



**European Cooperation  
in the field of Scientific  
and Technical Research  
- COST -**

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**Brussels, 15 May 2014**

**COST 049/14**

#### **MEMORANDUM OF UNDERSTANDING**

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Subject : Memorandum of Understanding for the implementation of a European Concerted Research Action designated as COST Action IS1405: Building Intrapartum Research Through Health - an interdisciplinary whole system approach to understanding and contextualising physiological labour and birth (BIRTH)

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Delegations will find attached the Memorandum of Understanding for COST Action IS1405 as approved by the COST Committee of Senior Officials (CSO) at its 190th meeting on 14 May 2014.

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**MEMORANDUM OF UNDERSTANDING**  
**For the implementation of a European Concerted Research Action designated as**

**COST Action IS1405**  
**BUILDING INTRAPARTUM RESEARCH THROUGH HEALTH - AN**  
**INTERDISCIPLINARY WHOLE SYSTEM APPROACH TO UNDERSTANDING AND**  
**CONTEXTUALISING PHYSIOLOGICAL LABOUR AND BIRTH (BIRTH)**

The Parties to this Memorandum of Understanding, declaring their common intention to participate in the concerted Action referred to above and described in the technical Annex to the Memorandum, have reached the following understanding:

1. The Action will be carried out in accordance with the provisions of document COST 4114/13 “COST Action Management” and document COST 4112/13 “Rules for Participation in and Implementation of COST Activities”, or in any new document amending or replacing them, the contents of which the Parties are fully aware of.
2. The main objective of the Action is to improve maternal and infant wellbeing and the economic sustainability of European maternity services, by advancing scientific knowledge of the normal physiology of labour and birth through a range of disciplinary perspectives.
3. The economic dimension of the activities carried out under the Action has been estimated, on the basis of information available during the planning of the Action, at EUR 48 million in 2014 prices.
4. The Memorandum of Understanding will take effect on being accepted by at least five Parties.
5. The Memorandum of Understanding will remain in force for a period of 4 years, calculated from the date of the first meeting of the Management Committee, unless the duration of the Action is modified according to the provisions of section 2. *Changes to a COST Action* in the document COST 4114/13.

## **A. ABSTRACT AND KEYWORDS**

Optimal maternal and infant health is critical to societal well-being. Reducing childbirth mortality and severe morbidity is a primary concern for most governments. However, this focus on pathology has been associated with an over-extension of clinical interventions to low risk women, with unexpected adverse clinical consequences, and rising health care costs. Part of the problem has been a scientific focus on understanding pathologies of pregnancy and childbirth from simple, clinical, linear perspectives, with a consequent lack of understanding of the range and limits of normal childbirth physiology in different populations, individuals, and contexts. This Action will advance scientific knowledge in this area from a whole-systems perspective, using the realist research framework of what works, for whom, in what circumstances. It will include five domains:

1. Biomedicine (epigenetics and the hygiene hypothesis);
2. Biomechanics (maternal and fetal movement);
3. Socio-cultural perspectives (social expectations and experiences, including marginalised and migrant populations);
4. Organizational perspectives (the effect of organizational contexts and cultures on variation in rates of childbirth interventions)
5. Neuro-psycho-social perspectives (how inter-personal actions and behaviours affect physiological processes).

**Keywords:** childbirth, salutogenesis, whole-system, physiology, transdisciplinary

## **B. BACKGROUND**

### **B.1 General background**

#### **Research Topic**

The process of being born affects every citizen. Reducing childbirth mortality and severe morbidity is a primary concern. However, this focus on pathology has been associated with an over-extension of clinical interventions to low risk women and babies, resulting in iatrogenic damage and excessive costs: *rates of Caesarean section (CS) are now over 30% in three European countries*. It has been estimated that unnecessary cesarean section alone costs \$350,000,000 a year across 30 European countries.

#### **Wider relevance (why a COST Action)**

International teams are working on each of the proposed topic areas, but, to date, they have not explored potential synergies. Programmes such as Horizon 2020 require collaborative dialogue before bids can even be theorised, let alone designed. The EUREKA programme is orientated towards the market and commercialisation. ESF is about skills and employment. ERC starter,

consolidator and advanced researcher grants are focused on funding single research teams and not wide networks.

