Report of the Workshop

“Towards Improved Coordination of Birth Cohort Research in Europe”

Barcelona, 11-12 April 2011

Centre de Recerca in Epidemiologia Ambiental
Parc Recerca Biomèdica de Barcelona
Auditorium

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Executive summary

There are many pregnancy and birth cohorts in Europe, studying over 350,000 mothers and children. The cohorts include a few very large cohorts and many smaller, more specialized, cohorts. Data and methods are not uniform, and there are gaps in geographical coverage. CHICOS is a Coordination and Support Action funded by the European Commission 7th Framework (FP7) Health Research Programme with as main objective to develop an integrated strategy for mother-child cohort research in Europe.

This report summarises presentations and discussions during the first CHICOS workshop, which brought together researchers from 40 EU birth cohorts. The workshop served to introduce CHICOS to all European birth cohorts, to receive feedback on ongoing work, to discuss participation of cohorts in CHICOS, to discuss policy links, to build links to related projects, and to stimulate collaboration between cohorts. CHICOS partners presented ongoing work and two keynote lectures addressed important topics for birth cohort research. The workshop also included 38 poster presentations of cohort results.

Highlights of the meeting were two inspiring keynote lectures. Firstly, Linda Richter presented the COHORTS collaboration of birth cohorts in low and middle income countries: a great example of how diverse cohorts may set up close collaborations to improve causal evidence on important topics in child health. Debbie Lawlor then used childhood obesity to illustrate how we may improve the policy relevance of cohort research.

CHICOS work package (WP) 1 presented plans for the web-based inventory of cohort data (www.birthcohorts.net): all cohorts will be invited to complete their information and contribute to making this the world-wide portal for birth cohort information. This WP will also document the availability of pan-European registries and statistics on child health. WP 2 and 3 discussed the ongoing evaluations of cohort data and methods by working groups on specific child health outcomes and determinants. Input from the cohorts in these evaluations will be much appreciated and CHICOS working groups leaders invite all cohorts to submit their interest in joining specific groups. The meeting decided that it will be important to discuss the links between cohorts and registries as part of the final recommendations of the working groups.

The policy experts of CHICOS (WP4) discussed, in a panel discussion, the scope and actions of EU policy in child health, with contributions from CHICOS partners, Chris Roberts (Welsh Assembly Government), Anthony Staines (RICHE project), and Ruth Etzel (WHO, Geneva). This discussion clearly showed the ambiguity in our relationships with policy makers: on the one hand, it may be beneficial to establish better links with policy makers as it may lead to better and speedier translation and uptake of our messages; on the other hand, such links may actually be harmful and jeopardise our independence.

Lastly, CHICOS partners presented proposals for case studies which will tackle specific scientific questions by combining data across European cohorts. These case studies are needed to evaluate issues in cohort data comparison and pooling and will feed in to recommendations on how European cohort coordination can best be achieved. CHICOS includes these studies because it is clear that certain coordination issues can only be addressed by actually trying to use real data from the cohorts. It is also clear that CHICOS needs to draw on examples from cohort data pooling excersises underway in other European projects such as EAGLE (genetics) and ESCAPE (air pollution). The case studies will be contacting cohorts to discuss their participation in the case studies.
Overview of the report

The workshop gathered together researchers from 40 EU birth cohorts to improve birth cohort research coordination across Europe. During the workshop delegates discussed ongoing work in CHICOS and proposals for collaborative case-studies. It also included two keynote lectures and 38 poster presentations (http://www.chicosproject.eu/assets/87/Delegate_Booklet_CHICOS_April2011_final.pdf).

The present report summarizes presentations and discussions held at the workshop:

**Meeting agenda** and **list of delegates**

Workshop minutes:
1) **Introduction to the meeting**
2) **Inventory of birth cohort in Europe**
3) **Keynote lecture 1 “Birth cohort research in low- and middle-income countries: The COHORTS collaboration”**
4) **European birth cohort work on child health outcomes**
5) **European birth cohort work on child health determinants**
6) **Birth cohort research – EU research strategy and policy**
7) **Keynote lecture 2 “Childhood obesity - the role of birth cohorts in policy relevant research”**
8) **Case-studies**

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<tr>
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<th>Developing a Child Cohort Strategy for Europe</th>
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<td><strong>Project acronym:</strong></td>
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Meeting Agenda

DAY 1, 11 April 2011

Chair: Manolis Kogevinas, CREAL, Barcelona, Spain

9:00-9:30 Welcome and introduction
CHICOS aims and objectives, Martine Vrijheid – CREAL, Barcelona, Spain

9:30-10:00 Data for child health research in European birth cohorts and pan-European Registers - Anne-Marie Nybo Andersen, University of Copenhagen, Denmark.

10:00-11:00 Keynote Lecture 1. Birth cohort research in low- and middle-income countries: The COHORTS collaboration Linda Richter - University of the Witwatersrand, South Africa

11:00-11:30 Coffee break (posters)

11:30-13:00 European birth cohort work on child health outcomes
Camilla Stoltenberg - Norwegian Institute of Public Health, Oslo, Norway
Overview and discussion of specific topics
- Perinatal outcomes Camilla Stoltenberg
- Asthma and respiratory health; allergies Liesbeth Duijts
- Obesity; vascular and metabolic health Debbie Lawlor
- Neuro-cognitive and behavioural development Maribel Casas/Joan Forns
- Accidents and injuries Maribel Casas
- Infectious diseases Mads Kamper-Jorgensen
- Childhood Cancer Manolis Kogevinas

13:00-14.00 Lunch (posters)

Chair: Franco Merletti, University of Turin, Italy

14:00-15:30 European birth cohort work on child health determinants
Vincent Jaddoe – Erasmus Medical Center, Rotterdam, The Netherlands
Overview and discussion of specific topics
- Social and cultural conditions and inequalities Hein Raat
- Nutrition and physical activity Leda Chatzi
- Life-style and substance exposures Camilla Stoltenberg
- Environmental exposures Mark Nieuwenhuijsen
- Genetic materials Vincent Jaddoe

15:30-16:00 Coffee break (posters)

16:00-17:45 Birth cohort research – EU research strategy and policy
Chairs: Franco Merletti & Ruth Etzel, World Health Organisation, Geneva, Switzerland
- The scope and actions of EU policies for child health Patricia Lucas, University of Bristol, UK
- The role of policy makers in shaping cohort research: Preliminary findings Hein Raat, Erasmus Medical Centre, The Netherlands
- The role of the knowledge broker: Getting research into policy in Wales
Chris Roberts, Welsh Assembly Government, UK
- RICHE – A place for Research Into Child Health in Europe RICHE - a platform and inventory for child health research in Europe
  Anthony Staines, Dublin City University, Ireland

