

Module 1C

Safe Motherhood and Effective Perinatal Care: Are Changes Necessary?

Learning Objectives

By the end of this module the participants will:

- Become familiar with the Millennium Development Goals and the 'Health for All in the 21st Century' Strategy
- Learn about the main problems and directions of perinatal health care in the European region
- Know the main indicators of maternal and infant mortality in the European region
- Understand that addressing physiological, psychological, emotional, and social needs of pregnant women and their families is the basic factor in assessing the quality of perinatal care
- Learn about main effective perinatal technologies which will be reviewed in detail at the end of this module
- Learn how international collaboration can improve perinatal care

Outline of the Module

Classroom work – 45 minutes

Activity 1 – Presentation

45 min

Preparation for the Module

- Ensure that all the participants have the Participant Guide
- Ensure that all other facilitators know their responsibilities during this module.

Training Materials, Audio and Video Equipment

Training Materials

- Participant Manual
- Presentation 1C EPC ENG
- Local Guidelines and State Orders related to safe pregnancy and perinatal care.

Training Materials, Audio and Video Equipment Equipment

- LCD or slide projector
- Flip-chart
- Colour markers
- Name badges.

Key Messages

- Maternal and infant health has been a priority long before the 1990s. Program implementation and activities are based on over a century of experience
- Millennium Development Goals (MDGs) aim to decrease maternal and infant mortality as well as reduce the spread of HIV/AIDS
- A healthy start in life is a priority for all countries and a Safe Motherhood program is the best strategy to reach this goal
- Family satisfaction with healthcare is a reliable indicator of the quality of medical care and overall quality of the healthcare system
- Women worldwide define quality perinatal care in the same ways
- Effective technologies and tools are in place to prevent deaths and long-term disabilities related to delivery
- Technology is defined as a combination of activities that includes evidence-based methods, procedures, and equipment applied systematically to solve a specific problem. Appropriate technology is effective, safe, affordable, feasible, adjusted to local conditions and good for both patients and providers
- Perinatal care can be made better by improving client satisfaction, which involves increased family involvement as an instrument to encourage participation of the woman during pregnancy, delivery, post-partum period, and in newborn care
- Effective perinatal care should be evidence-based, which is a result of information obtained through modern clinical research.

Classroom Work

Activity 1 – Presentation (45 min)

- Show **Slide 1C-1**. Share with the participants the main objectives of this module which are presented at the beginning of this document.

- The last 20 years have been characterized by fast progress, scientific development and the implementation of different technologies in maternity care. However, at the same time there has been a growing feeling of dissatisfaction in many countries. The users of health care services are dissatisfied that society cannot introduce a more human approach in maternal health care. Ask the participants whether it is necessary to change the existing system of perinatal care. If yes, why? Suggest that the participants consider this question in detail.
- Show the participants **Slide 1C-2**. There are eight main Millennium Development Goals (MDGs) formulated by WHO in *The World Health Report* (2005). Although only three goals are directly connected with perinatal care, others are also connected in some regard to the health care system.
- Motherhood is a positive experience for the majority of women (**Slide 1C-3**) meaning that the most women and their families experience feelings of happiness, pride and elevated emotions during pregnancy, delivery, and in the postpartum period.
- However, in the world today, there are a lot of mothers that die because of pregnancy-related problems and even more women suffer from morbidity and disability (**Slide 1C-4**).
- **Slide 1C-5** shows the map of the European Region where countries and their different levels of maternal mortality rates (MMRs) are marked with different colours. Find and show the country where the training course is conducted. Assess the maternal mortality rate in this country.
- **Slide 1C-6** shows that a gradual decrease in the MMR has been observed in all countries of the European Region, although the pace of this decrease is very much dependent upon healthcare workers, including the participants of this course. Pay attention to the fact that the highest level of maternal mortality is found in Central Asia where the probability of dying from pregnancy- and delivery-related complications is 6-7 times higher than in Western Europe.
- **Slide 1C-7** shows the main causes of maternal mortality. **Slide 1C-8** shows that the majority of these cases can be prevented with the use of simple, effective, and low-cost interventions. These interventions are already known among the international community of perinatal care specialists.
- **Slide 1C-9** shows world child mortality rates. Explain to the participants that in the 21st century more than ten million children die each year although the majority of these deaths can be avoided, as in the case of many maternal deaths.
- Although neonatal mortality has decreased in the last half of the 20th century, the discrepancy between poor and rich countries continues to grow. **Slide 1C-10** demonstrates rates of neonatal mortality in different countries of the European Region.
- **Slide 1C-11** shows the causes of neonatal mortality in the world, which include asphyxia and trauma, prematurity and infections.

- Show the participants **Slide 1C-12**. Explain that the majority of neonatal deaths, similar to maternal deaths, are preventable with the help of known and available interventions.
- For the first time in history, WHO announced 2005 as the year of Mother and Child. The slogan of the 2005 World Health Day was *Every Mother and Child Counts* (**Slide 1C-13**).
- The WHO Safe Motherhood Initiative was a global initiative started in 1987. The goal was to decrease maternal mortality in half by 2000. The program goal was not achieved however international efforts were strengthened. Building on the lessons learned from the Safe Motherhood experience, the WHO Making Pregnancy Safer Initiative (MPS) was launched in 2000 and continues today. The MPS goal is for all mothers and their babies to have skilled care at every birth within a context of a continuum of care. The focus is the health sector. The main program strategy is to facilitate improvement of effective perinatal care in the European Region (**Slide 1C-14**).
- Then go to the **Slide 1C-15**. Tell participants that skilled care refers to the care provided to a woman and her newborn during pregnancy, childbirth and immediately after birth by an accredited and competent health care provider who has at her/his disposal the necessary equipment and the support of a functioning health system, including transport and referral facilities for emergency obstetric care.
- Show **Slide 1C-16**. Present to participants the “components of skilled attendant care”. Emphasize that core midwifery skills are essential for all providers. Many countries in Eastern Europe, Russia and the CARAK report very high levels of skilled attendants present for birth however core midwifery skills and the midwifery model of care are not provided.
- The main objectives of perinatal care improvement are shown on **Slide 1C-17**.
- Show **Slide 1C-18 – 1C-19**. List MPS Fundamentals and Principles to participants. Explain them that the basic fundamentals and principles of effective perinatal interventions were developed by a group of WHO experts from the European Region during PEPC/MPS Task Force meetings in Venice (1998), Verona (2003) and MPS Experts Meeting in Catania, Italy (2007). These fundamentals and principles subsequently received wide support, dissemination and implementation in all countries of the region.
- WHO Europe and WHO America jointly organized a conference in Fortaleza, Brazil (April 1985) where more than 60 experts (obstetricians, paediatricians, health care leaders, economists, psychologists and sociologists) took part. The participants of this conference made several conclusions that are based on the fundamental principle of effective perinatal care: the central role of the woman in all decisions related to safe pregnancy and safe delivery. The main problems characteristic to the majority of countries in the European Region were identified at this conference. These problems are presented on **Slides 1C-20 and 1C-21**.
- Show **Slide 1C-22**. Note that the best model of health care is based on three pillars: safety, evidence-based medicine, and the patient’s needs.

- **Slide 1C-23** demonstrates the necessity and advantages of the regionalization of medical care. Tell participants that *regionalized perinatal care* was first advocated in Canada more than 35 years ago. Its development in the United States of America (from 1971), and later on in United Kingdom, Canada, and other countries.
- Provide the participants with the definition of *regionalization*. Regionalization is the rational distribution of cost-effective healthcare services in a region with all services and facilities at all levels (primary, secondary, and tertiary) concentrated and easily accessible for the population.
- Show **Slide 1C-24**. Explain that if healthcare providers pay attention to client needs and wishes they will be able to improve access to existing services and health outcomes. Family satisfaction is a reliable indicator of the quality of medical care and the overall quality of the health care system.
- Ask the participants: What are the needs of pregnant women when they seek perinatal care? What are the needs of their family members, husbands, children, and close relatives? Write the participant's comments on the flipchart. Emphasize and conclude that the main needs of most pregnant women are not related to medical interventions. Women's requirements in antenatal care are focused on the provision of information, emotional and psychological support, trust in and the respectful attitude of healthcare workers, and social and legal assistance. Only a small number of women need medical interventions.
- Show **Slides 1C-25 through 1C-28**. These show the opinions of women on delivery and medical care during delivery in different countries of the world.
- Show **Slide 1C-29**. This summary of previous slides shows participants that the modern approach to perinatal care takes into account informational, social, and emotional needs of "normal" women and their families during pregnancy, delivery, and postpartum. This model is based on the approach that the delivery of a child is a normal and enjoyable life event. In addition, this model is an example of family-oriented perinatal care.
- Draw attention to the fact that although the individual needs of women and their families differ, healthcare providers often perform the standard set of interventions for everybody, and don't think about whether the needs of a particular woman or family may differ. Many provider interventions are not clinically effective and can lead to iatrogenic complications. (**Slide 1C-30**).
- Two most commonly used models of perinatal care are represented on **Slide 1C-31**; traditional and midwifery-led/first level. Compare these two models. Ask the participants which model will best satisfy women's needs. Remind them that client and family satisfaction is one of the most important indicators of medical care quality.
- Provide the definition of appropriate technology shown on **Slide 1C-32**.
- Appropriate evidence-based perinatal technologies are listed on **Slide 1C-33**.
- Talk about principles of safe motherhood and modern perinatal care and show **Slides 1C-34 and 1C-35**.

- Show **Slide 1C-36** and explain to the participants that using effective perinatal technologies means not only implementing effective interventions but also refusing unnecessary and sometimes harmful interventions.
- Ask the participants why known effective technologies are sometimes not used because of limited resources (for example, self-dissolving synthetic threads, surfactants, prostaglandins, etc.), whereas resources are spent on ineffective and sometimes dangerous technologies. Show **Slide 1C-37** with examples of ineffective technologies. Just list them without explaining in detail why they are ineffective. Tell the participants they you will explain later on during the training course.
- **Slide 1C-38** shows the correlation between neonatal mortality and skilled attendants. The presences of skilled attendants during childbirth and after produces a decrease in maternal and newborn mortality, saving the lives of women and their newborns. High-quality care is care provided by both medical doctors and midwives.
- Healthcare workers can prevent, avoid or solve many unpredictable and dangerous problems that happen during delivery and thus reach a very low level of maternal and neonatal mortality. **Slide 1C-39** lists targeted interventions for mothers and their children: an experienced healthcare provider for each delivery; identification of complications and referral to a hospital when needed; infection control; and exclusive breast feeding.
- While showing **Slide 1C-40** read the quotes and explain that it is very important to inform both healthcare workers and the population about appropriate perinatal technologies. Obstetrics cannot develop in isolation in each individual country. It is important to collaborate internationally and disseminate modern technologies demonstrated as a result of the implementation of various international perinatal projects.
- Show **Slide 1C-41**, which gives an example of a lengthy implementation of an effective technology of lemon use for long-term sailors. Explain to participants that it is up to them how long they take to implement effective perinatal technologies. Also ask them how long women and their families will be waiting for the technologies to become routine medical practices.
- Summarize **Slide 1C-42**. Explain that much of what has been done has been an excessive waste of resources and sometimes harmful. Emphasize the importance of medicine based on scientific evidence. More specifically, suggest that healthcare workers routinely ask themselves the slide's four main questions to assess their interventions.

References

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Module 2C

Introduction to Evidence-Based Medicine

Learning Objectives

By the end of this module the participants will:

- Have a better understanding of the principles of evidence-based medicine
- Learn the methods and approaches of evidence-based medicine
- Be able to critically assess the interventions they perform in their daily practice in terms of evidenced-based medicine
- Become familiar with available evidenced-based data and use.

Outline and Duration of Module

Module duration - 90 min

Activity 1 – Introduction	5 min
Activity 2 – Brainstorming	15 min
Activity 3 – Presentation “Introduction to Evidence-Based Medicine”	40 min
Activity 4 – Case study	30 min

Preparation to the Module

- Ensure that all participants have a copy of the Participant’s Manual
- Ensure that other facilitators know their respective duties when working on this Module.

Materials and Audiovisual Equipment

Materials

- Participant’s Manual (have enough copies for all participants)
- Presentation 2C-EPC ENG
- Local directives and orders related to safe motherhood and perinatal care (if possible)

Equipment

- Multimedia or overhead projector
- Flipchart
- Colour markers
- Pens and pencils

Materials and Audiovisual Equipment

- Name badges

Key Messages

- About 6000 articles in Obstetrics and Gynaecology are published each year, while only 15% of perinatal practices are based on clinical evidence
- Much of what is practiced today is not based on evidence, but on clinical experience of individual persons without consideration of patients' needs
- Many effective, life-saving treatment methods are many years behind because evidence-based medicine principles are neglected. At the same time, other technologies are used long after their uselessness or even harmfulness have been proven by rigorous scientific trials
- Evidence based medicine deals with the issues immediately related to patient management: diagnosis, treatment and prognosis
- Evidence received from randomized clinical trials (RCT) are the most reliable and clinically valuable
- Practical recommendations based on the evidence received from RCT are considered the highest level of evidence – Level A
- Level B recommendations – recommendations of lower level of evidence – are based on cohort studies which have lower quality than RCT
- Recommendations based on the results of a descriptive trial without a control group (series of cases or a clinical case), expert opinion or consensus, or on the knowledge of pathophysiology belong to the lowest level of evidence (Levels C and D)
- The best approach for a practitioner is to use protocols, standards and algorithms based on evidence.

The Course Director should decide which activities of this module can be done during the week of training focusing on theory and which should be done and/or repeated during the practical, hands-on week of training.

Part I – Classroom work

Activity 1 – Introduction (5 min)

- Show **Slide 2C-1** and discuss with the participants the learning objectives and the key issues to be reviewed in this Module.

Activity 2 – Brainstorming (15 min)

- Show **Slide 2C-2**. The task of facilitator is to collect information from participants: discuss each question with the participants and write their answers down on the flipchart. (You may want to ask a participant to record answers on the flipchart). Try to engage all participants in the discussion. Ensure that all answers of the participants are on the flipchart.
- By 1st mouse click will make the first question appear on the screen. A new question will appear with every new click of the mouse.
- Try to minimize comments/debate during this activity (other than generating the answers). The purpose is to brainstorm answers, and discussion will take place later during this Module.

Activity 3 – Presentation “Introduction to Evidence-Based Medicine” (40 min)

- Start the presentation showing **Slides 2C-3 and 2C-4**: quotes from Dave Sackett, professor of clinical epidemiology and head of the Centre for Evidence Based Medicine in Oxford, the father of evidence based medicine and Peter Morgan, the Scientific Editor of the Canadian Medical Association.
- Show **Slide 2C-5** and explain that very few medical practices were based on rigorous, scientific studies.
- Show **Slide 2C-6** and discuss with participants the data on the number of publications related to health. The number of medical journals has doubled since the 1970s and the amount of information grows daily. About 6000 articles on obstetrics and gynaecology are published each year. Simple math shows that doctors must read up to 20 articles per day to keep up with the new evidence in their field. Note that almost 95% of all medical journal articles, however, do not meet the minimum standards of quality.
- Ask the participants how many articles per day / week / month / year they actively read. Go back to the answers recorded during Activity 2: Brainstorming and review where the evidence for decision-making should come from.
- Show **Slides 2C-7 and 2C-8** and specify that there are 2 types of information: basic information and information directly related to patient care.

- Basic information is relatively stable and relates to anatomy, physiology, pathogenesis and aetiology. This information can be obtained from textbooks, manuals and other common sources.
- Information directly related to patient care (**Slide 2C-8**) covers diagnosis, treatment and prognosis. Emphasize that it is the issues of patient care that evidence-based medicine deals with.
- Show **Slide 2C-9** and remind the participants that much of what is practiced today is not based on good quality medical evidence. It is largely based on clinical experiences of individual people and does not necessarily consider patients' needs. Discuss.
- Show **Slide 2C-10** and discuss technologies which are not based on good quality evidence:
 - Uncontrolled oxygen therapy:
 - 1900 – Budin recommends the use of oxygen in preterm newborns with the cyanosis attacks
 - 1923 – Bakwin notes that administration of oxygen not only reduces cyanosis, but also prevents its further episodes
 - 1940 – Retrolental fibroplasia or retinopathy was described
 - 1942 – Wilson reports that breathing of 70% oxygen normalizes breathing in preterm neonates
 - 1950 – Retrolental fibroplasia or retinopathy was recognized as the main cause of infant blindness
 - 1951 – The connection between uncontrolled oxygen therapy and infant blindness was suspected
 - 1953 – About 10,000 cases of blindness due to retrolental fibroplasia were registered worldwide and, finally, a RCT on liberal versus limited use of oxygen in newborns with birth weight less than 1,500 g was initiated by 8 American hospitals.
 - Phocomelia (severe birth defects, especially of the upper limbs) due to Thalidomide consumption by a pregnant woman. Thalidomide was a sedative given to pregnant women to combat symptoms associated with morning sickness.
- Show **Slide 2C-11**. Note that in many situations experience helps the doctor to make the right decision. However, in some situations methods based only on experience are not supported by evidence and may be ineffective and even harmful.
- Show **Slide 2C-12** and discuss examples of how clinical experience isn't always enough.
- Show **Slide 2C-13**. Emphasize that clinical experience of any doctor is not sufficient and that clinical practice quickly becomes out-of-date without evidence.
- Show **Slide 2C-14**. Many painful, unpleasant, humiliating technologies were used for many years despite no proven effectiveness.

- Show **Slide 2C-15**. There are a number of common technologies or practices can be unpleasant for patients and have no proven effectiveness. They include:
 - Prohibition / limitation of visits to mothers in hospital
 - Rakhmanov birthing bed
 - Restriction of food and liquid consumption in labour
 - Routine enema
 - Routine pubic shaving
 - Routine catheterization of the urinary bladder after birth
 - Use of ice pack
 - Routine vaginal examination
 - Antiseptic treatment of the vagina
 - Separation of mother and baby immediately after birth.

- Show **Slide 2C-16**. Explain that before introducing any treatment into clinical practice it should be tested for effectiveness and safety in a quality clinical trial. Evidence received in RCTs is the most reliable and clinically valuable. To prove the effectiveness and safety of a treatment or preventive measure a clinical trial should be performed. In a clinical trial, one group of eligible study participants receives the new, experimental treatment while the other group (control group) receives the old, traditional treatment or a placebo. The new method is considered effective if it results in a lower statistically significant rate of undesirable outcomes (mortality, morbidity).

- Clinical trials can differ in reliability of results, depending on the design or methodology of the study. Evidence obtained in RCTs is the most reliable and clinically valuable.

- Show **Slides 2C-17 to 2C-19**. Explain the design and the advantages of RCTs using the example presented.

- Show **Slide 2C-17**. Imagine that a scientist organizes a clinical trial of a new drug to reduce arterial blood pressure. The scientist forms two groups of patients: one group (A) receives the new treatment; the other group (B) receives the traditional treatment. To determine the effectiveness of the new treatment, the scientist plans a study of the two groups for three years to compare mortality and severe morbidity between the two.

- Show **Slide 2C-18**. The scientist analyzes the data after 3 years and finds that in Group A, mortality and morbidity (myocardial infarction and stroke rates) were half that of Group B. The scientist concludes that the new treatment is highly effective and shows the results to an expert in the field. The expert reviews the results of the trial and asks the scientist: Did the decrease in morbidity and mortality in Group A result from the new treatment or from the fact that the average patient age of Group A is significantly lower than that of Group B? Could the age difference affect the outcome?

- Show **Slide 2C-19**. The scientist performs another clinical trial of the new drug to treat hypertension. This time the scientist defines two groups of patients and ensures that all patients are of the same age. Once again, one group receives the new treatment and another group receives the traditional treatment.

After three more years, morbidity and mortality, in Group A (new treatment) are half that of Group B (traditional treatment). However, the expert is still not sure whether it was the treatment that affected morbidity and mortality in Group A since the average body weight of Group A is significantly lower than that of Group B and weight is related to cardiovascular disease.

Explain that to prove that it was the new treatment rather than a difference in age or weight (or some other factor that might independently affect the outcomes of interest), upon enrolment in the study the participants in both groups must be similar in all ways except the type of treatment received.

- Show **Slide 2C-20**. Ask (based on the previous example):
 - What other factors might influence the outcomes?
 - Is it important to measure these factors which might influence the outcome?
 - Is it important that the groups be identical? Why or why not?
 - How might this young scientist ensure that any differences in outcome are attributable to the new drug?
- Emphasize that adequate sample size and random assignment of patients (randomization) to the intervention and control groups helps ensure validity of the results.
- Randomization is a procedure of randomly assigning patients to the intervention and control groups. By doing this, one can assure that there are no significant differences between the two groups and ensure that changes in outcomes cannot be attributed to anything other than the treatment.
- There are a number of other characteristics of good quality clinical trials. For example:
 - the majority of patients involved must be followed for a sufficient period of time to reveal the outcomes (completeness of the trial)
 - the patients must be analyzed in the groups where they were placed as a result of randomization (regardless if they received experimental treatment or not)
 - the groups must be homogenous at the beginning of the trial (if they are not, randomization was probably not well done)
- Show **Slide 2C-21**. Explain that one of the characteristics of a good quality clinical trial is that it is double blind. Describe briefly the methodology of this type of trial. Discuss with participants “placebo effect”, which may influence on results of trial.
- Show **Slide 2C-22**. Explain that a number of RCTs have been done related to midwifery and obstetric care including:
 - A review of studies on continuous support for women during labour and birth shows beneficial effects: more likely to have a vaginal birth, less likely to have intrapartum analgesia or to report dissatisfaction with their childbirth experience.

- Several benefits for upright position in second stage including shorter second stage, less assisted delivery, reduced episiotomy, reduced reports of pain, less abnormal fetal heart rate.
 - The Bristol trial is one of many studies proving the effectiveness of active management of the 3rd stage of labour for reducing the risk of postpartum haemorrhage
 - A study on eclampsia proved that magnesium sulphate is the most effective drug to treat fits of eclampsia. It ended the long argument between those supporting the use of magnesium sulphate and those who thought that Diazepam was the best drug for eclampsia
 - The MAGPIE RCT involved over 10,000 women with pre-eclampsia. The trial proved that magnesium sulphate is also effective for severe pre-eclampsia
 - Other RCTs have shown that corticosteroids significantly reduced perinatal mortality and morbidity in women with threatened preterm delivery.
- Show **Slide 2C-23**. Explain that there are also examples of RCTs that have found that the proposed or tested treatment is not effective. Some of these procedures have been performed during labour for many years. Examples include:
 - Hormone replacement therapy to reduce the risk of cardiovascular disease in menopausal women
 - Low dose of aspirin to reduce the risk of pre-eclampsia
 - Most treatments for intrauterine growth retardation
 - Routine directed pushing
 - Routine electronic foetal monitoring during labour for low-risk pregnancies
 - Routine or liberal use of episiotomy.
- Show **Slide 2C-24**. Explain that there are also examples of trials conducted on neonatal care practices which shown as effectiveness as useless of the proposed treatments or prevention methods.
- Show **Slide 2C-25**. Explain that this table is the basis for evaluating the reliability of findings from different study designs. It was developed based on the likelihood of errors and wrong conclusions.
 - Level A (highest level of reliability): recommendations based on the results of systematic reviews of RCT provide the most reliable evidence (Level 1a) while recommendations based on the results of a single RCT are a notch lower (Level 1b)
 - Level B: recommendations based on the results of clinical trials but which are of lower quality than RCTs. This includes cohort studies (Level 2a and 2b) and case-control studies (Level 3a and 3b)
 - Level C: recommendations based on the results of a series of cases and poor quality cohort and case-control studies (without control group)
 - Level D: recommendations based on expert opinions without explicit critical appraisal or recommendations based on physiology.

- Show **Slide 2C-26**. Explain that systematic reviews and meta-analyses of RCT are of the highest level of reliability. Remind that a good systematic review or meta-analysis is a better guide to action than an individual article.
- Show **Slide 2C-27**. Explain that this graph includes data from a meta-analysis, presenting the odds of dying after myocardial infarction among those who have had and have not had general clinical management of the condition (odds ratio). Explain following terms: **Odds ratio**, **confidence interval**. Explain that the dots on the graph indicate the odds of dying from a myocardial infarction.
- Point out how, in the graph presented, the number of cases involved in the studies increases over time. When the number of participants is below 1-3 thousand, the CI is long or wide and sometimes crosses the line of 1. As the number of patients involved in the trial increases, the CI becomes shorter or narrower and the reliability of obtained results increases.
- Explain that conducting a RCT is a very challenging task. Patients need to give informed consent to participate in a trial. RCTs can be expensive and can run the risk of being unethical – providing an experimental treatment to some and only giving a placebo to others. Therefore, evidence does also come from other types of studies such as cohort and case-control studies. However, the results of such studies are more subject to errors, thus their level of reliability is lower.
- Show **Slides 2C-28** through **2C-30**. Explain the design, advantages and disadvantages of cohort studies (Slide 2C-28), case-control studies (Slide 2C-29) and clinical cases (Slide 2C-30).
- **Optionally:** You can go back to **Slide 2C-27** once more and remind participants that the best evidence (Level A) is based on the results of high quality trials – RCT and systematic reviews of RCT. Recommendations based on the expert opinion or knowledge of pathophysiology that is not tested through clinical trials are the least reliable and belong to Level D.
- Show **Slide 2C-31** and define evidence-based medicine as the convergence of scientific evidence, clinical experience, and the needs of the patient. Note that implementation of the recommendations of the highest quality RCTs ensures the provision of the most effective care, but also note that the needs of the patient must also play a role in the delivery of health care services.
- Show **Slide 2C-32** regarding the history of evidence-based medicine. Explain that it was a very young science who conducted the first randomized trial of the use of streptomycin for TB treatment. Explain that EBM started to develop at a wider scale in the 1970s when Cochrane Community was formed.
- Show **Slide 2C-33**. Explain that, in practice, implementing evidence-based medicine consists of five steps and describe them briefly.
- Tell the participants that in this course of this module they will have to evaluate the existing practices answering the four questions presented on **Slide 2C-34**. It will be their own decision whether to continue using the old practices or opt for more rational implementation of the new technologies with proven effectiveness and safety.

- Show **Slide 2C-35**. Emphasize that a practicing midwife, doctor or nurse may find it difficult to go through all five steps required for implementing EBM. Clinicians need special skills and adequate time to search and critically analyze available evidence. It is much easier to use summaries of evidence-based medicine developed by specialists (Cochrane database, WHO Reproductive Health Library, “A guide to effective care in pregnancy and childbirth” by Murray W. Enkin) or clinical guidelines and protocols.
- Explain that many useful discoveries were not implemented immediately, using the example of lemon juice to prevent scurvy (**Slide 2C-36**).
- Show the example of the delayed implementation of an effective technology using the modified Antman table (**Slide 2C-37**).
- The Antman table visually illustrates the considerable delay in the appearance of reliable evidence of treatment effectiveness and its introduction in curriculum for health professionals and, consequently, in routine clinical practices. The table consists of two adjacent parts: the left part is the graph showing the growth of reliability of evidence on thrombolytic therapy of myocardial infarction. As the number of trials on this issue increases the confidence intervals become narrower.
- **Slide 2C-38** and explain that this table presents a number of technologies of proven effectiveness which have limited or rarely been implemented around the world.
- Show **Slide 2C-39** and explain that this table presents medical interventions or technologies which have limited effectiveness (offering limited or no protection), but are still commonly implemented.
- Show **Slide 2C-40**. Explain that evidence-based health care is the conscientious use of current best evidence in making decisions about the care of individual patients or the delivery of health services. Current best evidence is up-to-date information from relevant, valid research about the effects of different forms of health care, the potential for harm from exposure to particular agents, the accuracy of diagnostic tests, and the predictive power of prognostic factors.
- Show **Slide 2C-41**. Present “**A guide to effective care in pregnancy and childbirth**” by **Murray W. Enkin et al** – one of the many manuals for providers (midwives, doctors, nurses) containing many evidence-based technologies (both effective and ineffective). Explain that this guide accommodates different obstetric technologies and that during this training you will use this guide to make decisions and select tactics.
- Show **Slide 2C-42** and summarize once again the unique characteristics of this guide. Stress that the information in this guide is constantly updated, but mention that because of the speed of EBM development, some recommendations provided in this guide are already out-of-date.
- Show **Slide 2C-43** and specify that for the convenience of readers, the guide contains synopses with different levels of evidence.

Activity 4 – Case study (30 min)

- This Activity can be conducted in any time: as during 1st week as during 2nd week.
- Show **Slides 2C-44 and 2C-45**, presenting the case study. Explain that through this activity questions on diagnostics, laboratory testing, treatment and prognosis will be formulated and sources of evidence will be identified.
- **Slides 2C-46 – 2C-48** show how the question on the newborn's diagnosis is formulated and the ways to search for evidence.
- **Slides 2C-49 – 2C-53** review the questions on the newborn's treatment. **Slide 2C-51** asks about therapy in general and **Slide 2C-53** compares classical and fibro optic therapy.
- **Slides 2C-54 – 2C-56** reviews the questions on possible risks for the newborn's health.
- **Slides 2C-57 – 2C-60** present the conclusions to this case.

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Module 3C

Counselling Skills in Maternal and Neonatal Care

Learning Objectives

By the end of this module the participants will be able to:

- Define counselling and its role in improving medical care
- Identify the level of information the user possesses and the user's needs
- Characterize effective counselling focusing on the needs of the woman and her family
- Demonstrate effective communication skills including: non-verbal, open-ended questions, paraphrasing the user and using non-judgmental
- Using "listening and recognizing" skills

Outline and Duration of Module:

Part I – Classroom work - 150 min

Activity 1 – Introduction	10 min
Activity 2 – Group work	20 min
Activity 3 – Interactive presentation	50 min
Activity 4 – Demonstration of effective counselling	15 min
Activity 5 – Role plays	50 min
Activity 6 – Conclusions	5 min

Part II – Clinical Work

Activity 7 – Counselling of pregnant and postpartum women	_____
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Preparation for the Module

- Ensure that all participants have the Participant's Manual
- Ensure that facilitators know their responsibilities during this training module

Training Materials and Audio-visual Equipment

Training Materials

- Participant's Manual
- Presentation 3C - EPC ENG
- Local instructions and guidelines regarding safe pregnancy and perinatal care

Equipment

- Video projector or slide projector
- Flip chart
- Colour markers
- Badges

Key Messages

- Counselling is communicating with people in order to understand their feelings and provide them assistance in decision-making.
- Health care workers should possess good communication skills in order to understand the needs of their users.
- Users' main complaints in regard to medical care providers are that providers do not want to communicate with them, listen to them, understand their needs and use this information in giving effective care.
- Counselling provides users with information which helps them to make the right choices in their future behaviours.
- During counselling, the user has an opportunity to look at the situation from a different point of view, to evaluate its impact differently, to change her attitudes, and to make informed decisions.
- Good counselling requires a sympathetic attitude (confidentiality, compassion, care, taking the user's point of view), knowledge (facts, information) and communication skills (listening, questions, answers to questions).

Part I – Classroom work

Activity 1 – Introduction (10 min)

- Tell the participants that one of the most important quality indicators of medical care provided to mothers and children is the ability of health care workers to communicate with the users, to listen to them, to understand their needs and to use users' information in providing effective care.
- Health care workers do not always demonstrate good communication skills but they are expected to possess an understanding attitude. Lack of understanding can be detrimental to the user's health.
- Participants will start learning basic communication and counselling skills during this course.
- Note that the participants will have an opportunity to practice counselling skills with users during this course.

Activity 2 – Group work (20 min)

- Split the participants into four groups.
- Give the participants a blank sheet of paper and ask them to draw a picture of how counselling is done in their facilities. For example, in the case of breastfeeding counselling, the participants can draw a demonstration of a counselling session with a woman, her baby, and the counsellor. Each group will draw a picture according to the following scenarios.
 - Group 1 – counselling of a pregnant woman in their facility.
 - Group 2 – counselling of a family during labour and birth.
 - Group 3 – counselling users about breastfeeding support.
 - Group 4 – counselling users about family planning.
- Ask one participant from each group to show their drawings and explain what is captured there.
- Tell the participants that you will return to their drawings after the presentation and they will be able to discuss whether they correspond to the model presented in this module.

Activity 3 – Interactive presentation (50 min)

- Show **Slide 3C-2** and tell the participants that effective communication is one of the most important components of the positive behaviour change process. It is important that the counsellor uses the most effective methods of communication.
- Go to **Slide 3C-3** and discuss possible ways to share information.

- Show **Slides 3C-4 – 3C-5** with the guidelines for effective verbal communication. Explain that it is necessary to do the following:
 - Listen actively/be attentive;
 - Show your interest;
 - Support the user's feelings and maintain the spirit of the conversation;
 - Ask questions.
- Go to **Slide 3C-6** with the guidelines for effective non-verbal communication and discuss maintaining appropriate personal distance. Explain that there are many types of personal distance:
 - Intimate distance (up to 45 cm) – is suitable for personal conversations between friends, parents and children;
 - Professional distance (45 cm to 1.20 m) – distance appropriate for counselling;
 - Social distance (1.2 m to 3.5 m) – is maintained during business meetings;
 - Public distance (3.5 m and more).
- Ask the participants, “What is counselling?”
- Once the participants respond, show them **Slide 3C-7** with the definition of counselling. Work with the participants on focusing on their users' feelings and how it affects future decision-making.
- Go to **Slide 3C-8** and list possible types of counselling. Explain that family counselling is a sub-type of individual counselling since the whole family participates in infant care and not solely the mother.
- Show **Slide 3C-9**, list counselling steps and explain that during counselling, the user has an opportunity to look at his/her situation differently, to re-evaluate her/his attitudes, and to make informed decisions.
- Go to **Slide 3C-10** and explain:
 - Counselling includes the following:
 - Assisting the user in telling her story.
 - Assisting the user in considering different options and activities.
 - Assisting the user in making decisions and developing action plans.
 - Counselling is a combination of:
 - Attitude (confidentiality, compassion, care, understanding of user's point of view).
 - Knowledge (facts and information).
 - Skills (listening, checking the correctness of understanding, asking questions, answering questions).
- Go to **Slide 3C-11** and tell the participants that you will discuss the six main types of counselling.
- Go to **Slide 3C-12** and explain that non-verbal communication is communication through posture, facial expression and body language – everything but speech. Give examples of good non-verbal communication:
 - Keep your head straight

- Establish eye contact
 - Lean forward
 - Avoid physical barriers (for example, a table between you and the user)
 - Use touching when it is appropriate
 - Avoid defensive postures, for example, crossed arms
- Ask a trainee to write the first skill of counselling on the flipchart, "Use effective non-verbal communication".
- Show **Slide 3C-13** and highlight the following:
 - A close-ended question is a question that can only be answered with "yes" or "no". Such questions do not provide many opportunities for detailed responses.
 - On the contrary, open-ended questions allow the respondents to give many different answers.
 - Open-ended questions usually start with "how", "what", "when", "where" and "why".
 - Open-ended questions are an important tool used in counselling. There are no assumptions regarding how a person will answer an open-ended question.
- Ask a trainee to write the second skill of counselling: "Ask open-ended questions" on the flipchart.
- Go to **Slide 3C-14** and ask the participants to convert close-ended questions to open-ended ones:
 - Read closed-ended question, "Are you concerned about the upcoming labour and birth?" Possible open-ended question is "What are your thoughts about the upcoming labour and birth?"
 - Read the question, "Was your first birth difficult?" A possible open-ended question is, "What kind of difficulties did you have during your first birth?"
 - Read the question, "Do you breastfeed your child?" A possible open-ended question is, "How do you feed your infant?"
 - Read the close-ended question, "Do you swaddle your child tightly?" A possible open-ended question is, "How do you dress your child?"
 - Read the close-ended question, "Do you use family planning methods?" A possible open-ended question is, "What kind of pregnancy prevention methods do you use?"
 - Read the close-ended question, "Do you feel good?" A possible open-ended question is, "How do you feel?"
 - Read the close-ended question, "Does the father help you in child care?" A possible open-ended question is, "Tell me what kind of assistance your husband provides to you in child care?"
- Show **Slide 3C-15** and explain that if you want the user to keep on speaking you should show her that you are interested in what she is saying to you. You can use the following expressions for this purpose "Really?", "And what else?", etc. These expressions stimulate the user to continue the conversation.
- Ask a trainee to write the third skill of counselling, "Show your interest" on the flipchart.

- Show **Slide 3C-16** and explain that paraphrasing is a repetition of another speaker's words or a slight change of their words but with the same meaning. Paraphrasing demonstrates to the user that you have heard her and allows you to check whether you have understood her correctly.
- Ask a trainee to write down the fourth skill of counselling, "Mirror the user's words by paraphrasing them" on the flipchart.
- Go to **Slide 3C-17** and ask the participants to paraphrase the sentences on the slide:
 - Read the sentence, "I am worried because my milk is a bluish tint." A possible option for paraphrasing is, "Are you worried about the colour of your milk?"
 - Read the sentence, "I haven't felt my baby move for two days." A possible option for paraphrasing is, "You haven't felt your baby move for two days now?"
 - Read the sentence, "I feel much better this month." A possible option for paraphrasing is, "Do you feel better than last month?"
 - Read the sentence, "I feel fat and unattractive." A possible option for paraphrasing is, "Are you concerned about extra weight and unattractiveness of your appearance?"
 - Read the sentence, "My child wants to eat very often and I get very tired because of that." Possible paraphrasing is, "Are you tired because you feed the baby often?"
- Show **Slide 3C-18** and explain that in order to show that you understand the user's feelings, you need to have the following skills:
 - **Empathic reaction** – feeling compassionate for another out of past personal experience. It is important that the user feels the counsellor is interested in her problems, even if she has none.
 - **Perspective** - putting yourself in the other person's shoes or trying to understand something from the user's perspective. For example, the user says, "I have had a very painful labour." The counsellor could say, "I can imagine that your labour was very painful"
 - **Sympathetic reaction** – feeling compassion for another out of concern for that person. For instance, if the user's baby is in critical condition, the counsellor could say "I understand how difficult this is for you – you must be worried about your child."
- Ask a trainee to write down the fifth counselling skill, "Show that you understand the user's feelings".
- Show **Slide 3C-19** and review words that can be judgmental. Pay attention to the fact that:
 - Judgmental words can be more common in close-ended questions.
 - Asking open-ended questions can help to avoid using judgemental words.
 - Judgmental words can imply that the counsellor is evaluating the user's behaviour. Use of judgemental words may lead the user to feel

uncomfortable. The user may think that the counsellor does not care about her and/or her baby..

