Ph.D. 1982), administrative sciences (M.Sc., 1990) and epidemiology (M.Sc., 1985).

Major international activities include Director of the Baltic public health training programme (BRIMHEALTH) at NHV (1994 - 96); Project Manager of the Finnish part of the EU-Tempus public health training programme in Lithuania (1996 – 99); a member of the task forces in ASPHER (Association of Schools of Public Health in the European Region) planning European Master in European Public Health programme (1996 -1999) and quality improvement and accreditation of training programmes in public health (2000-2001); appointed as a member of ASPHER Executive Board (1996 – 2000); coordinating the Finnish parts of the European projects concerning glossary on public health and health promotion (1998 - 2000), smoking in restaurants (2000-2002) and adolescent health promotion in 2002-; participating in the evaluation of EU Europe Against Cancer Programme (1998, the Public Health Institute of Sweden (2000), Public Health training programmes in Swedish universities (2006-2007), research application procedures in Sweden (FAS and Medical Research Councils) and Denmark, professorships in Sweden and Denmark; participating in establishing School of Public Health in the Northern State Medical University, Russia; as well as research collaboration in Sweden, Norway and Scotland, and some others.

Her main research topics include adolescent health and health behaviours, inequalities in health, and evaluation of tobacco policies with new openings in health effects of information and communication technology. She is running NEDIS research network (Research on Children's and Adolescents Health and Health Promotion) that is a part of Doctoral Programs in Public Health graduate school.

Eastern European cohorts - Prof Wojciech Hanke

Wojciech Hanke, MD, is Professor of Occupational Medicine and Epidemiology at the Medical University in Lodz, Poland. He is the coordinator of the Polish birth cohort – environmental hazards to reproduction (2008-2011). His research interests are in; Effectiveness of smoking cessation interventions for pregnant women: environmental and occupational risk factors of low birth weight and preterm delivery (maternal smoking, exposure to ETS and other environmental pollutants, pesticides; biomarkers of exposure to tobacco smoke in epidemiological studies), risk assessment for reproductive hazards. Areas of Expertise: smoking cessation interventions, environmental epidemiology, reproductive health, environmental tobacco smoke.

Prof Hanke has been a board member – treasury - of the International Society for Prevention of Tobacco Induced Diseases (Winnipeg, Canada, 2001-2005) and a member of the Scientific Committee on Health and Environmental Risks (SCHER) at DG SANCO (2004-2009). He is furthermore member of the Polish Society of Occupational Medicine, the Polish Society of Environmental Epidemiology and the Polish National Committee for Risk Assessment for Carcinogens in Workplace as well as Polish National Committee for TLV values (2000- present).

Expert on policy-research interface - Prof Peter van den Hazel

Peter van den Hazel, MD, MPH, is the co-founder and International Coordinator of INCHEs. He has a medical background and received advanced training in Management of Non-profit Organizations, Epidemiology, Medical Statistics, Radiation Safety, Policy Writing, Corporate Environmental Care, and Project Management. Since 1986 he has worked as an Environmental Health Specialist for the Combined Municipal Health Services in Gelderland, the Netherlands. Since 1993 he has been a consultant for and partner in the Bureau of Environmental Medicine. He is the past President of the International Society of Doctors for the Environment, ISDE, (2001-2003) and served as an advisor to Margot Wallstrom, EU Commissioner for the Environment. He also serves as Chair of the board for the International Network for Children's Health, Environment and Safety (INCHEs). Peter van den Hazel successfully worked to ensure children's environmental health was an issue taken up at the World Summit for Children and the World Summit on Sustainable Development. Since 2002 has been coordinator for several EU-funded projects like PINCHE (Policy Interpretation network on children's health and environment), CHEST (Children's Health, Environment and Safety Training) (EU DG Sanco 2003310), PRONET, PHEEDUNET, Climate TRAP and for a tender called TOP (Training of Professionals).

Public health and policy research – Prof Anthony Staines

Prior to his appointment as the first Professor of Health Systems Research in the School of Nursing in DCU in August 2007, Anthony Staines spent a decade in UCD in the School of Public Health. His qualifications are PhD, MSc (Epidemiology), GDip (University Teaching and Learning), DCH, MB, BCh, BAO, BA, MRCPI (Medicine of Childhood), MFPHM, FFPHMI.

He has worked on many aspects of public health, often with a focus on policy relevant research. His particular skills are in study design, epidemiology, and policy analysis. He studies the uses of information in many different settings, including health service funding, health service planning, environmental health policies epidemiology and has often used a combination of qualitative and quantitative methods to develop policy relevant information.