**Discussion – lessons for researchers**
Led by Ruth Etzel, World Health Organization

17:45 Meeting SAB and PEC - terrace
20:30 Dinner – Restaurant Ca la Nuri

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**DAY 2, 12 April 2010**
Chair: Camilla Stoltenberg - Norwegian Institute of Public Health, Oslo, Norway

9:00-10:00 **Keynote lecture 2. Childhood obesity - the role of birth cohorts in policy relevant research.** Debbie Lawlor – University of Bristol, UK

10:00-11:00 **Proposals for case studies to pool birth cohort data**
- Introduction. Martine Vrijheid, CREAL, Barcelona
- Pooling birth cohort data: the experience of ENRIECO and GA²LEN
  - Centralised approach, Thomas Keil, Charité University Medical Center, Berlin, Germany
  - Decentralised approach, Mark Nieuwenhuijsen, CREAL, Barcelona
- Discussion
  - CHICOS case study proposals
    - Alcohol consumption and birth weight Anne-Marie Nybo Anderson
    - Socioeconomic inequalities in preterm delivery Katrina Strandberg-Larssen
    - Selected maternal occupations and fetal health Maribel Casas
    - Persistent Organic Pollutants and Birth Outcomes Maribel Casas

11:00-11:30 Coffee break

11:30-12:30 **Proposals for case studies to pool birth cohort data - continued**
- CHICOS case study proposals
  - Central fat mass, cardiovascular disease Sumaiya Patel
  - Fetal growth and wheezing/asthma Liesbeth Duijts
  - Maternal complications in pregnancy, procedures at birth and wheezing/asthma Franca Rusconi
  - Fish consumption and fetal growth/neurodevelopment Leda Chatzi
- General discussion

12:30-13:00 Conclusions – End meeting

14:00-18:30 **CHICOS project meeting (for CHICOS partners)**
## List of delegates

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Workshop Minutes

Abbreviations used

DAY 1, 11 April 2011

1) Welcome and introduction, CHICOS aims and objectives - Martine Vrijheid (MV), CREAL, Barcelona, Spain

→ General introduction to the CHICOS project:

CHICOS is a Coordination and Support Action funded by the European Commission 7th Framework (FP7) Health Research Programme.

Partner cohorts included in CHICOS are: ALSPAC (UK), Danish National Birth Cohort (Denmark), Generation R (Netherlands), INMA (Spain), MoBa (Norway), NINFEA (Italy), RHEA (Greece).

The objective is to develop an integrated strategy for mother-child cohort research in Europe through the coordination of European cohorts. Specific objectives are: 1. Inventory of data from cohorts and registries; 2. Evaluation of existing information; 3. Recommendations for research action in key areas of policy concern; 4. Recommendations for improved contribution of mother-child cohort research to policy at European level; 5. Dissemination of project activities and results.

→ Overview of the European cohorts and the inventory www.birthcohort.net:

Many cohorts exist, including 350,000 children with mix of large and small cohorts, specialized and non-specialized cohorts. Data and methods are not uniform, there are gaps in geographical coverage (Eastern Europe is less covered).

Why should birth cohorts work together? For replication, to increase simple size, to reduce publication bias, for exposure and outcome diversity and comparison of results in different settings, to understand inequalities, to produce coordinated and fast response to policy questions, and for greater and more efficient use of data.

→ General considerations:

i) Do we need a European Mega cohort or is it sufficient to improve the communication with continued coordination of existing cohorts, focusing on mechanisms for data sharing and exchanging methodology?

ii) How to translate cohort research results into policy? Speed answers and focused on questions are necessary to set up policy information.

→ Meeting aims:

i) To introduce CHICOS project, ii) To receive feedbacks on ongoing work, iii) To discuss participation of cohorts in WG and case studies, iv) To discuss policy links, v) To build links to related projects, vi) To bring cohorts together, to stimulate collaboration

Discussion

Audience: Is there a place where to know what exposure and outcome of different cohorts are available?

MV: Some inventories do exist, including the Enrieco inventory on environmental exposures and birthcohorts.net, which will be updated as part of CHICOS.
Audience: Two issues have not be discussed in the introduction. a) Recommendations for the type of new cohorts needed: focused or not focused? Starting recruitment in pregnancy? National or local? etc. b) The possibility to suggest to the European Union long-term support for the existing cohorts: some cohorts may face difficulties in continuing follow-up and we may end up having to choose between either setting up new cohorts or following up of the existing cohorts.

MV: CHICOS is structured so that these types of discussions will take place in each working group on determinants and diseases. This information will be used afterwards to derive the global picture.

Audience: In the presentation, the relationship between cohorts and routine registries was not mentioned. Registries are important and might come before birth cohorts. This should be considered when making the recommendations: In a country where neither birth cohorts nor registries exist, it might be important to prioritize the registries and later one build a birth cohort on them.

2) Data for child health research in European birth cohorts and pan-European Registers - Anne-Marie Nybo Andersen (AMNA), University of Copenhagen, Denmark.

-> Rationale for birth cohort coordination in EU
i) Child health data across Europe; Children have an increased susceptibility to environmental exposure; health and disease are founded early in life; child health varies within and between the European countries.
ii) Why focus on birth cohorts? Prospective design, similar data from different settings, existence of bio-banks, possibilities for lifecourse research.
iii) Why focused on existing data? These represent enormous investments in terms of money, time, intellectual resources, diversity and involvement.
iv) Why collaboration between birth cohorts? Need of large numbers (rare diseases and/or exposures), need for replication/rejection of findings, contextual differences between countries, sharing of know-how and scientific inspiration.

-> Presentation of WP1
Its purpose is to make knowledge accessible, producing an accessible overview of available data.

WP1 presentation: to collect data on registries, cohorts and current (ongoing) statistics on child health.

Registries: There are no pan-European registers. An exception is Eurocat → European surveillance of congenital anomalies (39 registries in 20 countries)

Statistics: We have an abundance of under-used child health data in Europe. Multiple suppliers provide data on child health: UN, WHO and WHO-Europe, OECD, Eurostat, Peristat, HBSC.

Cohorts. Inventory in birthcohorts.net.

-> Inventory of cohorts (update of birthcohorts.net).
Cohorts to be contacted: all cohorts registered in birthcohorts.net, all cohorts included in ENRIECO and other birth cohorts (started at latest at birth, with more than 300 children, with more than one data collection at least 1 year after birth).

Issues to be discussed: 1) Cohorts have different designs and aims, 2) Trade-off between a detailed or a more general questionnaire, 3) Issues of data collection, 4) Identification of the cohorts, 5) Basic description, 6) Availability of data and biological samples.

-> WP1 milestones and timeline
Year 1: decisions on inclusion criteria etc, technical re-arrangements of www.birthcohorts.net, questionnaire revised and piloted
April 2011: final revision of the questionnaire to the cohorts
1st May 2011: Questionnaire to be sent to cohort PIs / Managers
1st October 2011: Cohort database to be complete and publicly available.