- Ask a trainee to add the sixth counselling skill, "Avoid judgmental words" on the flipchart.
- Go to **slide 3C-20** and ask the participants to identify which words in the questions are judgmental. Then ask them to formulate similar questions without using such words:
 - Read the question from the slide with judgmental words, "What kind of problems do you face in breastfeeding?" A possible alternative without judgmental words is, "How is your breastfeeding?"
 - Read the next question, "Do you drink a lot of liquid?" A possible alternative is, "How much liquid do you drink?"
 - Read the next question, "Do you have normal bowel movements?" A possible alternative is, "How is your bowel movements?"
 - Read the next question, "Do you feel bad?" A possible alternative is, "How do you feel?"
 - Read the next question, "Does your child receive enough milk?" A possible alternative is, "How is your child eating?"
- Show **Slide 3C-21** and review the main counselling skills discussed during this presentation.
- Ask a trainee to post the flipchart with the main counselling skills written on it onto the wall. Tell the participants that you will refer to this list during future role playing and other activities.
- Go to **Slide 3C-22** and review the qualities of an effective counsellor.
- Ask the participants whether they have any questions. Answer their questions.

Activity 4 – Demonstration of effective counselling (15 min)

- This role play should be performed by the trainers. Tell the participants that you will demonstrate effective counselling skills now. Ask them to watch carefully and note skills that are used as well as possible mistakes made by the counsellor during the session.

Role play scenario: "Counselling of a couple on a companion for labour and birth."

A midwife or doctor trained in effective perinatal technologies (hereinafter referred to as "Consultant") is conducting a counselling session in the women's clinic. A young couple comes to this session. The midwife or doctor is sitting by a table in his room. The young couple enters the room.

The wife and husband: "Good morning!"

The consultant gets up and approaches them: "Good morning! Come in please. Have a seat" and invites them to sit. He takes a chair and sits near by.

The consultant: “What has brought you here today?”

The wife: “I have heard about the possibility of my husband being with me when I give birth to my baby. I am afraid about my upcoming birth.”

The consultant: “Are you afraid about your upcoming birth? Please tell me what specifically you are afraid about.”

The wife: “I am afraid about the pain and who will help me to manage it.”

The consultant: “I understand your feelings.” (The doctor nods and touches the woman’s shoulder.) Your decision to labour and give birth with your husband is the right one. He will massage you, talk with you, and the labour will go faster and smoother.”

The wife speaking with the husband: “Do you know how to give massage?”

The husband: “No, I do not.”

The consultant: “Do not worry, please, if you do not know how to give massage. We conduct courses on how to prepare future parents and one of the topics is preparation of the partner for labour and birth. You will be able to learn how to support your wife during labour. Do you have other questions?”

The wife: “If we have more questions we will definitely come back to you.”

The consultant: “I will be glad to see you again and answer you questions. Here is my contact telephone number.”

The couple gets up and leaves. The consultant accompanies them.

- Discuss with the participants which skills were used and what could have been done better?

Activity 5 – Role plays (50 min)

- Tell the participants that now they will be able to practice their counselling skills.
- Divide the participants into four groups and give each group one scenario:
 - **Role play 1.** Oksana is 22. This is her first pregnancy. She comes to the reception room with complaints of labour pains. Oksana is very afraid of the birth. In addition, she does not want her husband to be present at the birth.

Assignment: Counsel the couple about the advantages of a companion during labour and birth.

- **Role play 2.** Natasha gave birth to a baby girl three days ago. She is complaining about her lack of breast milk.

Assignment: Counsel her using the principles of effective counselling.

- **Role play 3.** Valentina gave birth to a healthy baby boy 15 days ago. She is at home now. Her husband Victor helped her during birth and the couple is very happy. They want to have another child in 2 years.

Assignment: Counsel the couple about family planning.

- **Role play 4.** Larissa is in labour now with her mother assisting her.

Assignment: Counsel them about management of the third stage of labour.

- Give the participants ten minutes to prepare, after which they will demonstrate their play to the group.
- Ask the other participants to observe and pay special attention to which counselling skills have been used, which have not been used enough, and which have not been used at all.
- Discuss the plays with participants after. Ask the participants to focus on usage of counselling skills, rather than on the medical content.

Activity 6 - Conclusions (5 min)

- Ask the participants to re-form the groups from Activity 2. Give each group their drawings and ask, "Do your drawings depict counselling oriented towards the user and her family's needs? What can be changed in the drawings?"
- Discuss with the participants their opinions/suggestions.
- At the end of the session remind the participants that they will have an opportunity to develop their counselling skills and use them throughout this training course.

Part II – Clinical work

Activity 7 –Counselling of pregnant and postpartum women

Use every opportunity to practice effective counselling skills in performing clinical work.

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Role play 1

Oksana is 22. This is her first pregnancy. She comes to the reception room with complaints of labour pains. Oksana is very afraid of the birth. In addition, she does not want her husband to be present at the birth.

Assignment

Counsel the couple about the advantages of a companion for labour and birth.

Role play 2

Natasha gave birth to a baby girl three days ago. She is complaining about her lack of breast milk.

Assignment

Counsel her using the principles of effective counselling.

Role play 3

Valentina gave birth to a healthy baby boy 15 days ago. She is at home now. Her husband Victor helped her during the birth and the couple is very happy. They want to have another child in 2 years.

Assignment

Counsel the couple about family planning.

Role play 4

Larissa is in labour now with her mother assisting her.

Assignment

Counsel them about management of the third stage of labour.

Module 4C**Assessment of Foetal Well-Being during
Pregnancy and Labour.****Assessment of Small for Gestational Age (SGA)
Foetuses****Learning objectives**

At the end of the module participants will:

- Be able to define the following:
 - Intrauterine Growth Restriction (IUGR)
 - Small for Gestational Age Foetus (SGA)
 - Nonreassuring Foetal Status
- Understand that the conditions, “foetoplacental deficiency” and “foetal hypoxia,” are pathophysiological and metabolic processes not subject to diagnostics. However, they account for some of the main reasons for antenatal hospitalization and unnecessary interventions during pregnancy in Eastern European countries.
- Know the main risk factors for IUGR and conditions which need dynamic antenatal examination.
- Learn and be able to use and interpret correctly main antenatal diagnostic tests improving perinatal outcomes. Understand clearly their low effectiveness in low risk pregnant women.
- Critically think over the current technologies used for improvement of foetal well-being in utero and treatment of IUGR. Understand that most of them have low effectiveness and are unsafe.

Module outline and duration:**Part I – Classroom work - 60 min**

Activity 1 – Introduction	5 min
Activity 2 – Work in small groups	10 min
Activity 3 – Interactive presentation	40 min
Activity 4 – Conclusions	5 min

Part II – Clinical work – 60 min

Activity 5 – Revision of the delivery or pregnancy records	60 min
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Preparation for the module

- Learn current practices on the subject in the region
- Review new publications on the subject matter
- Ensure that the participants from this region will understand the objectives
- Ensure that diagnostic procedures included in the module are used in this region and that the participants can understand them.
- Ensure that all participants have the Participant Manual
- Ensure that all co-facilitators know their respective functions during work with this module

Materials and Audiovisual Equipment

Materials

- Participant manual
- Presentation 4C EPC ENG

Equipment

- Video or overhead projector
- Flip-chart
- Colour markers

Key Messages

- Small-for-gestational age foetus (SGA) is defined as small weight or size for definite gestational age
- Intrauterine growth retardation (IUGR) is a sub-group of SGA (30-50%), in which the foetus has not attained its growth potential. Characterized by high morbidity and mortality
- The conditions, “foetoplacental deficiency”, “foetal hypoxia” and “asphyxia,” are some of the main reasons for antenatal hospitalization and unnecessary interventions. In many cases they are pathophysiological and metabolic processes and have no clinical significance.
- “Nonreassuring foetal status” is the only appropriate term for the determination of foetal wellbeing disorders, including foetal heart rate disorders and changes in some biophysical tests, which can lead to neonatal asphyxia.

Key Messages

- To assess foetal wellbeing, biometric and biophysical diagnostic tests are used, but none of them has a prognostic value in women of low risk.
- The majority of perinatal interventions aimed at improving foetal growth and prevention of foetal acidosis don't show good results for perinatal outcomes.
- The only treatment for IUGR and “nonreassuring foetal status” is delivery at the most optimal term and in most optimal way.

PART I – Classroom work

Activity 1 – Introduction (5 min)

- Show **Slide 4C-1** and explain to participants the learning objective of this module. Say that such conditions as “foetoplacental deficiency”, “foetal hypoxia” and “asphyxia” are not diagnoses, but at the same time in many countries account for some of the main reasons for antenatal hospitalization.
- Stress that obstetricians and midwives are used to classifying abnormal foetal conditions with various terms (foetal distress, foetal / perinatal anoxia / hypoxia, foetal growth restriction, foetal impairment, foetal acidemia, fetoplacental deficiency, etc.) on the basis of different tests, following different classifications and strictly relating such foetal “conditions” with neonatal outcomes.
- Tell participants that the purpose of this module is to clarify and revise definitions and essential tests and therapies for normal and IUGR complicated pregnancies.

Activity 2 – Work in small groups (10min)

- Split the participants into four groups in such a way that every group includes participants of all categories (midwives, paediatric nurses, neonatologists and obstetricians).
- Note that the team approach, including ideas and participation of each group member, is very important.
- Ask the participants from each group to write their answers down on the flip-chart and decide who will present the results of small group work to the other participants.
- Show **Slide 4C-2**, which presents the tasks for the small group work. The number of the group matches the number of the task:

1. What questions do you ask when assessing foetal well-being?
 2. Define the following conditions:
 - Intrauterine Growth Retardation (IUGR)
 - Small for Gestational Age Foetus (SGA)What are the predisposing factors for IUGR and what prevention methods are you using?
 3. Which tests do you perform to diagnose IUGR and SGA?
 4. How do you manage IUGR and SGA?
- Facilitator must explain that the reports of each group will be discussed and then the slides for that topic will be presented.

Activity 3 – Interactive presentation (40 min)

- At the beginning of your presentation ask the representative of **Group 1** to present the results of their group work.
- Discuss with group members what the aim of each question is (i.e., what we are expecting to receive for answers to each question).
- After the discussion show **Slide 4C-3** and ask the participants to summarize the results of the group 1 discussion of the four questions listed on the slide. List these questions and ask participants if they agree with such questions or they want to add something. If participants have something to add (which on their opinion is very important) write their comments on the flip chart.
- Ask participants, do they have any questions? Answer their questions if they have any.
- Then ask the representative of **Group 2** to present the results of their group work.
- Comment on the presentation of Group 2 using **Slides 4C-4 to 4C-10**.
- Show **Slide 4C-4** and present to participants the aim of antenatal care (ANC) including assessment of foetal well-being. Stress that the aim of ANC – of which assessment of foetal well-being is a component - is assisting women to remain healthy, finding and correcting adverse conditions when present, and aiding in the health of the unborn.
- Go to **Slide 4C-5** and give the definition of SGA. Tell participants that SGA refers to a foetus that has failed to achieve a specific anthropometric or estimated weight threshold by a specific gestational age. The commonly used threshold is the 10th percentile for abdominal circumference and estimated birth weight (as recommended by WHO).
- Note that SGA foetuses are a heterogeneous group comprised of foetuses that have failed to achieve their growth potential (intra uterine growth restriction – IUGR or foetal growth retardation - FGR) and foetuses that are constitutionally small.

- Use the chart and notes to **Slide 4C-6** to explain what the antenatal growth chart and directly 10th percentile are. Tell participants that fundal-symphyseal height measurement with a tape-line and marking its dynamics on an antenatal growth chart is a simple and inexpensive method of choice for ANC. This method allows the diagnosing of small or large foetus size for the corresponding gestational age however does not always indicate pathology.
- **Slide 4C-7** is optional. If you decided not to use it in your presentation – hide it before starting.
- If you do decide to use it, use **Slide 4C-7** to show the connection between birth weight and perinatal mortality and morbidity. Note that not all babies with low birth weight have an increased risk of morbidity and mortality.
- Explain to the participants that there are two different definitions: small-for-gestational age foetus (SGA) and intrauterine growth retardation (IUGR). The first condition in 50% is normal and babies will be healthy. The second condition is a sub-group of the first one, but the majority of those babies will be sick and have a high chance of dying (**Slide 4C-8**). The only problem is the following: when we diagnose “SGA” we don’t know if this is IUGR or the baby is small by constitution. To differentiate between the two, we need to use biophysical tests, which will give us information about foetal well-being.
- Go to **Slide 4C-9** and make a conclusion on factors predisposing to IUGR. Tell participants that there are several classifications of predisposing factors for IUGR, but the key ones are divided into 4 groups: maternal, placental, environmental, and hereditary or foetal.
- Emphasize the fact that there are many risk factors and they fall into 4 groups. The most important risk factors which can lead to foetal well-being disorders and require careful antenatal care are:
 - Pregnancy over 41 weeks
 - Preeclampsia / chronic hypertension
 - Diabetes
 - Multiple pregnancy
 - Infections in pregnancy
 - Decompensated chronic diseases
 - Premature Rupture of Membranes PROM
- Discuss with the group measures proposed by them for the prevention of IUGR. Say that there are only 5 technologies, which could improve perinatal outcomes in the case of IUGR. List them using **Slide 4C-10**.
- Ask participants, do they have any questions? Answer their questions if they have any.
- Then ask a representative of **Group 3** to present the results of their group work.
- Use **Slides 4C-11 through 4C-26** for a short presentation on diagnostic tests.
- Show **Slide 4C-11** and list the routine tests for assessment of foetal well-being.

- Tests used in ANC to assess foetal well-being:
 - Assessment of foetal activity
 - Auscultation of foetal heart beat
 - Ultrasounds (US)
- Go to **Slide 4C-12** and tell participants that maternal recognition of decreased foetal movement has long been used during antenatal care in an attempt to identify the jeopardized foetus and intervene to prevent death. Given the low prevalence of foetal compromise and an estimated specificity of 90% to 95%, the positive predictive value of the maternal perception of reduced foetal movements for foetal compromise is low, 2% to 7%. Following a reduction in foetal movements, women should be advised to contact their midwife or hospital for further assessment. The evidence does not support the routine use of formal foetal movement counting to prevent late foetal death.
- Show **Slide 4C-13**. Auscultation of the foetal heart may confirm that the foetus is alive but is unlikely to have any predictive value and routine listening is therefore not recommended. However, when requested by the mother, auscultation of the foetal heart may provide reassurance.
- Go to **Slide 4C-14** and say that routine ultrasound in early pregnancy (before 24 weeks) is effective in assessing gestational age, early detection of multiple pregnancies and early detection of clinically unsuspected foetal malformation at a time when termination of pregnancy is possible. Routine late pregnancy ultrasounds in low-risk women or unselected populations, does not benefit the mother or the baby.
- Show **Slide 4C-15** and list the tests used in ANC to detect SGA.
- Tests used in ANC to detect SGA
 - Abdominal palpation
 - Fundal height
 - Ultrasound biometry
 - Biophysical tests to diagnose SGA/IUGR
- Go to **Slide 4C-16** and tell participants that abdominal palpation has limited diagnostic accuracy to predict an SGA foetus.
- Show **Slide 4C-17**. Say that fundal height (FH) measurement has limited diagnostic accuracy to predict an SGA neonate. Use of a customised fundal height chart improves accuracy to predict an SGA fetus.
- Stress that a series of measurements (fundal-symphyseal height measurement chart) increases the sensitivity and specificity of this method.
- Show **Slide 4C-18** and ask the participants to answer the following questions:
 - Is IUGR present in these cases?
 - In which case is the risk of IUGR higher?
- Remember that usually participants define IUGR in both cases and prognosis is worse in the first one. Facilitator can count votes for different options.
- Then show **Slide 4C-19**, where both cases are plotted on the antenatal growth chart (the first one in blue, the second one in red). Note that it's impossible to

define IURG without graphically plotting the values of fundal-symphyseal height measurements.

- Give special attention to the fact that growth dynamics are more important than the values of fundal-symphyseal height according to the term.
- Go to **Slide 4C-20** and tell participants that abdominal circumference (AC) and estimated fetal weight (EFW) are the most accurate diagnostic measurements to predict SGA. In high-risk women, AC at less than the tenth percentile has sensitivities of 72.9–94.5% and specificities of 50.6–83.8% in the prediction of fetuses with birth weight less than the tenth percentile. The respective figures for EFW have sensitivities of 33.3–89.2% and specificities of 53.7–90.9%.
- Use the notes to this slide to explain all points listed on the slide.
- Show **Slide 4C-21** and say that all biophysical tests, including amniotic fluid volume (AFV), Doppler, cardiotocography and biophysical scoring, are poor at diagnosing a small or growth-restricted foetus. The diagnostic accuracies of AFV and uterine artery Doppler are given below as examples of limited accuracy of biophysical tests in diagnosing SGA/FGR.
- Stress that a distinction needs to be made between biometric tests (i.e. tests to measure size) and biophysical tests (i.e. tests to assess fetal well-being). Biometric tests are designed to predict size and if performed longitudinally growth but not well-being. Biophysical tests, on the other hand, are not designed to predict size but fetal well-being.
- Show **Slide 4C-22** which presents the list of the tests for assessment and surveillance of suspected SGA.
- Tests used in ANC for surveillance of suspected SGA
 - Antenatal cardiotocography (non-stress test)
 - Biophysical profile of the foetus
 - Doppler velocimetry of umbilical artery
- Discuss each test and give the description of its effectiveness based on scientific evidence (using **Slides 4C-23 – 4C-25**).
- Say that all these tests have low prognostic value in pregnant women of low risk and have no influence on perinatal outcomes. Performing these tests on in women of high risk has a positive effect. At the same time, interpretation of the test results, such as CTG and Doppler, need to be done by highly qualified and experienced medical staff only.
- Go to **Slide 4C-23** and say that the use of cardiotocography (CTG) antepartum to assess fetal condition is not associated with better perinatal outcome; in fact, a systematic review of randomised trials showed that there was a trend toward increased mortality in the group receiving CTG compared with those who did not. Computer systems for interpretation of CTG have better accuracy than clinical experts in predicting umbilical acidosis and depressed Apgar scores. However, further evaluation of this technology is required before clinical recommendations could be made regarding its widespread use.

- Show **Slide 4C-24**. Tell participants that conduction of BPF does not result in any improvements of the outcomes.
- Go to **Slide 4C-25** and tell participants that a systematic review (meta-analysis) has provided compelling evidence that the use of umbilical artery Doppler to monitor high-risk fetuses reduces perinatal morbidity and mortality. In addition, there was a significant reduction in the number of antenatal admissions and inductions of labour associated with Doppler use.
- Stress that if indicated (suspect of SGA) the use of Doppler velocimetry of the umbilical artery is the primary surveillance tool.
- Show **Slide 4C-26** and say that in those cases when an anomaly scan and umbilical artery Doppler are normal, the small foetus is likely to be a 'normal small fetus'. Evidence suggests that outpatient management of such fetuses is safe. In addition, a randomised controlled trial of two regimens of foetal surveillance for SGA fetuses with normal umbilical artery Doppler found that twice-weekly compared with fortnightly monitoring resulted in earlier deliveries and more inductions of labour with no difference in neonatal morbidity. This suggests frequency of monitoring in SGA fetuses with normal Doppler need not generally be more than once every fortnight.
- Ask participants, do they have any questions? Answer their questions if they have any.
- Then ask the representative of **Group 4** to present the results of their group work.
- Use **Slides 4C-27 - 4C-35** for a short presentation on assessment of foetal well-being during delivery and effective management of SGA and IUGR.
- Show **Slide 4C-27** and tell participants that in the case of severe IUGR and severe foetal impairment, emergency delivery is the therapy of choice. In the case of IUGR in a compensated stage, periodic assessment of foetal well-being is necessary.
- The purpose of assessment is to timely identify the development of the conditions threatening the life of the foetus. In such conditions an emergency pre-term delivery is the best choice to maintain the life of the foetus and prevent morbidity, rather than prolongation of pregnancy when being in utero becomes more and more dangerous.
- Go to **Slide 4C-28** and present the purpose of intrapartum assessment of foetal well-being.
- Go to **Slide 4C-29**. List the indications for continuous electronic foetal heart monitoring. Explain to participants which problems on behalf of mother and foetus can require the continuous electronic monitoring of foetal heart beat.
- Go to **Slide 4C-30** and present participants the cardiotocograph (CTG) classification of not reassuring categories of a foetal heart beat rate. Ask participants to look through the table in the notes to this slide. Discuss with them foetal heart-beat feature classifications.

- Then show **Slide 4C-31** and say that in cases where the CTG falls into the suspicious category, conservative measures should be used.
- Note that in cases when the CTG falls into the pathological category, conservative measures should be used and foetal blood should be sampled where appropriate/feasible. In situations where foetal blood sampling is not possible or appropriate delivery should be expedited.
- Show **Slides 4C-32 – 4C-34**.
- Tell participants that the Committee on Obstetric Practice is concerned about the continued use of the term “foetal distress” as an antepartum or intrapartum diagnosis, and also about the use of term “birth asphyxia” as a neonatal diagnosis.
- The Committee reaffirms that the term “foetal distress” is imprecise and non-specific. The communication between clinicians caring for the woman and those caring for her neonate is best served by replacing the term “foetal distress” with “nonreassuring foetal status”, followed by a further description of findings (e.g., repetitive variable decelerations, foetal tachycardia or bradycardia, late decelerations, or low biophysical profile).
- The term has a low positive predictive value even in high-risk populations and is often associated with an infant who is in good condition at birth as determined by the Apgar score or umbilical cord blood gas analysis or both.
- In the past the term “foetal distress” generally referred to an ill foetus, but the term “nonreassuring foetal status” describes the clinician’s interpretation of data regarding foetal status (i.e. the clinician is not reassured by the findings). This acknowledges the imprecision inherent in the interpretation of the data. Therefore, the diagnosis of “nonreassuring foetal status” is consistent with the delivery of a vigorous neonate.
- Foetoplacental deficiency identified by an ultrasound examination is one of the main justifications for hospitalizing women in departments of pregnancy pathology in post-Soviet countries.
- A disease named “foetoplacental deficiency” does not exist; this is a pathological physiological process. “Newborn hypoxia” is not a clinical condition; it is a metabolic process (metabolic acidemia) that is confirmed by blood gas analysis. Intrauterine growth retardation is one of the key conditions indicating possible hypoxia and foetoplacental deficiency. IUGR is the most objective marker of decompensated foetoplacental deficiency.
- One definition of foetoplacental deficiency:
 - A pathologic state when the ability of the placenta to maintain adequate metabolism between the mother and the foetus decreases, thus impairing the metabolic, trophic, endocrinal, transportation, barrier and gas exchange functions of the placenta and the foetus.
- **Slide 4C-33**. The essential criteria of the newborn’s response to asphyxia of such a degree as to be likely to cause harm are:
 - Apgar score of 0 to 3 for ≥ 5 minutes;
 - Neonatal neurologic consequences (e.g. hypotonia, seizures, coma);

- Evidence of multi-organ system dysfunction in the immediate neonatal period;
 - Umbilical cord arterial pH < 7.0; and
 - Umbilical cord arterial base deficit > 16 mmol/L.
-
- All of these conditions must be present to diagnose hypoxic acidemia. If they are not all present, one cannot conclude that hypoxic acidemia existed or had the potential to cause neurologic deficits.
 - **Slide 4C-34.** Tell participants that “intrapartum asphyxia” is an “a posteriori” criteria. Obstetricians can only suspect a “not reassuring foetal status” on the basis of “a not reassuring or abnormal categories of FHR”. Stress that the most appropriate term for determination of foetal well-being disorders is “not reassuring foetal status”.
 - Go to **Slide 4C-35.** Present participants **the** full standard observations of the foetus that are recommended during delivery by the *Scottish Ob Gyn College*:
 1. Women in active labour should receive continuous close support from an appropriately trained professional. One-to-one nursing is recommended. (I-A)
 2. Intermittent auscultation following an established protocol of surveillance and response is the preferred method of foetal surveillance in healthy pregnancies during the active phase of labour. (I-A)
 3. Labour induction requires close monitoring of uterine activity and the foetal heart rate. (III-B)
 4. If intermittent auscultation detects characteristics of abnormal foetal heart rate and the foetus is unresponsive to resuscitative measures, increased surveillance by continuous electronic foetal monitoring or foetal scalp sampling or delivery should be instituted. (I-A)
 5. Continuous intrapartum electronic foetal monitoring is recommended:
 - a) For pregnancies where there is an increased risk of perinatal death, cerebral palsy, or neonatal encephalopathy. (III-C)
 - b) When oxytocin is being used to augment labour. (1-A)
 - c) When oxytocin is being used to induce labour. (III-C)
 6. With respect to continuous electronic foetal monitoring, all professionals must be familiar with the paper speed used in each case to avoid misinterpretation. The correct time should be recorded on the electronic foetal monitoring record. (III-C)
 7. Electronic foetal monitoring records should be inspected and documented every 15 minutes in the active phase of labour and at least every 5 minutes in the second stage of labour. (III-C)

8. The timing of electronic fetal monitoring patterns should be determined in association with uterine contractions. Contraction frequency, duration, intensity, and resting tone should be assessed and documented. Abdominal palpation, a tocodynamometer, or an intrauterine pressure catheter may be used to facilitate the assessment. (III-C)
 9. Practitioners should use standard terminology when describing foetal heart rate characteristics of an electronic foetal monitoring record. (III-C)
 10. Foetal scalp blood sampling is recommended when electronic foetal monitoring patterns are uninterpretable or non-reassuring, such as sustained minimal or absent variability, uncorrectable late decelerations, increasing foetal tachycardia, and abnormal FHR characteristics on auscultation. (II-3B)
 11. The limited knowledge available on the use of labour admission tests warrants further research to establish the usefulness of this screening approach. (III-C)
- Answer any questions the participants have about this module.

Activity 5 - Conclusion (5 min)

- Ask participants to share their conclusions about the subject matter.
- Finish this part of the module by showing the conclusions listed on **Slide 4C-36**.

PART II – Clinical Work

Activity 5 – Revision of delivery or pregnancy records (diagnostic, treatment, management) with diagnoses of: IUGR, “chronic foetal hypoxia”, “chronic foetoplacental deficiency” and/or “foetal distress”

- During the clinical week discuss with the facility management the possibility of working with women’s records and their anonymous analyses.
- In the Department of Pregnancy Pathology and/or the Postpartum Department select women’s records that have diagnoses of: IUGR, “chronic foetal hypoxia”, “chronic foetoplacental deficiency” and/or “foetal distress”
- Divide the participants in 2-3 groups and give them the selected records for analysis.
- Participants should analyze pregnancy and delivery records and evaluate the effectiveness of diagnostic tests, discuss possible schemes of treatment and recommend further management of the case.
- After the above activity discuss all cases with the entire group of participants.
- End the session by coming to a conclusion on each case and once again listing effective diagnostic and treatment methods in the case of IUGR and/or a non-reassuring foetal status.

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Activity 2

Group 1

What questions do you ask when assessing foetal well-being?

Group 2

Define the following conditions:

- Intrauterine Growth Retardation (IUGR)
- Small for Gestational Age Foetus (SGA)

What factors predispose one to IUGR and what methods of prevention are you using?

Group 3

Which tests do you perform to diagnose IUGR and SGA?

Group 4

How do you manage IUGR and SGA?

Module 5C

Management of Normal Labour and Birth

Learning objectives:

By the end of the module, the participants will:

- Question any activity performed in labour without clear justification
- Recognize the importance of providing comprehensive support to the woman and family in childbirth
- Be familiar with the WHO recommendations on labour and birth management
- Be able to offer non-pharmacological pain relief and different positions for labouring women

Module structure and duration:

Part I – Classroom work – 270 minutes

Activity 1 – Introduction	20 min
Activity 2 – Interactive presentation	230 min
Activity 3 – Conclusion	20 min

Part II – Clinical sessions

Activity 4 – Practice with a manikin “Active Management of the Third Stage of Labour”	60 min
Activity 5 – Discussion and preparation of the clinical week	60 min
Activity 6 – Preparation of the individual birth rooms	-----

Preparation to the Module

- Review the current publications, evidence-based articles and recommendations on normal labour and birth management
- Review non-pharmacological methods of pain relief
- Ensure that 10 copies of “A Guide to Effective Care in Pregnancy and Childbirth” by M. Enkin are available
- Ensure that all the facilitators know their functions in this module

Materials and Equipment

Materials

- Participant's manual
- Reference book by M. Enkin "A Guide to Effective Care in Pregnancy and Childbirth" (10 copies)
- Power Point Presentation 5C EPC ENG
- List of technologies printed out on separate sheets, to be used in group work

Equipment

- LCD-projector or slide projector
- Flipchart
- Markers

Key Messages

- Good quality of perinatal care means that physical complications (mortality and morbidity) avoided and psycho-emotional needs of the woman and the family are met.
- For the majority of women and families the latter may matter more, taking into account the fact that the major part (85%) of all birth are normal and need only support and observation rather than medical interventions.
- There is no evidence of the effectiveness of many interventions / technologies used to improve the outcome / prevent complications; despite the absence of the proof of effectiveness, many painful and humiliating forms of care are still used.
- The most effective birth interventions are simple, cost-effective and contain minimal risk – such as partner involvement in delivery, skin-to-skin contact, ability of the woman to move freely in childbirth, vertical positions for birth, etc.
- Continuous support of the woman during labour and birth is one of the most effective interventions, thus it must be fully encouraged by the staff.
- There is no clear link between **duration of the second stage of labour** and neonatal morbidity. If maternal and foetal status are stable, the length of the second stage, even if exceeding certain limits, is not an indication for interventions.
- Moreover, technologies / interventions used to shorten the duration of the second stage (**directed pushing, breath holding, early pushing, fundal pressure/ Kristeller maneuver**) may affect the maternal and foetal status and lead to lacerations of the mother's birth canal.
- **The supine position** is the least favourable position for birth, and the mother should be informed about this. **Vertical positions** are more beneficial for delivery than horizontal. Woman should be encouraged to give birth in a vertical position.

- **Guarding of the perineum** has very few advantages to the “hands off” tactics; the use of this procedure should not interfere with free adoption of the position.
- **Restrictive episiotomy** routine use of episiotomy is not encouraged. Restrictive use of episiotomy might have a number of advantages.
- According to the WHO definition, a safe delivery is the one that is clean and is carried out by someone who has the necessary skills, and with access to emergency care if necessary.
- Normal birth should be managed by a midwife; specialist’s skills are necessary only if complications arise.

It is preferable if the session is conducted by a midwife assisted by an obstetrician-gynaecologist and a neonatologist.

Part I – Classroom work

Activity 1 – Introduction (20 min)

- Show **Slide 5C-1** and tell the participants that while working on the module, you will discuss the principles of normal labour and birth management and assess their effectiveness based on medical evidence.
- Discuss the learning objectives with the participants.
- Go to **Slide 5C-2** and tell the participant that lately women tend to have fewer infants than before, and that the last several decades have brought along a change in the attitude toward perinatal care. In addition there have been many procedures that have improved perinatal care over the past decades.
- Show **Slide 5C-3** “Women’s experiences of birth” and comment on it. Summarize that despite the use of many interventions and the decrease in the number of pregnancy and birth complications, many women are still unhappy with the quality of care and lack of a human touch. .
- Go to **Slide 5C-4** and note that quality research showed the ineffectiveness of many interventions routinely used in childbirth (the majority of which are painful and humiliating); moreover, some of them are harmful rather than beneficial. This is the reason why many women emerge from the maternity with the desire “not to have another child again” and “never go through this again”.
- Show **Slides 5C-5** and **5C-6** listing the key factors of the women’s satisfaction with birth, and factors which are much less important though health professionals award them unjustified significance.
- Go to **Slide 5C-7** and tell the participants that over 20 years ago, the Conference in Fortaleza, Brazil, made a number of recommendations about

appropriate practices during childbirth and proposed to discontinue those which effectiveness was not supported by evidences, and do not respect women's dignity and psychological needs. These recommendations are still valid and implemented by many health systems.

Activity 2 – Interactive presentation (230 min)

- Ask two course participants to role play that they are pregnant women. Give them the list of procedures / interventions prepared in advance, and ask them to answer the following question after reading through the list: “Which of the listed procedures would you like to be performed and which ones you would reject?” Remind the participants that they should try to answer these questions from the client’s view point, not from the point of view of the health professionals.

Group assignment: Role play that you are a pregnant woman who is being admitted to the maternity, or members of her family. Select from the list the technologies / procedures which you would prefer to be performed at admission to the maternity or in delivery, and which ones you would refuse. Give the reasons for your acceptance or rejection of a procedure.

List of procedures:

- 1 Routine pubic shaving
 - 2 Routine enema
 - 3 Labour and birth in an individual room
 - 4 Provided with the maximum of information and is involved in decision making
 - 5 Low risk birth is managed by a midwife
 - 6 Companion presence at delivery
 - 7 Restriction of food and liquid consumption during labour and birth
 - 8 Ambulation and free choice of birth position
 - 9 Non-pharmacological methods of pain relief
 - 10 Routine cardiotocography in the first stage of labour
 - 11 Supine position with the feet brought up to the stomach (lithotomic position) in the second stage of labour
 - 12 Arbitrary limitation of the duration of the second stage of labour
 - 13 Routine directed pushing and breath holding in the second stage of labour
 - 14 “Ironing-out” and massage of the perineum in the second stage of labour
 - 15 Guarding of the perineum
 - 16 Routine use of episiotomy
 - 17 Ice pack put on the woman’s lower abdomen after the birth
 - 18 Bladder catheterization after birth
 - 19 Routine treatment of vagina with antiseptics after birth
 - 20 Active management of the third stage of labour
- Split the rest of the participants into 10 small groups. Give one copy of M. Enkin’s “A Guide to Effective Care in Pregnancy and Childbirth” to each group as well as the group assignments and the list of procedures/interventions printed out on separate sheets of paper.

Group 1

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Routine pubic shaving
- 2 Active management of the third stage of labour

Group 2

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Routine enema
- 2 Routine treatment of vagina with antiseptics after birth

Group 3

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Birth in an individual labour and birth room
- 2 Bladder catheterization

Group 4

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 The woman is provided with maximum information, involved in decision making
- 2 Ice pack put on the woman's lower abdomen

Group 5

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Low risk births are managed by midwives
- 2 Routine episiotomy

Group 6

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Companion presence during labour and birth
- 2 Guarding of the perineum

Group 7

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Restriction of food and liquid consumption in delivery
- 2 "Ironing out" and massage of the perineum in the second stage of labour

Group 8

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Ambulation and free choice of position in the first stage of labour
- 2 Routine directed pushing and breath holding in the second stage of labour

Group 9

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Alternative (non-pharmacological) methods of pain relief
- 2 Arbitrary limitation of the duration of the second stage of labour

Group 10

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Routine cardiotocography in the first stage of labour
- 2 Supine position with the feet brought up to the stomach (lithotomic position) in the second stage of labour

- Ask the participants to find data about the effectiveness of the procedures listed on the separate sheets of paper which they received. The participants should look for such information in the synopsis during 20 minutes. Also ask the participants to read more about these procedures in the relevant chapters of the book.
- After the participants finish searching and reading the evidence presented in the "Guide..." by M. Enkin, proceed as follows:
- Ask the participants of the "client" group to present to the other trainees the procedures/interventions listed on the sheet of paper they received, and comment on them. Would they like this procedure to be performed to them upon admission to the maternity / in labour?
- After the "clients" commented **on each procedure / intervention**, ask those participants who were searching for the evidence of their effectiveness to present the search results.

- Provide additional information on each procedure / intervention using the slides:
- Routine pubic shaving – **Slides 5C-8 and 5C-9**
- Routine enema – **Slides 5C-10 and 5C-11**
- Birth in an individual labour and birth room – **Slides 5C-12 to 5C-15.**
- Show **Slide 5C-16** and comment on the WHO definition of safe delivery. Show **Slide 5C-17** and draw the attention of the participants to the idea of “Clean delivery”.
- The woman is provided with maximum information and involved in decision-making - **Slides 5C-18 and 5C-19**
- Low risk birth is managed by a midwife – **Slides 5C-20 and 5C-21**
- Companion presence during labour and birth – **Slides 5C-22 and 5C-23.** Tell the participants that considering the benefit associated with this intervention, many professional associations recommend partners as the companions for labour and birth. Thus a partner companion is actively encouraged as a key method of improving maternal and infant health.
- Restriction of food and liquid consumption in labour – **Slide 5C-24**
- Ambulation and free choice of position in the first stage of labour - **Slides 5C-25 to 5C-30**
- Non-pharmacological methods of pain relief – **Slides 5C-31 to 5C-33.** The degree of pain perceived by a woman in childbirth depends on her emotional state and cultural expectations. Her pain is less when she feels relaxed, unafraid, and reassured by the continuous, comforting support of her companion and/or birth attendant. Non-pharmacological methods of pain relief may help many women to cope with the pain without any risk of side effects or complications associated with analgesia and anesthesia. Note that non-pharmacological methods of pain relief are not as effective for decreasing pain as an epidural or other pharmacological methods. Show to the participants the different methods of non-pharmacological pain relief (5-7 minutes): counter pressure, massage, etc.
- Routine cardiotocography in the first stage of labour – **Slides 5C-34 to 5C-35**
- Supine position with the feet brought up to the stomach (lithotomic position) in the second stage of labour – **Slides 5C-36 to 5C-41.** Stress that one of the key advantages of the vertical position is the decrease in the rate of abnormal foetal heartbeat patterns. Note that though an upright position of the woman may cause some inconvenience for the healthcare provider, women are very satisfied with this position.
- Arbitrary limitation of the duration of the second stage of labour – **Slides 5C-42 to 5C-44.** Tell the participants that results of studies support the assumption that labour should not be terminated or augmented simply because an arbitrary period of time has elapsed in the second stage.