### **Advantages of working within the COST framework**

European scientists lead much of the cutting edge research at the centre of this Action. However, they are not currently in active cross-disciplinary dialogue. The networking nature of the Action allows the unique opportunity of face to face meetings for scientists who, otherwise, may not even think of collaborating. This offers the potential for some truly innovative future research that could not be catalysed by the other research funds. The networking opportunities also allow engagement of doctoral and postdoctoral students, Early Stage Researchers (ESR), senior scientists, and invited experts in specific related fields from outside of Europe.

## **B.2 Current state of knowledge**

### **Previous research and current State of the Art**

Research to date has identified links between routine interventions in labour, a rise in mortality and morbidity, epigenetic and gut flora changes in the neonate, and later autoimmune disease, in both human and animal studies. Iatrogenic damage can influence intention to breastfeed, affect parenting, and limit the intention for future children. Sociological studies, and examination of organisational cultures, have noted that the risk aversion that underpins routine unnecessary use of interventions also tends to result in target driven health care, and a litigation focus that leaves little room for expertise and creative thinking. This can lead to ‘burn out’, to attrition of professionals, and to a reluctance to take responsibility for decision making in practice, which can, in itself, result in sub-optimal care and adverse consequences for women and babies. The way childbirth is managed therefore has important short and long term financial, clinical, and societal consequences. Part of the problem has been an excessive scientific focus on understanding pathologies of pregnancy and childbirth from simple, clinical linear perspectives, with a consequent lack of understanding of the range and limits of the normal physiology of labour and birth for well women and babies in different populations, individuals, and contexts. This Action will advance current scientific knowledge from a salutogenic, complex, whole-systems perspective, using the realist research framework of what works, for whom, in what circumstances. It will build on current scientific knowledge in five specific scientific fields of enquiry: epigenetics and the hygiene/gut flora/Old Friends hypothesis; new ways of dynamic, non-invasive imaging of the human body; insights into social expectations and experiences, including those of marginalised and migrant populations; the effect of organizational contexts and cultures on variation in cross-EU

interventions in childbirth; and neuro-psycho-social insights, specifically in the area of oxytocin and mirror neurons.

### **Innovative aspects**

Some areas (epigenetics, oxytocin studies, mirror neurons) are innovative in and of themselves.

Innovation also lies in the integration of previously highly disparate disciplines (neuroscience and the sociology of organisations, for example). The overall intent, which is to understand the nature of *physiological* labour and birth for *well women and babies* from a wide range of disciplinary perspectives, is completely new. The policy implications are economically innovative, as they have the potential to render European health budgets more sustainable as well as more effective.

## **B.3 Reasons for the Action**

### **Reasons for launching the Action**

The Action is launched to advance scientific knowledge in *pregnancy and childbirth from a salutogenic whole-systems perspective, using the realist research framework of what works, for whom, in what circumstances to integrate knowledge across biomedicine, biomechanics, and socio-cultural, organizational and neuro-psycho-social perspectives.*

### **Need and added value/benefits**

The *immediate benefits* include the opening up of a dialogue between scientists from very disparate disciplines, catalyze conversations, share research paradigms, skills, knowledge and techniques. In the *medium term*, this will result in highly innovative research activity that synthesizes these approaches and paradigms to produce new knowledge and insights. In the *longer term*, this has the potential to reduce rates of iatrogenic chronic disease that may result from unnecessary intervention in physiological labour and birth, and to maximize the sustainability of maternity care services provision in Europe and beyond.

### **Scope**

The Action is both scientific/technical, and, ultimately, economic/societal, through the scientific and technical exploration in each scientific/technical domain, and through the contextualization and implementation of these new scientific insights via sociological, organizational, and economic research and theory.

### **Objectives, expected results, means to achieve them**

**The main objective** is to *improve the wellbeing of women, babies and families, and the economic sustainability of maternity services in Europe, through advancing scientific knowledge about the normal physiology of labour and birth for populations and individuals in diverse social, political,*

*and health care contexts.*

### **Expected results, and means of achieving them**

- Creation of a new, world-leading research programme through the networking activities of the Action and through new transdisciplinary bidding and research activity
- Development of new methods and technical solutions through Working Group (WG) activities, Short Term Scientific Missions (STSMs), Training Schools, and Conferences
- Creation of new ways of synthesizing and presenting complex real world health research for non-scientific stakeholders through knowledge transfer activities, and the use of cutting edge e- and m-technology and social media
- Creation of a mentorship programme in cross-disciplinary research by STSM visits and the development of an ESR (Early Stage Researcher) Community of Practice (CoP)