Anthony is the coordinator of the FP7 funded RICHE project on child health research policy, and is a partner in three further FP7 projects: TACTICS, on childhood injury prevention; RN4CAST, on forecasting the nursing workforce, both in terms of quantity and of skill, and EUROHEIS2, on health and environment information systems. He has done a lot of work on haematological disease epidemiology, especially multiple myeloma. He was the Irish lead for the Epilymph project, and is a member of the Interlymph consortium, and one of the founders of the International Multiple Myeloma Consortium.

Other recent work includes the ongoing Health Atlas Ireland, a new web based health information, analysis and planning tool for HSE; a developing program of work on autism; a health technology assessment for colo-rectal cancer screening; the allocation of resources within the Irish health system; blood transfusion in Ireland. Earlier work includes policy-oriented reports on issues in the Irish environment, namely electromagnetic fields, contaminated drinking water and waste management, infectious disease in care facilities for people with learning disabilities, health information systems, and injury epidemiology.

Representative WHO (Geneva) – Dr Ruth Etzel (apologies)

Dr. Etzel is Senior Officer for Environmental Health Research in the Department of Public Health and Environment at WHO. She completed residencies in Pediatrics and Preventive Medicine and received her Ph.D. in epidemiology from the University of North Carolina at Chapel Hill. She was a Robert Wood Johnson Clinical Scholar at UNC in 1983-85. As a Commissioned Officer in the US Public Health Service, Dr. Etzel served in numerous public-sector leadership positions including: CDC (Founding Chief of the Air Pollution and Respiratory Health Branch), Department of Agriculture (Director of the Division of Epidemiology and Risk Assessment) and Indian Health Service (Research Director at the Alaska Native Medical Center). In addition to being board-certified in Pediatrics, Dr. Etzel is also board-certified in Preventive Medicine and served for 9 years on the American Board of Preventive Medicine.

Dr. Etzel was a member of the NHLBI's First Expert Panel on the Management of Asthma and the Department of Defense Science Board Task Force on Gulf War Health Effects. She is Founding Editor of *Pediatric Environmental Health* and an Associate Editor of *Current Problems in Pediatrics and Adolescent Health Care*. Dr. Etzel has received numerous awards, including the 2007 Children's Environmental Health Champion Award from US EPA, the Distinguished Service Award from the US Public Health Service, the Don C. Mackel Memorial Award from CDC, the Arthur S. Flemming Award, and the Clinical Society Award from the US Public Health Service Commissioned Officers Association for her discovery of the association between infant pulmonary hemorrhage and exposure to toxigenic molds. Her epidemiologic research interests include identifying the environmental precipitants of asthma attacks and studying the health effects of exposure to indoor and outdoor air pollutants.

Abstracts

Role of confounding in the association between paracetamol use in pregnancy and risk of wheezing in offspring

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Some studies have suggested an association between paracetamol use in pregnancy and wheezing in childhood but it is unclear whether the association is causal or due to bias. We assessed this association in an Italian mother and child cohort (the NINFEA cohort, www.progettoninfea.it), aiming, in particular, at evaluating the potential role of confounding by indication of paracetamol use. Analyses included 1777 infants, 1076 of whom were born to mothers who used paracetamol during pregnancy. Infant wheezing in the last 12 months was assessed in a follow-up questionnaire 18 months after delivery, while paracetamol use in pregnancy was assessed both during pregnancy and 6 months after delivery. Prevalence of wheezing was 25% and it was more common among infants exposed to maternal paracetamol use in pregnancy (relative risk (RR)=1.23, 95% confidence interval (CI): 1.00-1.54). Adjustment for maternal respiratory diseases in pregnancy (asthma episodes, influenza like illness, bronchitis), maternal smoking and education, child sex and number of siblings reduced the RR of wheezing to 1.06 (95% CI: 0.84-1.34). We are currently carrying out further analyses taking into account a larger number of potential determinants of paracetamol use; however these preliminary analyses suggest that confounding by indication is a likely explanation for the association between paracetamol use in pregnancy and wheezing in offspring.