- Routine directed pushing and breath holding in the second stage of labour – **Slides 5C-45 and 5C-46**. Stress that the only advantage of directed pushing is shortening of the second stage of labour, while the disadvantages are clinically much more significant. Emphasize that directed pushing in combination with breath holding may have adverse effects on the maternal and foetal status.
- Guarding of the perineum - **Slides 5C-47 and 5C-48**. Explain to the participants the results of the randomized controlled trials evaluating the benefits of perineum care and emphasize that this technology must be applied to 33 women to prevent one case of pain. At the same time, there was only 20% increase in the number of episiotomies in the hands-poised group. Ask the participants which outcome matters more.
- Routine use of episiotomy – **Slides 5C-49 and 5C-50**
- Active management of the third stage of labour – **Slides 5C-51 to 5C-57**
- Intervention of unproven effectiveness – **Slide 5C-58**. The participants cannot find the evidence for putting ice packs on woman's lower abdomen to prevent post-partum haemorrhage, urinary bladder catheterization after each delivery, or routine treatment of vagina with antiseptics after delivery to prevent infection. Ask them if it is necessary to perform these inconvenient procedures with no proof of effectiveness for the mother and baby contact and if fact, are unnecessary interference with the mother and baby.
- Having presented the slides **on each procedure/intervention**, ask the participants what they think about the effectiveness of this procedure / intervention. Discuss all the questions that the participants might have on **each procedure / intervention**.
- Upon completion of this activity, ask the participants if they have any questions. Discuss all issues that might arise.

Activity 3 – Conclusion

- Show **Slides 5C-59 to 5C-62** listing all the essentials of management of all stages of labour and summarize main points of the module.
- Emphasize that during the clinical week you will come back to this module and will work on the practical skills of active management of the third stage of labour on the mannequin.
- Finish working with this module by asking the participants if they have any questions or issues to discuss.

Part II – Clinical work

Activity 4 – Practice on a mannequin “Active management of the third stage of labour” (60 min)

- Ask 2-3 participants (preferably, midwives) to describe the key steps of active management of the third stage of labour and show them on a mannequin.
- Then show **Slides 5C-52 – 5C-54** and repeat the key points and steps of the active management.
- Show **Slides 5C-55 - 5C-57** listing the benefits and disadvantages of the active management. Ask the participants if everything is clear and answer any questions that they ask.
- Show all the steps of the active management on the mannequin.
- Ask 2-3 other participants to perform all the steps on the mannequin again. Ask the group if anyone would also like to try to do the same thing. Try to involve as many participants as you can in working on a mannequin.
- Tell the participants that one of the most essential steps of the active management of the third stage of labour is informed consent of the patient.
- Ask 2-3 participants to play roles in counselling a woman in the first stage of labour or in the antenatal clinic, on different tactics of managing the third stage of labour.
- Recall the main steps of correct counselling.
- Ask the participants to evaluate counselling both from the point of view of the process of counselling itself, and information provided to the patient.
- Split the participants into 2 groups.
- Ask each group to draft a form to record the woman’s informed consent for active management of the third stage of labour.
- Give each group 5 minutes to present their draft of written informed consent form.
- Conduct panel discussion on what an appropriate consent form should include.
- Perform correct counselling on the active management of the third stage of labour if the participants want it.
- Tell the participants that during the clinical week they will have an opportunity to counsel women on this issue and manage the third stage of labour actively if the woman gives her consent.

Activity 5 – Discussion and preparation of the clinical week (60 min)

- Split the participants (obstetrician-gynaecologists and midwives) into two groups. Try that each group has an equal number of midwives and doctors.
- If participants are coming from different facilities, then try to split them so that the participants from one facility are in different groups. You can explain that by splitting people from the same facility, the participants are exposed to colleagues with different experiences than their own.
- Tell the participants how the clinical practice sessions will be organized, their goals and objectives.
- The total number of hours worked by each group will be determined by the scheduling option chosen for the clinical week (See the Director's Guide)
- Introduce the participants to the work plan for the clinical week.
- Explain to the group that every morning both groups will, together with the neonatologists, discuss the events of the previous day – both classroom and clinical work. The focal points of the discussions will be birth, postpartum care and newborn care.
- On the first day of the duty shift all the participants should be engaged in preparing the individual labour and birth rooms (Activity 6). After the rooms are prepared, the group of neonatologists will assess their readiness.
- If the 12 hour shift option is selected: Tell the trainees that the labour and births will be managed by the participants from the group working a 12 hour shift, and discuss the possibility of the delivery managing team working overtime if the delivery continues past 9 p.m.
- Each group should be split into teams (depending on the quantity and composition), consisting of 1-2 midwives and 1-2 doctors. 1 midwife will be the leading midwife (the one managing the labour and birth), the other midwife – assisting with labour support. 1 doctor will be the physician consultant for the lead midwife. Together they will review the partograph, especially if the alert line crossed, and determine the appropriate actions or interventions. The other doctor will either observe the labour, or provide labour support if the woman wants it. The consultant midwife and consultant physician will provide clinical guidance and feedback to the participants.
- Remind the participants about the importance of privacy, confidentiality and respect of the woman's feelings and requests.
- Tell the participants that, despite their desire to observe the labour and birth only the participant midwife/physician team caring for the woman may be present in the birth room.
- The Course Director, in preparation for the clinical week, will have a discussion with the maternity administration and clinical staff. Decisions will be made regarding appropriate women for care, record keeping, clinical responsibilities of the teams, communication and interaction with the working maternity staff,

how complications and interventions may be handled, transfer of care to the maternity staff, and true emergencies. Discuss with the participants the issue whether it will be the midwife or the doctor to perform the vaginal examination and to keep a record in the delivery file. The lead midwife will complete the partograph and use this tool for management decisions and consultation

- Emphasize that facilitators and trainees are “guests” here using their facility for the training. Good communication and interactions with the working maternity staff will enhance the clinical experience.
- Ask the participants to bring a change of shoes and a set of working gowns for the clinical week, if possible.

Activity 6 – Preparation of individual labour and birth rooms

- Split the participants into groups, depending on the situation in the maternity: (1) the number of groups may correspond to the number of birth rooms which are planned to be re-organized (it is important that each group is accompanied by an obstetrician-gynaecologist or midwife facilitator); (2) the number of groups may be two, one working in the physiological department, the other one – in the observation department; (3) if the birth rooms are located on different floors and all of them are planned to be reorganized, then the number of groups should be corresponding. The groups must be diverse, each representing obstetricians-gynaecologists and midwives.
- Give each group the following task: **to assess friendliness** (home-like atmosphere) and **safety** of the individual labour and birth rooms for the mother and the newborn (if there are any in the maternity) or **to re-organize** the delivery rooms into individual labour and birth rooms.
- **Family-friendly birth room** is a labour and birth room with a home-like atmosphere: curtains, no Rakhmanov birthing bed, a normal bed for birth not facing the door; the bed should be approachable from all sides; the room must have chairs for companions, if possible, paintings on the walls, audio, flowers, etc.
- If necessary, re-discuss with the participants the negative aspects of the lithotomy position in the second stage of labour. This technology is ineffective and harmful. Use open-ended questions to bring the participants to the conclusion that a Rakhmanov bed is not needed in the labour and birth room. The labour area should be organized so that the woman can be transported in minimum time to the operation theatre in an emergency situation.
- **Safety of the birth room for the mother and the baby** means the availability of the equipment, supplies, and drugs for childbirth care as outlined in Attachment 2 (Table from IMPAC, L3).
- Groups should also assess:
 - The presence of equipment to ensure free choice of labour and birth positions: ball, gymnastic wall, rubber carpet, chair that can be used for management of second stage.

Effective Perinatal Care (EPC)

- Places for hand washing: running water, liquid soap, paper towel, poster with the description of hand washing technique, antiseptic solution.
- The presence of posters: labour and birth positions, breastfeeding; booklets on diverse issues.
- After the assessment and discussion assist the participants to reequip the birth rooms to make them safe for the mother and baby and be family friendly.
- Ask the participants to assess the safety and friendliness of birth rooms re-equipped by other groups of participants.
- Gather the participants and discuss the activity. Answer any possible questions.

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Activity 2

You are a pregnant woman who is being admitted to the maternity, or members of her family. Select from the list the technologies / procedures which you would prefer to be performed upon admission to the maternity or in the delivery department, and which ones you would refuse. Give the reasons for your acceptance or rejection of a procedure.

List of procedures:

- 1 Routine pubic shaving
- 2 Routine enema
- 3 Birth in an individual labour and birth room
- 4 The woman is provided with the maximum of information, involved in decision making
- 5 Low risk birth is managed by a midwife
- 6 Companion presence during labour and birth
- 7 Restriction of food and liquid consumption in labour
- 8 Ambulation and free choice of birth position
- 9 Non-pharmacological methods of pain relief
- 10 Routine cardiotocography in the first stage of labour
- 11 Supine position with the feet brought up to the stomach (lithotomic position) in the second stage of labour
- 12 Arbitrary limitation of the duration of the second stage of labour
- 13 Routine directed pushing and breath holding in the second stage of labour
- 14 "Ironing-out" and massage of the perineum in the second stage of labour
- 15 Guarding of the perineum
- 16 Routine use of episiotomy
- 17 Ice pack put on the woman's lower abdomen after the birth
- 18 Bladder catheterization after birth
- 19 Routine treatment of vagina with antiseptics after the birth
- 20 Active management of the third stage of labour

Group 1

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Routine pubic shaving
- 2 Active management of the third stage of labour

Group 2

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Routine enema
- 2 Routine treatment of vagina with antiseptics after the birth

Group 3

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Birth in an individual labour and birth room
- 2 Bladder catheterization

Group 4

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 The woman is provided with maximum of information for decision making
- 2 Ice pack is put on the woman's lower abdomen

Group 5

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Low risk births are managed by midwives
- 2 Routine episiotomy

Group 6

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Companion presence during labour and birth
- 2 Guarding of the perineum

Group 7

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Restriction of food and liquid consumption in labour
- 2 "Ironing out" and massage of the perineum in the second stage of labour

Group 8

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Ambulation and free choice of position in the first stage of labour
- 2 Routine directed pushing and breath holding in the second stage of labour

Group 9

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Alternative (non-pharmacological) methods of pain relief
- 2 Arbitrary limitation of the duration of the second stage of labour

Group 10

Using the tabulated synopsis, find in the reference book by Enkin the information about the effectiveness of the following procedures:

- 1 Routine cardiotocography in the first stage of labour
- 2 Supine position with the feet brought up to the stomach (lithotomic position) in the second stage of labour

EQUIPMENT, SUPPLIES AND DRUGS FOR CHILDBIRTH CARE (IMPAC, L3)

<p><u>Warm and clean room</u></p> <p>Delivery bed: a bed that supports the woman in a semi-sitting or lying in a lateral position, with removable stirrups (only for repairing the perineum or instrumental delivery)</p> <p>Clean bed linen</p> <p>Curtains if more than one bed</p> <p>Clean surface (for alternative delivery position)</p> <p>Work surface for resuscitation of newborn near delivery beds</p> <p>Light source</p> <p>Heat source</p> <p>Room thermometer</p> <p><u>Hand washing</u></p> <p>Clean water supply</p> <p>Soap</p> <p>Nail brush or stick</p> <p>Clean towels</p> <p><u>Waste</u></p> <p>Container for sharps disposal</p> <p>Receptacle for soiled linens</p> <p>Bucket for soiled pads and swabs</p> <p>Bowl and plastic bag for placenta</p> <p><u>Sterilization</u></p> <p>Instrument sterilizer</p> <p>Jar for forceps</p> <p><u>Miscellaneous</u></p> <p>Wall clock</p> <p>Torch with extra batteries and bulb</p> <p>Log book</p> <p>Records</p> <p>Refrigerator</p>	<p><u>Equipment</u></p> <p>Blood pressure machine and stethoscope</p> <p>Body thermometer</p> <p>Fetal stethoscope</p> <p>Baby scale</p> <p>Self inflating bag and mask - neonatal size</p> <p>Mucus extractor with suction tube</p> <p><u>Delivery instruments (sterile)</u></p> <p>Scissors</p> <p>Needle holder</p> <p>Artery forceps or clamp</p> <p>Dissecting forceps</p> <p>Sponge forceps</p> <p>Vaginal speculum</p> <p><u>Supplies</u></p> <p>Gloves:</p> <ul style="list-style-type: none"> - utility - sterile or highly disinfected - long sterile for manual removal of placenta - Long plastic apron <p>Urinary catheter</p> <p>Syringes and needles</p> <p>IV tubing</p> <p>Suture material for tear or episiotomy repair</p> <p>Antiseptic solution (iodophors or chlorhexidine)</p> <p>Spirit (70% alcohol)</p> <p>Swabs</p> <p>Bleach (chlorine-base compound)</p> <p>Clean (plastic) sheet to place under mother</p> <p>Sanitary pads</p> <p>Clean towels for drying and wrapping the baby</p> <p>Cord ties (sterile)</p>	<p>Blanket for the baby</p> <p>Baby feeding cup</p> <p>Impregnated bednet</p> <p><u>Drugs</u></p> <p>Oxytocin</p> <p>Ergometrine</p> <p>Magnesium sulphate</p> <p>Calcium gluconate</p> <p>Diazepam</p> <p>Hydralazine</p> <p>Ampicillin</p> <p>Gentamicin</p> <p>Metronidazole</p> <p>Benzathine penicillin</p> <p>Nevirapine or zidovudine</p> <p>Lignocaine</p> <p>Adrenaline</p> <p>Ringer lactate</p> <p>Normal saline 0.9%</p> <p>Water for injection</p> <p>Eye antimicrobial (1% silver nitrate or 2.5% povidone iodine)</p> <p>Tetracycline 1% eye ointment</p> <p>Vitamin A</p> <p>Isoniazid</p> <p><u>Vaccine</u></p> <p>BCG</p> <p>OPV</p> <p>Hepatitis B</p>
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Module 6C

Initial Rapid Assessment of the Newborn and Principles of Neonatal Care

Learning Objectives

At the end of the module the participants will:

- Know main steps of newborn care at birth
- Understand the major adaptations experienced by newborns at birth
- Know how to prepare a safe and warm room for each birth
- Know the list of needed equipment for newborn care
- Know the universal precautions to prevent infection
- Know how to implement the warm chain
- Be able to assess the status of a newborn at birth and to take immediate action
- Know the main principles of newborn care during the first two hours of life

Module Outline and Duration

Part I – Classroom work - 120 min

Activity 1 – Introduction	5 min
Activity 2 – Interactive presentation	75 min
Activity 3 – Work in groups	20 min
Activity 4 – Role play	10 min
Activity 5 - Conclusion	10 min

Part II – Clinical work

Activity 6 – Assessing the preparation of a labour and birth room (warm, clean, light, family-oriented, safe, equipped)	90 min
Activity 7 - Assessing newborn care in the delivery room at birth	-----

Preparation for the Module

- Review:
 - *Thermal Protection of the Newborn: A Practical Guide. WHO, 1997*
 - *Pregnancy, childbirth, postnatal and newborn care: a guide for essential practice. IMPAC, WHO, Geneva, 2nd edition, 2006.*
- Ensure that all participants have the Participant Manual.
- Ensure that all co-facilitators know their respective functions during work with this module.

Materials and Audiovisual Equipment

Materials

- Participant Manual
- *Thermal Protection of the Newborn: A Practical Guide. WHO, 1997*
- Printed roles for the role play
- Case studies for small group work

Equipment

- Video or overhead projector
- Flipchart
- Markers
- Pens and pencils
- Name badges
- Doll
- Baby cap and socks
- Linen
- Bulb for aspiration

Key Messages

- Each birth must be carefully prepared for to allow the baby to adapt to life outside the womb under warm, clean, safe, and friendly conditions.
- The steps of newborn care are clearly defined which are implemented almost simultaneously within the first few minutes after birth.
- Assessment of the newborn should be performed in the first 30 seconds of life in order to initiate action such as resuscitation if necessary.

Key Messages

- Aspiration of the newborn's airways is necessary only if the baby has breathing difficulties or if there is blood- or meconium-stained fluid in her/his lungs.
- The warm chain needs to be fully implemented by a trained team.
- Neonatal hypothermia is an important issue leading to many complications. It should be avoided through correct implementation of the warm chain.
- Newborns need appropriate clothing. Swaddling should be discouraged.
- The mother and baby should not be separated after birth. Immediate and longstanding skin-to-skin contact, early breastfeeding and rooming-in should be encouraged.
- Delayed cord care clamping is beneficial for newborns and must be recommended as a component of active management of the third stage. Delayed cord clamping usually occurs by 3 minutes, using dry cord management.
- Some procedures (weighing, measuring, and complete clinical examination) should be delayed to respect the warm chain and mother/newborn bonding.

Note: It is important to conduct this module using 2 or 3 facilitators. The course director should decide which parts can be presented by a neonatologist, midwife or obstetrician.

PART I – Classroom work

Activity 1 – Introduction (5 min)

- During the introduction discuss with participants the module objectives.
- Ask the participants if they agree with the module objectives and if any of their expectations are not covered by the list. If participants have any additional questions, list them on a flipchart.

Activity 2 – Interactive presentation (75 min)

- Show **Slide 6C-2** and discuss with participants information on how a baby adapts to extra-uterine life:
 - At birth the baby leaves the warm and secure uterus for the cold world outside.
 - The baby undergoes important changes, including initiating breathing, maintaining his/her own body temperature (previously done by the mother),

feeding himself, fighting against germs, and interacting with the mother and the family.

- Show **Slides 6C-3 and 6C-4** and briefly describe the basic steps of newborn care.
- Underscore that some steps (2-5) must be done simultaneously, whereas some are not mandatory for all newborns (e.g., step 5 cleaning of airways).
- Emphasize that all steps are important for each newborn and are not dependent on the baby's gestational age or birth weight.
- Show **Slide 6C-5**. Note the following points:
 - Universal precautions need to be implemented during each delivery as every patient should be considered as possibly infected.
 - Protection is for both the patient and the health staff.
 - Universal precautions must be implemented thoroughly, not partially (for example use of non-sterile instruments or having unprotected eyes).
- Ask the participants what is the most effective way to prevent cross-contamination/infection in the maternity. After a short discussion, remind participants that hand washing is essential and is the most effective way to prevent cross-contamination and infections in the maternity.
- Show **Slides 6C- 6 Preparation for Birth**. If module 5C was given before this module, information can be covered briefly. If not, facilitators must describe information on these slides in detail.
 - Each birth should take place in a labour and birth room or operation theatre which meets the criteria listed in the slide.
 - Individual rooms ensure privacy, confidentiality and comfort.
 - Clean delivery rooms help prevent infection.
 - Warm surroundings (not less than 25°C) help prevent hypothermia.
 - Good light facilitates effective resuscitation and more precise evaluation of the baby's status.
- Ask participants who is the most qualified staff to support a birth.
 - Correct answer: A qualified midwife is the key person in supporting a labour and birth.
- Show **Slide 6C-7** and discuss the following points on equipment required for birth:
 - Trained personnel able to initiate resuscitation with bag and mask need to be ready for each delivery and should have all equipment needed for neonatal resuscitation.
 - Switched-on radiant heater, warm linens, cap and socks need to be prepared before every birth.
 - Warm chain must be fully implemented to prevent newborn hypothermia.
 - Mother and baby's safety is ensured through availability of equipment for newborn resuscitation and urgent care for the mother in the delivery room.
- Tell the participants that you will now role play a birth.
 - Facilitator must prepare:
 - A doll
 - Linens
 - Bulb

- “Examination” table
- Chair
- The following people participate in this role play:
 - two facilitators: one playing the role of the mother, the other playing the role of the grandmother (or husband);
 - a midwife (training participant);
 - an obstetrician (training participant);
 - If a neonatologist is present in all births in the facility where you conduct the training, involve one from the trainee group in the role play.
- Note: it would be better if the midwife, obstetrician and neonatologist selected come from the same facility.

Script of the role play:

- A baby’s birth is in progress. You are giving birth on your back and it is very painful. Your mother (or husband) is by your side. Your partner is nervous and asks to weigh the baby, clamp and disinfect the cord, etc.)
- Ask the participants (midwife, obstetrician and neonatologist) to demonstrate the current baby care practices performed just after birth in the delivery room in their facility.
- Don’t make comments (and ask all other participants not to comment) during the role play. Ask the observers to write their comments down. Explain that all comments will be reviewed at the end of the session.
 - During the role play the “mother” does the following:
 - Insists on drying the baby only with sterile linen (to prevent infection).
 - After putting the doll on her chest, says to the midwife or neonatologist that the baby is “blue,” breathing is not good, and insists on newborn examination.
 - Insists on eye care just after birth.
 - Insists on weighing the newborn, because she needs to inform the father of the baby’s weight.
 - Insists on feeding the baby, because now 15 minutes have passed since birth and the baby may want to eat.
 - Insists on treatment of the cord with brilliant green to prevent infection.
 - The “partner” supports the “mother” in all her requests during the role play, but most of all insists on formula-feeding the baby (because the mother has only colostrum, not milk).
- After the role play, continue presentation without any comments and discussion about the role play.
- Show **Slide 6C-8** and explain **Drying the Baby** and describe all steps in details.
- **Slide 6C-9.** Remind the participants that a baby born in a delivery room at 23°C experiences the same cold stress as a naked adult exposed to 0°C. During the birth, health care workers must have a thermometer in each room to: check the

baby's temperature on the mother's chest after 30 minutes and two hours post-delivery, recheck the temperature if the baby's feet are cold (warmth of the baby's feet assessed every 15 minutes), record the data received in special forms, and continuously analyze them.

- **Slide 6C-10.** Describe the basic approaches to diagnosing hypothermia and the main consequences of hypothermia for the baby.
 - Normal temperature after birth is 36.5°C -37.5°C.
 - Lower than 36.5°C = hypothermia.
 - Hypothermia can be mild. Usually it can be treated by skin-to-skin contact in a warm room.
 - Moderate and severe hypothermia are dangerous for the baby's life. These conditions need treatment by qualified personnel with oxygen and intravenous glucose.
- Show **Slide 6C-11.** This simplified diagram shows some consequences of hypothermia in newborns.
- **Slide 6C-12.** "Warm chain" may be a new concept for participants, who will be unfamiliar with this topic. Therefore take your time on this slide. List of steps of the warm chain and emphasize the fact that these actions form a chain and that if a link is missing, the baby will be cold. The warm chain should be implemented by a team trained on the importance of hypothermia. Warm chain implementation is not easy. Thus the team needs to be trained and retrained.
- **Slide 6C-13.** The baby needs to be appropriately dressed in loose, warm clothes (in order to keep air between the clothes and the baby's body). Remind that the baby's head needs to be covered because it is a big body surface and much heat is lost through radiation). Use of clothes from home is recommended, as the newborn becomes exposed to the mother's/home's flora and a link is created between the baby and mother.
- **Slide 6C-14.** Discuss the harm of tight swaddling.
- **Slide 6C-15.** Explain, that as soon as the infant is born, while drying him/her, the health provider should immediately assess the infant's well-being in order to identify if he/she needs special care or if he/she can be given immediately to the mother.
- **Slide 6C-16.** Lists the components of newborn assessment before and after the birth. The majority of babies start to breathe and cry at birth without any assistance. If the baby is crying it means that he/she is breathing adequately and his/her heart rate is more than 100 beats per minute. Normal breathing is initiated within 30 seconds from birth. The rapid assessment must be done within 30 seconds
 - Normal breathing rate is 30–60 breaths per minute, with no sign of respiratory distress such as chest indrawing, grunting or nasal flaring.
 - The heart rate must be over 100 beats per min after the first minute from birth.
 - If the baby is crying, he/she is breathing, so staff do not need to count heart rate.
 - The baby's face and chest must be pink, not grey or blue, after 1-3 minutes.
 - The pink colour of the baby's face and chest is a good sign of adequate breathing and circulation (arms and feet can be bluish).
 - It is important to be sure that the baby does not have central cyanosis (no blue tongue or blue lips).

- In dark-skinned babies, assess the colour of the tongue, lips and mucous membranes.
 - The baby should have firm muscle tone and should not be floppy.
 - It is necessary to assess the baby's gestational age in order to make a decision about additional care and creation of a warmer surrounding for deliveries (no less than 28°C).
 - It is necessary to assess the amniotic fluid for meconium. At least two additional specialists trained on newborn resuscitation (in the case of preterm deliveries) and newborn intubations should remain in the delivery room.
- **Slide 6C-17.** Explain steps of Classification and Management after immediate assessment. Describe four situations.
 - **Slide 6C-18.** Discuss with participants main principles of cleaning the airway and precise that this step is not mandatory: unnecessary aspiration could create problems and delay the start of breathing. Draw participants' attention to the fact that this manipulation needs to be done gently and according to the guidelines. A sterile catheter/bulb is needed for cleaning the airways. Use of the same catheter/bulb in different babies is unacceptable because of the difficulty sterilizing this equipment.
 - **Slide 6C-19.** Discuss with participants main roles to organize Early Skin-to-Skin Contact and after that pay special attention:
 - Skin-to-skin contact needs to be as natural as possible – no disinfectant, no medical interference. Leave the mother to welcome the newborn.
 - **Slide 6C-20. Skin-to-Skin Contact**
 - Photos demonstrating early skin-to-skin contact. Encourage the participants to explore all possibilities in organizing skin-to-skin contact of the healthy newborn with the mother and/or father.
 - **Slide 6C-21.** Pay special attention for key statements:
 - Delayed cord care clamping is beneficial for newborns and must be recommended as a component of active management of the third stage. Delayed cord clamping usually occurs by 3 minutes, using dry cord management.
 - Do not cover the cord with a bandage.
 - Do not apply any substance to the cord, including antiseptic (alcohol).
 - **Slide 6C-22.** Discuss with participants all steps of organization of Early Breastfeeding:
 - Never force the baby to initiate breastfeeding before he/she is ready.
 - Start breastfeeding when the newborn shows signs of readiness to suck, support the mother to find a comfortable and good position for breastfeeding.
 - Help mother to attach the baby well if necessary.
 - Assess correct breast attachment.
 - Do not impose a time limit for breastfeeding; the baby will stop on his/her own.
 - **Slide 6C-23. Early Breastfeeding**
 - Show photo which depicts baby's first breastfeeding with skin-to-skin contact. Note that baby is dressed correctly.

- **Slide 6C-24.** Describe procedures which may decrease neonatal morbidity.
- **Slide 6C-25.** Discuss key points of Monitoring during the first two hours
 - During the two hours the baby will spend in the birth room, he/she needs to be carefully monitored. The following must be reported in the baby's file:
 - breathing rate and breathing difficulties (chest indrawing, grunting or nasal flaring)
 - skin colour
 - warmth of feet and body temperature
 - time of first breastfeeding, activity of sucking reflex
 - meconium and urine passing
 - Conduct complete and detailed medical examination (before rooming-in).
 - Measure baby's weight and length.
 - Bathing should be postponed for six to 24 hours, as it may cause hypothermia.
- **Slide 6C-26.** Discuss with participants step by step how to **re-warm** a newborn.
- **Slide 6C-27.** Shows basic points of complete assessment of the newborn in the delivery room two hours after birth and before rooming-in.
- **Slides 6C-28 and 6C-29** show basic principles of rooming-in.

Activity 3 – Group work (20 min)

- Divide the participants into two multidisciplinary groups and give them the cards with two case studies (Attachment 1).
- Give each group a page of flipchart and marker.
- Ask the participants to write the answers to the questions using the flip-chart.
- Ensure that groups understand their tasks well.

Case Study 1

Sasha is a baby boy born after 39 weeks of gestation without any problems. He was breathing regularly, his heart rate was >120 beats/min, after one minute the baby was pink and very reactive.

After birth, the midwife dried Sasha thoroughly with a warm linen and placed him skin-to-skin with his mother. The midwife covered the baby's head with a hat. After 20 minutes the midwife weighed the baby, bandaged the cord, swaddled him tightly and placed him close to his mother in a crib.

After 30 minutes the baby's temperature was 36.2°C.

Questions:

- How would you define this infant?

- Was everything done in the right way?

Case Study 2

Sophia is born after 36 weeks of pregnancy in a delivery room at 23°C.

She cried immediately and was pink in 1 minute.

She was dried quickly by the midwife, and because she looked “small”, the midwife weighed her naked immediately. Her weight was 2,300 g.

The midwife was anxious and asked the neonatologist to check the baby’s medical status. Sophia stayed naked and covered with a piece of cotton under a radiant heater during 15 min.

The examination was normal and after 20 min she was given back to her mother for skin-to-skin contact.

After 30 min her temperature was 36.2°C.

Questions:

- How would you define this infant?
- Was everything done in the right way?
- After the groups have finished working on the case studies, one representative from each group presents the results of the group’s work.
- Discuss the answers with the participants.
- If needed, the facilitator can return to the presentation and review the slides to confirm the right answers.

Possible answers:

Case study 1:

- Sasha is a full term baby suffering from mild hypothermia.
- Sasha was separated from his mother after only 20 minutes of skin-to-skin contact and he was weighed too early. In addition, he was tightly swaddled and put in a crib.
- He needs to be put naked in skin-to-skin with the mother, with his head and feet covered.
- Mother and baby must be covered with a warm blanket in a warm room (the delivery room is 26°C).
- The warmth of Sasha’s feet need to be assessed every 15 minutes . If the feet are cold, the temperature should be taken at that moment. If the feet remain warm, the temperature needs to be assessed in one hour (> 36.5°C).
- The mother should be supported to initiate breastfeeding if the baby is ready or ask mother to express her milk and feed Sasha with mother’s milk.

Case study 2:

- Sophia is a preterm baby with no problem at birth. She suffers from mild hypothermia.
- The delivery room was cold, only 23°C. The drying was too quick; the weighing was premature as it was obvious that Sophia was not a “very small baby” needing special care.
- During the first 20 minutes of life, she was separated from her mother and deprived of skin-to-skin contact.
- Sophia needs to be put naked skin-to-skin with the mother, with her head and feet covered.
- Mother and baby need to be covered with a warm blanket, and a heating system needs to be brought to the room to reach 25°C.
- The warmth of Sophia’s feet need to be assessed every 15 minutes . If the feet are cold, the temperature should be taken at that moment. If the feet remain warm, the temperature needs to be assessed in one hour (> 36.5°C). If the temperature is not within normal range in 2 hours, Sophia’s needs further assessment and re-warming measures.
- The mother should be supported to initiate breastfeeding as soon the baby is ready or ask mother to express her milk and feed Sophia with mother’s milk..

Activity 4: Role plays (10 min)

Role play 1

- Needed materials:
 - A doll
 - Linens
 - Bulb
 - “Examination” table
 - Chair

The following people participate in this role play:

- Two facilitators: one playing the role of the mother, the other the role of the grandmother (or husband). You can ask the same participants as during the first role play or ask other facilitators to participate.
- One midwife (training participant).
- One obstetrician (training participant).
- If the facility where you are conducting the training has neonatologists participating in all births, involve a neonatologist from the trainee group.
- Note: it would be good if the midwife, obstetrician and neonatologist were the same as during the role play in Activity 2.

Script of the role play (the same role play as in Activity 2):

- A baby’s birth is in progress. You are giving on your back and it is very painful. Your mother (or husband) is by your side. Your partner is nervous and asks to weigh the baby, clamp and disinfect the cord, etc.
- Ask the participants (midwife, obstetrician and neonatologist) to demonstrate the current baby care practices performed just after birth in the delivery room in their facility.

- Don't make comments (and ask all other participants not to comment) during the role play. Ask the observers to write their comments down. Explain that all comments will be reviewed at the end of the session.
- During the role play the “mother” does the following:
 - Insists on drying the baby only with sterile linen (to prevent infection).
 - After putting the doll on her chest, says to the midwife or neonatologist that the baby is “blue,” breathing is not good, and insists on newborn examination.
 - Insists on eye care just after birth.
 - Insists on weighing the newborn, because she needs to inform the father of the baby's weight.
 - Insists on feeding the baby, because now 15 minutes have passed since birth and the baby may want to eat.
 - Insists on treatment of the cord with brilliant green to prevent infection.
 - The “partner” supports the “mother” in all her requests during the role play, but most of all insists on formula-feeding the baby (because the mother has only colostrum, not milk).
- In addition to this role play you can conduct another one if you have free time.

Role play 2 – Implementation of warm chain

- This role play can be conducted at any time after the end of module 6C.
- It is advisable to conduct this role play during the clinical week in two small groups (obstetricians/midwives and neonatologists/paediatric nurses).
 - Needed materials:
 - A doll
 - Two pieces of cloth for drying baby
 - A baby hat or a piece of material to cover the baby's head
 - A blanket to cover mother and baby
- Select participants to be mother and midwife (ask volunteers if possible) and recommend to the rest of your group to observe carefully and to report what is done well and what needs to be improved.
 - Give participants three minutes to prepare.
 - Stop the role play after 10 minutes even if not complete.
 - Conduct a discussion on the positive and negative aspects of players' actions.

Script for “mother”:

- You just gave birth to your first baby (a big boy of 4,000 g) on your back with an episiotomy.
- The labour and birth was painful, you are tired, and you want to rest.
- Your mother is with you.

Script for “midwife”:

- You are trained in warm chain implementation.

- You want to implement the warm chain perfectly.

Activity 5 – Conclusion (10 min)

- After the role play ask the participants to compare the actions of the “medical personnel” during the role play in Activity 2 and the first role play in Activity 4, paying special attention to the following points:
 - Drying and putting the baby on the mother’s chest
 - Assessing the baby’s wellbeing
 - Putting on the cap and socks and covering the baby with a blanket together with the mother
 - Clamping the cord
 - Counselling the mother (breastfeeding)
 - Attachment to the breast
 - Checking the baby’s feet for warmth and the body temperature at 30 minutes or if the feet are cold.
 - Eye care
 - Baby examination, weighing and cord care
- After the discussion comparing the role plays, ask the participants to make conclusions on key points of newborn care in the delivery room (paying special attention to the following points):
 - Preparation of warm premises
 - Preparation of needed equipment (linens, caps, socks, equipment for resuscitation, heated table and radiant heater)
 - Drying of the baby and putting him/her on the mother’s chest;
 - Assessment of the baby’s wellbeing on mother’s chest: breathing, malformations/birth trauma, prematurity/low weight;
 - Putting on the cap and socks and covering with common blanket
 - Cord clamping at the end of pulsation with physiologic management of the placenta OR just prior to controlled cord traction with active management of the third stage
 - Counselling the mother on breastfeeding (baby’s readiness, signs of correct attachment, frequency of feeding)
 - Eye care (after the first attachment to the breast, but not later than one hour after birth)
 - Checking the baby’s feet for warmth every 15 minutes and the body temperature thirty minutes after birth (digital thermometer, must be checked in axillaries)
 - Actions on baby re-warming
 - Complete examination after two hours (until then maintain skin-to-skin contact)
 - Twenty-four hour rooming-in
 - Warm chain steps
- Show **Slide 6C-30** and make brief conclusions on the module.
- Ask participants if they have any questions. Briefly answer any questions.

PART II – Clinical work

Activity 6 – Checking the preparation of a labour and birth room (90 min)

- Divide participants into sub-groups with one facilitator per sub-group.
- This activity can be conducted at any convenient time during the clinical week or during the day of individual labour and birth room organization by obstetrical group participants.

Preparation of the group before the maternity visit:

- Explain the task to the group: to check the labour and birth room readiness and availability of everything needed for care.
- Briefly explain the contents of Tables 1 and 2. Give each participant evaluation forms (Tables 1 and 2), pen/pencils and flipchart paper.
- After checking the birth rooms, discuss results with the participants.

Table 1. Check availability of the following equipment

Table with radiant heater	Yes ()	No ()
Equipment for resuscitation (bag, masks in two sizes and T-piece)	Yes ()	No ()
Oxygen supply	Yes ()	No ()
Suction apparatus	Yes ()	No ()
Sterile suction catheters	Yes ()	No ()
Disposable suction bulb	Yes ()	No ()
Infant laryngoscope	Yes ()	No ()
Sterile endotracheal tubes	Yes ()	No ()
Sterile gloves	Yes ()	No ()
Sterile materials (cotton, gauze napkin)	Yes ()	No ()
Thermometer	Yes ()	No ()
Linens/ towels for drying the infant	Yes ()	No ()
Blanket to cover mother and baby	Yes ()	No ()
Cord cutting/cord clamping set	Yes ()	No ()
Cord clamp	Yes ()	No ()
Oxytocin	Yes ()	No ()
Adrenalin	Yes ()	No ()
Vitamin K	Yes ()	No ()
1% tetracycline eye ointment	Yes ()	No ()
Syringes	Yes ()	No ()
Infant weighing scale	Yes ()	No ()

Table 2. Check the condition of the birth room and the functioning of the equipment/devices

Is the birth room free of draught?	Yes ()	No ()
Is there a good light in the birth room?	Yes ()	No ()
Is there a clock with a second hand in the birth room?	Yes ()	No ()
Is the birth room equipped to support a free labour and birth position?	Yes ()	No ()
Is the labour and birth room “family-oriented” and friendly?	Yes ()	No ()
The temperature of the birth room is:		
o 20-25°C	Yes ()	No ()
o > 25°C	Yes ()	No ()
o < 20°C	Yes ()	No ()
Is the overhead heater of the table functioning?	Yes ()	No ()
Is the bag:		
o Self-expanding with a volume of about 250–750 ml?	Yes ()	No ()
o Easy to take apart?	Yes ()	No ()
o Easy for cleaning and sterilizing?	Yes ()	No ()
o Without visual damage?	Yes ()	No ()
Mask:		
o Anatomical shape?	Yes ()	No ()
o With soft border?	Yes ()	No ()
o Without visual damage?	Yes ()	No ()
o Two sizes?	Yes ()	No ()
Is the suction apparatus functioning well?	Yes ()	No ()
o Manual/foot-operated?	Yes ()	No ()
o Electrically operated?	Yes ()	No ()
Is the incubator/heated crib for newborn:	Yes ()	No ()
o Clean?	Yes ()	No ()
o With a temperature of about 35°C?	Yes ()	No ()
o With a temperature < 30°C?	Yes ()	No ()
o With a temperature > 38°C?	Yes ()	No ()
Is the weighing scale functioning?	Yes ()	No ()

Activity 7 – Assessing newborn care in the delivery room at birth

- This part of the clinical work must be conducted when the group is attending deliveries.
- Each participant must receive Table 3 and complete it while attending births.
- The facilitator's role is to supervise what goes on during labour and birth (it is recommended that the facilitator fills in the same form), to collect participants' forms, and to conduct a group discussion the next day on what was done well and what was not good, as well as to discuss the assessment method and completing the forms.
- After the group discussion, facilitators should conduct a general discussion on Activity 7's results and create a plan for newborn care in the delivery room together with participants.
- Write down the results of the participants work in the following table.