### **The new research programme will result in the following:**

1. A comprehensive synthesis of the current State of the Art in each WG
2. Findings on epigenetics/the gut flora hypothesis and intrapartum events; associations with/evidence of protection from long term non-communicable diseases (WG1)
3. New knowledge about the mechanics of pregnancy and labour (WG2)
4. New insights into socio-cultural phenomenon that contextualize labour and birth, including marginalized groups and migrant women (WG3)
5. Examination of organizational characteristics, contexts, cultures and economic costs of variation in rates of interventions in childbirth in different socio-political contexts (WG4)
6. Data on neuro-psycho-social characteristics and effects of labour events (WG5).
7. Synthesis and dissemination of the evidence from WG 1-5 (WG6)

### **Trans domain issues**

Experts within the Action cross disciplinary domains. One of the activities in year one will be to reveal, share, understand and synthesise the common theoretical concepts and methods across all the groups, so insights based on positivism (biomedicine, biomechanics) can be catalysed with those based on subjectivist/interpretivist theoretical perspectives (sociology, for example).

### **B.4 Complementarity with other research programmes**

This Action complements IS0907, *Childbirth Cultures, Concerns, and Consequences*. The key theoretical insights from IS0907 (salutogenesis and complexity) and the FP7 funded Optibirth study will be taken forward in the proposed Action. The international ROAM (Reproductive Outcomes and Migration) network will be members of the Action, to share insights on migrant women in maternity care. There is cross-membership with the UK ESRC funded LIFE Birth Cohort study, and with the sub-group of LIFE that is funded by the UK Wellcome Trust to examine the epigenetic and microbiota consequences of labour and birth. This will ensure that compatible biological, clinical and psychosocial data can be collected across Europe, and that the resulting data sets can be shared and compared. The Action also has cross-membership with the EU Peristat team.

## **C. OBJECTIVES AND BENEFITS**

### **C.1 Aim**

The main objective is to improve the wellbeing of women, babies and families, and the economic sustainability of maternity services in Europe, through advancing scientific knowledge about the normal physiology of labour and birth for populations and individuals in diverse social, political, and health care contexts.

### **C.2 Objectives**

#### **Secondary objectives**

2. To describe the current State of the Art and to extend the evidence base in each of the following areas:
  1. Epigenetics and the hygiene hypothesis in relation to intrapartum events, and associations with longer term non-communicable diseases (WG1)
  2. The mechanics and bioengineering of pregnancy and labour, including the nature and consequences of, and synergies between, maternal and fetal movement (WG2)
  3. Socio-cultural phenomenon that contextualize labour and birth, including the effects of dissonance between dominant cultural social expectations and those of marginalized groups, such as migrant women (WG3)
  4. Organizational characteristics, contexts, cultures and economic costs of variation in rates of interventions in childbirth (WG4)

5. Neuro-psycho-social characteristics and effects of labour events (WG5).
6. To synthesise and disseminate the evidence from WG 1-5 to scientific, clinical, managerial, opinion leader, policy maker and service user stakeholders (WG6)

### **C.3 How networking within the Action will yield the objectives?**

The main route to achieving the objectives will be the networks of collaboration set up by the WGs. These groups will allow for cross-fertilisation of ideas and techniques, and the sharing of skills (for example, in complex data analysis) and person-power. They will also allow for critical mass to be developed, so that studies that are currently being run in single sites/countries can be extended to other European countries through the Action membership. The Action will also enable researchers to learn techniques, theoretical approaches, and research skills from each other, and from experts outside of Europe. There will be particular emphasis on training of Early-Stage Researchers (ESRs) in these techniques, and on involving them in active research and in co-publishing. As well as contributing to the work of the Action members, they will be encouraged to develop their own research ideas so that they can gain funding to continue working in this area after the Action is complete. Given the topic of the Action, it is expected that this will enhance the careers of young women health scientists in particular, some of whom will be based in the emerging academic professions of nursing and midwifery. A range of experimental and technical facilities will be available across the participating institutions. These range from access to laboratory resources to expertise in complex statistics and organizational theory. STSMs and Training Schools will allow access to the institutionally based resources, and Working Groups, Conferences, and the Action website and other multi-media communication systems will allow access to the human resources. New advances in Implementation Science, and in e- and m- and social media will be used dynamically and as appropriate for specific audiences, as the means to achieving the final objective of synthesising and disseminating the evidence to a wide range of stakeholders.