The week following the CHICOS meeting provided the last opportunity for cohorts to comment on the questionnaire.

→ Collaborations between statistics, registries and cohorts.

  i) Registry-cohort collaboration provides a possibility to explore different scientific questions. E.g. fever during pregnancy and congenital malformation risk.

  ii) Registry-Statistics collaboration: EUROCAT data are linked with national prescription registry

  iii) Cohort-cohort collaboration: major challenges are the identification of eligible cohorts, the identification of administrative obstacles for data sharing, the willingness to share data, the difficulty in pooling or even comparing data

Discussion

Audience: Researchers from the registries were excluded from this meeting because the criteria used to define a birth cohort included the necessity of at least one contact with the participants. However, electronic EU cohorts exist as well.

AMNA: You have a point, CHICOS is mainly focused on birth cohorts with an added point on registries. This workshop did not exclude registries but we could only pay for one representative per cohort. The links between cohorts and registries will be discussed as part of the final recommendations of the project.

Audience: It might be useful to offer the different cohorts the possibility to put their questionnaires online, apart from the information obtained from the standardized inventory questionnaire

AMNA: It is a very good idea. In birthcohorts.net there is already a link to the cohort websites but we should have a direct link to the questionnaires whenever possible.

Audience: It would be very useful to recommend standard definitions for the various exposures and diseases, such as for asthma, so that data become more uniform.

AMNA: This is an important issue. My point of view is that diversity of methods to assess exposures and diseases is also a value as cohorts will provide data for many years to come.

Audience: Regarding cohort-cohort collaborations, it is recommendable to start with small well defined research questions and always have a written agreement before starting the project

AMNA: This is why we will have case-studies in CHICOS: to explore issues involved in cohort-cohort collaborations.

Audience: in the last 10 years the willingness to share data form researchers has changed, mainly thanks genetic studies. Nowadays the main point is to focus on doing it well, but researchers are typically willing to share data.

3) Keynote Lecture 1: Birth cohort research in low- and middle-income countries: the COHORTS collaboration - Linda Richter (LR), University of the Witwatersrand, South Africa.

LR illustrated aims, features, strengths, and limitations of the COHORTS collaboration, which includes five birth cohorts from five LMI countries.

Discussion

Audience: How much of the follow-up is achieved through registries and how much is based on questionnaires?

LR: All cohorts have only active follow-up. We explored possibilities of getting routine data but they have been very limited. The only exception is the Pelota cohort in which they used data obtained from the medical examinations
for the military service.

Audience: What are your recommendations for CHICOS? How should we deal with the fact that we have many regions in EU? Are there any possibilities to partner between CHICOS and the COHORTS collaboration?

LR: Regarding recommendations we should consider the huge advantages in continuing to fund old cohorts and the pressures to start new cohorts with better measurements. So there is an advantage in starting a new cohort but this should build on work done in old cohorts. Funding becomes important. It is a hard decision to take. And it should be considered also that a new cohort is a long-term commitment.

We have learnt in the COHORTS collaboration that we are small enough to be intimate: so possible a recommendation is perhaps to start with small groups: if there are too many cohorts involved, the collaboration becomes too heavy administratively.

We are already collaborating with ALSPAC and other cohorts in EU on individual projects and this can be expanded

Audience: Would you consider inclusion of these cohorts in birthcohorts.net?

LR: We would be very willing to do that.

AMNA: We have already started to expand the inventory (birthcohorts.net) outside EU

Audience: Is there any established program for student and staff exchange between the different cohorts? What do you do about inclusion of other possible cohorts from LMI countries?

LR: We have specific funding for exchanges between the cohorts, so there is an established program for that. We searched for other birth cohorts in LMI countries with follow-up lasting until adulthood but we could not find them. If there are other cohorts we are willing to discuss about their inclusion in the COHORTS collaboration.

4) European birth cohort work on child health outcomes - Camilla Stoltenberg (CS), Nasjonalt Folkhelseinstitutt, Oslo, Norway

Cohorts interested in joining a particular working group (WG) are invited to contact the coordinator.

1) **WG on Childhood Cancer – Manolis Kogevinas (MK)**

Brief overview of the state of knowledge.

Future research directions:

- Registry based research: this approach is crucial to evaluate trends in childhood cancer in Europe;
- Cohorts and case-control studies: the current main initiative is the consortium I4C which groups together the largest existing birth cohorts world-wide. It is organized in two large working groups on environmental exposures and genetics. I4C initiative may give first results in 5 years;
- Biomarker-based studies: the current main initiative is NewGeneris which relies on biomarkers of effect. It is still unclear however if a biomarker based approach will deliver more valid results, as biomarkers of effect are not clinical outcomes

2) **WG on Infectious diseases – Mads Kamper-Jorgensen (MKJ)**

Brief overview of the state of knowledge.

This WG focuses on infections as an outcome. We will evaluate social, cultural, nutritional, physical, and environmental exposures as determinants of infectious diseases. Other aspects including life-style, substance exposures and biobanks are addressed by other WGs.

Currently, five cohorts are involved in the preliminary review (DNBC, ALSPAC, MOBA, Gen R, Bamse). The
available information on infections is often limited to the respiratory types, rather than encompassing a wider range...

Future research direction:
- Compile larger databases to allow focus on less common infections;
- Increased availability of biological samples makes it possible to study specific infectious organisms.

Discussion
Audience: Have you looked at alternative sources of data, for example monitoring systems in EU?
MKJ: We have not looked at these yet, but alternative sources are a very important issue
Audience: Do you think that there is a sufficient number of migrants in the cohorts to study them separately?
MKJ: It could be the case, but this may depend on the type of infection and its common occurrence.
Audience: You mentioned that biobanks where not used in the review. Availability of biological samples may be very important for studying infections. Why are you not including information on the biobanks?
MKJ: This WG will not work on biobank material as this will be done by the WG in WP3 on biological and genetic markers led by Vincent Jaddoe. So biobanks will be covered in the end.
MK: Even with this WG reviewing biobanks more broadly it may be useful to discuss some specific aspects of biobanks in other WGs.
MV: We do not want WGs to overlap but this does not mean that single WGs cannot use material from other WGs.
Audience: Did you discuss new infections (for example polyomavirus)?
MKJ: It is an emerging area and it is important that we discuss this.

3) **WG on Accidents and injuries – Maribel Casas (MC)**
Brief overview of the state of knowledge.
Research on accidents and injuries is currently based on routine data sources and registries, intervention studies, patient cohorts, child cohorts and historical birth cohorts. Some examples are given.
Future research directions for birth cohorts:
- Better linkage with registries, if possible;
- Analysis of parents’ behavior;
- Analysis of behavior determinants (e.g. social inequalities, ...);
- Implementation of intervention studies and evaluation of impact of interventions.