	Name	Comments by the facilitator
1		
2		
3		
4		

Table 3. Procedures performed at birth and immediately after birth

Is a family member allowed to assist the women at the time of birth?	Yes ()	No ()
Does the staff wash their hands each time before assisting a birth?	Yes ()	No ()
Does the staff use sterile gloves during the birth?	Yes ()	No ()
Does the staff use only sterilized instruments and supplies?	Yes ()	No ()
Are the newborn's upper airways cleared at birth?	Yes ()	No ()
If yes, specify:		
o With a catheter by suction	Yes ()	No ()
o With a bulb	Yes ()	No ()
o Other _____	Yes ()	No ()
Is the baby dried after birth?	Yes ()	No ()
If yes, specify:		
o Immediately after birth	Yes ()	No ()
o Within 30 minutes	Yes ()	No ()
o With a dried warm towel/linen	Yes ()	No ()
Is the baby assessed at birth?	Yes ()	No ()
If yes, what is the newborn assessed for:		
o Breathing	()	
o Heart rate	()	
o Skin colour	()	
o Floppiness	()	
o Weight	()	
o Length	()	
o Head circumference	()	
o Congenital anomalies/birth trauma	()	
o Other _____	()	
Is the cord cut:		
o Immediately after birth	()	
o At approximately 1 min after birth	()	
o After more than 1 min after birth	()	
Is the cord clamped with		
o A rubber band	()	
o A silk string	()	
o A disposable clamp	()	
Where is the healthy baby placed immediately after birth?		
o On the resuscitation table	()	
o On the mother's chest (skin-to-skin)	()	
o Near the mother	()	
o Other _____	()	
Is the newborn's body temperature checked after birth?	Yes ()	No ()
If yes, specify:		
o 30 minutes after birth	()	
o Within 2 hours	()	
o After 2 hours	()	
o In all newborns?	Yes ()	No ()
o Only in low birth weight and sick infants?	Yes ()	No ()
Is the baby washed (specify):	Yes ()	No ()
o Immediately after birth	()	
o Within the first 2–6 hours	()	
o With warm water	()	
o With cold water	()	
o Other _____	()	

When does the baby start breastfeeding?

- When the baby shows signs of readiness ()
- Within the first 30 minutes ()
- Within the first 4 hours ()
- After the first 4 hours ()
- After the first 12 hours ()

Which of the following prophylactic procedures are carried out at birth?

- Use of vitamin K Yes () No ()
- Prophylaxis of gonoblenorrhoea Yes () No ()

Is a complete examination of the baby carried out in the delivery room?

Yes () No ()

If yes, specify:

- 2 hours after birth ()
- Within 2 hours after birth ()
- On a warm examination table ()

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Activity 3

Case Study 1

Sasha is a baby boy born after 39 weeks of gestation without any problems. He was breathing regularly, his heart rate was >120 beats/min, after one minute the baby was pink and very reactive.

After birth, the midwife dried Sasha thoroughly with a warm linen and placed him skin-to-skin with his mother. The midwife covered the baby's head with a hat. After 20 minutes the midwife weighed the baby, bandaged the cord, swaddled him tightly and placed him close to his mother in a crib.

After 30 minutes the baby's temperature was 36.2°C.

Questions:

- How would you define this infant?
- Was everything done in the right way?

Case Study 2

Sophia is born after 36 weeks of pregnancy in a delivery room at 23°C.

She cried immediately and was pink in 1 minute.

She was dried quickly by the midwife, and because she looked “small”, the midwife weighed her naked immediately. Her weight was 2,300 g.

The midwife was anxious and asked the neonatologist to check the baby’s medical status. Sophia stayed naked and covered with a piece of cotton under a radiant heater during 15 min.

The examination was normal and after 20 min she was given back to her mother for skin-to-skin contact.

After 30 min her temperature was 36.2°C.

Questions:

- How would you define this infant?
- Was everything done in the right way?

Module 7C

Breastfeeding

Learning objectives

By the end of the module the participants will:

- Understand the importance of breastfeeding
- Understand the danger of artificial feeding
- Know the main mechanisms of production and let-down
- Know the main characteristics of breast milk
- Understand the importance of “skin-to-skin” contact for initiation of effective breastfeeding
- Obtain skills to counsel women on first attachment to the breast
- Know correct breastfeeding positions
- Observe breastfeeding to provide supportive environment to the mother
- Learn breastfeeding counselling skills
- Learn to timely recognize difficulties related to breastfeeding and help mothers to overcome them

Module outline and duration:

Part I – Classroom work – 105 minutes

Activity 1 – Introduction	5 min
Activity 2 – Beginning of interactive presentation	20 min
Activity 3 – Massage demonstration on breastfeeding mother	10 min
Activity 4 – Continuation of interactive presentation	15 min
Activity 5 – Role play: first attachment to the breast	10 min
Activity 6 – Continuation of interactive presentation	15 min
Activity 7 – Role play: Counselling and helping mother to breastfeed	10 min
Activity 8 – Continuation of interactive presentation	20 min

Part II – Class-room –120 minute

Activity 9 – Assessment of breastfeeding, breastfeeding counselling session	120 min
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Preparation to the Module

- Review of existing publications, evidence-based literature and health strategies, recommended for breastfeeding. Make sure that all the participants have received the Module for participants.
- Make sure that all facilitators know their scopes of work during the training

Materials and audio-visual equipment

Materials

- Module for participants
- Local guidelines and state orders (policies) on breastfeeding
- Presentation 7C EPC ENG

Equipment

- Slide-projector or PowerPoint projector
- Flipchart
- Notebooks
- Markers
- Pens and pencils
- Badges
- Baby doll

Key messages

- Exclusive breastfeeding (just breastfeeding) is recommended up to 6 months and breastfeeding (plus complementary foods) is recommended up to 2 years and beyond
- Breastfeeding protects the child from infections, allergies and chronic diseases
- Exclusive breastfeeding improves the physical and psychological development of the child
- It is necessary to help the mother to initiate breastfeeding within one hour after delivery
- It is recommended to breastfeed on demand 8-12 times a day on average, during the day and night
- Exclusive breastfeeding can protect women from unwanted pregnancy
- Breast and nipple shapes do not hinder exclusive breastfeeding
- Every woman should be taught and counselled on how to breastfeed

Part I – Classroom work

Activity 1 – Introduction (5 min)

- Show **Slide 7C-1** and explain to the participants that while working on the Module you will discuss:

- Advantages of exclusive breastfeeding and influence of breastfeeding on physical and psychological development of the child
- Advantages of breastfeeding for the woman and child
- Vital components of breast milk
- Mechanisms of breast milk production and let-down
- Possible breastfeeding difficulties and problems and the ways to overcome them
- Practical help and counselling for the mother on breastfeeding

Activity 2 – Beginning of interactive presentation (20 min)

- Then show **Slide 7C-2** and ask the participants “How do you call these types of feeding?”
 - 1 – Exclusive breastfeeding
 - 2 - Predominant breastfeeding.
 - 3 – Artificial feeding
 - 4 – Mixed feeding (which is not acceptable with availability of breast milk)
 - 5 – Complementary (also called supplementary) feeding

- Then discuss terminology:
 - Exclusive breastfeeding: baby doesn't get any water or food except breast milk.
 - Predominant breastfeeding: baby gets a little water or other liquid in addition to breastfeeding
 - Artificial feeding: feeding baby with formula
 - Mixed feeding: when the baby of the first six months of life receives some other food and or drinks in addition to breastmilk
 - Weaning (supplementary feeding): introduction of semi-solid or solid food to the baby's nutrition from 6 months of age

Pay attention to the fourth kind of feeding “mixed feeding” and underline that if the mother breastfeeds her child the use of formula is not acceptable.

- Show **Slide 7C- 3** and ask the participants “What advantages of breastfeeding do they know?” Write the answers on the flipchart. Make sure that all the participants name the below-listed points:
 - Complete nutrition, easy to digest
 - Protects from infections
 - Provides bonding and development
 - Helps to avoid pregnancy
 - Benefits the mother's health

- Go to **Slide 7C-4** and ask the participants to list disadvantages/risks of artificial feeding. Write the answers on flipchart. Then pass on to the information in the presentation and explain it:
 - Risk of the child malnutrition and Vitamin A deficiency. Malnutrition is connected to the fact that the child is given certain portions of breast milk that do not suffice for his growth and development (that covers only the child's energy needs)
 - Formula does not contain Vitamin A which can lead to a deficiency
 - Mothers can become pregnant immediately after delivery as very little prolactin is developed to suppress ovulation (prolactin level is very high among breastfeeding mothers)
 - Risk of anaemia as well as breast and ovarian cancers is increased
- **Slide 7C-5** discuss with the participants in brief about prolactin reflex and its function:
 - When a child suckles the breast, impulses are produced that pass from the nipple to the brain. In response to this action, the hormone prolactin is secreted in the front part of the hypophysis, which then increases the production of milk.
 - Draw participants' attention to the fact that prolactin suppresses ovulation
 - Draw participants' attention to the fact that prolactin is produced abundantly at night.
 - Then ask the participants: how to maintain the prolactin reflex? Then show the slide with brief summary on how to maintain prolactin reflex.
- **Slide 7C-6** discuss briefly with the participants about the oxytocin reflex and its function. Draw participants' attention to the fact that during suckling the uterus actively contracts. When a child suckles the breast, sensory impulses pass from the nipple to the brain. In response to these impulses, the hypophysis secretes the hormone oxytocin, which passes from the blood to the breast and causes the contraction of muscle cells around areola, leading to the "let down" of milk.
 - Emphasize that stress, pain, anxiety can have a negative influence on oxytocin production. Ask the participants "What can a woman do to facilitate the oxytocin reflex?"
- **Slide 7C-7** explains to the participants other things that help mothers breastfeed and how to avoid problems connected with insufficient production of oxytocin.
- After that conduct a role play.

Activity 3 – Role play - Massage of breastfeeding mother (10 min)

- Ask one of the participants to come to the front of the room and sit down on the chair. Ask another facilitator (or do it yourself) to show the technique of massaging

the mother's back to stimulate the oxytocin reflex. Then ask the participants to sit behind each another and massage each others backs as demonstrated.

Activity 4 – Continuation of interactive presentation (15 min)

- **Slide 7C-8** demonstrates the mechanism of suckling; specify that the child makes “pressing” movements with his tongue. This allows the milk from the milk sinuses to enter into the baby's mouth, which is then swallowed. This is why it is important to properly attach him to the breast.
- Demonstrate **Slide 7C-9** and ask the participants to list the vital components of breast milk. Draw attention to the bifidus factor. Ask the participants whether it's important to prescribe probiotics for the exclusively breastfed child. The gastrointestinal enzymes available in breastmilk help with the maturation of the intestinal system and with food digestion, therefore breastfeeding plays a critical role in caring for children with jaundice.
- Ask the participants whether the mother has to stop breastfeeding if she has infections (e.g. viral infections). Ask them to explain answers. Then go to **Slide 7C-10**. Draw attention to the fact when a mother has an infection, her body produces antibodies to fight this infection. These antibodies are transferred to the baby through the breast milk, thereby protecting the baby.
- Discuss **Slide 7C-11**. Explain to the participants the differences between different kinds of breastmilk. Colostrum contains more protein than later milk, foremilk contains more lactose, hindmilk contains more fat than foremilk. Focus on the significant differences between foremilk and hindmilk especially the need for hindmilk in caring for low-weight children.

Activity 5 – Role play: First attachment to the breast in the delivery room (10 min)

- One of the participants to play the role of a woman who just delivered.
- Ask a participant (midwife, obstetrician/gynaecologist, neonatologist) to play the role of a health care provider who helps/counsels the woman on first attachment to the breast. You may ask for help from those participants who routinely counsel women.
- Ask the group to silently write down their comments to be discussed after the role play.
- Also ask the group to pay attention to the information delivering but not to focus on the counselling skills.

Task for participant playing the provider role: explain to the woman what the first attachment to the breast should look like.

Task for second participant: As the new mother, you have read a lot of literature during pregnancy and you know that breastfeeding is very useful for the mother and child and wish to breastfeed. In the women's outpatient clinic you were told about breastfeeding. You're worried about breastfeeding since you don't have any experience in it. Use the baby-doll to show how you are breastfeeding. During the counselling role play counselling indicate that you

are worried that you will not be able to properly attach the baby to the breast and you have mastitis.

- Discuss as a group the notes that the other participants have written regarding the role play after showing **Slide 7C-17**. The training participants should compare the help and counselling given during the role-play using the information from **Slides 7C-12 - 17**. Focus on whether the counselling involved informing the mother of the main signs of the child's readiness for the first breastfeeding and proper attachment.

Activity 6 – Continuation of interactive presentation (15 min)

- **Slides 7C-12 - 7C-16** demonstrate the first attachment to the breast. While showing these slides, discuss with the participants how they would counsel a woman during regarding the first breastfeeding. Pay attention to the beginning of the first attachment.
- **Slide 7C-12** – explain to the participants that success of breastfeeding is “skin-to-skin” contact between the mother and baby immediately after birth.
- **Slide 7C-13 – 7C-15** explains the signs of the child's readiness for breastfeeding (first attachment to the breast). The baby opens his mouth widely and starts moving his head from one side to another; opens his mouth and pushes his tongue out. The baby can also suckle his fist and crawl towards the breast. The signs of readiness to breastfeed usually appear at least an hour (and sometimes longer) after birth depending upon the child's state and the age of gestation. Pay attention that the healthcare provider **SHOULD NOT** attach the baby to the mother's breast. Let the baby attach when the baby is ready.
- **Slide 7C-16** the child's attachment to the breast. Ask the participants to discuss the signs of correct attachment to the breast. After the answers go to the next slide.
- Show **Slide 7C-17** and summarize the main points of proper first attachment to the breast. Ask the participants to discuss the role-play: which information was given to the mother, which information should have been given and how should the providers counsel mothers on the initiation of breastfeeding.
- Show **Slides 7C-18 – 7C-19** and using the pictures discuss with the participants: whether the child is positioned correctly for breastfeeding. Ask the participants to describe the signs of proper attachment to the breast.
- **Slide 7C-20**. Summarize the participants' answers using the slide.
- Show **Slide 7C-21** and discuss with the participants the most comfortable positions for breastfeeding. Note that there are **no** distinct recommendations as to certain positions that the mother has to use while breastfeeding. What is most important is that that the mother is relaxed and feels comfortable. Pay attention that all the signs of proper attachment to the breast are followed despite the mother's position.
- Show **Slide 7C- 22** and ask the participants “Why it is important to observe breastfeeding?” and “How do you observe breastfeeding?” Expected answers: “quickly identifies any problems, able to correct the problem”. **Slide 7C 22-23**

demonstrate the list of main points to pay attention to while observing breastfeeding.

- **Slide 7C-24** – shows main organizational points of observation for breastfeeding.

Activity 7 – Role play: Helping mother to breastfeed (10 min)

- Ask one of the facilitators to play the role of the breastfeeding mother.
- Ask one of the participants (midwife, obstetrician/gynaecologist, neonatologist) to play the role of a health care provider, who helps/counsels the woman on the first attachment to the breast in postpartum period. You may ask for help from those participants who routinely counsel women.
- Ask the group not to comment the actions of the role-play participants but rather write down their comments to be discussed after the role play.
- Also ask the group to pay attention to the information delivered rather than to counselling skills.

Task for facilitator: Act as if you are breastfeeding your child in an uncomfortable position: sitting on the chair, bent forward and swaying. The baby-doll (baby) is on your lap lying on the back with his head turned towards the breast, the baby's legs are hanging. During the role play you insist that you are breast feeding your child correctly. You give the breast to the baby (the baby is not moved to the breast,)

Task for the participants: explain and help the woman to breastfeeding in the proper position. Ask the participants how breastfeeding counselling is done in their maternities wards.

Activity 8 – Continuation of interactive presentation and conclusion (20 min)

- Show **Slide 7C- 25** and talk about main difficulties of breastfeeding.
- **Slide 7C-26** – demonstrates reliable and possible signs of milk insufficiency. Discuss that real hypogalactia cases occur in less than 1% of women. Pay attention that this information should be discussed with the mother soon after delivery to reduce her worries and concerns.
- Discuss with the participants the role-play. Ask the participants to compare the help and counselling skills in the role-play with the information in the presentation. Pay attention to the following: whether the health care provider observed the breastfeeding, which recommendations did the provider give to the mother and whether the provider helped the mother to choose a comfortable position for herself and the baby?
- Then show **Slide 7C-27** and discuss the possibilities of breastfeeding for babies with congenital abnormalities. You can show the “dancer’s hand” position, using the baby-doll.

Next discuss the conditions of the breasts which may cause difficulties in breastfeeding.

- On **Slide 7C-28** you can see the list of breast conditions which can cause problems with breastfeeding.
- On **Slide 7C-29** different breast shapes are shown. Help the participants to come to the conclusion that a baby can be breastfed by any type of breast. Healthcare providers should teach and help the mother to choose the optimal breastfeeding position.
- **Slide 7C-30** demonstrates the main points of helping the mother with flat and inverted nipples. Remind the participants that preparation of the nipple before delivery is usually ineffective. Important – help the mother right after delivery and keep helping her during her stay in the maternity. The use of a suction device and milk pump is possible before breastfeeding.
- **Slide 7C-31** shows the advantages of cup feeding if the baby is having difficulty breastfeeding. Don't discuss cup feeding in detail as it will be covered in the module "Caring for Low-weight Babies".
- **Slide 7C-32** demonstrates the list of factors that may hinder breastfeeding.
- Ask whether the participants have questions. If there are questions – discuss them until the participants feel satisfied with the answer. Suggest that the participant answer the questions of their colleagues using the information they have learned from the presentation.
- **Slides 7C-33 - 7C-34** shows and summarizes the information of the presentation: women can learn to establish and maintain breastfeeding in a number of ways, but evidence suggests that the on-going support from an individual or healthcare provider who is knowledgeable about breastfeeding is most effective for a positive breastfeeding experience.

Part II – Clinical work

Activity 9 – Assessment of breastfeeding and breastfeeding counselling (120 min)

- Split the participants into two groups: 1 facilitator for each group.
- In each sub-group identify 2 participants: one who will counsel a mother and the other who will observe the counselling session.
- Ask the rest of the participants to not speak or comment during counselling. All information will be discussed afterwards.
- Remind the participants that before entering the room they should ask the mother's permission and introduce themselves.
- Give each participant who is watching the interaction a breastfeeding observation form.
- It's possible to counsel more than one mother at a time.
- Check that most of the participants took part in this activity as counsellors.

BREASTFEEDING OBSERVATION FORM

Mother's name: _____ Date: _____

Baby's name: _____ Age of baby: _____

[Observations in brackets refer only to newborn, not to older babies]

Signs that breastfeeding is going well

BODY POSITION

- Mother relaxed and comfortable
- Baby's body close, facing breast
- Baby's head and body straight
- Baby's chin touching breast
- [Baby's bottom supported]

RESPONSES

- Baby reaches for breast if hungry
- [Baby roots for breast]
- Baby explores breast with tongue
- Baby calm and alert at breast
- Baby stays attached to breast
- Signs of milk ejection,
[leaking, afterpains]

EMOTIONAL BONDING

- Secure, confident hold
- Face-to-face attention from mother
- Much touching by mother

ANATOMY

- Breasts soft after feeding
- Nipples stand out, protractile
- Skin appears healthy
- Breast looks round during feed

SUCKLING

- Mouth wide open
- Lower lip turned outwards
- Tongue cupped around breast
- Cheeks round
- More areola above baby's mouth
- Slow deep sucks, bursts with pauses
- Can see or hear swallowing

TIME SPENT SUCKLING

- Baby releases breast
Baby suckled for ___ minutes

Signs of possible difficulty

- Mother's shoulders tense, leans over baby
- Baby's body facing away from mother's
- Baby's neck twisted
- Baby's chin not touching breast
- [Only shoulder or head supported]

- No response to breast
- [No rooting observed]
- Baby not interested in breast
- Baby restless or crying
- Baby slips off breast
- No signs of milk ejection

- Nervous or limp hold
- No mother/baby eye contact
- Little or no touching
- Shaking or poking baby

- Breasts engorged
- Nipples flat or inverted
- Fissures or redness of skin
- Breast looks stretched or pulled

- Mouth not wide open, points forward
- Lower lip turned in
- Baby's tongue not seen
- Cheeks tense or pulled in
- More areola below baby's mouth
- Rapid sucks only
- Can hear smacking or clicking

- Mother takes baby off breast shortly after starting

Notes:

- Adapted with permission from "B-R-E-A-S-T-Feeding Observation Form" by H C Armstrong, *Training Guide in Lactation Management*, New York, IBFAN and UNICEF 1992.

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Training Module 8C

Postpartum Care of Mothers and Newborns

Learning objectives

By the end of this module the participants will:

- Understand the importance of effective postpartum care for mothers and newborns
- Gain effective and safe skills in mother and newborn postpartum care
- Understand the advantages of breastfeeding for mothers and newborns
- Understand the principles of correct breast attachment
- Understand the methods of family planning available during the first 6 months of the postpartum period

Module Outline and Duration

Part I – Classroom Work - 105 min

Activity 1 – Introduction	5 min
Activity 2 – Small group work	20 min
Activity 3 – Interactive presentation	35 min
Activity 4 – Small group work	20 min
Activity 5 – Role play 1	10 min
Activity 6 – Role play 2	10 min
Activity 7 – Conclusion	5 min

Part II – Clinical Work

Activity 8 – Practical work: counseling women in postpartum contraception	-----
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Preparation

- Review existing evidence and WHO recommendations regarding postpartum care of mothers and newborns
- Ensure that all participants have the module for participants
- Ensure that all facilitators understand their responsibilities for this training

Materials and equipment

Materials

- Module for participants
- Case studies

Equipment

- LCD or overhead projector
- Flipchart
- Markers (several colors)
- Name tags

Key messages

- Effective principles of mother and newborn postpartum care :
 - Close monitoring of a mother's condition is essential for her future health
 - Full-time rooming in
 - The importance of exclusive breastfeeding for mothers and newborns
 - Effective prevention of infections
- Expensive and complicated technology is not required for effective postpartum care.
- The absence of care and psychological support are key causes of frustration for new mothers.
- A newborn is a human with rights and needs: love, warmth, breast milk, cleanliness and safety.
- Lactational amenorrhea is a contraceptive method that is 98% effective if all conditions are met.

Part I – Classroom Work

Activity 1 –Introduction (5 min)

- Show **Slide 8C-1** and tell participants that women in the postpartum period require practical assistance and emotional support. This kind of care depends on traditions and culture and can change with time. Every woman possesses an individual capacity for psychological adaptation to motherhood. Some women have conflicting reactions and feelings. Unfortunately, the importance of postpartum care is not widely recognized, but it is equally important as antenatal and intranatal care.

Activity 2 – Small group work (20 min)

- The name of this activity is “Practicing postpartum care for mothers and newborns in maternities”
- This activity is designed to explore current practices of postpartum care for mothers and newborns in the maternities participants are coming from.
- Divide the participants into 2-3 groups (the quantity of groups should correspond to the number of represented maternities).
- Ask participants to list on a flipchart the practices of maternal and neonatal postpartum care used in their maternities.
- Ask participants to nominate one person from each group to present the results of their group work.
- The appropriateness of the practices presented should not be commented on by the facilitator.
- The facilitator’s objective is only to determine existing practices of postpartum care of mothers and newborns.
- Explain to the participants that the results of their group work will be discussed in detail at the end of your presentation.

Activity 3 - Presentation (35 min)

- During the facilitator’s presentation major attention should be paid to the practices that differ greatly from accepted practices. Practices presented by participants on flipcharts during Activity 2 should be used.
- Show **Slide 8C-2** and underline the importance of postpartum care as a component of effective perinatal care. In the postpartum period emotional and physical bonds between the mother and newborn are forming. It is also a period when serious complications can develop. To avoid prolonged negative consequences, these complications should be discovered and addressed immediately.
- Ask participants about the system of monitoring a mother’s condition in the early postpartum period (within 2 hours after delivery) that is accepted in their maternities. When the answers are received show **Slides 8C-3 – 8C-4** and discuss with participants the basic principles of postpartum care.
- Show **Slide 8C-5** and highlight the advantages of full time rooming-in.
- Show **Slide 8C-6** and tell the participants that postpartum exercises should be started one day after delivery and continued for at least 3 months. These exercises should take 5 minutes twice a day.
- Show **Slide 8C-7** and discuss with participants possible ways to prevent maternal and neonatal postpartum infections.

- **Slide 8C-8.** Typical postpartum problems. A lack of assistance and psychological support are key reasons for a mother's frustration. Two examples can be given:
 - A preterm baby – the mother doesn't have any information about the infant's condition and she is not allowed to take care of the infant.
 - Nipple cracks – there is no information about correct attachment, no practical assistance, the child is restless and relatives are not allowed to visit.
- Turn to **Slide 8C-9** and discuss with the participants major postpartum complications and diseases.
- **Slide 8C-10.** Note that specific evidence for the ineffectiveness of these practices comes from multiple studies.
- **Slide 8C-11.** Four needs of newborns. Display only the title of the slide at the beginning.
- Then ask the participants:
 - What needs does a newborn have in your opinion?
 - Display one by one the four needs and interpret each of them. Note that these recommendations of care are evidence-based.
 - Ask the participants: What do you think are some advantages of breastfeeding? Then display **Slide 8C-12**. Give an example of the trial that was conducted by Widström et al (1990). It was shown that early initiation of breastfeeding within the first 30 minutes after birth has a positive influence on the relationship between the mother and newborn. Underline that breastfeeding is not only best for the infant's growth and development; it is also important for establishing emotional bonds between the mother and newborn.
- Turn to **Slides 8C-13 - 8C-14**. List the 10 steps of successful breastfeeding and ask the participants which step presents difficulties in their maternities. Emphasize that only the exact implementation of each step will enable the mother to establish successful breastfeeding.
- Show **Slides 8C-15 - 8C-18** and explain the difficulties of breastfeeding. Note that none of these difficulties is an indication to separate the mother and newborn. Discuss overcoming these difficulties and providing practical and psychological support for the mother.
- **Slide 8C-19.** Display the slide and ask participants: What techniques do you know to prevent infection in newborns? Then display one by one the techniques to prevent infection in newborns.
- Turn to **Slide 8C-20** and explain that the postpartum period is a splendid opportunity for the family to find new ways (patterns) of communication. Husbands should visit the mother and newborn to establish new bonds.
- Show **Slide 8C-21**, note that several RCTs devoted to diverse methods of postpartum training efficacy have been conducted. Despite the absence of a complete consensus in recommendations regarding what must be included in a curriculum for postpartum training, these trainings have a positive influence on parents' behaviour and family health indices.

- Turn to **Slide 8C-22** and explain the conditions in which the lactational amenorrhea method is highly effective as a method of family planning.
- Show **Slide 8C-23** and tell participants which family planning methods can be used in the postpartum period. Note that the choice of method depends on:
 - Method of feeding the baby
 - Safety, availability, and duration of the method
 - Effectiveness of method
 - Likelihood of side effects
 - Woman's choice and the relationship between the couple
 - Concomitant diseases
 - Woman's sexual behavior
- Turn to **Slide 8C-24** and tell the participants about danger signs in the postpartum period. Emphasize the importance of counseling women about this issue before discharge.
- Ask the participants how long mothers and newborns stay in their maternities before discharge after a normal delivery. Ask the participants about the criteria for maternal and newborn discharge. Show **Slides 8C-25 to 8C-28** and discuss the maternal and newborn criteria for discharge.
- Finish your presentation with these points: it is necessary to remember that mothers are adults and responsible for their own behavior. Effective postpartum care includes monitoring a mother's health and giving her precise and comprehensive information to allow her to make informed decisions.

Activity 4 –Small group work (20 min)

- The name of this activity is: "What changes in postpartum care can be made in your maternity?".
- The aim of this activity is to detect practices that need to be changed in maternities, and to ensure that participants learn the material well.
- Divide the participants into 2-3 groups (similar to Activity 2).

Ask the participants to refer to the list of practices created during Activity 2 and point out the practices of mother and newborn postpartum care that need to be changed or implemented.

- Have participants give their answers. Correct or supplement the answers if necessary.

Activity 5 – Role play 1 (10 min)

- Ask two participants to assist you during the role play.
- Distribute the assignment to the participants (Role Play 1) and give them 5 minutes to prepare and demonstrate the role play.

Role play 1

One participant plays the role of a health care worker, another plays the role of a woman.

Role play statement: Irina, 22 years old, delivered at 39 weeks a girl with body mass 3.7 kg, length 54 cm. She breastfeeds and is planning to continue breastfeeding for 1.5 years. Irina will be discharged tomorrow. You need to counsel her in the lactational amenorrhea method.

Irina asks the consultant:

- How long can she use the lactational amenorrhea method?
- What is the method's effectiveness?

It is important to include the following:

- The method is grounded in physiological infertility during breastfeeding – menstruation is absent and pregnancy is impossible.
 - The lactational amenorrhea method can be used only for the first 6 months after delivery.
 - The method is effective when there is exclusive breastfeeding and amenorrhea.
 - The method is 98% effective (2-3 % chance of pregnancy during the first 6 months).
 - The efficacy of the method decreases if fluid or additional feeding is applied.
- At the end of the demonstration discuss with the participants what was done correctly by the “doctor” and what points must be considered when counseling women in this issue.

Activity 6 - Role play 2 (10 min)

- Ask two participants to assist you during the role play.
- Distribute the assignment to the participants (Role play 2) and give them 5 minutes to prepare and demonstrate the role play.

Role play 2

One participant plays the role of a health care worker, and another one plays the role of client.

Role play statement: Tatiana delivered yesterday a healthy boy with a body mass of 3,9 kilo, and had an episiotomy. You are visiting Tatiana the next day. Counsel her about:

1. Care for perineal sutures.
2. What can be used to decrease perineal pain.

It is important to include the following:

- Shower daily
 - Clean the perineum
 - Frequently change sanitary pads
 - If there is perineal pain provide psychological support.
Paracetamol can be given orally for pain medication. If not effective, use another non-steroid analgesic (e.g. ibuprofen).
- After the demonstration discuss with participants what was done correctly by the “doctor” and what points must be considered when counseling women on this issue.

Activity 7 - Conclusion (5 min)

- When concluding underline that effective principles of care must be used for postpartum care of mothers and newborns.
- A universal scheme of postpartum period management that is suitable for all women is unlikely to be developed.
- Tell the participants that you will continue to work on this module during the clinical week.
- Complete this module by answering participants’ questions.

Part II – Clinical work

Activity 8 – Practical work: counseling women in postpartum contraception

- Make sure that during the theoretical week all key points of mother and newborn postpartum care were understood.
- Ask the course director / head of the maternity to help you to choose 4-5 mothers in a postpartum department for counseling. The newborns should not have any problems, and should be 2-3 days old.
- Discuss with participants all methods of contraception (advantages and disadvantages) in a classroom before they counsel in the postpartum department.
- Divide the participants into pairs. Tell them that they will go to a postpartum department to counsel women in postpartum contraception. Each pair will communicate with one woman; one participant will counsel and the other will observe the counseling. The second participant should pay attention to the content of counseling and how well the elements of counseling were used. The second participant can also supplement if something was overlooked by the first participant.
- At the end assemble the participants in a classroom and discuss the activity. Ask participants about difficulties they had when counseling.
- Ask the participants who can counsel women in postpartum contraception and on which day of the postpartum period counseling should be provided.

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Role play 1

One participant plays the role of a health care worker and another participant plays the role of a client.

Role play statement: Irina, 22 years old, delivered at 39 weeks a girl with a body mass of 3.7 kilo, length 54 cm. She breastfeeds and is planning to continue breastfeeding for 1.5 years. Irina is being discharged tomorrow. You need to counsel her in the lactational amenorrhea method.

Irina asks the consultant:

1. How long can she use the lactational amenorrhea method?
2. What is the method's effectiveness?

Role play 2

One participant plays the role of a health care worker, and another one plays the role of a mother.

Role play statement: Tatiana delivered yesterday a healthy boy with a body mass of 3.9 kilos. She had an episiotomy. You are visiting Tatiana the next day.

Counsel her about:

1. Care of perineal sutures
2. What can be used for decreasing perineal pain

Module 9C

Neonatal Resuscitation

Learning Objectives

By the end of the module the participants will:

- Be ready for neonatal resuscitation in every birth, if needed
- Ensure appropriate environment and equipment for every birth
- Do the initial assessment of newborn status to decide when to start resuscitation
- Provide neonatal resuscitation through a continuous Assess-Classify-Manage cycle
- Understand the importance of the team approach for neonatal resuscitation.

Module Outline and Duration

Part I – Classroom work – 150 min

Activity 1 – Introduction	10	min
Activity 2 – Interactive presentation	90	min
Activity 3 – Conclusion	10	min
Activity 4 – Small group work	40	min

Part 2 – Clinical practice

Activity 5 – Practical exercise on bag and mask assembling	-----
Activity 6 – Practical exercise on neonatal resuscitation	-----

Preparation for the Module

- Review of current publications, scientific evidence and healthcare strategies focused on safe motherhood and effective neonatal care.
- Ensure that all trainees have a copy of Participant Manual.
- If possible, identify which common practices related to safe pregnancy and effective neonatal care are used in the participants' work settings.
- Ensure that all facilitators know their roles and responsibilities regarding this module.

Training Materials and Audiovisual Equipment

Training Materials

- Participant Manual
- Case studies for small group work (if needed)
- Local guidelines and orders related to neonatal resuscitation (if possible)

Equipment

- LCD or slide projector
- PowerPoint presentation 9C – EPC ENG
- Flipchart
- Markers
- Pens or pencils
- Name badges

Equipment for the practicum week

- Clock with second hand
- 1 resuscitation mannequin and doll
- 2 masks: size 1 and size 0
- 1 self inflating bag (250-400ml)
- 1 suction device and tubing (mechanical or electrical or mouth-operated)
- Cloth for folding and placing under shoulders
- 2 towels/cloths for drying/warming

Key Messages

- Every newborn must be assessed at birth to decide when to start resuscitation.
- The appropriate environment and necessary resuscitation equipment must be prepared for every birth in advance.
- Resuscitation equipment must be checked daily to ensure proper working condition.
- Each health worker attending deliveries must be skilled in neonatal resuscitation and should be ready to perform resuscitation at every birth.
- A baby's Apgar score at the end of the first minute does not determine whether or not neonatal resuscitation is needed.
- Effective neonatal resuscitation can potentially decrease neonatal mortality and morbidity by about 40%.

PART I – Classroom work

Activity 1 – Introduction (10 min)

- Show **Slide 9C–1** and discuss the module objectives with the participants. Explain that this module contains two parts: Part 1 – Classroom work which includes several activities, and Part 2 – Clinical practice done during the practicum week.
- Show **Slide 9C–2** and ask the participants how many newborns require resuscitation? Explain that “extensive resuscitation” includes intubation, chest compression, and drug administration, whereas “assistance to initiate breathing” can include tactile stimulation (drying), suction and ventilation with bag and mask.
- Show **Slide 9C–3** and explain that all babies should be assessed for the need for resuscitation. In the case when resuscitation is needed, a standard approach is to be applied.
- Show **Slide 9C-4** and highlight that during this module, participants will study neonatal resuscitation as an effective standard approach which can decrease neonatal mortality and morbidity by up to 40%.

Activity 2 – Interactive presentation (90 min)

- Show **Slide 9C-5** and discuss the main topics of effective neonatal resuscitation which should be started without any delay. Highlight the need for any institution in which births occur to develop and administer local guidelines and training programmes based on current international practices, standards, skills and local clinical audits.
- Before showing the following slide, ask the participants, “Is the need for neonatal resuscitation predictable?” Discuss briefly and then show **slide 9C-6**. Highlight that some neonates (as described on this slide), require neonatal resuscitation more often than others. Some clinical signs presenting during labour may also indicate a higher need for neonatal resuscitation.
- **Slide 9C-7**. Explain that up to half of newborns who require resuscitation have no identifiable risk factors before birth. Thus the need for resuscitation must be anticipated at every birth and every birth attendant must be skilled in delivering neonatal resuscitation. Equipment for resuscitation and trained staff must be present in the delivery room or operation theatre not only when a high risk delivery is expected, but at every birth.
- **Slide 9C-8** describes requirements for every delivery: a warm and draught-free delivery room; warm, dry towels to help prevent neonatal hypothermia; a flat work surface; good light to facilitate assessing the newborn; a sterile kit to cut the cord (scalpel or scissors); and sterile gloves. Emphasize the importance of appropriate hand washing of the staff.
- **Slide 9C-9**. Discuss with participants neonatal resuscitation equipment which must be prepared for every birth and checked daily. Every institution in which

births occur should select a staff member(s) who is responsible for preparing and checking resuscitation equipment and materials.