### **C.4 Potential impact of the Action**

The main *scientific benefits* of the programme of research catalysed by the Action will be the production of new kinds of evidence that synergise insights across a range of disciplinary groups, and capacity building for junior and senior researchers in the study of complex phenomena and of salutogenic approaches to health outcomes and health care delivery. The *clinical and organisational*

*benefits* will include the translation of the scientific insights into effective and appropriate clinical and organisational maternity care, in terms of knowledge that can be used to develop best quality clinical practice, and the optimal organisation and delivery of maternity care. *Economic benefits* will arise from a more person-centered, individualised use of technical and other interventions in pregnancy and labour, ensuring the appropriate use of health resources, and maximum sustainability of effective and appropriately targeted health care for each woman/baby/specific group (including migrant women). *Societal benefits* include happier and healthier mothers and babies, resulting in improved family and community well-being, improved health of the workforce, and, longer term, less chronic auto-immune disease in adults and the elderly.

### **C.5 Target groups/end users**

- Academics, and particularly early career researchers will use the new techniques and knowledge developed through the Action
- Clinicians, strategists, opinion leaders, maternity services funders, policy makers, and service managers across Europe and beyond will apply the findings to practice and to service provision
- Women in pregnancy, childbirth and early motherhood, and their partners, will benefit from knowing if their pregnancy, labour and birth are likely to be straightforward, and from understanding what kind of maternity care they should look for in their country.
- European society in general will be an end user, as happy, healthy mothers and partners are more likely to effectively parent their children, sustain healthy families, and, therefore, contribute to the growth of social and economic capital in Europe.
- European research efforts and competitiveness in this area will benefit from the skills, knowledge and collaboration developed, and from possible tools and products that might result.

Stakeholders from most of these constituencies have been involved at various stages in the bid writing and development. The Action will ensure that the developing membership reflects these stakeholder interests, and that the Action website is engaging and informative for these end-users throughout the life of the Action.

## **D. SCIENTIFIC PROGRAMME**

## **D.1 Scientific focus**

In *year one*, the main research task is to share scientific paradigms between the diverse disciplinary groups that will make up the Action, and to establish the scope of the methodological and scientific knowledge base that will exist across all Action members. During the two face to face meetings planned in year one, this will be a key activity, catalyzed within each WG by full day meetings, and between each WG by full day joint Workshops. New members joining in year one will be integrated into these activities. In year two, plans for WG specific and cross WG research activities will be put into action, building on STSM activities in years one and two, and synergizing infrastructure resources that will be available in research teams and laboratories that are available to the Action members. Development of ESRs will take place. The Training School in this year will reflect the skills and knowledge required to deliver the year two Workplan. In year three, specific scientific activities will be well under way for all WGs. WG6 will have a specific role in keeping an overview of all the diverse but complementary activities of the other WGs. Grant applications to support the scientific work within and beyond the timescale of the Action will also be submitted. In year four the scientific focus will be on consolidation of the activities of the WGs, both within each group, and between all the groups, and on further grant applications to ensure the network continues and grows. An increased amount of academic time will be spent on preparing and submitting outputs from the Action during this year. Specific scientific techniques during the Action will include systematic reviews, surveys, cohort studies, qualitative and observational studies, collection of biological data, epidemiological work on linked data sets across European and other countries, imaging studies, basic laboratory work, and implementation science techniques.

### **The means for achieving the objectives**

The range of scientific, technical, clinical, policy making, managerial and organisational expertise that is signed up to the Action will provide the networking basis of achieving the objectives. COST instruments such as STSMs, Training Schools, Conferences, and Working Group (WG) and Management Committee (MC) meetings will provide technical support for the networks and for the development of the new skills and collaborative spaces that are needed to catalyze these human resources. The Action website will be designed and launched in year one. It will provide the means for sharing information, and for working collaboratively (through freely available open space and communication tools such as Google Docs, Blackboard, and Skype, and any newly emerging Creative Commons tools that may emerge as the Action proceeds). The website will also host a Community of Practice for stakeholders on the public area of the site. This will provide a 360

degree opportunity to feed end users views in to the on-going work of the Action, and to feed the results of the Action activities back out to end users.

## **D.2 Scientific work plan methods and means**

At the beginning of each face to face meeting the MC Chair will offer a 'catch up' session to all those new to the Action at that point, to update them on the evolution of the Action activities since the production of the MoU, so they can contribute effectively to the scientific work of the WG's from the outset.