Discussion
1) Audience: Ecological evaluations are important for this outcome, including the comparison between different cohorts and legislations of different countries. For example, legislation is very important when studying traffic accidents.
MC: Yes, we will see if we can take this aspect into account
2) Audience: Selection bias in the cohorts has not been mentioned and could be an important problem.

4) **WG on Neuro-cognitive and behavioral development – Joan Forns and Maribel Casas (JF and MC)**
Brief overview of the state of knowledge.
Aims of the WG:
- To review the contribution of European birth cohort to scientific knowledge on child neurodevelopment:
  - to review the main neuropsychological and psychological phenotypes assessed in the European birth cohorts;
  - to review the findings on the selected determinants in the European birth cohorts;
  - to review the primary preventive interventions on ADHD by country;
- To make recommendations for future research in neuro-cognitive and behavioral development in European birth cohort studies.

Future steps:
- Identification of birth cohorts not included in ENRIECO, using the inventory from WP1 and ad-hoc questionnaires;
- Collection of neuro-cognitive and behavioural development information available in cohorts not included in ENRIECO;
- Review of existing national primary preventive interventions for ADHD.

5) **WG on Obesity, vascular and metabolic health – Debbie Lawlor (DL)**

Brief overview of the state of knowledge.

Aim of WG: to identify geographical inequalities and risk factors associated with metabolic and cardiovascular diseases.

Future steps:
- To identify cohorts with available data
- To improve collaboration among cohorts

6) **WG on Asthma and respiratory health; allergies – Liesbeth Duijts (LD)**

Brief overview of the state of knowledge.

Aims of WG:
- To review existing information on Environmental risk factors in early life and genetic risk factors for asthma and allergies
- To identify gaps in knowledge on priority topics of policy interest
- To evaluate the role of cohorts as part of the development of a future research strategy
- To conduct case studies in topics of policy interest

Future steps:
Some case studies are proposed in CHICOS: asthma and social inequalities, early growth and asthma, maternal and infant’s nutrition, maternal complications in pregnancy and association with asthma and wheezing.

7) **WG on Perinatal outcomes – Camilla Stoltenberg (CS)**

Brief overview of the state of knowledge.

Future steps:
- It is proposed that the WG will focus on pregnancy cohorts and on the following perinatal outcomes: fetal
loss, infant death, congenital malformations, pre-eclampsia, gestational duration and preterm birth, fetal growth and size at birth.

**Discussion**

**Audience:** There is one important outcome to be added that is early fetal loss. It has been studied in case-control studies and results are inconsistent. We have the opportunity to investigate its determinants prospectively in cohorts with early recruitment

**Audience:** I am not sure that it is necessary to select the women during pregnancy to study reproductive outcomes. In our cohort with recruitment at birth, we have a detailed questionnaire on diet during pregnancy, we will use linkage with the medical records and we have biological samples taken at birth which can be used to obtain information on exposures that acted during the fetal life

**CS:** If information on the exposure comes form routine registries completed during pregnancy the cohort meets the criterion of "recruitment" in pregnancy

**Audience:** why do you want pre-defined criteria for inclusion of cohorts in the overview on research in prenatal field?

**CS:** We do not need criteria to describe what has been done. However, in the recommendations it is important to define some criteria for what is needed in future in research.

**General discussion**

**Audience:** Registries are indeed very important, but starting new registries on the ground of research-based questions might be difficult in some countries

**CS:** It depends on the different countries and the possibility to foster registry-based research should be evaluated locally.

**Audience:** It would be useful to foster collaborations between registries. Currently, there are several disease-based registries which work independently, working together would benefit the dataflow.

**Audience:** I would like to point out that there will be a change in the current EU legislation for registries to harmonize the format of consent needed for inclusion in the population registries. Countries with national-based registries are afraid that this could create problems in the national registration

**Audience:** It is very important that each WG includes researchers from every part of Europe. For registries for example there are great differences as some countries have many registries while others have none. These differences should be taken into account

**Audience:** Who should join the WGs? Those interested in specific research questions that they would like to develop or those who are interested in policy questions and in the global recommendations?

**MV:** Our aim is to look at the contribution of the cohorts to scientific knowledge. The expertise of people needed depends on the different WGs. For example, for the perinatal group it could be important to have somebody who knows about the registries in southern europe but for other WGs it might be important to have some other types of expertise. If somebody is interested in a specific topic he/she should talk with the WG leader to see if his/her contribution could be valuable.

**MK:** The WGs will provide overviews and recommendations, for which lot of expert input is required from outside (the project team). Specific research questions will be addressed in the case-studies.

**Audience:** A recent paper on brominated flame retardants and neurodevelopment and two other previous papers have been published on the same issue. It is very difficult on the basis of these 3 papers to understand what is the available evidence because there are large differences in the neurodevelopment outcomes assessed and in the tests used to assess them. In this area there is really need of some type of standardization before being able to put together the evidence.

**JF and MV:** To increase comparability, neurodevelopment can be divided in functional phenotypes and cognitive domains. Indeed, we are trying to put the different tests in a global framework working on the constructs: then, different tests assessing the same construct at the same age can be compared. It would be difficult to use the
same tests in all cohorts and perhaps this type of uniformity is not advantageous..

**Conclusions (CS)**

Two points to conclude:

We need good examples to achieve the CHICOS objectives.

For example, the EAGLE consortium will produce results from actual pooling of data to respond to research questions. One outcome of CHICOS could be that EU money should be put into actual collaborative research.

There might be situations where it will be difficult to gain access to national databases for research use. We should point out that routine datasets are used in many different fields (economics as an example) and there is no reason not to have them also in health research.
Day 1, Afternoon

5) European birth cohort work on child health determinants - Vincent Jaddoe (VJ), Erasmus Medical Centre, Rotterdam, The Netherlands

→ General presentation of Work package 3 on health determinants:

i) There are three large groups of determinants of health: socio-demographic characteristics, environmental exposures, and biological and genetic markers.

ii) It is important to watch out for multiple environmental and genetic determinants, interactions, and effect sizes at a population level

iii) The aims of WP3 are a) To evaluate: available data on determinants in existing cohorts, gaps in knowledge both globally and in specific geographical area’s (e.g. Eastern Europe), methods and tools; b) To develop case studies, c) To develop recommendations.

iv) WP3 on determinants is strictly linked to the activity of WP2 on outcomes and the inventory of WP1

→ Working Groups

1) Working group on Social and cultural conditions and inequalities – Hein Raat (HR)

Brief overview of the state of knowledge.

Main issues:

i) This WG proposes a lifecourse perspective approach, in which there are several pathways that mediate the effects of the determinants.

ii) A preliminary report has been drafted, based on seven cohorts selected as examples.

iii) The overview of the knowledge has been based on the social and cultural determinants available in the selected cohorts and on a literature search.