- Show **Slides 9C-10 and 9C-11** and explain that the decision to start and continue neonatal resuscitation is based on simultaneous assessment of the baby's breathing, heartbeat, muscle tone and skin colour. These assessments are performed at birth and re-evaluated after every 30 seconds to decide whether to progress to the next step. Stress that the baby's breathing is the key sign.
- Before showing **Slide 9C-12**, initiate a short discussion:
 - What is an Apgar score?
 - What does it assess?
 - When the newborn's Apgar score is determined?
- After this discussion, show **Slides 9C-12 and 9C-13**. Emphasize that the results of scoring depend on many factors (for example, the mother's use of anaesthetics and analgesics, neonatal infection, congenital anomaly, or prematurity) and that accurate scoring requires good training. Review how to determine a baby's Apgar score with participants.
- Before showing **Slide 9C-14**, initiate a short discussion, "Can we use the Apgar score at the end of the first minute of life as an indicator to start neonatal resuscitation?"
- After discussing, show **Slide 9C-14** and explain that a baby's need for neonatal resuscitation is identified immediately at birth, whereas the first Apgar score is determined at the end of the first minute after birth. Therefore, by the time the Apgar score is determined, it is too late to start neonatal resuscitation.
- **Slide 9C-15** shows the complete scheme of four categories of assessment and action, ordered in strict sequence. Respiration, heart rate and colour are assessed simultaneously every 30 seconds, after which the baby is re-evaluated each time and the health care provider decides whether or not to progress to the next step in the sequence.
- **Slide 9C-16** shows the initial assessment process which allows the provider to determine the newborn's status at birth and decide whether or not the baby requires resuscitation. If the newborn cries or breathes well (30-60 breaths per minute and does not grunt and gasp), becomes pink and has good muscle tone, he/she does not need resuscitation and should not be separated from the mother. The baby can be dried, placed directly on the mother's chest, and covered with a dry cloth to maintain body temperature. The provider should continue to monitor the baby's breathing, activity, and colour.
- **Slide 9C-17**. If the baby is not breathing, or is grunting or gasping, or is hypotonic, the provider should consider the need for neonatal resuscitation. In this case, the provider should do the steps listed on the slide and continue to assess the baby on a flat surface under a radiant heater.
- **Slide 9C-18** shows the position the baby should be in order to clean his/her airways. The baby should lie on a flat surface. Describe proper suctioning technique – first from the mouth, then from the nose, with suctioning and drying not taking longer than 30 seconds. Initiate a short discussion here by

asking, “Do we aspirate with a catheter or with a bulb?” A bulb is safer for the newborn and less expensive than a catheter. The bulb must not be reusable. **Note:** Ask another facilitator to demonstrate positioning the baby correctly, suctioning, and drying using a mannequin.

- **Slide 9C-19** is hidden. The facilitator should decide whether or not it is necessary to show this slide to participants. If not, the facilitator can describe this information during the discussion of **Slide 9C-18**.
- **Slide 9C-20** describes steps to follow in the case of presence of meconium-stained waters. Explain to the participants that routine aspiration of meconium before delivery of baby’s shoulders, during birth, or during resuscitation can cause severe aspiration pneumonia. One obstetric technique that was used in the past to decrease aspiration is intrapartum suctioning (suctioning meconium from the infant’s airway after delivery of the head but before delivery of the shoulders). However, current recommendations no longer advise routine intrapartum oropharyngeal and nasopharyngeal suctioning for infants because there is a lack of evidence that intrapartum suctioning is effective for decreasing the risk of aspiration syndrome.
- It is important to immediately assess the baby at birth for breathing, heart rate and muscle tone. If the newborn is breathing well (30-60 breaths per minute, no gasping, no grunting), his/her heart rate is over 100 beats per minute, and he/she has good muscle tone, provide essential care and close monitoring.
- If the newborn has breathing difficulties (no breathing or is gasping or grunting), has a heart rate less than 100 beats per minute, or is hypotonic, do not dry the baby, immediately separate the baby and put him/her on a flat surface, clean the trachea through the endotracheal tube, and then dry him/her.
- **Slide 9C-21.** Explain that during resuscitation, endotracheal intubation can be considered if a staff member skilled in endotracheal intubation is present.
- **Slide 9C-22.** Explain that after the immediate assessment at birth and administration of initial steps, further resuscitative efforts should be guided by simultaneous assessment of the baby’s breathing, heart rate, and colour. In general, after initial respiratory efforts, newborn infants should be able to establish adequate regular breathing that is sufficient to improve colour and maintain a heart rate of more than 100 beats per minute. In these cases, the baby should be put on the mother’s chest. Health workers should continue to provide essential care and monitoring.
- If the newborn has breathing difficulties, has a heart rate less than 100 beats per minute, is cyanotic or pale, or is hypotonic, ventilation with a bag and mask should be started. In this case, health workers should call for help because this newborn may require intubation, chest compression, and/or drug administration.
- **Slides 9C-23 and 9C-24.** These slides describe ventilation techniques using a bag and mask. Stress that the bag must only be squeezed using the fingers. Point out that if the maternity has no bag and mask equipment, health workers must deliver ventilation using a mouth-to-mouth or mouth-to-nose technique.

- **Slide 9C-25** shows steps to perform if no chest wall movements are detected during ventilation. Shortly describe most probable reasons for a lack of chest wall movement.
- **Note:** Give a correct short ventilation demonstration (not more than 10 minutes) using a bag, mask, and mannequin.
- Describe briefly the key parts of a self-inflating bag (patient's outlet, oxygen inlet, air inlet with oxygen reservoir attached, and safety valve). Show the participants how to check the working condition of a Ambu bag (safety valve, no leakage):
 - Hold the patient's exhale with your hand and squeeze the bag – you must see the safety valve and hear the sound of its opening.
 - Hold the patient's exhale and the safety valve with your hand and squeeze the bag – you will not be able to do it if the bag does not leak; you will feel resistance.
- Show the participants how to perform artificial lung ventilation with a bag and mask using a resuscitation mannequin:
 - Note the time;
 - Position the newborn correctly (a cloth roll under the shoulders, head extension position);
 - Attach the mask to the newborn's face and seal it;
 - Squeeze the bag with your fingers gently;
 - Check for chest wall movements;
 - If there are no chest wall movements, act appropriately (**refer to Slide 9C – 25**);
 - Ventilate at a rate of 40-60 squeezes per minute.
- **Slide 9C-26** describes **REASSESSMENT** of the newborn's breathing and heart rate after 30 seconds of ventilation with the bag and mask (now 1 minute after birth) where the baby's breathing has improved. Remind the participants that health workers should assess the baby's condition for the first time during the initial assessment, then again after the initial steps of resuscitation and ventilation with bag and mask has been performed.
- **Slide 9C-27.** If the baby's condition improves after ventilation with the bag and mask and has a good respiratory rate and heart beat rate, he/she should be given to his/her mother. The baby's breathing condition and temperature should be carefully monitored during this time.
- **Slide 9C-28** describes **REASSESSMENT** of the newborn's breathing and heart rate after 30 seconds of ventilation with the bag and mask (now 1 minute after birth) where the baby's breathing has not improved. In the described cases, the baby will require continued resuscitation.
- **Slides 9C-29** through **9C-32** show chest compression rules (slide 9C-29) and techniques (slides 9C-30 to 9C-32). (Note: Slides 9C-31 and 9C-32 are hidden. The facilitator should decide whether to show them or not). Highlight the importance of achieving approximately 120 events per minute (30 ventilations and 90 chest compressions per minute). Emphasize that the quality of the compressions and breaths are more important than the rate. Remind the participants that lung ventilation and chest compression cannot be performed by one person alone; participation of at least two trained staff is

necessary. Highlight the fact that at this stage of resuscitation, the possibility of intubation should be considered. Therefore, a person with intubation skills should be present.

- **Note:** Demonstrate two neonatal resuscitation techniques on the mannequin.
- **Slides 9C-33 and 9C-34** describe reassessment of the baby's breathing and heart rate 1 minute and 30 seconds after birth, after ventilation with a bag and mask and chest compressions have been completed. In the case where the baby's heart rate is less than 60 beats per minute, give 30 seconds of chest compression and ventilation with 100% of oxygen, followed by 10-30 mcg/kg of adrenalin
- **Slide 9C-34.** In addition to adrenaline, the facilitator can describe other drugs that can be considered:
 - **Volume expansion:** Consider volume expansion when blood loss is suspected or the infant appears to be in shock (pale skin, poor perfusion, weak pulse) and has not responded adequately to resuscitative measures (ventilation, chest compression, adrenaline). Normal saline rather than albumin is the solution of choice for volume expansion in the delivery room. The recommended dose is 10 mL/kg, which may need to be repeated. When resuscitating premature infants, care should be taken to avoid giving volume expanders too rapidly, because rapid infusions of large volumes have been associated with intraventricular haemorrhage.
 - **Bicarbonate:** Please note that Sodium bicarbonate is controversial. Beveridge & Wilkinson (2005) states the following in Background: "The most recent international consensus guidelines for neonatal resuscitation state that "there is insufficient data to recommend routine use of sodium bicarbonate in resuscitation of the newly born. Its use is discouraged during brief cardiopulmonary resuscitation and if it is used during prolonged arrests unresponsive to other therapy, it should be given only after establishment of adequate ventilation and circulation.
 - The Resuscitation Council (UK) recommends administration of sodium bicarbonate when there is no effective cardiac output, or virtually none, prior to a second dose of adrenaline
 - **Naloxone:** Administration of naloxone is not recommended as part of initial resuscitative efforts in the delivery room for newborns with respiratory depression. If administration of naloxone is considered, heart rate and colour must first be restored by supporting ventilation. The preferred route is IV or intramuscular. Given the lack of clinical data in newborns, endotracheal administration of naloxone is not recommended. The recommended dose is 0.1 mg/kg, but no studies have examined the efficacy of this dose in newborns. In 1 case report, naloxone given to an infant born to an opioid-addicted mother was associated with seizures. Therefore, naloxone should be avoided in infants whose mothers are suspected of having had long-term exposure to opioids.
- **Slide 9C-35.** Preparation for transfer of the baby and providing care during transfer:
 - Ensure that the baby's condition is stable before transfer.

- Have a health care provider (with experience in establishing and maintaining intravenous lines, resuscitating the baby and giving drugs) accompany the baby (if possible).
 - Gather essential equipment, supplies, drugs and fluid.
 - Treat low blood glucose, if possible:
 - If the baby is able to feed, breastfeed the baby or use alternative feeding method;
 - If the baby is not able to feed, establish the IV line (if possible) and give fluid.
 - Keep the baby warm (using an incubator, skin-to-skin contact, or a warm blanket).
- **Slide 9C-36.** Ask the participants, “When should you consider stopping neonatal resuscitation efforts?” This is a difficult decision both for health workers and for parents, as there is no clear information about the maximum length of time resuscitation efforts should be continued.
 - **Slide 9C-37.** This diagram shows the main causes of 4 million neonatal deaths worldwide in 2000. Complications of neonatal asphyxia are the third most common cause of neonatal mortality in the world, but these deaths can be reduced by providing effective neonatal resuscitation.
 - **Slide 9C-38** shows the definition of newborn asphyxia. Explain that asphyxia is a disease, not a symptom. An asphyxia diagnosis must be supported by laboratory test results: acidosis after birth; Apgar score of 0-3 points for more than 5 minutes; neurological sequelae in 72 hours; and polyorgan dysfunction. Asphyxia is diagnosed if all four signs are present. As with the Apgar score, neonatal asphyxia should not be used as an indicator to start neonatal resuscitation.

Activity 3 – Conclusion (10 min)

- Show **Slide 9C-39** for conclusions.
- Ask the participants if they have any questions. Answer questions.

Activity 4 – Small group work (40 min)

This activity can be conducted at any time, as long as module 4N has been completed.

- Divide participants into four groups. Ensure that each group includes physicians and nurses. Give flip-chart paper and markers to each group.
- Ask participants to carefully read the case study and questions in the Participant’s Manual at the end of this module.
- Explain that group 1 will answer question 1, group 2 question 2, etc.
- Ensure that participants understand the task.

- Give each group 10 minutes to answer their question. Answers should be written on the flip-chart and presented to the big group by one subgroup member.

Case study:

Bogdan is born after 40 weeks of gestation. Vacuum-extraction was performed. The amniotic fluid was clear. Immediately after birth the midwife put Bogdan on his mother's chest, he was gasping. The midwife cut the cord and moved Bogdan to the table, turned the radiant heater on, dried the boy with towels, and conducted tactile stimulation along his back.

Then the midwife aspirated from the nose and the mouth and assessed Bogdan (end of the first min). Bogdan was breathing irregularly at a rate of only 20 breaths per minute. When his nose and mouth were aspirated he grimaced. His heart rate was 90 beats per minute. His extremities were cyanotic and he was hypotonic. The midwife called for help.

The doctor came within three minutes with a bag and a mask, re-assessed Bogdan and started ventilation.

Questions.

1. Was everything done correctly in Bogdan's case? What could have been done differently?
2. Which resuscitation equipment must be prepared for every birth?
 - When should the equipment have been prepared?
 - How was the preparation of equipment in Bogdan's case?
3. Should Bogdan be assessed by an Apgar Score at 1 minute? Please explain?
4. What should be done for Bogdan in the following 5 minutes?

Possible answers:

- **Question 1: Was everything done correctly in Bogdan's case? What could have been done differently?** No, in this case Bogdan was not assessed for breathing at birth. He was separated from his mother and put on a cold surface. The midwife turned on the radiant heater after Bogdan's birth. Suction was performed in the wrong order (before positioning the baby correctly). Bogdan's breathing; heart rate and colour were assessed too late (at the end of first minute).
- Things that could have been done: prepared environment before delivery (turn on radiant heater, prepare warm towel); assessed breathing at birth; separated from mother and positioned correctly; suctioned first from mouth, then from nose; assessed for breathing, heart rate and colour after initial steps. All skilled attendants must be able to perform neonatal resuscitation. In case need the midwife should call for help and start immediately bag and mask ventilation. It is strongly recommended that the midwife or the skilled attendant for birth must be certified in neonatal resuscitation.

- **Question 2: Which resuscitation equipment must be prepared for every birth?**
 - Bag and masks in two sizes; mucus extractor, bulb, or catheter; laryngoscope with appropriate blade; intubation tube; normal saline; adrenaline; syringes prepared and checked for working condition before birth.
- **When should the equipment have been prepared??**
 - Resuscitation equipment should have been prepared before the baby's birth.
- **How was the preparation of equipment in Bogdan's case?**
 - In Bogdan's case, the resuscitation equipment was not prepared in advance and was not placed in the birth room. Thus ventilation with a bag and mask started too late.
- **Question 3: Should Bogdan be assessed by an Apgar Score at 1 minute? Please explain?**
 - Bogdan must be assessed by Apgar score at the end of 1st minute but not for decision to start neonatal resuscitation.
 - Apgar score at 1 minute – 5 points: heartbeat = 1 point; breathing = 1 point; skin colour = 1 point; muscle tone = 1 point; reflex response = 1 point.
- **Question 4: What should be done for Bogdan in the following 5 minutes?**
 - Continue ventilating with bag and mask for 30 seconds. Reassess his breathing, heart rate and colour.

PART II – Clinical practice

- During the clinical week, hands-on sessions on neonatal resuscitation (Activities 5 and 6 below) must be conducted.
- All the participants can be split into 2 groups.

Activities 5 – Practical exercise on bag and mask assembly

- The goal of this session is to give the participants practice in bag and mask assembly.
- Show the participants how to assemble and disassemble an Ambu bag correctly (attach and detach the mask to/from the bag).
- Stress that it is necessary to attach the oxygen reservoir to the self-inflating bag to ensure 90-100% oxygen supply to the newborn.
- Explain to the participants how to select the correct mask size for neonatal resuscitation: size 0 for a preterm newborn, size 1 for a term newborn.
- Remind participants that it is preferable to use masks with soft edges for newborn resuscitation.
- Show participants how to assemble and disassemble the bag and masks.
- During the course, each participant must practice preparing and using the bag and mask at least three times.

Activity 6 – Practical exercise on neonatal resuscitation

- The goal of this session is to practice neonatal resuscitation procedures.
- This activity is conducted in the joint group of obstetricians-gynaecologists, neonatologists, midwives and paediatric nurses. All participants must practice neonatal resuscitation (drying the mannequin, suction, ventilation with bag and mask, chest compression) at least three times.
- Before each exercise, the bag and mask must be disassembled.
- Show participants all of the neonatal resuscitation steps: position the baby correctly; suction first from mouth then from nose; dry the baby; ventilate with bag and mask (attach the mask correctly, seal the mask, squeeze the bag with fingers gently with a rate of around 40 squeezes per minute, ventilate for 30 seconds); and perform chest compression (ask a co-facilitator to help you and show participants two chest compression techniques: with thumbs and with fingers).
- When ventilating, suggest to participants an easy way to count:
 - SQUEEZE – count aloud “one hundred and one”, SQUEEZE – “one hundred and two”, SQUEEZE – “one hundred and three”, etc.,

until you reach "one hundred and forty". You can then start again or continue with SQUEEZE – "two hundred and one", SQUEEZE, etc.

- Use Table 1 to evaluate participants' neonatal resuscitation skills during Activity 6. Check off each action if it was done correctly.
- Use the case studies below for more practice.

Scenario 1

Describe the case step by step and select participants to perform appropriate resuscitation measures required after each step. Ask the rest of the group to observe and be ready to discuss this case after it is finished.

Task 1: A "full term newborn" is gasping at birth. Your actions?

Possible actions: cut the cord; position the mannequin correctly and put a cloth roll under its shoulders to extend the neck slightly; suction from mouth, then from nose; and describe assessing the baby's breathing, heart rate and colour.

Task 2: After performing these actions, the newborn is gasping, is cyanotic and has a heart rate of 120 beats per minute. Your actions?

Possible actions: start bag and mask ventilation under positive pressure for 30 seconds. After that, assess breathing, heart rate and colour.

Task 3: After this the newborn starts breathing well, the heart rate is 120 beats per minute, and the newborn becomes pink. Your actions?

Possible actions: stop bag and mask ventilating; assess the newborn by Apgar scale; place baby on the mother's chest for skin-to-skin contact.

Scenario 2

Describe the case step by step and select participants to perform appropriate resuscitation measures required after each step. Ask the rest of the group to observe and be ready to comment when this case is finished.

Task 1: A "full term newborn" is gasping breathing at birth. Your actions?

Possible actions: cut the cord; position the mannequin correctly and put a cloth roll under its shoulders to extend the neck slightly; suction from mouth, then from nose; and describe assessing the baby's breathing, heart rate and colour.

Task 2: After this the newborn is gasping, is cyanotic and has a heart rate of 90 beats per minute. Your actions?

Possible actions: start bag and mask ventilation under positive pressure for 30 seconds. After that, assess breathing, heart rate and colour.

Task 3: The newborn is gasping, is cyanotic and his heart rate is 50 beats per minute. Your actions?

Possible actions: start chest compression and continue bag and mask ventilation. At the same time, quickly assess the baby's Apgar score. After 30 seconds, re-evaluate the baby's breathing, heart rate and colour.

Table 1. Evaluation of participant neonatal resuscitation skills

Actions	Participant							
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
1. Assess breathing, muscle tone at birth								
2. Position the newborn correctly: with a roll of cloth under the shoulders to slightly extend the neck								
3. Aspirate from the newborn's mouth and nose								
4. Dry the newborn								
5. Assess breathing, heart rate, colour								
6. Position the newborn correctly again								
7. Select an appropriate mask (size 0 for preterm babies and size 1 for term babies)								
8. Attach the mask to the newborn's face so that it covers the chin, mouth and nose								
9. Seal the mask to the newborn's face								
10. Clearly note the time ventilation begins and ask the assistant to record it								
11. Squeeze the bag with the fingers								
12. Ventilate at a rate of 40-60 squeezes per minute								
13. Evaluate chest wall movements during ventilation								
14. Take correct measures if no chest wall movements: <ul style="list-style-type: none"> o Reposition the newborn's head o Take off and reseal the mask o Squeeze the bag with full hand 								
15. Assess the newborn's breathing and heart rate after 30 seconds of bag and mask ventilation								
16. Start chest compression if the heartbeat is below 60 beats per minute, continue ventilating with bag and mask								
17. Assess the newborn's heartbeat and breathing rate after 30 seconds of chest compression and bag and mask ventilation								
Conclusions:								

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15. Cochrane review relevant to the module: Endotracheal intubation at birth for preventing morbidity and mortality in vigorous, meconium-stained infants born at term
16. Cochrane review relevant to the module: Epinephrine for the resuscitation of apparently stillborn or extremely bradycardic newborn infants
17. Cochrane review relevant to the module: Laryngeal mask airway versus bag-mask ventilation or endotracheal intubation for neonatal resuscitation
18. Cochrane review relevant to the module: Sodium bicarbonate infusion during resuscitation of infants at birth

Module 10 C

Integration of Prevention of Mother to Child HIV Transmission into Effective Perinatal Care

Learning objectives

By the end of the module, participants should:

- Be informed on the magnitude of MTCT in the European region
- Be informed about the risk of Mother to Child Transmission of HIV
- Understand that PMTCT needs to be fully integrated in routine antenatal, intra partum and postpartum care
- Understand that HIV-positive mothers and babies need to be treated with respect and confidentiality
- Be familiar with prophylaxis ARV treatment to prevent MTCT, counselling and specific care for HIV-positive women in antenatal period
- Be familiar with major obstetric scenarios for HIV-positive women at admission to maternity
- Be knowledgeable about specific care for the immediate postpartum period for HIV-positive mother and newborn preventing MTCT
- Be conversant with infant feeding patterns in cases of HIV-positive mother for preventing MTCT
- Be trained in basic counselling skills

Module outline and length

Part I – Classroom work (110 min)

Activity 1 – Introduction	5 min
Activity 2 – Interactive presentation 1 st part	15 min
Activity 3 – Group discussion	10 min
Activity 4 – Interactive presentation 2 nd part	15 min
Activity 5 – Interactive presentation 3 rd part	60 min
Activity 6 – Conclusion	5 min

Part II – Clinical work

Activity 7 – Checking potential stigmatization in maternity	60 min
Activity 8 – Role play: Infant feeding counselling for HIV-positive mother	30 min

Preparation for the module

- Review WHO EURO Clinical Protocol for the WHO European Region on 10 Prevention of HIV Transmission from HIV Infected Mothers to their Infants, 2006.
- Review national guidelines/protocols on PMTCT.
- Ensure that all participants have their manual.
- Ensure that all co-facilitators know their respective functions during the work with this module.

Materials and audiovisual equipment

Materials

- Participant manual
- Table of possible stigmas for the clinical week for each participant (Attachment 1)
- Printed scripts of the roles for the role play (Attachment 2)

Equipment

- Video projector or overhead projector
- Presentation 10C EPC ENG
- Flip-chart
- Markers
- Pens and pencils
- Name tags
- Doll

Key Module Messages

- Eastern Europe has one of the fastest growing HIV epidemics in the world.
- The prevention of MTCT needs to be fully integrated into routine care in antenatal and maternity site, thereby preventing the creation of a "PMTCT vertical program."
- HIV voluntary testing and counselling should be routinely offered, as it is an entry point to preventing MTCT (antenatal care and maternity).
- The risk of MTCT could be reduced from > 40% to < 2% by receiving appropriate care during the antenatal, labour and postpartum periods.
- ARV prophylaxis for mother during pregnancy, labour and postpartum period and for newborn is the main strategy to prevent MTCT.
- Elective caesarean section is recommended to reduce MTCT for 50%.
- Safe delivery practices should be implemented to reduce newborn exposure to mothers' blood and secretions.
- Breastfeeding replacement should be discussed: if available, affordable, sustainable and safe as up to 15% of newborns could be infected through breastfeeding.
- HIV status in infants born to HIV-positive mothers can be established by 6 weeks of age by using PCR test. PCR diagnosis is used in children younger 18 month of age because ELISA test can be false positive due to presence of maternal antibodies before the age of 18 month.
- Infants born to HIV+ mothers should receive prophylaxis against *Pneumocistic carinii*. If the negative status is proven the prophylaxis is stopped.

Organizational part

- It is important that a minimum of two facilitators conduct this module. The Course Director must decide which part should be presented by a neonatologist, midwife and/or obstetrician.

PART I – Classroom work

Activity 1 – Introduction (5 min)

- **Show slide 10C-1.** The prevention of MTCT needs to be fully integrated into routine care in antenatal and maternity site, thereby preventing the creation of a “PMTCT vertical program.”
- It is also important to engage more HIV-positive women to seek medical care; with integration the effectiveness of PMTCT program would likely increase.
- Present and discuss the learning objective of this module with participants.
- Then a facilitator will share the following main points:
 - The risk of MTCT is significant in the European region
 - The risk of a newborn being infected without any intervention is approximately 40% and could be reduced to 2% if appropriate interventions are implemented.
- a. The facilitator should emphasize the necessity of having PMTCT fully integrated into routine antenatal, intra partum and postpartum care in order to avoid stigmatization and creating a new vertical program.
- b. The facilitator should emphasize the necessity of treating HIV-positive mothers and babies with respect and confidentiality therefore each medical staff need to have basic counselling skills.

Activity 2 – Interactive presentation 1st part (15 min)

- **Show slide 10C-2.** Explain to participants:
 - The highest prevalence of HIV/AIDS is in Sub-Saharan Africa followed by East and South Asia.
 - Presented data are estimates. Note information may be underreported.
- Stress that Eastern Europe has one of the fastest-growing HIV epidemics in the world.
- **Show slide 10C-3.** These graphs show the increase of HIV prevalence (number of cases per 10,000 people) among pregnant women in the Russian Federation, Ukraine, Belarus and Georgia – Georgian data is not available before 2004.
- **Show slide 10C-4.** Explain to participants that the comprehensive strategy to reduce HIV infection in mothers and infants includes four complementary components. Only the third one - the Prevention of Mother to Child Transmission - will be explored during the module.

Interactive activity 2-3 min: Before showing the following slide, please ask participants:

Will all babies born to an HIV-positive mother be infected with HIV?

Lead a short discussion (under 2 or 3 minutes).

- **Show slide 10C-5.** Present to participants the following information: Preble and Piwoz (2002) used MTCT data from scientific studies to show the risk of MTCT in a **hypothetical** group of 100 HIV positive mothers if no interventions are done during pregnancy, labour and if the mother is breastfeeding for 2 years.
- Explain to participants that on the slide they can see the results of the analysis of this hypothetical group showing that 63 infants out of 100 born to HIV-positive mothers are not infected despite the fact the mothers were not treated at all and breastfed their children until they were two years age. The point is that not all children born of HIV-positive mothers will be HIV-positive themselves.
- **Show slide 10C-6.** Present to participants the interventions which should be done to prevent mother-to-child HIV transmission. Tell them that in the absence of any intervention the risk of such transmission is 15–30% in non-breastfeeding populations. Breastfeeding by an infected mother increases the risk by 5–20% to a total of 20–45%. The risk of MTCT can be reduced to under 2% by interventions that include antiretroviral (ARV) prophylaxis given to women during pregnancy and labour and to the infant in the first weeks of life, obstetrical interventions including elective caesarean delivery (prior to the onset of labour and rupture of membranes), and complete avoidance of breastfeeding. With these interventions, new HIV infections in children are becoming increasingly rare in many parts of the world, particularly in high-income countries.
- Note that in many resource-constrained settings, elective caesarean delivery is seldom feasible and it is often neither acceptable nor safe for mothers to refrain from breastfeeding. In these settings, the efforts to prevent HIV infection in infants initially focused on reducing MTCT around the time of labour and delivery, which accounts for one to two thirds of overall transmission, depending on whether the mother breastfeeds.

Interactive activity (3 min):

Please ask one participant:

Which interventions, ideally, should be implemented to reduce MTCT to 2%?

1. *ARV prophylaxis or ART during pregnancy and labour;*
2. *Elective caesarean section; and/or*
3. *Safe breastfeeding replacement.*

- **Show slide 10C-7.** Tell the participants that goals for the European region to eliminate HIV infection in infants by 2010 could be achieved if the four prongs of *Strategy on Elimination of HIV in Infants in Europe* are implemented
- **Show slide 10C-8.** Explain to participants that due to stigma and discrimination women are often afraid to seek care, even to prevent MTCT. Therefore, in each clinic and in each maternity, all staff needs to respect the rules of confidentiality and help in the fight against discrimination and stigmatization targeting HIV-positive women and their children. Discrimination against PLWHA or people thought to be infected is a violation of human rights.

Activity 3 – Group discussion (10 min)

- **Show slide 10C-9.** HIV-positive mothers and babies need to be treated as other mothers and babies, with love, respect and benefiting from evidence-based perinatal care.
- **Ask one participant** to read out loud a letter written by an HIV-positive woman to maternity staff.
- **Then ask all participants:** *Why was this woman so thankful to the maternity staff?*
- Write their answers on the flip-chart. Discuss answers.

Activity 4 - Interactive presentation 2nd part (15 min) PMTCT in antenatal period

- Show **slides 10C-10 and 10C-11.** The first intervention during the antenatal period is to provide appropriate information and offer HIV testing for each woman receiving antenatal care. Tell participants that HIV counselling and testing during antenatal clinic visits is a key PMTCT strategy. Partner involvement needs to be supported.
- Show **slides 10C-12 and 10C-13.** The second PMTCT intervention in antenatal care is to ensure special care and support to each HIV-positive pregnant woman.
 - Tell participants that all HIV-positive women should make decisions about her pregnancy by herself/with her partner.
 - The role of health workers needs to be strictly limited to providing clear and detailed information to women about MTCT risks as well as information about preventative procedures.
 - HIV-positive pregnant women need to receive appropriate care and additional information and counselling about MTCT prevention
 - Staging of HIV disease; ARV prophylaxis or therapy
 - Counselling on safest mode for birth
 - Counselling on safest infant feeding

- Medical care and support to HIV-positive pregnant women needs to be multidisciplinary. Most HIV-positive women discover their HIV-positive status in antenatal clinics, and this can be extremely stressful and difficult for women. Peer support via HIV-positive social workers is essential, and should be provided to HIV-positive women as soon as possible.
- After confirming a woman's HIV-positive status, the woman should be gently referred to a special department/centre where she should have a complete medical assessment for her condition.
- Show **slides 10C-14 and 10C-15**. The third intervention in the antenatal period is the prescription of antiretroviral drugs to HIV-positive pregnant women.
- Based on the women's health status and the availability of ARV medications, pregnant women could receive different ARV regimens during pregnancy.
- The decision of ART regimen during pregnancy (MTCT prophylaxis regimen or treatment regimen) should be based on clinical stage of HIV disease and in combination with immunological criteria.
- ARV treatment regimens for those women who are on need of ART for their own health is also effective to prevent MTCT. ARV prophylaxis is also given to mothers during labour and postpartum period and for their infants during first weeks of life.
- The most commonly recommended prophylaxis ART regimen (for women who do not need ARV treatment for their own health) during pregnancy is Zidovudine (AZT or ZDV) from 24-28 weeks of pregnancy or as soon as possible thereafter.
- ZDV could also be used if Highly Active Antiretroviral Treatment (HAART) is not available.
- HAART, a combination of 3 drugs, is the core intervention for the treatment of advanced HIV disease or AIDS. HAART is also the most effective prophylaxis for MTCT.
- The most common drug combinations used as HAART
 - Zidovudine/Lamivudine/Nevirapine
- Ask participants to open the Attachment 3 at the end of this module and tell them that here they can find more detailed information on stages and recommendations for treatment of HIV+ pregnant women, but you will not do it now because of the limited time. Propose them to read it carefully at home.

Interactive activity 5 min:

Please ask the group or one participant:

Which ARV regimens should be prescribed to an HIV+ asymptomatic pregnant woman, without immunosuppression (count of CD4 > 350 cells/mm³) and if Viral load is less than 10 000 copies/ml and patient is ZDV naive?

The correct answer is:

Zidovudine (AZT or ZDV) started from 24-28 weeks of pregnancy or as soon as possible thereafter.

Activity 5 - Interactive presentation 3^d part (60 min) PMTCT in maternity (intrapartum and post partum)

- Show **slide 10C-16**. Inform the participants that the following slides will describe PMTCT interventions in maternity. The first PMTCT intervention at admission to the maternity is the assessment of the maternal HIV status, *if HIV status is unknown pre-test counseling and rapid HIV tests should be done.*
- **Show slide 10C-17**. This slide repeats the main message to participants, which is that all maternity staff need to respect the rules of confidentiality everywhere providing care for women and their children:
 - Do not isolate HIV-positive women into special department or room;
 - Do not deliver HIV-positive woman in a special delivery room or special operating theater;
 - Do not mark HIV-positive patients' files so they are easily recognized in the maternity;
 - Never disclose HIV-positive status;
 - Provide to HIV-positive women and their children the same level of care as HIV-negative women;
 - Implement rooming-in and free visiting of relatives and friends for all women including HIV-positive mothers
- Main reasons preventing HIV-positive women from seeking medical care is their fear of their HIV-positive status and the potential stigmatization and discrimination towards them and their children.
- Medical care providers should respect the confidentiality and privacy of each woman, including HIV-positive mothers and their babies, and do their best to fight against stigma and discrimination in their maternity.
- Show **slide 10C-18**. Explain to the participants that the HIV status of women admitted to the maternity could be assessed from the antenatal records if existing. If the HIV status is not known prior to admission conduct rapid HIV pre-test counselling and if the woman agrees to be tested, conduct a rapid HIV test in the maternity. If the woman refuses to be tested provide her with safe delivery and appropriate counselling on safe baby feeding.
- Show **slide 10-C-19**. Tell participants that the second intervention is the choice of delivery method is very important as it could reduce the MTCT risk
- Show **slide 10-C-20**. Tell that whenever a woman is admitted to the maternity an assessment of labour needs to be conducted immediately.
- If this woman is known as HIV-positive

1. If the labour has not start yet (no contractions) an elective Caesarean section needs to be recommended if the Caesarean section could be provided safely and if the pregnancy is reaching 38 weeks.
 2. If the membranes are not ruptured for more than four hours, an elective Caesarean section is also recommended in the same condition as above.
- Elective Caesarean section can reduce MTCT risk by 50% (evidence Level A)
 1. If the woman is admitted with active contractions or with a rupture of membranes > 4 hours, let the labour continue and insist on safe delivery practices to reduce contact between the foetus and mothers' fluids (blood, vaginal secretions)
 - Show **slide 10-C-21**. Choice of delivery method if HIV-positive status is unknown at admission to the maternity. In this case, after the labour assessment pre test counselling should be conducted to explain to the woman the risk of HIV transmission to her baby, and the possibility of reducing this risk using specific interventions.
 - If the woman agrees to be tested for HIV, conduct the test immediately in the maternity using a rapid HIV test. The results will be known after 30 min and can be given to the mother.
 - If the test is positive follow the same scenarios as described on the previous slide.
 - If the test is negative let the labour continue.
 - Show **slides 10-C-22 and 23**. Emphasize that the elective Caesarean section could reduce MTCT by 50% if done prior labour and if rupture of membranes < 4 hours. The facilitator should stress that in addition to the strict implementation of Universal Precautions which need to be observed in any contact with a patient, surgeons performing a Caesarean section for HIV-positive women need to follow safe technique during interventions.
 - Evidence based data suggests that the risk of a surgeon becoming infected during a Caesarean section is < 0.3% for HIV, compared to a 3% risk of infection by Hepatitis B and 30% risk of infection with Hepatitis C.
 - Show **slides 10-C-24 and 25**. Stress that if an elective Caesarean section could not be performed, during vaginal delivery safe practices need to be implemented to reduce contact between the foetus and the mother's fluids (blood, vaginal secretions)
 - Read each line on the slides and answer to question if any.
 - Show **slides 10-C-26 and 27**. Tell participants that the next PMTCT intervention which should be done in maternity is the prescription of antiretroviral drug during labour/caesarean section.
 - Ask participants to open Attachment 4 at the end of this module and discuss its content with them. Emphasize to participants that:
 - HIV positive women receiving ART during pregnancy should receive the same ART regimen during labour and continue the same ART regime postpartum.

- If pre-labour caesarean section (PLCS) woman should be prescribed intravenous Zidovudine is available, start IV infusion four hours before PLCS (2mg/kg for first hour and 1mg/kg/hour until the cord is clamped).
- Tell participants that if pregnant woman on ARV prophylaxis or not on ARV prophylaxis during pregnancy:
 - At the onset of labour they should prescribe:
 - AZT 600mg (two tablets of 300mg) once* (Note that the woman may have already taken this dose at home – ask her and record the results. If she has taken this dose at home, administer NVP and 3TC) PLUS
 - NVP 200mg as a single dose* (not necessary to give this if the woman was on AZT for > 4 weeks) PLUS
 - 3TC 150mg and continue 3TC 150mg every 12 hours until delivery
 - After childbirth give
 - AZT 300mg and 3TC 150mg twice a day for 7 days
- Show **slide 10-C-28 and 29**. Tell participants that HIV is present in breast milk of HIV-positive mothers. The risk of MTCT through breastfeeding is about 15 %. The risk becomes higher as the breastfeeding period continues longer.
- Show **slide 10C-30**. Describe to participants that this study shows the levels of MTCT depend on the feeding patterns during a 15 - month period: exclusive breastfeeding, mixed feeding and breastfeeding replacement. Stress that the greatest risk of MTCT occurs in the case of mixed feeding.
- Show **slide 10C-31**. Emphasize that breastfeeding replacement should be discussed with the mother and the family and recommended only if **available, feasible, affordable, safe and sustainable**. Otherwise exclusive breastfeeding is recommended during the first months of life and should be discontinued as soon as conditions for the replacement feeding are met.
- Table: Quantity of needed milk from birth until six month (ml/kg/day).