*Year one:* At the Action Kickoff meeting, the WG's will be formed. WG leads will be appointed, and a detailed Workplan will be developed for the first year for each WG, with an outline Workplan for subsequent years. Following the Kickoff meeting, a whole day will be devoted to the first Workshop, where Action members will present their research paradigm, and their current and planned research activities, and during which there will be time to discuss variation between the world views and approaches of each discipline, as well as to discuss how cross-WG research can be facilitated for the Action. The scientific ground work for the later activities of each WG will be laid in this first meeting, and consolidated in the rest of the meetings during year one.

*Year two:* The WGs will specifically target potential new members in COST countries who have the skills and expertise to fill any gaps in their planned work activities, By the end of year two, all WG's will have submitted for publication detailed descriptions of the current State of the Art in their area. For some WG's this will be a scoping exercise; in others, formal systematic reviews will be undertaken, using meta-analysis, meta-synthesis, and/or meta-narrative. Agreement will be reached, and published, on standard types of, and collection techniques for, collection of biological data from mother and baby, and on the nature and timing of outcome measures for the assessment of salutogenesis (wellbeing), to ensure consistency within and between studies within the COST Action, and other such studies undertaken globally. Points of intellectual, theoretical and practical commonality across some or all of the WG's will have been discussed, agreed, and summarized in academic outputs as a basis for exploring transdisciplinary research and advances in the area of physiological pregnancy and childbirth.

In the later years of the Action, comparative implementation studies may be set up and run based on new grant income, to assess the impact of new and optimal ways of providing maternity care, based on the findings of the Action.

The programme of work in *years three and four* will include (but is not limited to) the following:

WG1: Longitudinal (matched) cohort studies, in a range of settings and population groups, mapping

the epigenomic and gut flora characteristics of neonates to pregnancy and intrapartum interventions and activities (such as social support, mode of birth, spontaneous unmedicated labour onset and progress, labour induction, pharmacological pain relief, routine use of antibiotics, skin to skin processes, breast feeding and formula feeding), to assess patterns of epigenetic changes/of gut flora characteristics that might be associated with different labour and birth events; longitudinal studies that link any such patterns with patterns of positive or adverse behavioural characteristics/ health events in the child, and the later adult. Mapping of the epigenetic characteristics of a straightforward emotionally happy pregnancy resulting in spontaneous onset and progress of labour, normal birth, and effective breastfeeding and mothering on specific epigenetic gene receptors in the infant and the mother, including the OXY sites, as well as general mapping of the epigenome in a cohort of women and babies using current advances in global genomic mapping, based on blood and salivary samples. Examination of the maternal and neonatal and staff skin microbiome, and of neonatal faecal tissue for the characteristics of the microbiota in this circumstance, as a baseline for studies of what happens when pregnancy and labour is not straightforward. Set up of linked studies between these cohorts and behavioural, sociological, organizational, ethical and neurophysiological studies going on via the other WGs, to map whole systems. Examination of specific subgroups, such as migrant populations.

WG2: Identification and/or development of non-invasive, dynamic, real time methods for assessing mechanical and bio-engineering parameters *in vivo* for pregnant and laboring women and their fetus. Observational studies of maternal-fetal movement during labour, using these new techniques, and, for the first time, assessing how the mother and the fetus co-evolve optimal mechanical interactions through mutual movement in pregnancy and labour. Mapping of the emerging data to other phenomenon, such as the fetal heart rate. Analysis of the possible association of maternal movement with changes in the movement of the fetus, and vice versa. Mapping the movement zone of the fetus. Examination of specific bio-mechanical and engineering workplace issues for pregnant women, such as the effect of position when pregnant and using a computer on the maternal spine, and on optimal fetal position, and development of commercial and non-commercial solutions to these issues. Modelling analysis to explore the possibility of delineation of optimal movement parameters in pregnancy and labour, and the conditions in which these might be maximized. Input from the other WG's will explore the organizational, behavioural, sociological and psychosocial factors around these optimal conditions.