Discussion

Audience: Separated families tend to be underrepresented and lost to follow-up in these studies. Can you comment on the possible role of registries to study separated families?

HR: In many of the cohorts we have an over-representation of families that are more advantaged but we have also disadvantaged families. In registries, however, we have the whole population which is a clear advantage but it should be considered that the number of available variables is limited

Audience: Are the activities in this WG still ongoing or has the report already been completed?

HR: We have a draft report which will be distributed and we will gladly receive feedback and comments, and are open to involve those interested in further work.

Audience: To follow on this issue: your review focuses on the example of seven selected cohorts. Do you have plans to extend the review on the rest of Europe? The European Commission is very interested in social inequalities and it could be important to expand the overview to other areas in Europe.

HR: The results of the inventory and contact with researchers involved in birth cohort research (already during this workshop) will help us to expanding the work

2) WG on Nutrition and physical activity – Leda Chatzi (LC)

Brief overview of the state of knowledge.

Aim: to evaluate existing data on prenatal and postnatal diet.
The review is ongoing and some preliminary tables have been prepared.

Future steps:

Discussion

Audience: Are you planning to review also information on physical activity?

LC: Yes, we included studies on physical activity.

Audience: It seems that the frequency of breast feeding is an important health determinant.

LC: There are many studies on breastfeeding and we are still reviewing them. In our review, we will check also duration of breast feeding.

MV: This group has done an impressive amount of work and it had to start right from zero. It can be used as an example for other groups interested in producing a comprehensive review.

Audience: Will we able to see the review?

MV: We are currently at an early stage with a preliminary draft. At the end of the project the reports will be publicly available. They will be made accessible to people outside the research groups in the form or short reports.

3) WG on Life-style and substance exposures - Camilla Stoltenberg (CS)

Brief overview of the state of knowledge.

Controversial issues of lifestyle and substance use during pregnancy include: alcohol intake, tobacco smoking, illegal drug use.

Accordingly the aims the WG will focuses on:

- The effects of alcohol intake during pregnancy on cognitive and neuropsychiatric development, length of gestation, birth weight, metabolic status (e.g. later cardiovascular disease);
- The effects of tobacco smoking during pregnancy on hyperemesis and preeclampsia and lung diseases in childhood;
- Health effects of cannabis use.

4) WG on Other environmental exposures including ETS - Mark Nieuwenhuijsen (MN)

Brief overview of the state of knowledge.

This WG represents a link with the ENRIECO project: overview of the ENRIECO’s results.

Future steps:
- Identification of new birth cohorts that collect data on environmental exposures – they will be included in the ENRIECO inventory database also;
- Literature search focused on those exposure-response relationships not evaluated within ENRIECO (i.e. obesity and endocrine disruptor chemicals);
- Comparison with existing reviews of other study designs/sources selected from literature search;
- To identify gaps in knowledge in priority topics of policy interest;
- To conduct case studies in topics of policy. Case studies proposed: i) Selected maternal occupations and birth outcomes; ii) POCs exposures and birth outcomes; iii) POCs exposures and respiratory infections (if possible); iv) POPs exposure and Child Neurodevelopment (if possible).
5) **WG on Biological and genetic markers – Vincent Jaddoe (VJ)**

Brief overview of the state of knowledge and use of biological and genetic materials.

**Aims:** i) To explore biobanks in child cohort studies and existing collaborations and infrastructures, for identification of possibilities for harmonization, standardization, quality management, gaps in specific materials, gaps in specific geographical areas, gaps in specific socio-economic and ethnic populations; ii) To provide recommendations for genetic and non-genetic biobanks.

Several types of biological material have been collected in the different cohorts, including blood, urine, saliva, DNA, tissues (e.g. placenta).

The WG will work in close collaboration with existing collaborative projects involving biobanks and cohorts: the EAGLE and EGG consortia, and the public population project in genomics (P3G).

**General discussion**

**VJ:** We are open to any kind of collaborations. It is important to have inputs and if you are interested just contact the WG leaders.

**MV:** The last two presentations show that it is really important that we make use of what has been already done in previous projects and collaborations.

**Audience:** do you intend also to study biological markers of environmental exposures in relation to outcomes?

**VJ:** It might happen that there will be a case-study on these issues (for ex: genetic determinants of birth weight)

**Audience:** Vincent mentioned the overview on biobanks. It could be interesting to hear about what is the situation with the environmental banks.

**MN:** This information is included in the ENRIECO inventory. As an unrelated issue, it is important to keep the reports short and underlie key messages; otherwise people will not use them much;

**MV:** I would like to comment on the fact that CHICOS is wider than ENRIECO and it will be more difficult to summarize what we will produce. We will need more time to prepare the summary and we will have to go quicker with the individual reports from the WGs.

6) **The scope and actions of EU policies for child health - Linking research and policy - Patricia Lucas (PL), University of Bristol, UK**

→ Overview of approaches to health policy in the EU

→ Aims of WP4 on policy:

i) To understand the impact of mother-child cohorts on policy and effective dialogue between researchers and policy in this area;

ii) To review the extent to which mother-child cohorts have contributed to current policies produced by EU institutions and some EU Member States;

iii) To structure an inventory of the information needed from parties involved in the development and implementation of child health policies at the European and national level;

iv) To evaluate the current role of policy makers with regards to decisions involving the design of child cohort studies with the purpose of gathering data that suit policy needs

→ Ongoing and future work within WP4:

To answer the WP4 research question - What child health policies and agenda exist in the European Union? - documents have been identified on health policy by searching EUR-Lex (EU law and policy document database),
CINAHL, Medline, WHO Europe, UNICE, etc. Documents were divided in two broad groups: i) targeted policies which define actions, and ii) documents related to overarching policies mostly called for action without giving specific recommendations.

Searching Eur-Lex was useful but difficult and incomplete: There is need for policy makers to make structures and processes accessible to researchers (and public); at the same time, there is need for researchers to make research results accessible to policy makers.

The cases studies and the Delphi study will be useful to understand research/policy interaction processes.

First results of cohort interviews: Examples of policy involvement in birth cohort studies: a case study approach – Hein Raat (HR), Erasmus Medical Center, Rotterdam, The Netherlands

→ Presentation of the case study on involvement of policy makers in birth cohort research

Aims: to assess the role of policy makers in the design of cohort research, and to assess the interaction between policy makers and researchers, especially with regard to the use of cohort outcomes.

Both policy makers and researchers of selected birth cohorts (Generation R, INMA and REPRO-PL) have been interviewed. The interaction between policy makers and cohort researchers was intense during the design phase but later on it seemed to slow down. Interaction with policy makers at the EU level has been limited.

Interviewed researchers propose to increase interaction with policy makers on issues related to political and funding structure. This interaction could be facilitated by research seminars and meetings, flyers, active publicity, working visits, newsletters, telephone calls, research reports and fact sheets.