Age	Quantity of milk ml /kg/day
1 st day	60 ml
2 nd day	80 ml
3 ^d day	100 ml
4 th day	120 ml
5 th day	140 ml
Example : Birth weight 3kg $3,000 \times 140 = 420$ ml/24 hours 70 ml if 6 feeding a day or 55 ml if 8 feeding per day use a cup to feed the baby	
6 th day	160 ml
7-14 th day	160-200 ml
15-31 st day-6months	200 ml

- Main rules of milk formula preparation:
 - Strictly follow basic hygiene (hand washing, safe water, clean containers)
 - Strictly follow ratio water and formula powder (don't overdilute the preparation)
 - Keep milk formula in proper place
- Show **slide 10C-32**. Tell that the mother has the right to choose which feeding choice she prefers for her child. The role of the health worker is limited to providing the mother with evidence based information about the risks and benefits of all feeding infant options. When the mother has selected her feeding option, the health worker should train her on the selected feeding technique.
- Show **Slide 10C-33** with the steps on counselling of HIV+ mother on infant feeding. This algorithm of counselling HIV-positive women on infant feeding options helps health workers to conduct effective counselling.
- *It is important to demonstrate proper techniques such as infant preparation, cup feeding, and expression of breast milk. It is also very important to observe the mother when she is practising and to give her some feedback, praising her for the good practices and correcting her if she needs assistance.*
- *This will allow medical workers to be sure that the mother understands the recommendation and will be able to safely feed her baby.*
- Show **slide 10-C-34 and 35**. Tell participants that all babies born to HIV-positive mothers need similar care as other newborns. They need to be skin-to-skin with the mother if possible. The cord needs to be cut carefully to prevent blood splashing.
- ARV newborn prophylaxis prevents virus replication as the baby could be exposed to HIV virus during labour through the mother's fluids (blood, vaginal secretions). This is a preventive post exposure prophylaxis.
- The facilitator should stress that ARV prophylaxis for the newborn depends on: the mother's ART regimen or ARV prophylaxis during pregnancy and labour.
- Ask participants to open Attachment 5 at the end of this module and tell them that all infants born to HIV-infected women need to receive a course of ARV drugs as post-exposure prophylaxis. The ARV regimen for newborns will depend upon if and for how long the mother received either ART or ARV prophylaxis during pregnancy. Present shortly the content of the Attachment 5 to the participants and note that if the capacity to deliver combination ARV prophylaxis (NVP plus AZT) does not exist, give single dose NVP to mother and newborn.
- Show **slide 10-C-36**. Stress that the postpartum period in maternity is an ideal time for providing counselling on important issues such as infant feeding, infant care and growth monitoring, infant HIV testing and on the prophylaxis of Pneumocystis carinii pneumonia. Infant HIV testing depends on the test availability, but needs to be done as soon as possible. This will also prevent healthy babies from being considered 'HIV-positive babies' for an unnecessary period of time.

- Ask participants to open Attachment 6 at the end of this module and discuss with them how to interpret correctly the results of HIV antibody test.
- Show **slide 10-C-37 and 38**. Emphasize that post partum care for HIV-positive mothers need to be similar to HIV-negative mothers. Nevertheless PLWHA are more vulnerable to bacterial infections because of their depressed immune systems. Special attention needs to be given to post Caesarean section antibiotic treatment of possible infections.
- Any specific treatment received previously by the HIV-positive mother needs to be continue, except HAART if it was prescribed for PMTCT, which needs to be stopped after birth.
- All efforts should be made to help HIV-positive mothers who are addicted to drugs.
- Show **slide 10-C-39, 40 and 41**. Tell participants that it is extremely important to use the postpartum period as an opportunity to counsel HIV-positive mothers and her family on family planning. One of the PMTCT strategic interventions is the prevention of unwanted pregnancies for HIV-positive women.
- Partner presence is essential. Therefore, partners need to be actively and pleasantly invited to attend family planning counselling sessions together with the mother.
- Facilitator needs to stress that condom use has a dual effect in preventing pregnancies and STIs.
- Care for HIV-positive women needs to take a multidisciplinary approach. A reliable referral system should be established including HIV/AIDS specialists, NGOs, harm reduction programs and narcological clinics including substitution therapy.

Activity 6: Conclusion 5 min

- Emphasize to participants that PMTCT interventions should be integrated into daily routine care in antenatal care and in maternities. Stress that basic care for HIV-positive women and babies should be identical to those provided to HIV-negative patients.
- Remind participants that summary of stages and recommendations for treatment, prophylaxis and infant testing are in the Attachments 3 - 6 of this module in their participant guides (same Attachments are at the end of this module in the facilitator's guide).

PART II – Clinical work

These activities will be conducted during the second week and the precise plan needs to be developed together with the course director.

Activity 7: Assessing possible stigmatisation in the maternity department (60 min)

This activity should be conducted at any convenient time during the clinical week

- Divide participants on sub-groups: 1 facilitator per 1 each sub-group (ideally not more than 10 participants per sub group)

Prepare the groups before the visit to maternity:

- Explain the task to the group: check for signs of stigmatization and discrimination in different maternity departments: at admission, in delivery room, in operation theatre, in postpartum department or in nursery if existing.
- Each sub-group should go to a different department.
 - Duration of the assessment (20 min)
 - Preparation of presentation on flip-chart (10 min in class room)
 - Presentation of one representative from each sub-group (3-5 min)
- Time for discussion and summarization (10 min)

List of potential signs of HIV and AIDS-related stigma and discrimination that may be found in a maternity

Stigmatization during hospitalization of HIV-positive mothers/babies in maternity may include:

1. HIV specialized (referral) maternity or ward for HIV-positive women
2. HIV specialized delivery room, operation theatre
3. Special entrance in maternity for HIV-positive mother and visitors
4. Isolated wards for HIV-positive newborns
5. Specific HIV-positive separation for mother/baby
6. Visits limitation for HIV-positive women during in maternity
7. Limited ambulation of HIV-positive mothers in maternity (limitation of the use of common toilets, dining room, meeting rooms and corridors)
8. Refusal of HIV-positive woman's companion during labour/Caesarean section
9. Labelling of patient's files

Stigmatization during provision of medical care for HIV-positive mothers/babies in maternity may include:

1. Absence of HIV rapid test in admission
2. Mandatory HIV testing for the baby despite mother refusal

3. Absence or poor quality of pre and post test counselling in admission
4. Refusal or low (<60%) level of elective Caesarean section for HIV-positive women
5. No "skin-to-skin" contact for HIV-positive mothers/companions and babies
6. Special no rooming-in policy for HIV-positive mother/babies
7. Poor quality of infant feeding replacement (inaccuracy in quantity and quality)
8. Refusal of newborn immunization (BCG)
9. Frequent out stocks of ARV drugs for mother and baby
10. Absence or poor quality of specific postpartum family planning counselling for HIV-positive mother.

Stigmatization by staff (attitude) may include:

1. Recommendation to HIV-positive mother to terminate pregnancy and/or get sterilized
2. Public disclosure of HIV status, violation of confidentiality
3. Intended avoidance of examination, care and communication with HIV-positive mothers
4. Assimilation by the staff of all HIV-positive women to marginalized social groups (drugs users or prostitutes)
5. Use of special insulting names, words or gestures to designate HIV-positive mother /baby;
6. Inadequate use of protective gear, demonstrative precaution and disinfection
7. Special and demonstrative infection precautions used for HIV-positive women/baby in order to protect the staff
8. Special disinfection after HIV-positive woman stay.

Activity 8: Role play: Infant feeding counselling to HIV-positive mother (30 min)

- Select two participants to be a "mother" and a "health worker" (ask for volunteers if possible) and recommend the rest of your group observe the role play carefully. They should not interrupt the actors. At the end, everyone will have the opportunity to report on what occurred and what could be improved.
- Give 3 minutes to the actors to read their roles and to prepare.
- Recommend the actors perform in the middle of the room where everyone can see and hear them.
- Inform the actor that they have only 10 minutes to perform.
- The facilitator should interrupt the performance after 10 minutes regardless of completion (may want to provide an 8 minute warning).
- The facilitator should congratulate the actors and lead a discussion on positive and negative aspects of their role behaviour by writing comments on a flip-chart. (*It is recommended the flip chart be separated by a vertical line into positive and negative sides (10 min)*)

- Summarise the discussion, focus on the positive (7 min)

Script for the “mother”:

The name of mother is Natalia, she is 24 years old, and she discovered that she is HIV-positive when she was 12 weeks pregnant. She decided to keep her baby and received ART since 28 weeks.

Natalia is married and her husband was in maternity during operation.

Baby Sergey was born by planned Caesarean section performed this morning.

Natalia feels good after the operation but she worries about Sergey’s future.

Natalia is not sure about how she will feed her Sergey.

Feeding replacement will be financially difficult for the family.

During counselling she is keeping Sergey close to her.

Script for “medical worker”:

Medical worker has to conduct counselling on infant feeding for HIV-positive mother.

Facilitator

The facilitator records on the flip chart positive and negatives recommendations and actions. Then he/she will ask participants to open their module and to look to **slide 10C-33: Steps on Counselling HIV-positive Mothers on Infant Feeding**

The different comments can be reanalyzed reviewing these steps.

The facilitator will conclude stressing the importance of organised and well planned counselling to support the mother in decision making for appropriate infant feeding

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Attachment 1

List of potential signs of HIV and AIDS-related stigma and discrimination that may be found in a maternity.

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1. HIV specialized (referral) maternity or ward for HIV-positive women
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4. Isolated wards for HIV-positive newborns
5. Specific HIV-positive separation for mother/baby
6. Visits limitation for HIV-positive women during in maternity
7. Limited ambulation of HIV-positive mothers in maternity (limitation of the use of common toilets, dining room, meeting rooms and corridors)
8. Refusal of HIV-positive woman's companion during labour
9. Labelling of patient's files

Stigmatization during provision of medical care for HIV-positive mothers/babies in maternity may include:

1. Absence of HIV rapid test in admission
2. Mandatory HIV testing for the baby despite mother refusal
3. Absence or poor quality of pre and post test counselling in admission
4. Refusal or low (<60%) level of elective Caesarean section for HIV-positive women
5. No "skin-to-skin" contact for HIV-positive mothers/companions and babies
6. Special no rooming-in policy for HIV-positive mother/babies
7. Poor quality of infant feeding replacement (inaccuracy in quantity and quality)
8. Refusal of newborn immunization (BCG)
9. Frequent out stocks of ARV drugs for mother and baby
10. Absence or poor quality of specific postpartum family planning counselling for HIV-positive mother.

Stigmatization by staff (attitude) may include:

1. Recommendation to HIV-positive mother to terminate pregnancy and/or get sterilized
2. Public disclosure of HIV status, violation of confidentiality
3. Intended avoidance of examination, care and communication with HIV-positive mothers
4. Assimilation by the staff of all HIV-positive women to marginalized social groups (drugs users or prostitutes)
5. Use of special insulting names, words or gestures to designate HIV-positive mother /baby;
6. Inadequate use of protective gear, demonstrative precaution and disinfection
7. Special and demonstrative infection precautions used for HIV-positive women/baby in order to protect the staff
8. Special disinfection after HIV-positive woman stay

Scripts of the roles for the role-plays:

“Mother”:

The name of mother is Natalia, she is 24 years old, and she discovered that she is HIV-positive when she was 12 weeks pregnant. She decided to keep her baby and received ART since 28 weeks.

Natalia is married and her husband was in maternity during operation.

Baby Sergey was born by planned Caesarean section performed this morning.

Natalia feels good after the operation but she worries about Sergey’s future.

Natalia is not sure about how she will feed her Sergey.

Feeding replacement will be financially difficult for the family.

During counselling she is keeping Sergey close to her.

“Medical worker”:

Medical worker has to conduct counselling on infant feeding for HIV-positive mother.

SUMMARY RECOMMENDATIONS

	WHO Clinical Stage 1 Asymptomatic	WHO Clinical Stage 2 Mild Disease	WHO Clinical Stage 3 Advanced Disease	WHO Clinical Stage 4 Severe Disease (AIDS)
<p>Symptoms</p> <p>Treat common and opportunistic infections according to Acute Care guideline module and/or guidelines in this module. Follow the Treatment Plan from district clinic</p>	<p>No symptoms or only:</p> <ul style="list-style-type: none"> ◆ Persistent generalized lymphadenopathy 	<ul style="list-style-type: none"> ◆ Weight loss 5-10%* ◆ Sores or cracks around lips (angular cheilitis) ◆ Itching rash (seborrhoea or prurigo) ◆ Herpes zoster ◆ Recurrent upper respiratory infections such as sinusitis or otitis ◆ Recurrent mouth ulcers 	<ul style="list-style-type: none"> ◆ Weight loss > 10%* ◆ Oral thrush (or hairy leukoplakia) ◆ More than 1 month: <ul style="list-style-type: none"> – Diarrhoea or – Unexplained fever ◆ Severe bacterial infections (pneumonia, muscle infection, etc) ◆ Pulmonary TB ◆ TB lymphadenopathy ◆ Acute necrotizing ulcerative gingivitis/periodontitis <p>* Conditions marked with an asterisk require a clinical diagnosis – this can be from records of a previous hospitalization. Muscle infection, Pneumocystis or any other severe pneumonia, toxoplasma, cryptococcal meningitis, and Extrapulmonary TB, etc are all infections which should be referred for hospital diagnosis and treatment.</p>	<ul style="list-style-type: none"> ◆ HIV wasting syndrome ◆ Oesophageal thrush ◆ More than 1 month: <ul style="list-style-type: none"> – Herpes simplex ulcerations ◆ Recurrent severe pneumonia within 6 months ◆ Lymphoma* ◆ Kaposi sarcoma ◆ Invasive cervical cancer* ◆ CMV retinitis* ◆ <i>Pneumocystis pneumonia</i> ◆ Extrapulmonary TB* ◆ Toxoplasma* ◆ Cryptococcal meningitis* ◆ Visceral leishmaniasis* ◆ HIV encephalopathy <p>(Significant neurological impairment interfering with independent functioning and not due to other cause will often improve on ARV treatment)</p>

Prophylaxis		<ul style="list-style-type: none"> ◆ Cotrimoxazole prophylaxis ◆ INH prophylaxis 	<ul style="list-style-type: none"> ◆ Cotrimoxazole prophylaxis ◆ INH prophylaxis ◆ Other prophylaxis in Treatment Plan 	<ul style="list-style-type: none"> ◆ Cotrimoxazole prophylaxis ◆ INH prophylaxis ◆ Other prophylaxis in Treatment Plan
ARV therapy	<ul style="list-style-type: none"> ◆ Only if CD4 < 200 ◆ Consider ART if CD4 between 200-350 	<ul style="list-style-type: none"> ◆ Only if CD4 < 200 or TLC < 1200/mm³ ◆ Consider ART if CD4 between 200-350 	<ul style="list-style-type: none"> ◆ Give ART: <ul style="list-style-type: none"> – If CD4 not available – If CD4 < 200 – If pregnant or pulmonary TB or severe bacterial infection and CD4 < 350 ◆ In other patients, consider ART if CD4 200-350 and initiate ART before CD4 count drops below 200. 	<ul style="list-style-type: none"> ◆ All in Stage 4 are medically eligible. Treat. ◆ Evaluate for ART (8.1) ◆ Prepare for adherence (8.9)

WHO Adolescent and Adult HIV Clinical Staging

CD4 count: Pregnant women who test HIV-positive need to have their CD4 count checked rapidly, if possible on the same day as receiving their test result. If the number of CD4 tests which can be done by the laboratory are limited, priority should be given to pregnant women in WHO clinical stage 1 and 2, in order to decide whether to start ART or provide ARV prophylaxis. Pregnant women in stage 4 are automatically eligible for ART, irrespective of their CD4 count result. If CD4 is not available, all women in stage 3 or 4 are medically eligible for ART. The absence of CD4 count should not delay ART for pregnant women in stage 3 or 4.

Some pregnant women may delay getting a CD4 count or HIV care and treatment because there is delay in obtaining the result, or the woman is overwhelmed by the implications of a positive HIV test and might need more time to consider ART. It is important to counsel all pregnant women with a positive test result and educate health workers (including laboratory personnel) on the advantages and the urgency of PMTCT interventions.

Haemoglobin: In patients with pre-existing anaemia, AZT has been shown to worsen the condition. Therefore, if the proposed ARV regimen for an HIV-positive pregnant woman contains AZT, it is important to check her haemoglobin level before initiation of AZT and again at 4, 8 and 12 weeks after initiation for monitoring purposes. Haemoglobin testing should always be available at the point of care.

If the woman's haemoglobin is less than 7 g/dl before initiation, **do not** start AZT – instead treat the anaemia. Similarly, if the haemoglobin level falls to below 7 g/dl once the woman is started on AZT, AZT should be stopped and treat the anaemia. If the woman is receiving ART that includes AZT, replace AZT by d4T. If she is on AZT prophylaxis, stop the AZT. In both cases, treat the anaemia and reassess the woman.

STAGES AND RECOMMENDATIONS FOR INITIATING ANTIRETROVIRAL TREATMENT IN PREGNANT WOMEN BASED ON CLINICAL STAGE AND AVAILABILITY OF IMMUNOLOGICAL MARKERS

WHO Clinical Stage	CD4 testing not available	CD4 testing available
1	Do not treat (Level A-III recommendations)	Treat if CD4 cell count <200 cells/mm ³ (Level A-III recommendations)
2	Do not treat (Level B-III recommendations)	
3	Treat (Level A-III recommendations)	Treat if CD4 cell count <350 cells/mm ³ (Level A-III recommendations)
4	Treat (Level A-III recommendations)	Treat irrespectively of CD4 cell count (Level A-III recommendations)

* - Women have lower CD4 cell count during pregnancy compared to postpartum, partly due to pregnancy-related haemodilution. The impact of this on using the CD4 350 threshold in pregnant women, especially in those in clinical stage 1 or 2, is not known.

Antiretroviral drugs for treating pregnant women and preventing HIV infection in infants: towards universal access. Recommendations for a public health approach. WHO, Geneva, 2006, p.17

RECOMMENDATIONS FIRST-LINE ARV REGIMENS FOR TREATING PREGNANT WOMEN AND PROPHYLACTIC REGIMEN FOR INFANTS

Mother Antepartum Intrapartum Postpartum	AZT + 3TC + NVP twice daily ^a AZT + 3TC + NVP twice daily AZT + 3TC + NVP twice daily
Infant	AZT x 7 days ^b

^a – When NVP therapy is started, NVP should be given in half of the daily dose once a day for 14 days (e.g. 200 mg once daily), with escalation to standard twice the daily dose (e.g. 200 mg twice daily) after 14 days if there are no side-effects.

^b – If the mother receives less than four weeks of ART during pregnancy, then four weeks, instead of one week, of infant AZT is recommended.

Antiretroviral drugs for treating pregnant women and preventing HIV infection in infants: towards universal access. Recommendations for a public health approach. WHO, Geneva, 2006, p.22

RECOMMENDED PROPHYLACTIC ARV REGIMENS FOR PREGNANT WOMEN WHO ARE NOT YET ELIGIBLE FOR ART AND PROPHYLACTIC REGIMEN FOR INFANTS

Mother Antepartum Intrapartum Postpartum	AZT starting of 28 weeks of pregnancy or as soon as feasible thereafter Sd-NVP ^a + AZT/3TC ^a AZT/3TC x 7 days ^a
Infant	Sd-NVP + AZT x 7 days ^b

^a – If the women receives at least four weeks of AZT during pregnancy, omission of the NVP dose may be considered for her. In this case, the NVP dose for the infant must be given immediately at birth, and four weeks instead of one week of AZT is recommended for the infant. If the NVP dose is not given to the mother, she will not require intrapartum 3TC as well as postpartum AZT and 3TC.

^b – If the mother receives less than four weeks of AZT during pregnancy, four weeks, instead of one week, of AZT is recommended for the infant.

Antiretroviral drugs for treating pregnant women and preventing HIV infection in infants: towards universal access. Recommendations for a public health approach. WHO, Geneva, 2006, p.27

DOSES OF ANTIRETROVIRAL PROPHYLAXIS DRUGS FOR THE PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF HIV

ARV regimens to be followed for women during labour and after childbirth	
<p>ARV drugs during labour</p> <p>Give extra adherence support during labour</p>	<p>Mother on ART during antenatal care: Continue regular schedule of ARV drugs every 12 hours (no additional ARV prophylaxis)</p> <p>Mother on ARV prophylaxis or not on ARV prophylaxis during pregnancy:</p> <p><u>At the onset of labour:</u></p> <p>AZT 600 mg (two tablets of 300 mg) once. <i>Note that the woman may have already taken this dose at home - ask her and record the results. If she has taken this dose at home, administer NVP and 3TC.</i></p> <p>Plus</p> <p>NVP 200 mg as a single dose (not necessary to give this if the woman was on AZT for >4 weeks)</p> <p>Plus 3TC 150 mg</p> <p>Then continue with 3TC 150 mg every 12 hours until delivery</p>
<p>ARV drugs to mother after childbirth</p>	<p>Mother on ART during antenatal care: Continue regular schedule of ART every 12 hours</p> <p>Mother on ARV prophylaxis or not on ARV prophylaxis during antenatal care:</p> <p>3TC 150 mg and AZT 300 mg — twice daily for 7 days</p>

Antiretroviral drugs for treating pregnant women and preventing HIV infection in infants: towards universal access. Recommendations for a public health approach. WHO, Geneva, 2006, p.41-43

ARV PROPHYLAXIS REGIMENS FOR INFANTS

All infants born to HIV-infected women need to receive a course of ARV drugs as post-exposure prophylaxis. The ARV regimen for newborns will depend upon if and for how long the mother received either ART or ARV prophylaxis during pregnancy.

Newborn: give ARV prophylaxis as soon after birth as possible. Duration depends on if and how long the mother took AZT prophylaxis or ART	
Mother's antenatal ARV regimen	Newborn ARV prophylaxis regimen
> 4 weeks AZT prophylaxis	Single dose NVP plus AZT for 1 week
≤ 4 weeks AZT prophylaxis or no ARV prophylaxis or ART	Single dose NVP plus AZT for 4 weeks
> 4 weeks ART	AZT for 1 week
≤ 4 weeks ART	AZT for 4 weeks

Dosages for ARV prophylaxis for the newborn	
AZT	4 mg/kg twice daily
NVP	2mg/kg as soon as possible after the birth
ARV drugs formulation for the newborn	
AZT	10 mg/ml
NVP	10 mg/ml

Note: If the capacity to deliver combination ARV prophylaxis (NVP plus AZT) does not exist, give single dose NVP to mother and newborn.

Antiretroviral drugs for treating pregnant women and preventing HIV infection in infants: towards universal access. Recommendations for a public health approach. WHO, Geneva, 2006, p.40-43

HIV TESTING FOR THE HIV EXPOSED CHILD

Encourage HIV testing for:

- All children born to an HIV positive mother
- All sick children with symptomatic suspected HIV infection

For children >18 months, a positive HIV antibody test result means the child is infected

For HIV exposed children <18 months of age:

- If PCR or other virological test is available, test from 6 weeks of age
 - A positive result means the child is infected
 - A negative result means the child is not infected, but could become infected if they are still breastfeeding
- If PCR or other virological test is not available, use HIV antibody test
 - A positive result is consistent with the fact that the child has been exposed for HIV, but does not tell us if the child is definitely infected
 - A negative test usually means the child is not infected

If PCR or other virological test is not available, use HIV antibody test:

- If child becomes sick, test immediately
- If child remains well, test at 9-12 months
- If child > 12 months has not been tested, recommend HIV antibody test

Interpreting the HIV antibody test results in a child <18 months of age		
Test result	HIV antibody test is positive	HIV antibody test is negative
Not breastfeeding or not breastfed in last 6 weeks	HIV exposed and/or HIV infected Manage as if they could be infected. Repeat test at 18 months	HIV negative Child is not HIV infected
Breastfeeding	HIV exposed and/or HIV infected Manage as they could be infected. Repeat test at 18 months or once breastfeeding has been discontinued for more than 6 weeks	Child can still be infected by breastfeeding. Repeat test once breastfeeding has been discontinued for more than 6 weeks

Integrated management of childhood illness complementary course on HIV/AIDS. WHO; UNICEF, Geneva, 2006; Module 2, p. 17

Module 11C

Infections in Pregnancy, Childbirth and Postpartum

Learning Objectives

At the end of the module participants will:

- Have a basic knowledge on the main infections affecting pregnancy and their possible adverse consequences for the mother and foetus
- Know how to manage these infections to prevent complications
- Question the current practices of infections prevention in pregnancy and recognize the harm of an inappropriate management
- Know the definition of Nosocomial Infection and effective ways of prevention
- Understand the importance of hand washing and be able to do it correctly

Module Outline and Duration

Part I - Classroom work –195 min

Activity 1 – Introduction	20 min
Activity 2 – Interactive presentation	120 min
Activity 3 – Conclusions	5 min
Activity 4 – Interactive presentation	45 min
Activity 5 – Conclusions	5 min

Part II – Practical work

Activity 6 – Practical work: hand washing	-----
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Preparation for the Module

- The facilitator should review current evidence and public health strategies regarding infections during pregnancy and infection control.
- Write the following statements on different flipchart sheets:
 - A. Infections which affect the pregnancy/foetus
 - B. Infections which not do affect the pregnancy/foetus
- For Activity 1: prepare pieces of paper with the names of infections written on them (Attachment 1) or write the following names of infections on the separate

Preparation for the Module

sheets of paper:

- Urinary tract infections (asymptomatic bacteriuria)
 - Syphilis
 - Gonorrhoea
 - Chlamydiosis
 - Bacterial vaginosis
 - Group B streptococcus
 - Listeriosis
 - Tuberculosis
 - Hepatitis B
 - Genital Herpes
 - Cytomegalovirus Infection
 - Rubella
 - Toxoplasmosis
 - Malaria
 - Trichomoniasis
 - Vaginal Candidiasis
- For Activity 2: prepare 16 sheets of paper with the name of infections written on them and questions for discussion (Attachment 2).
 - Invite representatives from the Sanitary-Epidemiological Department to this session (if possible).

Materials and Audiovisual Equipment

Materials

- Participant Manual
- 16 pieces of paper with names of infections for each participant (Attachment 1)
- Murray W. Enkin et al "A guide to effective care in pregnancy and childbirth" 3-rd edition, 2000 (preferably 16 books)
- 16 sheets of paper with names of infections (Attachment 2)
- Two statements about infections written on flipchart pages:
 - "Infections which affect pregnancy"
 - "Infections which do not affect pregnancy"

Equipment

- Video projector or projector overhead
- Flipchart
- Felt pens
- Pens and pencils
- Liquid soap
- Paper towels
- Alcohol antiseptic in individual container

Key Messages

- Many infections adversely affect pregnancy or can be transmitted to the foetus/newborn. Many others have no negative effect on pregnancy or perinatal outcomes.
- The adverse effects of some infections can be reduced by implementation of relatively simple and effective preventive measures.
- Nevertheless, in many countries there is widespread use of ineffective or even harmful practices regarding infection management. Evidence exist that inappropriate diagnosis and infection management during pregnancy causes considerable waste of limited healthcare resources.
- Patients can experience embarrassment, stress and dissatisfaction when infections are inappropriately managed.
- Factors which limit the ability to prevent adverse effects of infections include:
 - Lack of reliable diagnostic tests and/or resources to conduct them;
 - Limited ability to confirm infection in the foetus;
 - Absence of effective treatment options for many infections;
 - Limited impact on pregnancy outcome despite effective treatment options for some infections; and
 - Lack of resources to implement effective but expensive preventive strategies.
- With very few exceptions, there is no need to isolate a mother with an infection from her baby or from other women/families.
- Hand washing is an effective way to prevent nosocomial infection transmission.
- Nosocomial infection prevention is a key priority for maintaining quality services in the hospital.
- Continuous training of personnel regarding infection control is necessary.
- Effective practices for preventing nosocomial infections include: rooming-in, breastfeeding, unrestricted family visits, rational therapy and prophylaxis with antibiotics.
- Routine use of ultraviolet radiation, disinfectants and wearing of medical robes and caps are ineffective for preventing nosocomial infections.

PART I – Classroom work (195 min)

Activity 1 – Introduction (20 min)

- Show **Slide 11C-1-1** and explain that this module is divided on 2 parts. During the Part I of this module, the participants will discuss strategies for preventing and managing infections during pregnancy, childbirth and postpartum period. Tell to participants that not all infections will be discussed during the module. Remind participants that HIV infection and pMTCT issues were covered in the module 10C. During the Part II you will discuss the issues of nosocomial infections and infection control in general.
- Go to **Slide 11C-1-2** and tell participants that most infections in pregnancy are not worrying, and it is important that those giving care to the pregnant woman do not impose unnecessary restrictions on the pregnancy, or unnecessarily waste resources. Of course, some infections can be disastrous for mother, baby or both, but they are very much in the minority.
- In any health care system there is an imperative need not to waste resources, particularly where such resources are limited. Analysis of health care practices in the European region has demonstrated in many countries widespread practices in the field of infections in pregnancy that are either ineffective or, worse still, likely to be harmful. This module will therefore concentrate heavily on interventions that appear at present to be effective, and will attempt to identify practices that are inappropriate.
- Infections in pregnancy can be subdivided into those which affect pregnancy, and those which do not affect pregnancy. This grouping is important, not least because those in the second category should not be managed in any different way from in the non-pregnant state. There is of course a third category: infections that are influenced by pregnancy. However this category is in effect a sub-category of the above two categories, as will become clear.
- Ask participants, which general routes of infection they know? Listen carefully all their opinions.
- Then go to **Slide 11C-1-3** and present to participants the general routes and possible time (periods) of infection for the women/pregnant women/mother and for the foetus/newborn.
- Post 2 flipchart sheets with statements about the different types of infections and their impact on pregnancy (see “Preparation for the Module” section above) on the walls in different places so that they are visible to all participants.
- Divide participants for 16 groups and give to each group one sheet of paper with the name of an infection written on it (Attachment 1) and ask them to stand next to the flipchart statement that they think corresponds to their infection.
- Ask participants from each group to hold up their papers with the names of the infections so that everybody can see them. One facilitator should write the names of the infections on the corresponding sheet of flipchart (according to participants’ placement). The same infection can be written on multiple different flipcharts, according to participants’ ideas.

- Ask participants to look at the infections that have been added to the flipchart pages. Thank them and proceed to the next activity.

Activity 2 – Interactive presentation (120 min)

- Tell participants that now you are starting to work with the Part I of this module and will discuss infections in pregnancy, childbirth and postpartum.
- Divide participants into 16 groups and give each group a sheet of paper with names of infections and questions on it (Attachment 2). Depending on the number of participants, each group may have 2 or 3 people in it.
- Each sheet of paper with infection names and questions should include:
 - Urinary tract infections (asymptomatic bacteriuria)
 - Syphilis
 - Gonorrhoea
 - Chlamydiosis
 - Bacterial vaginosis
 - Group B streptococcus
 - Listeriosis
 - Tuberculosis
 - Hepatitis B
 - Genital Herpes
 - Cytomegalovirus Infection
 - Rubella
 - Toxoplasmosis
 - Malaria
 - Trichomoniasis
 - Vaginal Candidiasis
- Ask participants to prepare a presentation using the Murray W. Enkin et al “A guide to effective care in pregnancy and childbirth” 3-rd edition, 2000. Give them 10 minutes to answer the following questions:
 - What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
 - Is a reliable and inexpensive diagnostic test available for this infection?
 - Is there an efficient method of treatment?
 - Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
 - Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?
- Explain that answers need to be written on flipchart sheet. One to three sentences per question is sufficient.
- When the task is completed, show **Slide 11C-1-4** with the list of infections which can affect pregnancy. Tell participants that now you will not compare this list with those developed by participants - you will do it at the end of the work with this part of the module.

- Post completed flipcharts in a visible place and ask a representative from each group to present the results of their group work.
- After each group's presentation, the facilitator can show the corresponding PowerPoint slide (**Slides 11C-1-5 to 11C-71**). You need to focus on important aspects of each infection and discuss them in more detail. Discuss with participants the rationale behind and need for screening for each infection. Put the letter **S** near those infections which require screening.

Present/discuss the following infections in the order listed and stress the following aspects for each infection:

- **Slides 11C-1-5 to 11C-1-8 Urinary Tract Infections**

- Explain that urinary tract infections have three main manifestations: asymptomatic bacteriuria, acute cystitis and pyelonephritis.
- Define the criteria for an "acute cystitis" diagnosis: presence of symptoms such as dysuria, incontinence and frequent urination in febrile patients with no evidence of systemic illness.
- Define the criteria for a "pyelonephritis" diagnosis: presence of bacteriuria accompanied by systemic symptoms/signs such as fever, nausea, vomiting and flank pain; very often symptoms of lower urinary tract infection. Acute pyelonephritis during pregnancy is a serious systemic disease that can progress to maternal sepsis, preterm labour and preterm delivery.
- Define the criteria for an "asymptomatic bacteriuria" diagnosis: finding of more than 10^5 colony-forming units per ml of midstream specimen of urine. Asymptomatic bacteriuria is common, with a prevalence of 3-8% during pregnancy.
- Tell participants that there is a large number of drugs, and combination of them, available to treat urinary tract infections:
 - a. Analysis of 9 studies recruiting a total of 997 pregnant women showed that in most of the comparisons there were no significant differences between the treatments under study with regard to cure rates, recurrent infection, incidence of preterm delivery, admission to neonatal intensive care unit, need for change of antibiotic and incidence of prolonged pyrexia. Only when cefuroxime and cephradine were compared, there were better cure rates (29/49 versus 41/52) and fewer recurrences (20/49 versus 11/52) in the cefuroxime group, but the sample size is insufficient to ensure that differences found in the effect of the drugs were real.
 - b. Make a conclusion: Although antibiotic treatment is effective for the cure of urinary tract infections, there are insufficient data to recommend any specific treatment regimen for symptomatic urinary tract infections during pregnancy. All the antibiotics studied were shown to be very effective in decreasing the incidence of the different outcomes. Complications were very rare.
- **Slide 11C-1-8 Management of Asymptomatic Bacteriuria during Pregnancy**:
 - a. Explain that asymptomatic bacteriuria is associated with an increased risk of pyelonephritis, preterm delivery and low birth-weight infants.
 - b. Screening and treatment of asymptomatic bacteriuria in pregnant women significantly decreases incidence of pyelonephritis during pregnancy, as well

- as incidence of preterm delivery.
- c. Screening for bacteriuria is justified by the relatively high prevalence of asymptomatic bacteriuria among pregnant women; the significant consequences of bacteriuria on women and their pregnancies; and the effectiveness of bacteriuria treatment.
- d. However, despite the proven effectiveness of asymptomatic bacteriuria screening and treatment strategies, these measures are not implemented in many countries.

- **Slides 11C-1-9 to 11C-1-13 Syphilis**

- Tell participants that foetal infection occurs with high frequency in untreated early infections of pregnant women and with lower frequency later in pregnancy. It frequently causes abortion or stillbirth and may cause infant death due to preterm delivery of low birth weight infants or from generalized systemic disease.
- Stress that syphilis is an infection for which there is an effective screening and treatment strategy for reducing adverse effects on pregnancy/foetus:
 - a. Reliable diagnostic test exists and is not expensive;
 - b. Effective treatment method exists and is affordable;
 - c. Diagnosis and treatment reduces infection's adverse affects on the foetus.
 - d. Women with an allergy to penicillin should be desensitized or referred to a higher level of care.
 - e. Partners must be treated.
 Thus syphilis screening is recommended in most countries
- If the mother tested positive for syphilis and was treated adequately (2.4 million units of penicillin) and the treatment started at least 30 days before birth, **NO** treatment is necessary (WHO, 2003; CDC, 2006). However, some specialists would treat with benzathine penicillin G 50,000 units/kg as a single IM injection, particularly if follow-up was uncertain. (CDC, 2006)
- If the mother was not treated for syphilis, she was treated inadequately, or her treatment status is unknown or uncertain **AND** the baby has no signs of syphilis: Give the baby:
 - a. Benzathine penicillin G 50,000 units/kg/dose IM in a single dose (CDC,2006; WHO, 2007)
 - OR**
 - b. Procaine benzylpenicillin 50 000 units/kg/dose IM a single dose for 10 days (CDC, 2006).
 - OR**
 - c. Aqueous crystalline penicillin G, 100,000-150 000 units/kg/dose, administered as 50,000 units/kg/dose IV every 12 hours during the first 7 days of the life, and every 8 hours thereafter for a total of 10 days (CDC, 2006)
- Follow up in four weeks to examine the baby for growth and signs of congenital syphilis.
- Clinical evidence of early congenital syphilis is similar to that of secondary syphilis in adults. The rash has a higher probability of being atypical and can be vesicular or bullous instead of the characteristic reddish brown macular rash.
- For early congenital syphilis:
 - a. Aqueous crystalline penicillin G, 50 000 units/kg/dose, given IV or IM

every 12 hours during the first 7 days of the life, and every 8 hours thereafter for a total of 10 days

OR

- b. Procaine penicillin G 50,000 units/kg/dose IM in a single daily dose for 10 days. (CDC, 2006; WHO, 2007)
- For late congenital syphilis, if the CSF is normal and there is no neurologic involvement, children can be treated as for latent syphilis. If the CSF is abnormal, treatment for neuro syphilis is required: Aqueous crystalline penicillin G 200 000-300,000 units/kg/day IV administered as 50,000 units/kg every 4-6 hours for 10 days (CDC, 2006).
 - Tell them that the best approach to preventing syphilis is to avoid exposure. At this first level of prevention, the likelihood of being exposed to syphilis can be reduced by:
 - a. Decreasing the number of sex partners;
 - b. Using condoms correctly and consistently.