WG3: Ethnographic case studies of socio-cultural phenomenon that contextualize labour and birth where there is variation that cannot be explained by case-mix/risk status, with a particular emphasis on the effects of dissonance between dominant cultural social expectations and those of

marginalized groups, such as migrant women. Specific studies could include a socio-cultural exploration of dominant models and places of birth and associated care pathways in different national settings; a review of current literature on expectations of services amongst different groups of women within different country settings (including marginalized women) and how these impact on engagement with services and experiences of services; a critical synthesis of existing methods for measuring women's satisfaction with services and the development of new qualitative methodologies in this area; exchanging data on how maternal services in different countries are enhancing access and adapting services based on women's expressed needs, including for marginalized groups, such as migrant women. Available tools will be implemented (eg Migrant Friendly Maternity Care Questionnaire- MFMCCQ) by the WG to find an explanation for disparities, and to identify settings where things go well, so that the key characteristics of these settings can be revealed as the basis for improving practice elsewhere. Some of the work planned in WG's 1, 4 and 5 could also be carried out in these 'optimal' settings, to assess their organisational characteristics, and the epigenetic, microbiomial, and neuro-hormonal impact of labour and birth in such settings. In the later years of the WG, these results on 'what works well, for who, in what circumstances can be used to design implementation studies for sites that are not identified in the top quartile in each participating country. Work in this WG will pay particular attention to the views, experiences and aspirations of service users.

WG 4: Observational case studies of the organizational characteristics, contexts, cultures and economic costs in sites that demonstrate variation in use of intrapartum interventions, despite having similar case-mix and population catchments; longitudinal epidemiological studies across multiple epidemiological and biological parameters, using existing and new local and national data sets in a range of countries, after agreeing standard outcome measures and techniques across the COST network. In depth organizational case studies of sites identified as providing optimal care clinically, culturally, psycho-socially, and in terms of women and families views and experiences, and, (in collaboration with experts from other WG's in the Action) of the neuro-hormonal, epigenetic, and microbiome consequences, will be undertaken to identify the specific organisational characteristics that typify these kinds of maternity systems.

WG5: Observational studies of neuro-psycho-social characteristics and effects of labour events, with a particular emphasis on the effect of personal interactions and behaviours within and between maternity care staff and laboring women and their families on neurohormones specific to labour processes. This will include measures of oxytocin secondary to techniques such as massage and to the use of agents such as exogenous oxytocin and epidural analgesia. The reviews for this WG will include the fundamental studies performed on the role of oxytocin historically, as well as more

recent studies. A model of the physiology of labor/birth including the neuro-physiological consequences of birth will be created. Based on this it should be possible to deduce and describe the mechanisms, in particular the role of oxytocin, behind the positive effect of personal interactions, within and between maternity care staff and laboring women and their families, including of skin to skin contact and breastfeeding. The mechanisms behind the negative effects of some medical interventions can also be described. In the later years, new experiments could be performed in which the physiological and hormonal processes during labour and in the early postnatal period are monitored in great detail. This work will be linked back to the epigenetic studies being undertaken with WG1. Studies will also be set up to examine mirror neuron activity between pregnant and laboring mothers, their partners and families, and attending staff, and the infant once it is born.

WG6: Use will be made of realist research techniques, and mixed-methods review methodology to bring together the data from WG1-5, on the basis of both ‘what works, for who, in what circumstances’, and in terms of the formula, ‘mechanism + context =outcome’. This will be integrated with new insights from emerging Implementation Science studies to inform the design of knowledge transfer tools and techniques, and the use and design of such tools and techniques for specific stakeholder groups, including the use of new e-and m-technologies

## **E. ORGANISATION**

### **E.1 Coordination and organisation**

#### **Coordination and organisation**

The overall management of the Action will be undertaken by the Management Committee (MC). More immediate management will be undertaken by a representative Core Group (CG). Six Working Groups (WG) will be set up; each one will broadly address one of the objectives of the Action. An Early Stage Researcher Think Tank (ESRTT) will also be set up. At the first MC meeting, the Chair, Vice Chair, Grant Holder and WG Leaders will be elected by the MC members. The ESRTT and STSM/Training School Steering Groups will be set up. The CG will be established, to consist of the Chair, Vice Chair, financial Rapporteurs, and Chairs of the WG's and other groups. Each year, there will be a minimum of two face to face meetings of the Action CG, WGs, ESRTT and MC. Virtual meetings of all groups will take place, a minimum of quarterly. Specific activities will include:

Year one: First MC meeting: setting up the Action. MC, CG, WG, ESRTT meetings: developing the website, building the network, , scoping the topic areas within each WG, building a portfolio of

existing work undertaken by the Action members. 5 Short Term Scientific Missions (STSMs). At least 2 Workshops to disseminate and share knowledge within and between the WG's.