Prenatal Exposure to Organochlorine Compounds and Early Postnatal Growth in the Spanish INMA Cohort

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Aim: To examine the effects of prenatal exposure to organochlorine compounds (OCs) on rapid growth in the first six months of life and body mass index (BMI) at 14 months and effect modification by child sex or maternal overweight. **Methods:** Pregnant women were recruited to a prospective birth cohort study (INMA Project) in Spain between 2004–08. We studied 1361 infants with complete data on OC levels and anthropometric measurements. DDE, HCB and PCBs

(congeners 118, 153, 138, 180) were measured in maternal pregnancy serum and lipid-adjusted. Rapid growth was defined as a z-score change in weight >0.67 in the first six months of life. Overweight at 14 months was defined as a BMI z-score \geq the 85th percentile. Generalized linear models examined the association between OCs, rapid growth and overweight. **Results:** DDE and HCB were associated with rapid growth [adjusted RR (95% CI) per log-unit increase=1.13(1.01–1.26) and 1.13(1.00–1.29), respectively]. DDE effects were stronger in boys than in girls (p-interaction=0.04). DDE and HCB were associated with overweight [adj RR (95% CI)= 1.18(1.01–1.36) and 1.30 (1.10–1.54), respectively]. HCB effects were stronger in infants of normal weight mothers (p-interaction= 0.03). PCBs had no effect on growth. Multipollutant adjustment for all OCs did not change the results. **Conclusions:** This study replicates the effects of prenatal DDE exposure on early postnatal growth published previously in one small INMA subcohort, and suggests that HCB is also associated with postnatal growth. These effects may be modified by child sex and maternal overweight.

How the Newcastle Thousand Families birth cohort study has contributed to the understanding of the impact of birth weight and early life socioeconomic position on disease in later life

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Much has been made of the potential influence of birth weight and early socioeconomic disadvantage in influencing adult health, but little has been published in terms of how important these associations may be with respect to exposures throughout the lifecourse. The objective of this review is to describe the contributions of the Newcastle Thousand Families Study in understanding the relative impacts of factors in early life, particularly birth weight and socio-economic position at birth, in influencing health in later life.

The Newcastle Thousand Families Study is a prospective birth cohort established in 1947. It originally included all births to mothers resident in Newcastle upon Tyne, in northern England, in May and June of that year. Study members were followed extensively throughout childhood and intermittently in adulthood. At the age of 49-51 years, study members underwent a large-scale follow-up phase enabling an assessment of how early life may influence their later health, but also incorporating adult risk factors which enabled the relative contributions of factors at different stages of life to be assessed.

While some findings from the study do support birth weight and early socio-economic position having influences on adult health status, the associations are generally small when compared to risk factors later in life. Using path analyses on longitudinal data of this nature enables mediating pathways between early life and later health to be assessed and if more studies were to take this approach, the relative importance of early life on adult disease risk could be better understood.

Longitudinal study of two-year changes in objectively measured physical activity and sedentary behaviour in a representative sample of English children

Basterfield L^{1,2}, Adamson A², Frary J², Parkinson K², Pearce M², Reilly J¹ and the Gateshead Millennium Study Core Team

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Physical activity is thought to decline during childhood but the extent of the decline is unknown. We made objective measures of two-year changes in physical activity (PA) and sedentary behaviour (SB) in English children participating in the Gateshead Millennium Study to explore the nature, timing and extent of changes in PA and SB prior to adolescence. Longitudinal study of n = 405 children (207 girls) studied aged 7 years in 2006/2007 and again 24 months later. PA and SB were measured with the Actigraph GT1M accelerometer. Data were analysed in 2010. Changes in total volume of PA (accelerometer count per minute, cpm), moderate-vigorous intensity PA (MVPA), and SB were quantified. Factors associated with changes in PA and SB were tested using linear regression. Tracking of PA and SB over the 2 year period was assessed by rank order correlation. Mean daily volume of PA declined by 83cpm (IQR -189, 31) over the two years; % daily time in MVPA was low at baseline and declined by 0.3% (IQR -1.4, 0.9). The % daily time in SB was high at baseline and increased from 78.0 to 81.1% of the day (change 3.1%; IQR -0.3, 6.0). The decline in MVPA and increase in SB were significantly greater in girls, and in those with higher BMI z-score at baseline. PA and SB showed moderate tracking over the two year period. This study reports new evidence of low and declining levels of PA and MVPA, and increasing SB, prior to adolescence.

The Southampton Women’s Survey: from epidemiology to policy

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Introduction: Birth cohort studies inform our understanding of influences on health. Findings can lead directly to policy changes, but such changes need formal evaluation.

Methods: The Southampton Women’s Survey (SWS) is a longitudinal birth cohort with data collected on the mothers before conception. 12,583 women aged 20-34 years were assessed when not pregnant; 3,159 were then followed through pregnancy and the children are followed-up.