Policy makers are aware of the importance of cohort research results: the use of these results may depend on their policy relevance, the quality of research, and the actual possibilities to translate results into policy.

→ Preliminary recommendations by case study results

i) Researchers should continuously involve policy makers, not only when results are final, but during the entire research process.

ii) Results should be offered in a way that is accessible to policy makers and researchers should translate results into policy recommendations.

The role of the knowledge broker: Getting research into policy in Wales - Chris Roberts (CR), Head of Public Health Branch, Social Research Division, Welsh Assembly Government, UK

→ Interaction between research and policy

Despite the fact that evidence-based policies are being contested, the role of research in informing policy is possible and desirable. The problem is the division of researchers and policy makers into two separate and seemingly inaccessible communities.

Nevertheless, research does inform policy, for instance, by highlighting areas of concern and monitoring time trends in disease occurrence.

Many types of research use are described in the literature; in particular: instrumental (a concrete application of research results with direct impact on a policy); conceptual (research results change the way policy makers think), and symbolic use (research legitimises pre-determined position)

→ Examples of successful interactions

i) The ASSIST project: Research showed that a large number of adolescents smoked regularly in Wales in 1990s; a feasibility trial was established and demonstrated reduced smoking prevalence; the program was adopted in Wales.
ii) The UNICEF work on child well-being in rich countries: Indicators of child well-being have been developed following which the publication of the report proved very influential to policy development in the Welsh Government.

iii) Government Social Research service in Wales (www.gsr.gov.uk)

RICHE – A place for research into child health in Europe – Anthony Staines (AS), Dublin City University, Ireland.

→ Context:
Child health is a critical element of EU public health policy, a political priority and an economic necessity, but the policy people and the researchers are often not able to find out reciprocal needs even if useful information for policy and implementation is already widely scattered. This situation could be called “the Dublin and Cork problem”: people working away in Dublin, repeating work already done in Cork, ignoring that this work existed.

→ General presentation of RICHE project:
RICHE is a project for child health researchers, practitioners, policy makers, and those who make decisions affecting children’s health. It is structured into six WPs, including a WP that aims at producing an inventory of child health research.

Everyone is invited to contribute to the inventory by registering through RICHE website - www.childhealthresearch.eu.

Emphasis lies on the evaluation of knowledge access problem: scientific knowledge is often inaccessible, access to journals is expensive, especially for decision makers in local, regional and central government, citizen groups and advocates and young people.

→ Solutions proposed for scientific knowledge dissemination and use:
RICHE is the first corner stone of new types of solutions: it is addressed to a community of practice in child health, and supports the next steps in building a European public health “infrastructure”.

→ RICHE and CHICOS collaboration:
RICHE and CHICOS compliment each other in the identification of research priorities for which cohorts are the answer, to support identification of research outputs from cohorts (especially grey literature), to provide and support a discussion space (RICHE provides an online forum).

Through the access to the RICHE facilities, CHICOS can contribute to providing directions where it comes to cohort activities.

General discussion
MV: One of the things we have been asked by the EC is to build bridges with policy makers. We contacted for this meeting all possible contacts we had within EU and we found that it is very hard to involve them.

PL: In addition, contacts often move within EU departments and which reduces the possibility of building sustainable bridges.

Audience: You have talked primarily with people in the health system but also other departments are important. Also we need to establish links with elective officials.

AS: Researchers should get involved in the policy making to understand how does it work. It takes a lot time, preventing for working on papers and grants, but to have an impact it is important to be involved in the policy making in one way or another.

CR: Part of the success in Wales is due to the fact that policy makers and researchers had good relationships. The real challenge is to formalize these relationships in the long run.
Audience: RICHE is much more policy oriented than cohort studies in CHICOS. Policy professionals themselves may say that there is no need to have close relationships with researchers because they gave the funding and researchers will deliver results. It is important instead to develop personal relationships.

Audience: Personal relationships definitely work. But there is no need to be depressed if we think about the last 20 years. Nobody knew about birth cohorts and biobanks 20 years ago. Enormous cohorts and biobanks have been instead set up and funded. We can wonder how did it happen and what can we learn from this.

AS: Probably one reason why some politics supported biobanks is that they were expecting economic return from a sort of bio-related industry. The results will be disappointing in this respect. Also often politicians decide to support research to delay decisions.

Audience: It is difficult to establish a direct link between each cohort and local policy makers. The problem is that results from single cohorts themselves are not enough to provide evidence for policy makers. It is when you have committees or broader projects (like ENRIECO or CHICOS) that evidence comes out.

Audience: When we look at the actual interaction between cohorts and policy makers we see that it is not that developed. It is also true that the findings from single cohorts should be reproduced - only after that they will be useful for policy makers. Still, we have to build these relationships for the future and work together with policy makers may speed up the process of translation of research into policy.

Audience: My feeling is that the relationship is built in a way that when policy makers need results they come and ask to us.

Audience: I think that we have to stick to our job of putting good research questions and solving them and not get too much involved in the policy making. Often policy makers take their decisions also on the basis of ideology. When the government changed in Denmark ten years ago expert committees were abandoned. After 10 years we have just as many expert groups but they involve different experts working on different research questions which the current politics like.

Audience: It is really true that there are two worlds: researchers and policy makers? We need somebody in as an intermediate, and the WHO has this role. It is very difficult for researchers to contact policy makers to advice them. A successful story is the UNICEF report on child well-being. Researchers, as individuals have difficulties in influencing policy but institutions can do it. Sometimes they need to regulate and ask for risk assessment based on research. We should emphasize the role of research as a tool for policy.

Audience: This idea that researchers should be involved in policy should be challenged. If researchers are involved in policy they will be influenced by that and their research results will be affected. Recently, I have been involved in a committee delivering a list of recommendations to the policy makers who eventually picked up selectively only what they were interested in. Our role as researchers is just to make science available.

AS: It is crucial to understand that policy making starts from elections. Politics is the art of the possible and the possible has a lot of constrains. We do science, we make it accessible in various ways to media and to policy makers using a comprehensible language. We also give advice based on the best available evidence, following which it is up to the elected people to decide, as this is how democracy works. The researcher’s responsibility is to give the technical information for those in power to apply this.

Audience: I am interested on the role of the media which are very important to transfer evidence from research to policy. Often the problems are brought to the attention of policy makers by the media. We do not have control on how the media report the research results but media have also an effect on funding.

CR: Media have a huge impact acting as intermediate.

AS: The media is another area where long-term relationships matter.
DAY 2, 12 April 2011

7) Keynote lecture 2. Childhood obesity - the role of birth cohorts in policy relevant research. 
Debbie Lawlor (DL) – University of Bristol, UK

The presentation illustrated current knowledge and ongoing research on childhood adiposity and cardiovascular disease risk factors in adult life, using this topic as an example of possible interaction between birth cohort researchers and policy makers.