Year two: Completion and submission for publication of scoping work/reviews. Agreement on WG activity to the end of the Action. First studies set up. Grant applications submitted. Training School (TS). At least 6 STSM's and 2 Workshops.

Year one three: consolidation, continuation. Results of studies submitted for publication. Second Training School. At least 8 STSM's and at least two Workshops.

Year four: Synthesis of work. Publication of final State of the Art book. Ongoing studies, publications, grant applications. At least 10 STSMs. Final Action Conference. Agreed plans for continuation and expansion of the networks and research and other activities catalysed by the Action. At least two Workshops.

### **Roles and responsibilities**

The CG will consist of the Chair, Vice Chair and leaders of the WG's and other groups. It will be responsible for detailed planning of each MC meeting, and it will be accountable to the MC. A Steering Group (SG) will be established for the coordination of Short-Term Scientific Missions (STSM) and Training Schools. It will consist of representatives of the WGs. The SG will be managed by the Vice-Chair of the Action. The Action will be managed by a Management Committee (MC). The MC will comprise up to two representatives from each signatory country and two alternates. The MC will be managed by the Chair of the Action. The MC will be responsible for: coordinating activities between the WGs; budget planning and allocating of funds; maintaining a high scientific level by fulfilling the tasks and milestones; organizing workshops, training schools and conferences; contacting relevant strategic, policy and clinical partners; exploring the possibility of expanding research plans within and outside of the European Research Area (ERA) by wider networking and grant applications.

### **Milestones**

1. Election of members and Chairs to all bodies (by month three)
2. Launch of the website (end of year one)
3. Production of an annual report that meets the requirements of COST (end of each year)
4. Workplans for the subsequent year agreed and signed off at least three months before the end of each year.
5. Publication of reviews (end of year two)
6. Contract for final State of the Art book signed (by the middle of year three)

## 7. Completion of the final Action Conference (by the end of year four)

### **E.2 Working Groups**

To ensure that activity takes place to fulfill each of the Action objectives, there will be six Working Groups (WG), each with an elected Chair and Vice Chair. The groups will agree a detailed Work Plan annually, and will meet at least quarterly (usually twice face to face, and twice virtually). All WGs will provide brief quarterly reports on new activities/outputs for the MC at least twice a year, in a rolling update format. Activities will be coordinated by the Chair of each WG. Workshops will be the main platform for exchanging information across the WGs. Training Schools and Conferences and the Action Website will also facilitate the transfer of knowledge between WGs. STSMs will allow for in-depth exploration of specific methodological or empirical aspects.

### **E.3 Liaison and interaction with other research programmes**

The Action will actively link with ongoing European level/funded projects such as EU-Peristat, and studies that have recently completed but that could contribute insights in future (EU FIRE, RN4CAST, for instance). The results and the continuing networks arising from COST IS0907 that will be complete in July 2014 will be highly relevant to the Action, and some members of the proposed Action are also involved in IS0907, allowing for cross-fertilisation of ideas. There is also cross-membership with the FP7 and the UK ESRC funded LIFE Birth Cohort study, that will start in 2015. Relevant existing European funded studies, and funding awards made through Horizon 2020 will be tracked. Where possible, collaborations will be formed, to eliminate possible duplication. All members of the Action will be encouraged to look for relevant programmes at national or cross-national level, and to build links accordingly.

### **E.4 Gender balance and involvement of early-stage researchers**

This COST Action will respect an appropriate gender balance in all its activities and the Management Committee will place this as a standard item on all its MC agendas. The Action will also be committed to considerably involve early-stage researchers. This item will also be placed as a standard item on all MC agendas. The MC will set appropriate gender balance rules, and will monitor the gender balance of those contributing to its activities. Appropriate levels of involvement

of ESRs will be established, and this will also be monitored and redressed where necessary. As a standard component of the face to face meetings schedule, some time will be allocated on the agenda for ESRs from all the WG's to strengthen links with each other and with experienced scientists in the Action. Each Training School will include the provision of intensive training in techniques relevant to the Action, specifically for ESRs.