Results: Maternal vitamin D levels in pregnancy were positively associated with markers of bone development in the children. Women’s educational attainment was strongly related to the quality of their diets before conception, which in turn predicted the quality of the diets of their infants and children. Variations in infant diet were related to body composition at the age of four years.

Our findings have led to intervention studies. Firstly, we are conducting a randomised controlled trial of vitamin D supplementation in pregnancy (MAVIDOS). Secondly, in relation to our diet quality findings, we are conducting a complex intervention, in collaboration with local policy makers, in which staff working in centres for women and children in disadvantaged areas are trained to engage in ‘healthy conversations’ with young women visiting the centres, to enable them to improve their diets and lifestyles (Southampton Initiative for Health). A school intervention (LifeLab) is also being developed.

Conclusion: The SWS, a large birth cohort study, has led to the development of interventions to improve health of women and their children. These are being evaluated to inform public health policy, locally, nationally, and internationally.

Growth velocity in the first 6 months of life and other obstetric and perinatal outcomes in ART vs naturally conceived twins.

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Several studies have been looking at obstetric and perinatal outcomes of assisted vs natural twinning with conflicting results. The Multiple Births Cohort Study (MUBICOS) is a recent Italian cohort of newborn twins. Aim of the present work is to compare pregnancy and pediatric outcomes between assisted reproductive technique (ART) and naturally conceived twins. Twin pairs (N=267) were classified on ART status based on pregnancy medical records. Information was available for: maternal age, parity, preeclampsia, prenatal corticosteroids, prematurity, mode of delivery, apgar-score, NICU admission, birthweight, gender, RDS, sepsis, SGA, breastfeeding and length of stay (LOS). The analysis was performed on dichorionic pregnancies. In a multivariate analysis, ART twins were more likely to have administered prenatal corticosteroid (OR=3.5, 95%CI:1.7-7.2), to develop sepsis (OR=12.3, 95%CI:1.1-140.0), to have a longer LOS (OR=1.04, 95%CI:1.0-1.1) and to be fed with both maternal milk and formula than with exclusive maternal milk (OR=2.9, 95%CI:1.4-5.9). Twins from ART have a higher risk of some obstetric and pediatric outcome that could influence their future health as for example a faster growth (in gr/kg/day) in the first 6 months of life (OR=13.5, 95%CI:2.0-88.5).

Odense Child Cohort – A birth cohort in Denmark

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Aims : The Odense Child Cohort is a joint research project including children born during a two and a half year period within the Municipality of Odense, Denmark, to be investigated from fetal life to adulthood. The overall aim of the project is to obtain information on the interaction between

the fetus/infant/child during pregnancy, birth and childhood and the social and environmental determinants for health and disease.

Methods : The Odense Child Cohort includes a series of 10 sub-projects. These include investigations of exposure to toxic compounds in pregnancy such as alcohol intake and environmental substances, vitamin D-concentrations in the mother and the infant, pattern of breast feeding, infectious diseases and language development of the infant and child. During the project, information in the form of biological material from the parents and the child, questionnaires and data from municipality registries will be collected, starting at the 10-12th weeks of pregnancy.

Results : The project began in 2010 and inclusion will continue until the summer of 2012. Presently 2200 pregnant women/families are included in the project representing approximately 51% of all pregnancies from the Municipality. The remainder will participate through registry information using the specific personal registry (CPR) number. Special efforts have been made to recruit socially disadvantaged families for full participation.

Conclusion : The Odense Child Cohort through close collaboration between university and municipality may provide a close to unbiased sampling of biological and social information from a well-defined community.

Green space exposure and risk of preterm birth in Kaunas Kanc cohort study

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Background. Green spaces have been suggested to improve physical and mental health by increasing physical activity, social contacts and decreasing psycho physiological stress. We examined the associations between residence distance from green space (city parks) and preterm birth.

Methods. We conducted a prospective pregnant women cohort study in Kaunas (Lithuania) and estimated 3,341 maternal residence distance from green space using the ArcGIS 9.2. Preterm birth was defined as infant's whose gestational age was less than 37 weeks. According to the distance from the women' homes to the nearest park, we determined three exposure groups: residence within 300 m (referent group), 300-1000 m and more than 1000 m. The associations between the exposure groups and singleton preterm birth were analyzed by logistic regression models with and without adjustment for maternal education, family status, renal diseases, diabetes, cardiovascular disease, stress, body mass index, smoking, alcohol consumption, parity, previous preterm birth, infant birth year, and NO₂ exposure.