- **Slides 11C-1-14 to 11C-1-17 Gonorrhoea**

- Tell participants that gonorrhoea in pregnancy is associated with several adverse outcomes, including chorioamnionitis, preterm rupture of membranes, and preterm delivery. Perinatal transmission to infants can cause severe conjunctivitis resulting in blindness.
- Discuss reliability of diagnostic tests: the “gold standard” is culture; but its rather complex and expensive so can not be widely used.
 - a. Most studies identify taking a culture as the best way to screen for gonorrhoea. The specificity of a culture specimen is 100%. A culture specimen has high specificity for differentiating Neisseria gonorrhoea from other organisms; however, the sensitivity of cultures varies widely, ranging from 61.8% to 92.6%. Bacterioscopy has a low sensibility and specificity. Currently there are no studies that have directly examined the harms of screening for or treatment of gonorrhoea infection. Potential harms of screening may include high costs and false-positive test results that may lead to stress, stigma, and the need for further testing. Even using a test with a specificity of 99% in a population at high risk for gonorrhoea with a prevalence of 0.5%, 2/3 of positive screening tests would be expected to be false-positive results.
- In reality, bacterioscopy (which has very low sensitivity) is used for screening.
- Stress that only in a region with a high prevalence of gonorrhoea, it can be argued that screening for gonorrhoea might be effective.
- Some countries with low gonorrhoea prevalence do not implement routine use of ointment for prevention of ophthalmia neonatorum (also known as neonatal conjunctivitis).
- Ask participants, “Should we at least offer mothers an informed choice regarding presumptive treatment of neonatal conjunctivitis?”
- The best approach to preventing gonorrhoea is the same to all STIs.

- **Slides 11C-1-18 to 11C-1-21 Chlamydiosis**

- Chlamydia infection during pregnancy is associated with higher rates of preterm birth and intrauterine growth retardation, and leads to neonatal conjunctivitis and pneumonia in 30–40% of cases. Chlamydia may coexist with other genital infections and may facilitate transmission of HIV infection.
- Ask participants which diagnostic tests are used locally for Chlamydia? Listen carefully all participants' answers.
- Explain which tests are recommended and how much they cost:
 - a. Currently, no simple, inexpensive laboratory tests exist for diagnosing chlamydia trachomatis.
 - b. Rapid tests include: direct fluorescent antibody staining (50% to 90% sensitive); enzyme-linked immunoassays (75-80% sensitivity and 85-100% specificity); and RNA-DNA hybridization (70-85% sensitivity).
 - c. Serology is not useful in diagnosing acute chlamydia infection.
 - d. Pregnant women should not be offered routine screening for asymptomatic chlamydia because there is insufficient evidence supporting the effectiveness and cost-effectiveness of screening.
- Note that in many populations screening programs are not cost-effective. Diagnostic tests are expensive and cannot be afforded in most countries.
- Discuss the treatment options and their effectiveness. Tell participants that uncomplicated genital chlamydia infection in pregnancy should be treated with:
 - a. Erythromycin 500 mg four times/day for 7 days, or
 - b. Amoxicillin 500 mg three times/day for 7 days
 - c. Another option includes Azithromycin.
- Discuss with participants the newborn management in case of chlamydial conjunctivitis and pneumonia.
- The best approach to preventing chlamydiosis is the same to all STIs.

- **Slides 11C-1-22 to 11C-1-24 Bacterial Vaginosis**

- Explain participants that bacterial vaginosis (BV) is a microbial disease characterized by a change in the bacterial flora of the vagina: decreasing of Lactobacillus species and high concentrations of anaerobic bacteria, Gardnerella, Mobiluncus and Mycoplasma hominis.
- BV is associated with many adverse effects on pregnancy and can be easily diagnosed and treated, but screening and treatment of asymptomatic infection does not reduce the incidence of pregnancy complications, especially of premature delivery. There is reliable evidence that screening and treatment of asymptomatic bacterial vaginosis without high risk factors does not improve delivery outcomes (including preterm delivery).
 - a. 15 Randomized trials comparing antibiotic treatment with placebo or no treatment, or comparing two or more antibiotic regimens in pregnant women with bacterial vaginosis or intermediate vaginal flora have been analyzed. Antibiotic therapy was effective at eradicating bacterial vaginosis during pregnancy. Treatment did not reduce the risk of preterm birth before 37 weeks (Peto OR 0.91, 95% CI 0.78 to 1.06; 15 trials, 5888 women), or the

- risk of preterm prelabour rupture of membranes (PPROM) (Peto OR 0.88, 95% CI 0.61 to 1.28; four trials, 2579 women).
- b. However, treatment before 20 weeks' gestation may reduce the risk of preterm birth less than 37 weeks (Peto OR 0.63, 95% CI 0.48 to 0.84; five trials, 2387 women).
 - c. In women with a previous PTB, treatment did not affect the risk of subsequent PTB (Peto OR 0.83, 95% CI 0.59 to 1.17, five trials of 622); however, it may decrease the risk of PPRM (Peto OR 0.14, 95% CI 0.05 to 0.38) and low birth weight (Peto OR 0.31, 95% CI 0.13 to 0.75)(two trials, 114 women).
 - d. In women with abnormal vaginal flora (intermediate flora or bacterial vaginosis) treatment may reduce the risk of PTB before 37 weeks (Peto OR 0.51, 95% CI 0.32 to 0.81; two trials, 894 women).
 - e. Clindamycin did not reduce the risk of PTB before 37 weeks (Peto OR 0.80, 95% CI 0.60 to 1.05; six trials, 2406 women).
- Antibiotic treatment decreased preterm prelabour rupture of membranes and low birth weight significantly only in the subgroup of women who had a previous preterm birth.
 - Stress that there is no significant correlation between BV and neonatal infection. In absence of clinical signs of infection in newborn the last do not need any specific evaluation or treatment.

- **Slides 11C-1-25 to 11C-1-30 Group B Streptococcus**

- Explain that group B streptococcus (GBS) is a common bacterium that normally lives in the intestines, vagina, and rectal areas. GBS colonization is not a sexually transmitted disease. Approximately 10-30% of pregnant women will be colonized with GBS.
- Explain that group B streptococcus (GBS) is an important cause of neonatal sepsis and death but that newborns can be protected against infection if antibiotics are given to the mother intrapartum according to the regimens described in **Slide 11C-1-27**.
 - a. Even if all women colonized with GBS receive antibiotic therapy in pregnancy, the effectiveness will be insignificant because colonization is transient and returns in many cases prior to delivery. Therefore, there is no sense in treating asymptomatic women during pregnancy; it is recommended that treatment be given intrapartum (including in the case of preterm rupture of membranes).
 - b. It is recommended by Royal College of Obstetric and Gynaecology (RCOG) that intravenous penicillin 3 g be given as soon as possible after the onset of labour and 1.5 g four-hourly until delivery.
 - c. Clindamycin 900 mg should be given intravenously every eight hours to those allergic to penicillin. It should be noted that these doses are based on tradition rather than good evidence. Broad-spectrum antibiotics such as ampicillin should be avoided if possible, as concerns have been raised regarding increased rates of neonatal Gram negative sepsis. To optimise the efficacy of antibiotic prophylaxis, the first dose should be given at least two hours prior to delivery.
- The results of the trials show that the minimal exposure to antibiotic should exceed 4 hours, that is, to reduce colonization level; over 4 hours must pass from antibiotic administration until the birth of the baby. In this case, the rate of

neonatal colonization with Group B Streptococcus reduces to <1%. Therefore, the exact time of intrapartum antibiotic administration must be carefully recorded (**Slide 11C-1-28**).

- Providers in different countries use different preventive strategies against group B streptococcus infection. Discuss with participants the different strategies:
 - a. The first approach – universal screening of women in late pregnancy and intrapartum antibiotic treatment of all infected women. This approach prevents 65-80% of all cases of neonatal sepsis with GBS.
 - b. The second approach - antibiotics are given during labour to women with high risk factors: preterm delivery; fever in labour; prolonged rupture of membranes >18 hours; previous baby with GBS disease; and GBS bacteriuria in the current pregnancy. Using this approach, to prevent one neonatal death it is necessary to treat 5,580 women with high risk factors. To prevent one case of sepsis, it is necessary to treat 625 women. Sixty-five percent of all cases will be prevented.
 - c. The third approach - screen all women (culture) and offer intrapartum antibiotic prevention to GBS carriers who also have clinical risk factors. This approach has been suggested by the Canadian Task Force on Preventative Health Care, who estimate that 3.4% of women will require intrapartum antibiotic prophylaxis and that the incidence of early GBS sepsis is reduced by 51%.
- There is no agreement on which is the best strategy since each differs in its cost and effectiveness.
- Ask, “Is it rational to implement preventive strategies in your area and what approach would be most suitable?”
- Conclude by explaining that many NIS countries cannot afford the cost of GBS screening. In addition, in most NIS countries intrapartum antibiotic treatment in the presence of high risk factors is not practiced either.
- Discuss with participants the management of a newborn born to a mother with GBS. Tell that GBS colonization in woman should not affect breastfeeding in any way, as well as should not be an indication for mother and baby separation.

- **Slides 11C-1-31 to 11C-1-34 Listeriosis**

- Tell participants that listeriosis, a serious infection caused by eating food contaminated with the bacterium *Listeria monocytogenes*. The disease affects primarily pregnant women, newborns, and adults with weakened immune systems.
- Emphasize that pregnant women are about 20 times more likely than other healthy adults to get listeriosis. About one-third of listeriosis cases happen during pregnancy.
- Stress that maternal listeriosis in the second or third trimester results in a **mortality of 40-50%** for the foetus.
- Tell participants that there is no routine screening test for susceptibility to listeriosis during pregnancy. During pregnancy, a blood test is the most reliable way to find out if presented symptoms are due to listeriosis.

- Discuss with participants the possible regimens for listeria treatment.
- Tell participants that babies with listeriosis should receive the same antibiotics as adults, although a combination of antibiotics is often used until physicians are certain of the diagnosis.
- Discuss with participants the general recommendations on prevention of listeria infection:
 - a. Thoroughly cook raw food from animal sources, such as beef, pork, or poultry.
 - b. Wash raw vegetables thoroughly before eating.
 - c. Keep uncooked meats separate from vegetables and from cooked foods and ready-to-eat foods.
 - d. Avoid unpasteurized (raw) milk or foods made from unpasteurized milk.
 - e. Wash hands, knives, and cutting boards after handling uncooked foods.
 - f. Consume perishable and ready-to-eat foods as soon as possible.
- Also tell participants that in case when infection occurs during pregnancy, antibiotics given promptly to the pregnant woman can often prevent infection of the foetus or newborn.

- **Slides 11C-1-35 to 11C-1-39 Tuberculosis (TB)**

- Stress that tuberculosis is a mycobacterial disease that is important as a major cause and death in many parts of the world. The recent increase in numbers of cases of tuberculosis in the European region indicates that this is a significant public health issue once more in the region.
- Tell participants that all pregnant women who are at high risk of TB should be screened with a Mantoux skin test with purified protein derivative (PPD) when they begin receiving prenatal care. Discuss with participants the risk factors for TB.
- Emphasize that management of a newborn whose mother is suspected of having TB is based on individual considerations. Whenever possible, separation of the mother and the neonate should be minimized.
- Discuss with participants the general recommendations on preventative measures:
 - a. BCG vaccination for all newborns
 - b. To avoid contacts with potentially infected people.

- **Slide 11C-1-40 to 11C-1-43 Hepatitis B**

- Explain that foetuses can be infected in utero, only if the mother has contacted the infection during pregnancy. In patients with acute hepatitis B vertical transmission occurs in up to 10% of neonates when infection occurs in the first trimester and in 80 - 90% of neonates when acute infection occurs in the third trimester
- Identification of the chronic carrier state in pregnant women is very important because babies born to these mothers are at significant risk of becoming infected at birth. Congenital infection results in a chronic carrier state more frequently than

being infected as an adult, therefore all babies from these mothers should receive hepatitis B immunoglobulin and vaccine.

- Ask if immunoglobulin is locally available? If no, ask what the purpose is of screening for hepatitis B if specific immunoglobulin is not available? Discuss this issue with participants.
- This presents an example of screening without practical benefit and waste of screening resources since the aim of screening is to prevent mother to child transmission through the use of specific immunoglobulin after delivery (babies from these mothers should receive hepatitis B immunoglobulin and hepatitis B vaccine just after delivery), where local recourses allow doing this.
 - a. 29 randomised clinical trials were analyzed. Compared with placebo or no intervention, vaccination reduced the occurrence of hepatitis B (relative risk 0.28, 95% confidence interval 0.20 to 0.40; four trials). No significant difference in hepatitis B occurrence was found between recombinant vaccine and plasma derived vaccine (1.00, 0.71 to 1.42; four trials) and between high dose versus low dose vaccine (plasma derived vaccine 0.97, 0.55 to 1.68, three trials; recombinant vaccine 0.78, 0.31 to 1.94, one trial). Compared with placebo or no intervention, hepatitis B immunoglobulin or the combination of plasma derived vaccine and hepatitis B immunoglobulin reduced hepatitis B occurrence (immunoglobulin 0.50, 0.41 to 0.60, one trial; vaccine and immunoglobulin 0.08, 0.03 to 0.17, three trials). Compared with vaccine alone, vaccine plus hepatitis B immunoglobulin reduced hepatitis B occurrence (0.54, 0.41 to 0.73; 10 trials).
- Most NIS countries continue to screen for hepatitis B despite a lack of access to immunoglobulin.

- **Slides 11C-1-44 to 11C-1-49 Genital Herpes**

- Tell participants that incidence of this infection varies in different countries:
 - a. In the United States the annually reported incidence of neonatal herpes infection is 11 to 33 cases per 100 000 live births.
 - b. In the UK the annually reported incidence of neonatal herpes infection is 1.65 per 100 000 live births.
- Transmission from an infected mother to her foetus cause severe disease with high neonatal mortality and morbidity
- It is difficult to interpret serology to distinguish first episode of infection from recurrent one At the same time, more than 2/3 of all cases of neonatal herpes occur in children born to infected pregnant women who have no lesions and no HSV history.
- Risk of herpes simplex virus (HSV) transmission from an infected mother to her foetus is highest when the mother's primary infection occurs in the days prior to labour (which are rare). In this case, delivery by caesarean section is recommended.
- Tell participants that Aciclovir has been used extensively in pregnancy and the Aciclovir Pregnancy Registry was established in 1984 to collect data on prenatal exposure to the drug. Data from 1207 pregnancies reported prospectively to the Aciclovir Pregnancy Registry between 1984 and 1998 did not demonstrate any

increase in the number of birth defects, nor any discernible pattern of defects, and this registry has since been disbanded.

- **Slide 11C-1-47.** Example of two different preventive practices for reducing neonatal infection in case of recurrent episode of genital herpes in USA and UK:
 - a. UK practice - In the case of recurrent genital herpes, the risk of mother to child transmission is extremely small and should be set against the risks to the mother of caesarean section **[B]**. Put participants attention to those fact that a cost-benefit analysis has suggested that, if all women with an episode of recurrent genital herpes at the onset of labour were to undergo caesarean section, **1583 (range 632–6340) caesarean sections** would be performed to prevent one case of herpes-related mortality or morbidity, at a cost of **2.5 million USD per case** averted.
 - b. USA practice - Caesarean delivery should be performed on women with recurrent HSV infection who have active genital lesions or prodromal symptoms at delivery **[C]**.
- Draw the attention to the participants to the different levels of recommendations ([B] in UK and [C] in USA).
- Remind the participants that the prevalence of neonatal herpes in the USA is higher than in UK so this could be one of the reasons to justify the policy of Caesarean delivery for women with recurrent HSV infection, aimed to reduce the level of neonatal herpes and its consequences.
- Stress the participants that in case of maternal HVS infection the infant may be breastfeed and the mother should be counselled in good hand-washing technique.
- **Slides 11C-1-50 to 11C-1-55 Cytomegalovirus (CMV) Infection**
 - Incidence of this viral infection is quite high in the general population (among women and men), and the consequences of infection to a foetus can be dramatic (**Slide 11C-1-51**). However, the possibilities for preventing adverse outcomes in the foetus are limited, even in developed countries:
 - a. The most important risk to the foetus is attributed to primary infection of the mother during pregnancy. During reactivation, the risk to the foetus is almost negligible
 - b. One third of foetuses are infected via transmission from a mother whose primary infection occurs during pregnancy, but only 10-15% of infected foetuses develop severe disease later. Tell participants that each year in the United States, about 1 in 750 children are born with or develop disabilities as a result of CMV infection.
 - c. It is very difficult to catch and confirm primary infection, there is no effective method of treatment of CMV infection, and it is very difficult to diagnose foetal infection and damage (**Slide 11C-1-52**).
 - Emphasize that the great majority of primary HCMV infections in the immunocompetent host are clinically silent. In addition, less than 5% of pregnant women with primary infection are reported to be symptomatic, and an even smaller percentage suffers from a mononucleosis syndrome. Thus, a primary HCMV infection can not generally be diagnosed on clinical grounds alone. The most definitive diagnosis of primary HCMV infection in a pregnant woman is by detection of seroconversion, i.e., the appearance of HCMV-specific IgG antibody

during pregnancy in a previously sero negative woman. When this result cannot be achieved, detection of IgM antibody during pregnancy, as well as during follow-up (whenever possible), can be used to determine clinically significant primary HCMV infection. Further testing by the IgG avidity test may be of great help in both confirming and clarifying the clinical significance of IgM antibody. When, at the end of the diagnostic algorithm, a primary HCMV infection is either diagnosed or suspected, prenatal diagnosis should be offered to a pregnant woman to verify whether the infection has been transmitted to the foetus. Ultrasound imaging may demonstrate migrational disorders with microcephaly and polymicrogyria, diminished white matter, delayed myelination, cerebellar hypoplasia, and cerebral calcifications.

- Draw participant attention to the fact that the challenging issue is that knowing the serological status of a woman can not help in prevention. This is particularly so since the presence of antibodies cannot reliably identify infectivity. Indeed the concern is that women who are found to be sero positive might receive interventions of no proven benefit. No study has ever investigated how many pregnancies are terminated in early stages (<12 weeks of gestation) on the basis of a positive IgM result and inadequate or misleading information ("your baby will be mentally retarded").
- Stress that the "gold standard" for CMV diagnosis in newborn is urine and saliva culture. Most urine specimens from infants with congenital CMV are positive within 48-72 hours. Given that saliva can be collected with less difficulty and expense, it may eventually replace the current use of urine screening.

No antiviral agent is yet approved for treatment of congenital CMV..

- Tell participants that the decision to breastfeed a very low birth weight infant needs to consider the potential benefits of human milk versus the risk of CMV transmission. (AAP, 2005)
- The benefits of breastfeeding a preterm infant versus the risk of transferring CMV in the human milk remain controversial. "...the benefits of breastfeeding greatly outweigh the minimal risk, if any, of infections transmitted to term infants. Caution is warranted, however, in low-birth-weight premature infants, who are at increased risk of CMV disease. Interventions to screen breast milk, or attempt to render breast milk non-infectious through treatments such as freezing, may be warranted in high-risk premature infants" Schleiss, MR (2006)
- Tell participants that "...a more recent study that used more sensitive tests for quantitative detection of CMV in breastmilk has shown that late viral RNA and viral infectivity are preserved even after freezing at -20 C for up to 10 days. Pasteurization removes CMV infectivity and should be carried out with donated milk. For a mother known to be infected with CMV, freeze storage of her own milk does not seem to be a perfect solution, but the rate of CMV transmission is likely to be lowered; the observed infections were asymptomatic (WHO, 2006, p17).
- Affected infants may excrete the virus for months to years and are often a concern to personnel caring for them. These newborns need to be isolated from their other one and room in with their mothers.

- **Slides 11C-1-56 to 11C-1-59 Rubella (German Measles)**

- Tell participants that rubella (also known as German measles) is usually a non-severe infection in children and adults and can pass asymptotically. Immunity is stable and is a base for further immunization.
- Emphasize that rubella is an example of a teratogenic infection which is associated with significant foetal damage in cases where the first symptoms appeared in women during the first 16 weeks of pregnancy. Despite the risk to the foetus, there is no risk of damage to the mother.
- Tell that transplacental rubella transmission from a mother to her foetus occurs in over 65% of cases where the mother's primary infection occurs during the first pregnancy trimester. The risk to the foetus of maternal infection decreases with increasing duration of pregnancy. In a prospective study, infants whose had confirmed rubella at successive stages of pregnancy were followed for two years. No defects attributed to rubella were found in children infected after 16 weeks of gestation, while infants infected before the 11-th week had significant cardiac disease and deafness.
- Stress that the diagnosis of rubella in pregnant woman who has been exposed to, or develops, rubella-like infection, is often difficult. The laboratory must be provided with a detailed history of, as routine screening tests are inadequate and additional testing to detect IgM antibody is required. False-negative results can occur if the specimen is drawn too soon after exposure. The pattern of antibody response to acute infection and re-infection will vary according to the test method used, and expert consultation may be required for interpretation of data.
- Tell participants that there is no treatment for the disease.
- Women thought to have developed rubella infection should not be in contact with other pregnant (or potentially pregnant) women. Where possible they certainly should not (except for labour) be admitted to hospital when they are acutely effected (where they might infect others) but once the infection is clinically over they are no longer potentially infectious.
- Immunization of the woman successfully prevents rubella transmission from mother to child.
- Immunization programs against rubella have led to significant decreases in diseases prevalence.

- **Slides 11C-1-60 to 11C-1-64 Toxoplasmosis**

- Tell participants that toxoplasmosis is caused by a protozoan parasite. The risk of congenital disease is lowest (10-25%) when maternal infection occurs during the first trimester and highest (60-90%) when maternal infection occurs during the third trimester. However, congenital disease is more severe when infection is acquired in the first trimester. The overall risk of congenital infection from acute (first episode) *T. gondii* infection during pregnancy ranges from approximately 20 to 50%.
- Emphasize that toxoplasmosis usually is diagnosed on the basis of antibody

detection. The presence of elevated levels of specific IgG antibodies does not distinguish between recent infection and infection acquired in the past. Detection of γ -specific IgM antibodies has been used as an aid in determining the time of infection: a negative IgM test result with a positive IgG result usually indicates infection at least six months previously. However, the interpretation of γ -specific IgM positive results is complicated by the persistence of IgM antibodies up to 18 months after infection and by false-positive reactions in commercial tests. That is why, IgM-positive test results should be confirmed by a Toxoplasmosis reference laboratory.

- Tell that unfortunately, evidence does not suggest that the treatment improves pregnancy outcomes (**Slide 11C-1-62**).
 - a. Two systematic reviews in women who seroconvert during pregnancy found insufficient evidence on the effects of current treatment compared with no treatment on mother or baby. Five studies of the first review (none of them randomized) found that treating mothers significantly reduced foetal infection rates versus no treatment ($P < 0.01$), the other four found no significant reduction in foetal infection. The second review had stricter inclusion criteria. The research studied a series of women treated with spiramycin or spiramycin plus pyremethamine–sulpha and found no evidence of a difference in outcomes (foetal infection, neonatal diseases).
 - Discuss with participants the possible ways of toxoplasma infection prevention.
- **Slides 11C-1-65 to 11C-1-69 Malaria**

The current malaria trends

- Tell participants that the perception that countries of the WHO European Region are free from malaria has changed rapidly over the past decades. Since the early 1980s and throughout the decades to follow, the number of countries affected by malaria has increased from three to ten. At the beginning of the 1990s, the residual reservoir of malaria infection, aggravated by political and socio-economic situations, mass population migration, extensive development projects, and almost discontinued activities on malaria prevention and control constituted conditions favourable for malaria transmission. As a result, large-scale epidemics have broken out in Central Asia and Trans-Caucasian countries since 1995. Azerbaijan, Tajikistan and Turkey suffered explosive and extensive epidemics, while Armenia, Turkmenistan and Kyrgyzstan faced outbreaks on a smaller scale¹.

Malaria in pregnancy

- Emphasize that pregnant women with symptomatic acute malaria are a high-risk group, and must receive effective antimalarials. Malaria in pregnancy is associated with low birth weight, increased anaemia and, in low-transmission areas, an increased risk of severe malaria. In high-transmission settings, despite the adverse effects on fetal growth, malaria is usually asymptomatic in pregnancy. There is insufficient information on the safety and efficacy of most antimalarials in pregnancy, particularly for exposure in the first trimester, and so treatment recommendations are different to those for non-pregnant adults.

¹ <http://www.euro.who.int/malaria> (11.03.2008)

Organogenesis occurs mainly in the first trimester and this is therefore the time of greatest concern for potential teratogenicity, although nervous system development continues throughout pregnancy².

Parasitological Diagnosis

- Stress that the the two methods in use for parasitological diagnosis are light microscopy and rapid diagnostic tests (RDTs). Light microscopy has the advantage of low cost and high sensitivity and specificity when used by well-trained staff. RDTs for detection of parasite antigen are generally more expensive, but the prices of some of these products have recently decreased to an extent that makes their deployment cost-effective in some settings.

Treatment

- Tell participants that the antimalarials considered safe in the first trimester of pregnancy are quinine, chloroquine, proguanil, pyrimethamine and sulfadoxine–pyrimethamine. Of these, quinine remains the most effective and can be used in all trimesters of pregnancy including the first trimester. In reality women often do not declare their pregnancies in the first trimester and so, early pregnancies will often be exposed inadvertently to the available firstline treatment. Inadvertent exposure to antimalarials is not an indication for termination of the pregnancy. There is increasing experience with artemisinin derivatives in the second and third trimesters (over 1000 documented pregnancies). There have been no adverse effects on the mother or fetus. The current assessment of benefits compared with potential risks suggests that the artemisinin derivatives should be used to treat uncomplicated falciparum malaria in the second and third trimesters of pregnancy, but should not be used in the first trimester until more information becomes available.
- Note that lactating woman should receive standard antimalarial treatment (including ACTs) except for tetracyclines and dapsone, which should be withheld during lactation.³

Congenital malaria

- Tell that congenital malaria is rare. It usually presents in the first 7 days of life. It may resemble neonatal sepsis, with fever, anaemia, and splenomegaly occurring in the most neonates and hyperbilirubinemia and hepatomegaly in less than half. No evidence indicates that malaria is transmitted through breast milk. The greatest risk to the infant is exposure to the anopheline mosquito infected with malaria.
- Discuss with participants the possible ways of malaria prevention both in mother and newborn.
- **Slide 11C-70 and 11C-1-71 Trichomoniasis**
 - Tell participants that trichomoniasis is a good example when screening and treatment of infection is not only ineffective, but seems to increase number of adverse outcomes.

² WHO, guidelines for the treatment of Malaria, 2006, WHO/HTM/MAL/2006/1108

³ WHO, guidelines for the treatment of Malaria, 2006, WHO/HTM/MAL/2006/1108

- The findings indicate that metronidazole is an effective treatment for symptomatic and asymptomatic trichomoniasis in pregnant women, but may be associated with increased risk of preterm delivery
- There is evidence that screening and treatment of asymptomatic trichomonos (without clinical sings) increases incidence of preterm delivery and premature rupture of membranes.
 - a. In the US trial women with asymptomatic trichomoniasis between 16 to 23 weeks were treated with metronidazole on two occasions at least two weeks apart. The trial was stopped before reaching its target recruitment because metronidazole was not effective in reducing preterm birth and there was a likelihood of harm.
 - b. Another trials show that treatment with metronidazole is associated with increased low birth weight (relative risk, 2.49; 95% CI, 1.12-5.50), preterm birth rate (relative risk, 1.28; 95% CI, 0.81-2.02) and 2-year mortality rate (relative risk, 1.58; 95% CI, 0.99-2.52), compared with children of 112 women with *Trichomonas* who were not treated.

Tell participants that now you will discuss Vaginal Candidiasis which does not affect pregnancy and the foetus. This infection should be treated only in cases where women are troubled by symptoms.

- **Slide 11C-1-72 Vaginal Candidiasis**

- Tell participants that screening for vaginal candidiasis is not recommended.
- Emphasize that infection can be treated with oral fluconazole or topical clotrimazole, miconazole, butaconazole, terconazole, tioconazole or nystatin, but infection is frequently recurrent, drugs are not cheap, and the most important that foetal effects of oral treatment are unknown.
- Stress that women do not need to be hospitalized or isolated from other women.
- Once presentation is finished, ask participants to review flipcharts from Activity 1 and determine if all infections were correctly grouped and which of them require screening programs.
- Conclude by asking if participants have any questions or additional points to make.

Activity 3 – Conclusions (5 min)

- Show **Slide 11C-1-73** and review the basic requirements of an effective screening program. These criteria were first developed by Wilson and Jugner for the World Health Organization (Wilson & Jugner, 1968). For each infection of concern, it is necessary to have information on its prevalence in the population, the risk of its transmission during pregnancy, and its consequences for pregnancy and the newborn. It is also necessary to have screening tests with high sensitivity and specificity. In other words, screening tests should not result in false diagnoses. False diagnoses can result in stress for the patient and can lead to unnecessary intervention. The consequences of false-positive and false-negative

diagnosis should not be underestimated. Interventions and treatment aimed at decreasing unwanted consequences of maternal infection should be clear, proven, effective and accessible.

- **Slide 11C-1-74.** Review the necessity of infection screening and treatment during pregnancy, but only under appropriate circumstances. Give examples of some countries' approaches to infection screening during pregnancy.
- Make a short conclusion: Each country chooses a screening program for pregnant women based on: need (prevalence of infection in population); significance of impact on the foetus (infections, congenital anomalies, prematurity); safeness of screening for women and foetus; cost; and potential for treatment or prevention (accessibility and effects of drugs/vaccines). These criteria help to determine whether a screening program could be routinely implemented on a state or regional level.
- Go to the next activity.

Activity 4 – Interactive presentation (45 min)

- Show **Slide 11C-2-1** and remind the participants that the next part of the module (Part II) is focused on infection control in the maternity participants.
- Ask participants, “Are the pathogenic organisms that we discussed during the previous session the only ones that can cause infection in mothers or newborns?” After a short discussion, emphasize that:
 - Any bacteria (staphylococci, enterococci, Escherichia coli, etc.) or virus can cause infection and disease.
 - These pathogens can be introduced to the hospital environment by hospital patients or can circulate in hospitals as “nosocomial flora”.
- Show **Slides 11C-2-2 and 11C-2-3**, which present the definition of nosocomial infection and official WHO data of its frequency.
- Tell the participants that despite progress in public health and hospital care, infections continue to develop in hospitalized patients, and may also affect hospital staff. Many factors promote infection among hospitalized patients: decreased immunity among patients; the increasing variety of medical procedures and invasive techniques creating potential routes of infection; and the transmission of drug-resistant bacteria among crowded hospital populations, where poor infection control practices may facilitate transmission.
- Emphasize that the most frequent nosocomial infections are infections of surgical wounds, urinary tract infections and lower respiratory tract infections. The WHO study, and others, have also shown that the highest prevalence of nosocomial infections occurs in intensive care units and in acute surgical and orthopaedic wards. Infection rates are higher among patients with increased susceptibility because of old age, underlying disease, or chemotherapy.
- Show **Slides 11C-2-4 and 11C-1-5** and discuss with the participants possible ways in which that bacteria which cause nosocomial infections can be acquired.

- Emphasise that people are at the centre of epidemiological process (**Slide 11C-1-5**):
 - As main reservoir and source of micro organisms
 - As main transmitter, notably during treatment
 - As receptor for micro organisms, thus becoming a new reservoir
- Show **Slides 11C-2-6 and 11C-2-7** and tell the participants that prevention of nosocomial infections requires an integrated, monitored, programme. Discuss the key components of this programme. Highlight the importance of continuing staff education and enhancing staff patient care practices.
- Show **Slide 11C-2-8** and underline the importance of hand hygiene in minimizing of hospital infections. Remind the participants that pathogenic organisms (bacteria) can be transmitted to patients via the hands of medical staff and/or other patients. Therefore appropriate hand washing is one of the key ways to prevent nosocomial infections.
- Tell the participants that proper hand washing techniques will be practised during the clinical week.
- Show **Slide 11C-2-9**. Discuss common reasons why personnel do not wash their hands:
 - Hand washing takes a lot of time.
 - Lack of soap (54%) and towels (65%).
 - Idea that one careful hand washing is enough for an entire day.
 - Use of gloves to replace hand washing (25% of interviewed, 50% of them were physicians).
 - Belief that hand washing is not necessary if the baby is receiving antibiotics.
- Show **Slides 11C-2-10 and 11C-2-11** and explain that each hospital should enable good hand washing practices by providing training for all staff as well as liquid soap, disposable towels and water.
- Increased education, individual reinforcement technique, appropriate rewarding, administrative sanction, enhanced self-participation, active involvement of a larger number of organizational leaders, enhanced perception of health threat, self-efficacy, and perceived social pressure can improve Health Care Workers' (HCWs') adherence with hand hygiene.
- Show **Slide 11C-2-12** which explains proper hand washing technique and discuss the following:
 - Do not use non-disposable towels for drying hands after washing.
 - All staff visiting the delivery department or newborn department (physicians, nurses, visitors, consultants, laboratory assistant) should wash their hands.
 - Hands should be washed before and after contact with every patient and/or item which has had contact with a patient.
 - Hands should be washed for not less than 30-60 seconds and should be followed by rinsing under running water.
 - Hands should be dried with a disposable towel after washing.
 - Hands should be washed before and after use of gloves; after any manipulation gloves must be removed. Never use the same pair of gloves in treating different patients, even when they are washed using disinfectant.

- **Slide 11C-2-13** shows areas on the hands which usually are missed in hand washing.
- **Slide 11C-2-14** presents proper steps in hand washing technique. Discuss the steps described point by point. Recommend that participants place similar posters near all hand washing stations in their hospitals.
- Show **Slides 11C-2-15 to 11C-2-17** and discussed the procedures of hand decontamination. Procedures will vary with the patient risk assessment (from minimal to high).
- **Slide 11C-2-18** demonstrates indications for proper glove use.
- Tell participants that before the emergence of the acquired immunodeficiency syndrome (AIDS) epidemic, gloves were worn primarily by personnel caring for patients colonized or infected with certain pathogens or by personnel exposed to patients with a high risk of hepatitis B. Since 1987, a dramatic increase in glove use has occurred in an effort to prevent transmission of HIV and other blood borne pathogens from patients to HCWs. The Occupational Safety and Health Administration (OSHA) mandate that gloves be worn during all patient-care activities that may involve exposure to blood or body fluids that may be contaminated with blood. The effectiveness of gloves in preventing contamination of HCWs' hands has been confirmed in several clinical studies. One study found that HCWs who wore gloves during patient contact contaminated their hands with an average of only 3 CFUs per minute of patient care, compared with 16 CFUs per minute for those not wearing gloves.
- Emphasize that:
 - Staff should wear sterile gloves for surgery, care for immunocompromised patients, invasive procedures which enter body cavities.
 - Non-sterile gloves should be worn for all patient contacts where hands are likely to be contaminated, or for any mucous membrane contact.
 - Staff should wear non-sterile gloves to care for patients with communicable disease transmitted by contact, to perform bronchoscopies or similar examinations.
- **Slide 11C-2-19** presents the rational antibiotic prophylaxis in pregnant women: indications and choice of agents.

Indications:

- Prolonged membrane rupture > 18 hours at 37 and more weeks of pregnancy: prophylaxis with antibiotics should be started from the moment of membrane rupture (or from the moment of admission to hospital regardless of the time after membrane rupture).
- Start treatment with penicillin (≥2 doses of penicillin or ampicillin (1 g/dose) for 4 injections).
- If the woman is allergic to penicillin, macrolides are recommended (500 mg erythromycin every 8 hours; 900 mg clindamycin every 8 hours).
- Preterm rupture of membranes at < 37 weeks of gestation: macrolides are recommended (500 mg erythromycin every 8 hours; 900 mg clindamycin every 8 hours).
- Treatment with erythromycin is associated with a lower complication rate than other antibiotics (e.g., augmentin and necrotizing enterocolitis).
- Prophylaxis recommendations for chorioamnionitis (given presence of clinical

- sings in any term of pregnancy) are as follows:
- Cephalosporin of 3rd generation + metronidasol
 - Gentamycin + metronidasol
 - Ampicillin + gentamycin
 - Peri-operation prophylaxis with antibiotics:
 - Negative effects of antibiotics on the baby can be decreased by injecting antibiotics just after cord cutting.
 - It is recommended to use one dose of intravenous ampicillin (500 mg) or gentamycin just after cord cutting.
 - Regarding caesarean section, administration of three or five doses of antibiotics for infection prophylaxis does not offer any advantages over administering one dose.
 - If group B streptococci is detected in vaginal discharge:
 - Administer intravenous benzyl penicillin (2.4 g) at onset of labour, followed by 1.2 g every 4 hours until the baby is delivered.
- It is important to consider local epidemiological/microbiological data when prescribing or changing antibiotics. Antibiotic regimens can be changed according to identified microbial sensitivity. Duration of antibiotic therapy depends on the patient's clinical form of infection.
 - Ask the participants to brainstorm ineffective infection prevention practices and write them on a flipchart.
 - Then show **Slides 11C-2-20**, where common yet ineffective infection prevention practices are listed.
 - Stress that there is no need to perform disinfectant fogging in patient care areas. Recommend participants to use in their healthcare facilities a one-step process and registered hospital detergent/disinfectant designed for general housekeeping purposes in patient-care areas where 1) uncertainty exists as to the nature of the soil on the surfaces (e.g., blood or body fluid contamination versus routine dust or dirt); or 2) uncertainty exists regarding the presence of multi-drug resistant organisms on such surfaces.
 - Emphasize that walls, blinds, and window curtains in patient care areas should be cleaned when they are visibly dusty or soiled.
 - **Slide 11C-2-21.** Discuss why restriction of relatives' visits is ineffective at preventing nosocomial infection.
 - **Slide 11C-2-22.** Explain that there is no evidence to support the efficacy of wearing of medical masks and caps at preventing infection. There is no evidence from this systematic review and meta-analysis to demonstrate that over gowns are effective in limiting death, infection or bacterial colonisation in infants admitted to newborn nurseries. Explain that clean clothes, washed hair (collected in a tidy hair-do), and clean shoes are sufficient.
 - **Slide 11C-2-23.** As a supplemental air-cleaning measure Ultraviolet Germicidal Irradiation (UVGI) is effective in reducing the transmission of airborne bacterial and viral infections in hospitals (room or corridor), military housing, and classrooms, but it has only a minimal inactivating effect on fungal spores.
 - Air velocity, air mixing, relative humidity, UVGI intensity, and lamp position all

affect the efficacy of UVGI systems.