## F. TIMETABLE

Milestone / Months	1-6	7-12	13-18	19-24	25-30	31-36	37-42	43-48
First MC meeting. Elect chair, vice chair, WG chairs, set up STSM committee; ESRTT. Outline plan of work for the Action. 1st call for STSMs (month 3)	X							
First full MC meeting, CG, WGs and ESRTT, first workshop, launch beta version website, detailed planning yr 2. (month 6)	X							
Second meeting of MC, WGs, 2nd workshop. STSMs completed, launch stakeholder CoP, annual financial & scientific report submitted. Work-plan yr 2 agreed		X						
Meetings of CG, MC, WGs, ESRTT. Workshops held. Website completed, STSMs for year 2 launched, training school developed. (month 15)			X					
Meetings of CG, MC, WGs, ESRTT, 2 workshops. Detailed plans for yr 3. (month 21)				X				
Training school, STSMs completed. 1st publications. Annual scientific & financial reports. Workplan yr 3 agreed.				X				
Meetings of CG, MC, WGs, ESRTT. Workshops held. STSMs for year 3 launched, 2 <sup>nd</sup> training school developed. (month 27)					X			
Meetings of CG, MC, WGs, ESRTT. Workshops. STSMs launched. Yr 4, final conference & state of art publication planning. (month 33)						X		
2 <sup>nd</sup> training school, STSMs completed, WGs publications, grant applications and financial & scientific reports submitted.						X		
Meetings of CG, MC, WGs, ESRTT, workshops, plans for continuation beyond Action. STSMs launched. (month 39)							X	
2 <sup>nd</sup> meeting of all groups. Workshops. Plans for continuing work of the Action. (month 45)								X
State of art publication finished. STSMs completed. WGs outputs published, grant to continue work of Action awarded. Final scientific & financial reports completed, stakeholder engagement/CoP continuation plans agreed.								X

## G. ECONOMIC DIMENSION

The following COST countries have actively participated in the preparation of the Action or otherwise indicated their interest: BE, CY, CZ, EL, ES, FR, IL, NL, PT, RO, SE, UK. On the basis of national estimates, the economic dimension of the activities to be carried out under the Action

has been estimated at 48 Million € for the total duration of the Action. This estimate is valid under the assumption that all the countries mentioned above but no other countries will participate in the Action. Any departure from this will change the total cost accordingly.

## **H. DISSEMINATION PLAN**

### **H.1 Who?**

- Researchers and scientists in all the scientific and academic fields represented by the WG's will be a key group for primary dissemination.
- Clinical, strategic, managerial, funding and policy level stakeholders are essential audiences for the outputs
- Service users (pregnant and postnatal women, and their families) are important catalysts for change in service delivery, and so dissemination strategies will also include these stakeholders.

### **H.2 What?**

Information to be published will include the following:

- Publications in scientific, professional, and lay journals
- Short policy and service design briefing notes
- Video and sound clips for media use, and short media briefings
- Regular blog posts on the Action website
- Regular twitter postings on the Action twitter account
- Short YouTube videos (TEDS type talks) for findings that might be of particular interest to a wide audience
- Where economically viable, live video streaming (eg keynotes at the final Action Conference)
- Occasional live twitter chats with scientists who have new findings to share
- Posts to social media sites, including ResearchGate, LinkedIn, and service user sites, such as Mumsnet

- Presentation of specific elements of the Action's work at external conferences, workshops, and other events (via invitations as keynotes, or submitted papers to peer reviewed conferences)
- Direct contact with and meetings with international, European and national governmental, professional and lay groups and networks

### **H.3 How?**

The Action website will consist of an intranet (protected by passwords) and an extranet (for all interested users). The intranet will serve as a platform for internal exchange of results, creating a forum for discussion and gaining know-how. It will reduce travel costs and provide continuous contact among all groups. WG6 will be responsible for the design and maintenance of the website, based on the implementation theories they develop as the Action progresses.

Each WG lead will be responsible for uploading at least one blog about the activities of their WG each quarter. The Chair of the Action will be responsible for doing this at least twice a year, to summarise the overall activities of the Action biannually. An interested member of WG6 will take responsibility for maintaining the twitter account. The MC will identify particularly important outputs from the Action when they arise, and WG6 will devise a specific dissemination plan for that output, drawing on some or all of the approaches listed in H2, depending on the audience. The dissemination plans will therefore be closely tailored to the relevant stakeholders in each case. Final reports, links to publications, blogs, twitterfalls, and announcements will be run on the extranet (free open) section.

All members of each WG will be expected to contribute to at least one scientific, academic or professional publication for each year of the Action. Each WG will be expected to present at least one paper at an external event each year.

Current participants in the Action application hold senior positions in a range of governmental, professional and lay organizations across Europe with an interest in the general area of maternity care, and dissemination via these outlets will also take place.