Results. We found positive associations between women home distance to the nearest park and preterm birth. The adjusted risk ratio of delivering a preterm birth infant among women residing within a 300-1000 m from park was 0.90, 95% CI 0.61-1.31 and among women residing above 1000 m from park it was 1.58, 95% CI 1.00-2.51 to compare to the referent women group. Similar results were found when from the model was excluded NO₂ exposure effect.

Conclusion. We found little evidence for a relationship between residence distance from green space and preterm birth risk.

The Norwegian Influenza Cohort Study, NorFlu

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¹Norwegian Institute of Public Health, ²Division of Infectious Disease Control, ³Division of Epidemiology, ⁴Division of Mental Health, ⁵Division of Public Relations and Institute Resources. Funding: The Norwegian Influenza Cohort Study (NorFlu) is supported by the Norwegian Ministry of Health.

Background and aim: NorFlu is a prospective population-based pregnancy cohort study set up during the influenza A H1N1 pandemic 2009/ 2010, aiming to study pregnancy outcomes, maternal health and childhood development after exposure to the pandemic.

Study sample: Participants were recruited during pregnancy week 28-40 from 4 hospitals in Norway, during February 2010 - September 2010. 41.2% of the invited women consented to participate. The cohort included 3206 mothers giving birth to 3291 children, among them 52 twin pairs. 326 non-pregnant controls were also included.

Data collection: Blood samples were obtained from mothers and umbilical cord at birth, and from non-pregnant women in October 2010. Maternal samples have been analysed for influenza A(H1N1)pdm09 antibodies. Questionnaires were administered at inclusion, addressing general health and pregnancy, vaccination, anti-viral medication and influenza illness. Follow-up at 6 and 18 months was conducted by questionnaires, and will be continued at regular intervals until age 16. Cohort data were linked to the Medical Birth Registry of Norway (MBRN) for pregnancy outcomes, and to the Norwegian immunisation register for information on maternal pandemic vaccination.

Preliminary results: 56.5 % of the participating women were vaccinated against H1N1. 393 (14.9%) women reported influenza in pregnancy, and 74% of them reported being quite sick or very sick. Linkage to the MBRN for pregnancy outcomes has been performed, and data analysis is ongoing. Preliminary results will be presented.

Acknowledgement: We thank all the participating families in Norway for taking part in this ongoing cohort study.

Smoking during pregnancy, breastfeeding and child’s neurodevelopment at 18 months of age: Rhea mother-child cohort in Crete, Greece

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Background: Breastfeeding has been associated with improved neurodevelopment in children. However, it remains unknown whether maternal smoking could modify the effect of breastfeeding on mental and motor development in early infancy.

Aim: To investigate the effect of maternal smoking in the relationship between breastfeeding and neurodevelopment at the age of 18 months.

Methods: The study uses data from the prospective mother-child cohort “Rhea” study in Crete, Greece. A total of 540 mother- child pairs were included in the present study having complete information on breastfeeding practices in the first six months of life and neurodevelopmental testing at 18 months by the use of Bayley Scales of Infant and Toddler Development (3rd edition).

Results: Children who were breastfed for more than 6 months had higher scores in fine motor developmental scale ($\beta=5.1$; 95% CI: 0.6, 9.5, $p=0.027$). Stratified analysis by smoking during pregnancy has shown that children of non smoking mothers during pregnancy, who were breastfed for more than 6 months, had higher scores in the scales of cognitive development ($\beta=5.6$; 95% CI: 0.8, 10.5) and receptive communication ($\beta=5.5$; 95% CI: 0.9, 10.0). On the other hand, children exposed to maternal smoking during pregnancy, who were breastfed up to 6 months, had decreased scores in receptive ($\beta=-10.0$; 95% CI: -18.8, -1.2) and expressive communication scores ($\beta=-13.6$; 95% CI: -24.5, -2.8) after adjusting for several confounders

Conclusions: Prolonged duration of breastfeeding was associated with increased scores in fine motor development at 18 months of age, while prenatal exposure to smoke may affect the beneficial effect of breastfeeding on child neurodevelopment. Additional longitudinal studies and trials are needed to confirm these results.