Discussion

Audience: I was surprised about your emphasis on the comparison between randomised controlled trials (RCT) and observational studies. It may be that this dispute nowadays is obsolete. For many of the associations and causal relationships we are interested in, RCTs are not the ideal design. For example, observational studies may give more clues than RCT when the interest is on understanding mechanisms. The best study design depends on what is the research question to address. We are going towards a richer way of evaluating the evidence including all different study designs.

DL: I completely agree with you about the debate between RCT and observational studies but I think that there are still pressures towards considering RCTs better than observational studies to study causation. Indeed RCTs are important to study causation and also to test effectiveness. So I agree with you but there are still pressures towards the use of RCT as the only method to prove causation.

Audience: A study published 2 years ago in the New England Journal of Medicine from EPIC shows the importance of waist circumference as compared to Body Mass Index (BMI) in predicting mortality. It is also possible to use scans next to BMI measurements. What is your suggestion: should we use these detailed measures in cohort studies or not?

DL: In a recent study published in the Lancet we found that waist circumference or waist-to-hip ratio did not add to BMI to predict cardio-vascular outcomes. This does not mean that visceral fat does not matter as waist circumference may badly measure it. To monitor and survey the population, BMI is fine as BMI and waist circumference predict cardiovascular disease with the same strength. In addition, it is difficult to measure waist circumference in the field. If we are interested in specific aetiological mechanisms, having fat composition in specific organs form scans (as opposed to waist circumference) may matter.

Audience: You told that to evaluate causation it is important to replicate results in populations with different confounding structures. Is there enough variation in EU countries to accomplish this?

DL: There is great potential to learn about causation by comparing results between very different countries like LMI countries and HI countries but there might be potentials also within EU countries.

8) Proposals for case studies to pool birth cohort data

Introduction - Martine Vrijheid (MV), CREAL, Barcelona, Spain

→ CHICOS case studies:

General overview on CHICOS case studies:

- Studies will focus on specific scientific questions by pooling data across EU cohorts or by comparing associations estimated separately in different cohorts;
- They will be used to evaluate issues in cohort data pooling/comparison;
- They will be important for the development of recommendations.

Guidelines for the case-studies were developed by the CHICOS partners both in terms of the types of studies that are suitable and the process of conducting the case studies (available from the coordinators).
Pooling birth cohort data: the experience of ENRIECO and GA2LEN

Centralized approach - Thomas Keil (TK), Charité University Medical Center, Berlin, Germany

General presentation of ENRIECO WP5 work:

Aim: to evaluate combined data analyses using the original raw data from EU cohorts on allergy and asthma.

The work has been organized in five steps: assessment of willingness to participate in the study from each cohort, assessment of the eligibility of the cohorts, collection of data (description of available variables, labels, categories, selection of variables), data harmonization and analyses.

Evaluation of the work done:

What went well? Project kick-off meeting was useful to establish personal contacts with cohorts interested in further participation, responsibility for coordination and communication concentrated in one institution with a single data collection and harmonization process, complex data questions were solved by telephone contacts in a fast and uncomplicated way.

What were the challenges?

- Time and effort for data management were underestimated due to a larger number of interested cohorts than expected;
- Poor quality of half of the received data sets;
- Half of the participating cohorts did not meet deadlines;
- Heterogeneous assessment of allergic phenotypes across the cohorts;
- Necessity of compromises to handle of the exposures variables (smoking and dampness/mould) in the combined analyses.

Recommendations for future projects:

i) A very detailed request for the labeling of variables and values and the order of variables in the provided datasets is needed for the single cohort’s data manager;
ii) Realistic deadlines should be set for data collection, harmonization and data-checks;
iii) More face-to-face contacts between the WP coordinators and working groups needed.

Decentralized approach in combined analysis - Mark Nieuwenhuijsen (MN), CREAL, Barcelona, Spain

General presentation of decentralized approach in ENRIECO:

Aim: to model exposure-response relations between biological markers of Persistent Organis Pollutant (POP)-exposure and selected adverse pregnancy outcomes.

A decentralized approach was used to: a) identify study variables, b) plan the data analysis, c) develop the program for stand-alone analysis, d) obtain center-specific outputs, e) carry out the meta-analysis. This means that no datasets were exchanged, researchers of each cohort ran agreed statistical programmes and then transferred the risk estimates to one centre for the meta-analysis.

Evaluation of work done:

Advantages of this type of approach are: a) barriers for transfer of full datasets across borders are bypassed; b) there is a better understanding of the data; c) consensus agreement on decisions before analyses; d) promotion of sharing of research tools with other research groups.

Disadvantages are: a) more effort and time consuming (and related higher costs); b) less efficient and flexible approach; c) limited options for sensitivity analyses; d) limited options for exposure-response modeling and other analyses where a pooled data-set is needed.
Proposals for CHICOS case studies

1) Socioeconomic inequalities in preterm delivery - Anne-Marie Nybo Anderson (ANMA)

Brief overview
Aim: to evaluate the association between measures of Socio-Economic Position (SEP) and risk of preterm birth in different European birth cohorts.

Inclusion criteria: cohorts characterized by recruitment and exposure data collection before 22 weeks, specific exposure data (parental education, income, occupation, age, cohab status), specific covariate data (smoking, alcohol, occupational exposures, infections and participation in antenatal care), outcome data (gestational age at birth, induced or spontaneous birth)

Cohorts will be contacted with an invitation to participate during Spring 2011

2) Alcohol consumption and birth weight - Katrine Strandberg-Larsen (KSL)

Brief overview
Aim: to examine whether the observed beneficial effects of light drinking are linked to behavior modification bias or confounding.

Inclusion criteria: cohorts with prospectively collected data on amount of alcohol intake during pregnancy, with data on birth weight and gestational age at delivery, with data on reproductive experience, including gravidity, parity, time-to-pregnancy, intention of pregnancy and infertility treatment, and with information on sibling- and/or cousin pairs within the cohorts.

Identification of eligible cohorts by Summer 2011.

Discussion
Audience: Have you considered using biomarkers of exposure? Recall bias might be a problem
KSL: We will not use biomarkers in this case-study
Audience: Exposure assessment is quite important. How can you harmonize all these data? For example will you ask for consumption per day or will you ask for grams of pure alcohol?
KSL: I have to see what data are available from the different cohorts. Harmonization will be a problem but hopefully one of the recommendations from the case-study will be on how to measure alcohol in cohorts

3) Selected maternal occupations and fetal health - Maribel Casas (MC)

Brief overview
Aims: a) to evaluate the risk of adverse birth outcomes (low birth weight and short gestational age) for specific "at risk" maternal occupations using combined data from European birth cohorts, b) to evaluate the heterogeneity among countries in these effects.