Maps

Congress Venue:

“Centro Incontri della Regione Piemonte” - Corso Stati Uniti, 23 – Torino <http://www.regione.piemonte.it/centro/index.htm>

How to get to the venue:

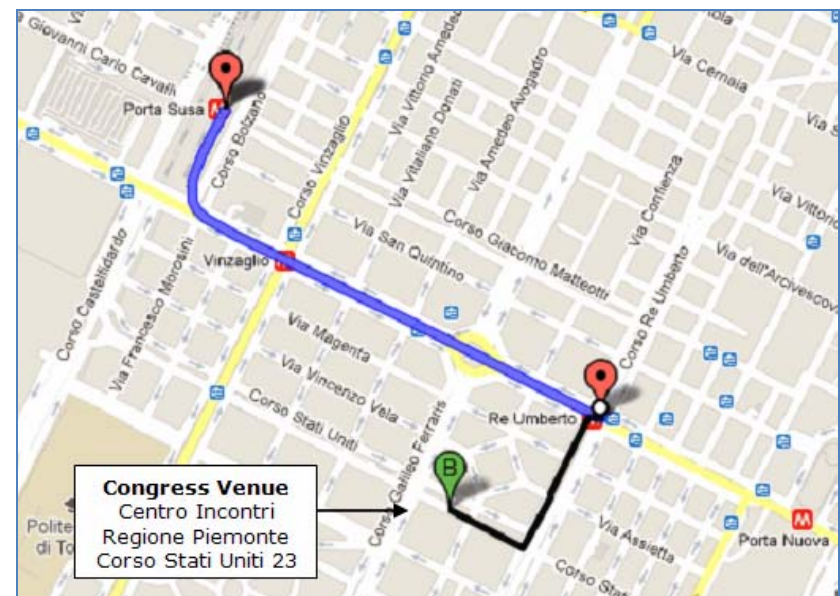
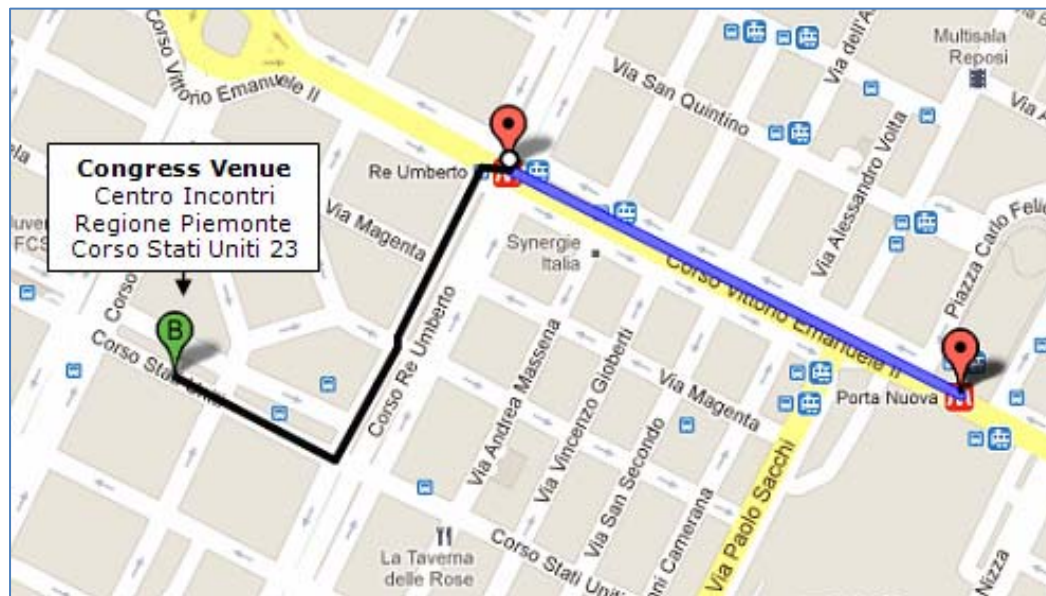
There is a public bus service connecting Turin Airport (Caselle) to Porta Nuova and Porta Susa Rail Stations every 15 minutes. For timetables please consult the website: <http://www.sadem.it/>. Tickets can be purchased online or at the Airport.

From Porta Nuova Rail Station to the Congress Venue:

Take the Underground Line 1 (direction: Fermi) for one stop and get off at Re Umberto. There is then a 5 minute walk to the venue.

From Porta Susa Rail Station to the Congress Venue:

Take the Underground Line 1 (direction: Lingotto) for two stops and get off at Re Umberto. There is then a 5 minute walk to the venue.



Social dinner:

The social dinner will take place at 20:00 on 24th May at the **NH Hotel Ambasciatori**.
Corso Vittorio Emanuele II, 104 – Torino - Tel. +39 011 57521 Fax: +39 011 544978