Inclusion criteria: cohorts that have recorded maternal occupations held at any time during pregnancy; information already coded; cohorts that started the enrolment after 1990.

Variables: occupational codes and work during pregnancy, birth outcomes (birth weight, gestational age), other variables (id, cohort, gender, maternal age, education, ethnicity, marital status, SES, smoking, alcohol, height and weight, etc.). A specific Job Exposure Matrix (JEM) will be also used.

Proposed time line. April 2011: answers from cohorts, data transfer agreement, final list of participating cohorts; April-August 2011: permissions, extraction of key variables and formatting of a data set according to uniform principles
Discussion

Audience: Will the assessment of the exposure based just on codes or you will use also additional information from the questionnaires? Do you consider including information on physical load from the questionnaires?

MC: For this case-study we will use only codes and the JEM.

Audience: Could paternal occupation also be included?

MC: This has been discussed, but for the moment we will include only maternal occupation

4) Persistent Organic Pollutants and Birth Outcomes, continuation of ENRIECO case study - Maribel Casas (MC)

Brief overview

Aims: to examine exposure-response associations between biological markers of persistent organic chlorines (POC) and selected pregnancy outcomes (birth weight, weight for gestational age, sex ratio, child growth until 2y of age) in order to discuss causal inference, to detail exposure-response relations, to identify thresholds and no-effect levels, to identify vulnerable subgroups, to examine interactive effects of exposures and characteristics. This is a continuation of the ENRIECO case study on the same topic.

Variables: POCs (PCB 153, p,p'-DDE), birth outcomes (birth weight and height, weight for gestational age, sex ratio at birth), other variables (id, cohort, maternal age, parity, pre-pregnancy height and body mass index, weight gain during pregnancy, fatty fish, serum lipids, SES, gender, smoking, alcohol, chronic disease).

Proposed time line. April-July 2011: invitation of cohorts, study protocol, permissions, extraction of key variables and formatting of dataset according to uniform principles; September 2011: meeting for the entire WG with the objective to discuss and decide the analytic strategy in detail.

Discussion

Audience: you decided to choose PCB-153; would it be possible to look at other POPs?

MC: Maybe in the future we could add other PCBs but ENRIECO has evaluated PCB-153 and the harmonization of the exposure data in ENRIECO has been quite a challenge.

5) Central fat mass, cardiovascular disease - Sumaiya Patel (SP)

Brief overview.

Aims: a) to evaluate existing information on measurements of adiposity, cardiovascular and metabolic outcomes in children from EU birth; b) to explore the extent to which this information could be combined across EU cohorts to complete research that would structure policy to prevent obesity, metabolic and cardiovascular diseases.

Inclusion criteria: Cohorts based in the EU geographical area, at least one measure out of weight, height and waist circumference assessed at any age in childhood, a measure of at least one cardiovascular risk factor measured either at the same time or after the assessment of weight, height and waist circumference

Variables: height, weight, waist circumference, other measurements of adiposity, blood pressure, total cholesterol, HDLc, LDLc, triglycerides, glucose, insulin.

Proposed time line. March/April 2011: invitation of cohorts; May 2011: finalization of the protocol for statistical analyses

Discussion

Audience: How many cohorts you will end up with your inclusion criteria?

SP: Hopefully a few more than the current number of 2 identified cohorts
6) Fetal growth and wheezing/asthma - Liesbeth Duijts (LD)

Brief overview
Aim: To examine the associations of fetal growth, birth weight and postnatal growth until the age of 1 year with wheezing and asthma.

Identification of the cohorts: birth cohorts will be done through the Birthcohorts.net website, existing collaborations and consortia on environmental risk factors, cohort websites and published articles.

Variables: growth characteristics (weight, length, head circumference) at least at one point during pregnancy (e.g. third trimester), at birth and at the age of 1 year; outcome variables: wheezing/asthma.

Proposed time line. April-June 2011: identification of cohorts and combined data collections with others WGs

Discussion

Audience: What is the aim of studying early wheezing? How would you deal with all the exposures that have an effect on early wheezing and birth weight? They will be confounders in this case-study

LD: We will collect information on confounders. We will have to use a strict age-related definition for asthma; for example ENRIECO ended up in two different case-studies: early wheezing and childhood wheezing/asthma

7) Maternal complications in pregnancy, procedures at birth and wheezing/asthma - Franca Rusconi (FR)

Brief overview
Aim: To analyze the associations of maternal complications in pregnancy and procedures at birth, in particular caesarean section, with wheezing/asthma in childhood, taking into account potential confounders.

Inclusion criteria: Cohorts with information on maternal complications and procedures at birth.

Variables: Outcome variables (wheezing/asthma in the first 1-3 years of life, number of wheezing episodes, severity of wheezing episodes, wheezing in the past 12 months at school age, asthma by school age); risk factors (maternal hypertension in pregnancy, maternal diabetes, maternal pre-pregnancy BMI, mode of delivery)

Contact will be made with cohorts in May 2011 to provide the protocol and discuss participation.

8) Fish consumption and fetal growth/neurodevelopment - Leda Chatzi (LC)

Brief overview
Aim: To evaluate the effect of seafood intake during pregnancy on birth outcomes in European birth cohorts

Inclusion criteria: cohorts with data on seafood intake in pregnancy, and on birth outcomes (gestational age, birth weight, small-for-gestational age).

Cohorts will be invited to participate in June 2011.

General discussion:

MV: Many interesting ideas have been presented during the workshop, and we have to discuss the feasibility and these will be organised. One consideration is that CHICOS has funding for meetings but not for the rest of the work in the case-studies.

There are some issues to be discussed:

1) How to approach the combination of data (centralized or non-centralized). Each case-study has to evaluate this individually.

2) How to involve the cohorts? This has to be active: the analysis protocol has to be approved and cohorts have to feel that they are involved in the case-studies. CHICOS can help this by supporting with some
specific meetings.

3) How to organize data collection? If each case-study collects data individually this can create problems to the cohorts and decrease their participation.

DL: We should go back to what the aims of CHICOS are. Some of these projects will not publish within CHICOS time and this would be already an outcome of the case-studies. There is no big difference between centralized and de-centralized approach. The easiest approach to offer people the choice. Regarding the last issue of repeated contacts to the cohorts from each case study, I do not think that it is a big issue. For example in ALSPAC we are receiving data requests every week.

MV: In other cohorts there can be a different level of organization and repeated contacts may be more problematic.

ANMA: We need active participation in each project. This means that the actual engagement is in the specific research question and the project, not in CHICOS. So maybe the contact with the cohorts should not be coordinated centrally by CHICOS.

MK: The main issue to discuss is: are you happy with the selection of the case-studies? Is it what we want in CHICOS?

MV thanked all attendees and closed the workshop