- The use of fans or systems to generate air movement may increase the effectiveness of UVGI if airborne microorganisms are exposed to the light energy for a sufficient length of time. The optimal relationship between ventilation and UVGI is not known.
- Regular maintenance of UVGI systems is crucial and usually consists of keeping the bulbs free of dust and replacing old bulbs as necessary. UVGI tubes should be changed and cleaned according to the instructions of the manufacturer or when irradiance measurements indicate that output is reduced below effective levels.
- In settings that use UVGI systems, HCWs should be trained in its correct use.
- **Slide 11C-2-24 Use of Disinfectants.** Explain that cleaning examination tables using disinfectants can negatively affect hospital staff, mothers and babies. Some disinfectants give off harmful fumes that can damage people's mucous membranes and cause other acute conditions.

Activity 5 – Conclusions (5 min)

- Review final conclusions using **Slides 11C-2-25 and 11C-2-26**, summarizing the key information discussed in this module.
- Ask the participants if they have any questions. Answer all participants' questions. (Discussion of some questions can be postponed for the clinical week.)

Part II – Practical work

Activity 6 – Practical work: hand washing

- It is important that all participants practice proper hand washing technique.
 1. Prepare liquid soap, paper towels, a container for used towels and alcohol antiseptic.
 2. Split the participants into groups with one facilitator per group.
 3. Review proper hand washing technique with participants (**Slides 11C-2-12 to 11C-2-14**).
 4. Ask the participants to wash their hands according to the algorithm.
 5. Ask the other participants to observe their colleagues hand washing technique.
 6. After each demonstration, ask a participant from each group to describe what she/he thought was done correctly and what was done incorrectly.
 7. Summarize the groups' discussion and conclusions.

- Use Table 1 below to assess the participants' hand washing technique. If the action is performed fully and correctly, mark the "+" column. If the action is done incompletely, inappropriately or in the wrong sequence, mark the "-" column.

Table 1. Assessment of hand washing practice

		1 st participant		2 nd participant		3 rd participant	
		+	-	+	-	+	-
1	Run the water	+	-	+	-	+	-
2	Squeeze out soap onto hands	+	-	+	-	+	-
3	Soap hands by rubbing them against each other	+	-	+	-	+	-
4	Rub right palm over left dorsum	+	-	+	-	+	-
5	Rub left palm over right dorsum	+	-	+	-	+	-
6	Palm to palm, fingers interlaced	+	-	+	-	+	-
7	Back of fingers to opposing palms, fingers interlocked	+	-	+	-	+	-
8	Rotational rubbing of right thumb clasped in left palm	+	-	+	-	+	-
9	Rotational rubbing of left thumb clasped in right palm	+	-	+	-	+	-
10	Rotational rubbing backwards and forwards with clasped fingers on the right hand of the left hand	+	-	+	-	+	-
11	Rotational rubbing backwards and forwards with clasped fingers on the left hand of the right hand	+	-	+	-	+	-
12	Wash hands under running water	+	-	+	-	+	-
13	Carefully dry hands with a paper towel	+	-	+	-	+	-
14	Turn water tap off with used paper towel	+	-	+	-	+	-
15	Discard used towel	+	-	+	-	+	-

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Activity 1

**Urinary tract infections
(asymptomatic bacteriuria)**

Syphilis

Gonorrhoea

Chlamydiosis

Bacterial vaginosis

Group B streptococcus

Listeriosis

Tuberculosis

Hepatitis B

Genital Herpes

Cytomegalovirus

Rubella

Toxoplasmosis

Malaria

Trichomoniasis

Vaginal Candidiasis

Activity 2

Urinary tract infections (asymptomatic bacteriuria)

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Syphilis

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Gonorrhoea

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Chlamydia

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Bacterial vaginosis

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Group B streptococcus

Questions:

1. What is the incidence of maternal colonization and neonatal infection in general as well as in your geographic region (if data exist), and how does this affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this maternal colonization, GBS bacturia in pregnancy and GBS neonatal infection?
3. Is there an efficient method of treatment in pregnancy, labour and for neonatal infection?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother colonized with GBS from other people or to separate her from her baby?

Listeriosis

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Tuberculosis

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Hepatitis B

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Genital Herpes

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Cytomegalovirus

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Rubella

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Toxoplasmosis

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the fetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the fetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Malaria

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the fetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the fetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Trichomoniasis

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Vaginal Candidiasis

Questions:

1. What is the incidence of this infection in general as well as in your geographic region (if data exist), and how does this infection affect pregnancy and the foetus?
2. Is a reliable and inexpensive diagnostic test available for this infection?
3. Is there an efficient method of treatment?
4. Are there any effective strategies for preventing/decreasing the adverse influences of this infection on pregnancy or for preventing transmission to the foetus/newborn? Are these strategies feasible/affordable locally?
5. Is it necessary to isolate a mother with this infection from other people or to separate her from her baby?

Module 12C

Preterm Labour

Learning objectives:

At the end of the module participants will:

- Learn and be able to use obstetric technologies correctly, which could improve perinatal outcomes in preterm newborns
- Understand problems with early diagnostic methods and preventative methods for preterm labour
- Critically assess the use of tocolytics in cases of threatened preterm labour
- Understand the recommended use of corticosteroids
- Understand the basic principles of managing low birth weight newborns

Module outline and duration:

Classroom work - 105 min

Activity 1 – Introduction	10 min
Activity 2 – Work in small groups	10 min
Activity 3 – Interactive presentation by obstetrician-gynaecologist with discussion of small group work results	50 min
Activity 4 – Interactive presentation by a neonatologist	30 min
Activity 5 – Conclusion	5 min

Preparation

- Review the existing publications, evidence-based materials, and public health strategies recommended to prevent negative outcomes of preterm labour.
- If possible, find and understand current data on rates and outcomes of preterm labour, common practices of managing preterm labour and premature newborn care.
- Ensure that all participants have the participant manual.
- Ensure that all co-facilitators know their respective functions during work with this module.

Materials and Audiovisual Equipment

Materials

- Participant manual
- Power Point presentation 12C EPC ENG

Equipment

- LCD or overhead projector
- Flipchart
- Markers
- Pens and pencils
- Name badges

Key Module Messages

- Other than regionalized medical care, the basic obstetric technologies used to decrease perinatal mortality are use of corticosteroids for high risk women and intranatal prophylactic antibiotics.
- Although advantages of antenatal corticosteroids therapy can vary depending on gestational age, in general the use of such therapy significantly decreases the risk of RDS, intraventricular haemorrhages, and neonatal mortality. If such therapy is used correctly it has no short-term or long-term negative effects.
- It's needed to use correct regiment of chosen corticosteroid use to reach the maximal effectiveness. Betamethasone has higher effectiveness and safety versus dexamethasone
- Existing data suggests that repeated courses of antenatal corticosteroids therapy are ineffective. Repeated courses of such therapy during the antenatal period may have negative consequences for the fetus, such as decreased birth weight.
- The use of corticosteroids is both clinically sound and cost effective, due to its low price. Corticosteroids therapy may be included into the general package of medical services and in official guidelines on obstetrical care.
- Despite the fact that risk factors of preterm labour are well known, currently there are no effective strategies for preterm labour prevention.
- The use of tocolytics prolongs pregnancy, but there is no evidence that this leads to decreasing perinatal morbidity and mortality.
- Tocolytics should be used only cases when additional time allows for the possibility of using evidence based technologies, such as transportation to the perinatal center or corticosteroids treatment.
- Magnesia Sulfate is not recommended for tocolysis. It is shown that its use can increase perinatal mortality.

Key Module Messages

- The main principles of managing low weight babies includes: 1) effective resuscitation in time; 2) special thermal protection; 3) prophylaxis/treatment of hypoglycemia; 4) adequate feeding, breastfeeding, “kangaroo” care method and rooming-in; 5) special hygiene, correct cord care; 6) timely and effective breathing support, if needed; 7) timely transportation to a higher level of medical care, if needed.

Classroom work

Activity 1 – Introduction (10 min)

- Show **Slide 12C-1** and explain that during this module participants will learn basic organizational, obstetrical and neonatal technologies to improve perinatal outcomes for preterm labour.
- Discuss learning objectives:
 - Learn and correctly use obstetric technologies, to improve perinatal outcomes in preterm infants.
 - Understand ineffectiveness of early diagnostic methods and preventative methods for preterm labour
 - Critically assess the use of tocolytics in cases of threatened preterm labour.
 - Understand the recommended regimens of corticosteroids use and their significance for improving perinatal outcomes.
- Tell participants that the module consists of two presentations: a presentation from a obstetrician-gynaecologist on basic organizational and obstetric technologies; and a presentation by a neonatologist on clinical aspects of glucocorticoids use and on the basic principles of caring for low weight babies. There will also be group work.
- Give information from **Slide 12C-2**. Ask participants about the rate of preterm labour in their region and how it has changed over the years. How do they think their indicators compare to indicators in developed countries? (You may add that in Amsterdam the frequency of preterm labour is 22%)
- Show and comment on **Slides 12C-3 and 12C-4**. Ask participants what percentage of babies with birth weights between 1000-1500 g survived in their facilities (regions). Ask participants, how, in their opinion, developed countries decreased mortality of premature babies.
- Ask participants which technologies, on their opinion, led to a decrease of neonatal mortality in developed countries? Show **Slide 12C-5** and list the basic technologies, implementation of which led to significant decreases in perinatal mortality and morbidity in cases of preterm deliveries. Ask them which technologies they use in their practice.

- Show the table of early neonatal mortality based on birth weight and level of medical facility (**Slide 12C-6**). Show **Slide 12C-7** to illustrate the advantages of corticosteroids. Tell participants that the use of corticosteroids will be discussed in depth at the end of the module.
- Describe positive aspects of antibiotic use in labour (**Slide 12C-8**). Note that only the above methods improve perinatal outcomes or prevent preterm labour. All the other methods have very low or no effectiveness.

Activity 2 – Small groups work (10 min)

- Divide participants into 4 groups. Give each group a sheet of flip chart paper and a marker. Ask them discuss and write answers to the following questions in 10 minutes:
 - **Group 1:** what do they use in their practice for the prevention of preterm labour?
 - **Group 2:** what do they use in their practice for the prognosis of preterm labour? In other words, how do they assess the possibility of a preterm labour for high-risk women?
 - **Group 3:** what interventions do they use for the treatment of preterm labour?
 - **Group 4:** what technologies for managing preterm labour do they use in their facility or region?
- When participants finish writing their answers, proceed to Activity 3.

Activity 3 – Interactive presentation from obstetrician-gynaecologist and discussion of small group work (50 min)

- Ask the representative of **Group 1** to present the results of his/her small group work.
- Show **Slide 12C-9**, where prophylactic and treatment methods aimed to decrease the frequency and consequences of preterm labour are listed.
- Note that risk factors of preterm labour are well known (**Slide 12C-10**). Ask participants what can be done to prevent preterm labour if these risk factors are present.
- List the measures which were collected in defining “enforced antenatal care” (**Slide 12C-11**) and proof of their ineffectiveness (**Slide 12C-12**). Note that during the antenatal period pregnant women need to receive complete information about the signs of preterm labour to take timely action.
- Ask the participants the aim of all treatment and prophylactic measures: the prevention of preterm labour (pregnancy prolongation) or decreasing mortality

and morbidity? Discuss this issue. Comment on clinical trials which studied the effectiveness of cervical cerclage (**Slide 12C-13**), and give participants an opportunity to draw conclusions about its effectiveness by themselves. Note ineffectiveness of the screening and treatment of bacterial vaginosis (**Slide 12C-14**).

- Ask the representative of **Group 2** to present the results of his/her small group work.
- Tell participants that at the present time no effective methods exist to prevent preterm labour. There were many attempts to diagnose this condition. Note ineffectiveness of identifying the maturity of the cervix (**Slide 12C-15**) and irrationality of many expensive diagnostic tests (defining the cervix length by a transvaginal ultrasound examination; level of fibronectin in vaginal discharge (**Slide 12C-16**)), because of the limited ability to prevent or treat preterm labour.
- Ask the representatives from **Groups 3 and 4** to present the results of their small group work. Note the most interesting proposals. Discuss briefly a possibility to differentiate threatened preterm labour and physiological changes during normal labour. Tell participants that possible “effect” from the treatment of threatened preterm labour could be explained by the fact that there was not threatened preterm labour.
- Use one example – use of antibiotics for treatment of threatened preterm labour in case of intact membranes and in case of PPRM (**Slides 12C-17-18**). Though it's shown that infection plays an important role in pathogenesis of preterm labour the use of antibiotics does not decrease and even increases perinatal mortality.
- Note that the basic treatment in case of threatened preterm labour is the use of tocolytics for pregnancy prolongation and decreasing morbidity and mortality. Ask participants what, in their opinion, the effectiveness of the use of tocolytics is for reaching this goal.
- Make a comment on the results of systematic review which studied the effectiveness of tocolytics in cases of threatened preterm labour (**Slides 12C-19 and 12C-21**). Draw their attention to insignificant differences between the number of prolonged pregnancies in the group with tocolytics treatment and in the group with placebo and no treatment, despite the statistically significant difference (**Slide 12C-20**). Note the absence of influence on perinatal mortality and severe morbidity (**Slide 12C-21**) and the fact that the aim of treatment is not to prolong pregnancy, but to decrease morbidity and mortality.
- Give a recommendation from the Royal College of Obstetrics and Gynaecologists on use of tocolytics (**Slide 12C-22**).
- Ask participants: Is early treatment harmful? As an answer to this question show and comment **Slide 12C-23** on choosing of tocolytic. Note the increase in mortality in women treated with Magnesium Sulphate. Ask participants to define how many women must be treated to get one additional case of perinatal death. Absolute risk is $6.5-3.8=2.7\%$; NNT – $100/2.7=37$.

- Show comparing of calcium channel blockers and Atosiban effectiveness and side effects versus other tocolytics (**Slides 12C-24 – 12C-25**), as well as recommendations of the Royal College of Obstetrics and Gynaecologists on necessity of supportive treatment with tocolytics when tocolytics use was effective (**slide 12C-26**).
- Note absence of the effectiveness of some technologies that are used in cases of preterm labour (**slide 12C-27**).
- State conclusions on the effectiveness of obstetrical technologies' using **Slides 12C-28 - 12C-29**.
- Introduce and give the floor to the neonatologist.

Activity 4 – Interactive presentation of neonatologist (30 min)

- Before starting this presentation, ask participants:
 - To raise their hands if they personally or if the medical staff of their departments prescribe corticosteroids in the antenatal period.
 - Ask the participants the following questions and write their answers on the flipchart:
 - What indications do they use for treatment with steroids?
 - What kind of corticosteroids do they use?
 - What regimens and dosages do they use?
 - Do they use repeated courses of corticosteroids?
 - Do they involve neonatologists in the decision-making process regarding the use of steroids during pregnancy?
- Comments on participants' answers will be made during presentation.
- Start presentation showing **Slides 12C-30 and 12C-31**. Note that recognition of effectiveness of antenatal corticosteroids use became one of the most important things in obstetrics. Briefly note that RDS is a leading cause of preterm infant mortality.
- Note that despite strong evidence available since 1987, obstetricians all over the world are very slow to support this therapy. Put their attention to the number of trials and patients.
- During the presentation of **Slides 12C-32 - 12C-33** it is important to explain why it is necessary to use corticosteroids in 24 – 28 weeks of gestation, despite the fact that they are effective for decreasing of the risk of RDS. In these terms use of corticosteroids versus placebo reliably decreases the risk of neonatal mortality, intraventricular haemorrhages and necrotizing enterocolitis.
- **Slide 12C-34** – Long-term consequences for newborns in cases of use of corticosteroids. Meta-analysis conducted by Crowley (2003) showed a

- tendency to decrease the rate of neurological disorders in babies previously treated with corticosteroids.
- The following slides describe the use and effectiveness of steroids. Show **Slides 12C-35 and 12C-36**, where basic **clinical indications** for use of steroids are listed.
 - Note the possibility of steroids use if the risk of preterm labour is high at 22-24 weeks of gestation. List other factors which need to be taken into consideration when you decide to use steroids, for example, gestational age (availability of NICU and the rate of VLWB survival in the region).
 - Note importance of at least 24-hour intervals between the use of steroids and labour (significantly decreasing of the level of neonatal mortality, RDS, intraventricular haemorrhages).
 - Comment on two special conditions in women: preeclampsia and diabetes. Note that preeclampsia does not stimulate the development of foetus' lungs as was previously believed. Also note that preterm babies born to such mothers are at high risk of complications of prematurity, including severe RDS despite the late gestational age.
 - Go to **Slide 12C-37** and show evidence of steroid use in women with PPRM. Note that here are many disagreements. There is strong evidence that a single course of antenatal steroids versus multiple courses improves neonatal outcomes, and does not increase the risk of infections for mothers and babies. It is important to use antibiotics in parallel with steroids. Make a brief conclusion on this part of the presentation.
 - Show **Slides 12C-38 - 12C-40** and note the importance of using selected steroids only (there is evidence of effectiveness for betamethasone and dexamethasone only), correct regiment and dosage (24 mg for 2 days), as well as the method of use (IM only).
 - Discuss evidence of preferences for betamethasone' use. It must be noted that in some European countries, obstetricians prefer to use 24-hour courses of treatment with steroids. Explain to participants that this regiment has no benefits and can lead to negative consequences, due to the high concentration of steroids in the mother's blood.
 - Note that glucocorticoids are strong modulators and can increase the risk of long-term negative consequences. Increasing the dosage or term of use can lead to so called 'non-genomic' effects of corticosteroids and increased power of dexamethasone can cause unwanted consequences instead of therapeutic advantages.
 - Discuss with participants the answers they gave at the beginning of this part of the presentation.
 - Go to **Slide 12C-41**, which shows another conflict area. Explain why repeated courses became a world wide practice. Draw participants' attention to the fact that modern evidence shows that repeated courses of steroid use are unsafe.
 - Briefly list the potentially negative consequences of repeated courses of corticosteroids for mother and infant showing **Slide 12C-42**.

- Show **Slide 12C-43**, where modern evidence of ineffective and unsafe use of repeated courses of corticosteroids is listed. Repeated use of corticosteroids during pregnancy can decrease severity of neonatal lung disease, but the data on advantages and risks are insufficient to recommend repeated courses to women with high risk of preterm labour for prophylaxis of neonatal lung disease. To study this issue, additional trials need to be conducted.
- **Slides 12C-44 to 12C-45** – danger of routine postnatal use of corticosteroids in newborns.
- Show **Slide 12C-46**. Discuss the problems shown on the slide. Note that **not all** low weight babies are sick and need intensive therapy. Ask obstetricians and midwives to answer the following questions and write their answers on the flipchart:
 - Which newborns do we consider “low weight babies”?
 - Which actions (interventions) after the low weight babies’ birth need to be done to maximize survival and minimize morbidity?
- Go to **Slides 12C-47 – 12C-49** and discuss basic points of LWBs’ care in the delivery room. Note that effective resuscitation and hypothermia prevention are of most concern, because these interventions need special training and additional efforts on the part of the personnel. It is important to observe (monitor) the low weight baby during first hours of his/her life to identify RDS and organize appropriate transportation of the baby from the delivery room.
- Explain to participants that more detailed information on care for low birth weight babies will be given in the presentation to the group of neonatologists.

Activity 5 – Conclusion (5 min)

- Finish your presentation by showing **Slides 12C-50 to 12C-51**. Summarize the main ideas of the module. To reach maximum effectiveness and safety it is important to use correct dosages for chosen corticosteroids.
- Note a very important point – the majority of effective neonatal technologies that improve perinatal outcomes in preterm babies are very expensive. At the same time, obstetric technologies have higher effectiveness, are cost-effective, and in combination with basic low-price technologies of neonatal care and some organizational measures could significantly improve the results of treatment of low birth weight babies.
- Ask the participants if they have any questions regarding this topic. If yes, answer the questions.

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Module 13C**Sudden Infant Death Syndrome (SIDS)****Learning Objectives**

At the end of the module participants will:

- Know what Sudden Infant Death Syndrome (SIDS) is
- Be aware of the risk factors for SIDS
- Apply risk-reduction practices for SIDS (“Back to sleep”)

Module Outline and Duration**Classroom work- 45 min**

Activity 1 – Brainstorming exercise	15 min
Activity 2 - Presentation	25 min
Activity 3 – Conclusion	5 min

Preparation for the Module

- Review current publications and evidence-based materials on SIDS prevention.
- Make sure that all participants have the Participant Manual.
- Make sure that the facilitator and co-facilitator know their roles and responsibilities in teaching this module.

Materials and Audiovisual Equipment

Materials

- Participant Manual

Equipment

- Video projector or projector overhead
- Flipchart
- Markers
- Name badges

Key Messages

- SIDS, also called “crib death,” is the most common cause of death for infants aged 1 month to 1 year in developed countries.
- Researchers have not been able to determine the exact cause of SIDS yet.
- Implementation of SIDS risk-reduction recommendations reduces SIDS incidence.
- SIDS risk-reduction education is not intended to create fear in families, but to inform parents of what they can do to reduce the risk of SIDS.
- Implementation of SIDS-reduction recommendations both by health care providers and families effectively reduces SIDS risk.
- Sleeping on the back is the safest sleeping position and reduces SIDS incidence by 50%.
- The second most important recommendation is to avoid smoking during pregnancy and to keep baby in a smoke-free environment.
- The third most important recommendation is to avoid overheating the baby.
- It is also recommended that babies sleep on firm mattresses. The baby’s face should stay uncovered while sleeping.

Classroom work – 45 min

Activity 1 – Brainstorming exercise (15 min)

- Show the participants **Slide 13C-1** and explain module objectives.
- Ask the participants to answer the following questions and write down (or ask your co-facilitator to write down) all answers on a flipchart. This brainstorming exercise will help you to evaluate participants' knowledge about SIDS and recommendations they would provide to families.
 - What is SIDS?
 - What do you recommend to parents to prevent SIDS?
- At the end of the presentation it is necessary to go back to the answers on the flipchart and to discuss them with the participants.

Activity 2 – Interactive presentation (25 min)

- Start your presentation by showing **Slide 13C-2** which includes the definition of SIDS diagnosis. Emphasize that SIDS can be diagnosed only when the three criteria are met. Point out that in 60% of SIDS cases, a mild infection was present, but that upon autopsy, the seriousness of these infections was found insufficient to be the cause of death. Underscore the fact that SIDS can not be diagnosed without a complete autopsy and examination of the death scene.
- Show **Slide 13C-3** which shows mortality data of infants from birth to 1 year old in New Zealand. Point out that the causes of mortality in this age group are similar for Europe, USA and Canada. Point out that the SIDS takes third place in this structure.
- Show **Slide 13C-4** which lists facts about SIDS. Point out that despite major decreases in the incidence of SIDS over the past decade in developed countries, SIDS is still the most common cause of death for babies aged 1 months to 1 year. Exact reasons of death in SIDS are still not known, though there are many theories. Even so, evidence-based, effective simple recommendations exist which can reduce SIDS incidence by more than 50%.
- Show **Slide 13C-5** which shows distribution of all SIDS deaths in the province of Alberta Canada by age group in 1998. SIDS incidence during the baby's first month of life is rare. Incidence increases to a peak between two and three months of age, and then decreases after three months.
- Show **Slide 13C-6** which lists SIDS incidence in different countries (per thousand). These data reflect differences in SIDS diagnostic criteria in different countries in 2000. In some countries mandatory autopsy are not requested (for example Italy). As a result SIDS diagnoses often rest on clinical symptoms alone and thus rates can vary significantly by country.
- **Slide 13C-7 SIDS Major Risk Factors.** Explain that several studies showed a 50% reduction in SIDS incidence after national campaigns were conducted which provided advice on avoiding SIDS risk factors, including prone sleeping position, tobacco smoke and overheating.

- Show **Slide 13C-8 and Slide 13C-9**. In 2000, on the basis of new evidence, the American Academy of Pediatrics (AAP) advised that placing infants on their backs while sleeping confers the lowest SIDS risk and is the preferred sleeping position. SIDS risk is especially high for infants sleeping on their sides or on their bellies. The chance that an infant will turn onto the belly from a side position is higher than from a prone position.
- **Slide 13C-10**. This slide shows the incidence of SIDS in England and Wales fell by two thirds between 1989 and 1993. The decline in death followed the “back to sleep” health education campaign (started in 1991), which advised parents to place babies on their back to sleep/to avoid overheating and smoky environments/ and to contact a doctor if their baby was unwell.
- **Slide 13C-11**. This figure shows SIDS rate versus prone sleeping rate in the United States, 1983 to 1995. In 1992, the SIDS rate in the U.S.A. was 1.2 deaths per 1000 live births. In 2001 the rate had halved to 0.56 deaths per 1,000 live births and remained the same in 2002. Much of this decline has been attributed to the 1992 recommendations of the AAP that healthy infants should be placed on their backs to sleep.
- Show **Slide 13C-12**. Another SIDS risk factor is prenatal smoking. Smoking during pregnancy has been found to be a major risk factor in almost every SIDS-related epidemiologic study and thus women are recommended not to smoke while pregnant. Smoking in an infant’s environment after birth also raises SIDS risk.
- Show **Slide 13C-13**. The next risk factor is overheating of the baby. The child must be dressed light for sleep to prevent overheating. You may recommend that parents dress a child like they dress. Explain that the child does not need many blankets or clothes. Explain that if a child perspires, his/her hair is wet with sweat, or he/she has heat rash, then maybe he/she is overheated.
- **Slide 13C-14 Other SIDS Risk Factors**
 - Recommend to parents that the baby’s sleeping surface should be firm - ideally a firm crib mattress covered by a sheet. Soft materials (e.g., pillows, sheepskins) should not be placed under a sleeping infant.
 - Loose blankets and sheets can also be hazardous. If blankets are used, they should be tucked in around the mattress to avoid having the infant’s face covered by bedding.
 - One strategy is to allow the infant’s feet to touch the foot of the crib, with blankets tucked in around the mattress and reaching only to the baby’s chest level.
 - Another strategy is to use warm pajamas or infant sleep sacks instead of bedding over the infant to avoid bedding covering the baby’s head.
 - Several case series of accidental suffocation or death from undetermined cause suggest that bed sharing is hazardous. The risk of SIDS seems to be particularly high when there are multiple bed sharers and also may be increased when the bed share has consumed alcohol or is tired. Also the risk of SIDS is higher when the bed sharing occurs with young infant.
- **Slide 13C-15 Preterm Birth and SIDS**. SIDS risk is influenced by an infant’s weight and gestational age. When the risk of SIDS was less than 1 per 1,000 for term babies, the incidence increased sharply with declining birth weight in

preterm infants: 3,8/1000 for 2000 to 2500g, 6,4/1000 for 1500 to 2000 g, and to 7,5/1000 for less than 1000 g birth weight babies.

- **Slide 13C-16 Near miss for SIDS.** Explain to the participants that for many years apnoea was thought to be predecessor of SIDS and was interpreted as possible near miss for SIDS episode or “life-threatening event”. Due to these home apnea monitors were thought to be effective strategy for preventing SIDS.
- SIDS and Apparent Life-Threatening Event. After interpreting data from Collaborative Infant Home monitoring Study group AAP recommended that home monitoring should not be considered as a strategy to prevent SIDS, because the great majority of infant dying of SIDS are apparently healthy infants. And home monitoring did not show significant impact on the overall SIDS rate. But in some cases home monitoring is still recommended such as one or more episodes of severe apparent life-threatening event (ALTE), siblings of SIDS victims, preterm infants with abnormal apnea and bradycardia, infants on respiratory support.
- Show **Slide 13C-17.** Possible protective factors against SIDS include breastfeeding, having the baby and parents sleep in the same room, and giving babies pacifiers.
 - **Breastfeeding:** Infant sleep studies show that breastfed infants wake up more easily than their formula-fed counterparts. This may be one reason why breastfeeding is protective against SIDS
 - Research conducted in New Zealand shows that SIDS occurs three times less often in breastfed infants than in formula-fed infants.
 - SIDS risk when breastfeeding was lacking was even higher than SIDS risk when mothers smoked.
 - Research conducted by the American Children’s Health and Human Development Institute discovered that SIDS babies were breastfed less and for shorter periods than non SIDS babies.
 - However, while some researchers have demonstrated breastfeeding protective effects, other researchers have not found such an effect.
 - **Room-sharing:** Infants should sleep separately from parents but nearby. Having an infant sleep in the same room with the mother reduces SIDS risk.
 - **Pacifiers:** According to a November 2005 recommendation from the AAP, pacifier use during sleep is associated with reduced SIDS risk. Investigators calculated that one SIDS death could be prevented for every 2,733 infants who use a pacifier when sleeping. Keep in mind that there is an approximate 1.2- to 2-fold increased risk of otitis media associated with pacifier use, but that the incidence of otitis media is generally lower in the first year of life (especially in the first 6 months), when the risk of SIDS is at its highest.
- Show **Slides 13C-18.** During the 1990’s, SIDS prevention campaigns were conducted in many countries. The campaigns resulted in reductions in post-neonatal death rates by 50%.
- **Slide 13C-19.** This slide shows examples of information, communication and education (IEC) materials used in SIDS prevention programs. These types of materials could be used in interpersonal counselling sessions between

providers and parents. An example of how a counselling session might be conducted follows:

- Begin counselling by asking about baby's sleep position.
 - Tell the parents to lay their baby on his/her back to sleep because this reduces SIDS risk.
 - Explain that though some children can sleep safely in a prone or side position, this creates a SIDS risk.
 - If the parents have questions about SIDS and sleep positions, give them a brochure about SIDS.
 - Do not agree with parents' arguments to let their baby sleep on his/her belly "sometimes" because he/she is "cold", "is teething", or "prefers sleeping on his/her belly", etc.
- **Slide 13C-20.** This slide shows the recommendation to parents: infants should be placed to sleep on their backs. It is the safer position to sleep. For infants with medical conditions such as symptomatic gastroesophageal reflux, sleeping position recommendations must take into account the potential risk of sleeping on their back, especially for infants with swallowing dysfunction or unilateral vocal cord paralysis, who have an increased risk of aspiration. However, at the present time no scientific evidence shows that vomiting and aspiration pose a threat to healthy infants. Countries that have switched predominantly from the prone to the supine sleeping position for infants have shown no increase in reports of choking on vomitus or of aspiration pneumonia.
 - **Slide 13C-21.** This slide shows the recommendation to parents: use a firm sleep surface. Soft materials or objects such as pillows, quilts, comforters, or sheepskins should not be placed under a sleeping infant. The recommended sleeping surface is a firm crib mattress, covered by a sheet. If bumper pads are used in cribs, they should be thin, firm, well secured, and not "pillow-like." In addition, loose bedding such as blankets and sheets may be hazardous.
 - **Slide 13C-22.** This slide shows recommendation to parents: avoid overheating the baby and smoking near the baby..
 - **Slide 13C-23.** Steps to prevent SIDS. Steps 1-3 have been proven effective. Steps 4-6 are complementary.

Activity 3 – Conclusion (5 min)

- After your presentation, return to the flipchart where you wrote participants' definition of SIDS and SIDS prevention recommendations in Activity 1. Ask the participants to identify the correct answers for these two questions.
- Ask participants to answer the following question and discuss their answers to ensure that they have understood all of the recommendations on reducing the risk of SIDS:
 - How can you help to prevent SIDS in your health setting?
- Show **Slide 13C-23** and review steps for SIDS prevention with participants.
- After you complete the module, ask participants if they have any questions or if there are any points that are unclear.

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Module 14C

Postpartum Depression, Loss and Tragedies

Learning Objectives

By the end of this module, participants will be able to:

- Describe the symptoms and treatment methods of postpartum depression.
- Provide support to women with postpartum depression
- Identify early and late psychological reactions of parents to the birth of a seriously ill child, a child born with a birth defect or dead, or the death of a newborn child.
- Help parents of a seriously ill child or child with a birth defect to be strong enough to provide the appropriate for the child.
- Provide timely support to parents whose baby died, helping them cope with the grief.

Module Outline and Duration

Classroom work – 60 minutes

Activity 1 – Introduction	5 min
Activity 2 – Group work	15 min
Activity 3 – Presentation	35 min
Activity 4 – Conclusion	5 min

Preparation for the Module

- Review current publications, materials on evidence-based medicine and public health strategies related to coping with death of a newborn, birth of an ill child, and postpartum depression.
- Make sure all the participants are provided with materials.
- If possible, become acquainted with common practices in participants' health facilities related to coping with death of a newborn, birth of an ill child, and postpartum depression.
- Make sure that the other facilitators know their respective roles during implementation of this module

Materials and Audiovisual Equipment

Materials

- Participant manual
- Power Point Presentation 14C - EPC ENG
- Local guidelines and regulations relevant to safe motherhood and perinatal care

Equipment

- Video projector or projector overhead
- Flipchart
- Markers

Key Messages

Postpartum depression

- Postpartum depression develops in 10-15% of all women.
- Most women and their family members do not realize that this condition requires support and treatment.
- In order to overcome postpartum depression successfully a woman needs the support of her friends, relatives, healthcare providers and social workers.
- Health care providers should identify postpartum depression and provide individual support and treatment in a timely manner.

Tragedy and loss

- All parents hope that they will have a healthy child. If their hope does not come true (e.g. the child is born seriously ill or with a birth defect or the child is born dead or dies shortly after birth), it can come as a shock to parents. They not only feel the loss but also lose hope of ever having a healthy baby and start to doubt health care providers.
- Continuous medical support, performed by health professionals plays a very important role during this period of loss.
- In order to discuss plans for caring for a seriously ill child or a child with a birth defect, it is very important for health care providers to be in close contact with the parents as soon as possible.
- It is also important for parents to bond with their child, regardless of illness or birth defect. This is made possible with the support of health care providers.
- Health care providers should support parents and share information about

Key Messages

the causes of the illness, birth defect, or death to help prevent a severe psychological reaction of the parents.

- The participation of both parents in all discussions will help them to improve their own relationship and to prevent misunderstandings and misinterpretations of the information provided.

Classroom work

Activity 1 – Introduction (5 min)

- Show **Slide 14C-1** and discuss with participants the objectives of the module. By the end of this module, participants will be able to:
 - Describe the symptoms and management of postpartum depression.
 - Provide support to women with postpartum depression
 - Identify early and late psychological reactions of parents to serious illnesses, birth defects or the death of a newborn.
 - Help parents of a child who is seriously ill or has a birth defect to be strong enough to provide the appropriate for the baby.
 - Provide timely support to parents whose baby died, helping them cope with the grief.
- Show **Slide 14C-2** and discuss with participants how all parents hope that they will have a healthy child. If their hope does not come true (e.g. the child is born seriously ill, with a birth defect, or dead or dies shortly after birth), it comes as a shock to the parents. They not only feel the loss but also lose hope of ever having a healthy baby and start to doubt health care providers.
- Show **Slide 14C-3** and call participants' attention to the fact that the postpartum period is a time of conflicting emotions – new mothers experience great excitement at the same time as they must deal with stressful situations. Mothers may also experience of sense of uncertainty, fear, and disappointment. They tend to feel drained both emotionally and physically. However, it is essential for parents to bond with or form a relationship with their child. This is important whether the child is healthy or sick. This must be done through close contact between the parents and child and with the support of health care providers.
- Show **Slide 14C-4** and discuss the prevalence of postpartum depression and puerperal psychosis. Many scientists and clinicians have investigated this postpartum condition and agree that it is critical issue from the clinician's point of view. Postpartum depression has greater clinical significance than temporary melancholia and is more widespread than postpartum psychosis. Symptoms of postpartum depression are difficult to describe or diagnose. Symptoms can manifest in first weeks or months postpartum and can exist for more than a year.

Activity 2 – Group Work (15 min)

- Divide participants into three groups.
- Provide each group with questions and ask them to discuss possible answers to those questions. Give them approx. 5-7 minutes for this task.
- Questions to the small groups:
 - Group 1 – What is postpartum depression? How can we help to identify it?
 - Group 2 – How do you see the role of a medical worker in providing help to women with postpartum depression? Who else can help her?
 - Group 3 – What steps are taken in your medical facility to help women with postpartum depression?
- After the specified time and/or when all groups have finished answering their questions, ask each group to have a representative share with the larger group what they had discussed.

Activity 3 – Presentation (35 min)

- Start your presentation with **Slide 14C-5** and discuss with participants the definitions.
- Show **Slide 14C-6** and discuss with participants the factors that may lead to postpartum depression. The following are types of factors which influence the development of postpartum depression:
 - *Psychological and Social*: expectations of the role and responsibilities of a woman in terms of how she cares for her child. A mother may feel that she doesn't meet her own expectations or those of others.
 - *Family*: relationships between a woman and her husband and other family members can make the situation easier or more difficult.
 - *Biological*: hormonal changes after birth.
- Show **Slide 14C-7** and discuss key practices for management and prevention of postpartum depression and psychosis during antenatal period.
- **Slide 14C-8** focuses on key tasks during postnatal period. Emphasize the fact that the continuous psychological support from medical workers plays a vital role for parents during this period. It is, for this reason, important for medical workers to develop a close relationship with parents as soon as possible – to discuss coping strategies for postpartum depression and/or plans for care of sick children or children with birth defects.
- **Slide 14C-9** shows key clinical signs of postpartum depression.
- Show **Slide 14C-10** and explain how medical workers can assess and diagnose PPD in a timely manner in order to provide the appropriate support and treatment.
- The following questions are helpful in identifying women who may have PPD:
 - How have you been feeling lately?

- What is your level of energy, compared to normal? Have you felt especially fatigued?
 - How have you been sleeping?
 - Are you able to enjoy activities which are usually pleasant for you?
 - How is your ability to concentrate (for example, on a newspaper article or on your favourite TV show)?
- **Slide 14C-11** outlines the main principles of management of postpartum depression and psychosis.
 - Show **Slide 14C-12**. It describes three key elements of psychosocial management of postnatal depression.
 - Show **Slides 14C-13 to 14C-14** and introduce the concept of counselling for woman with postnatal depression.
 - Show **Slide 14C-15** gives an overview of family focused interventions, which could be potentially effective for management of postnatal depression.
 - Go over to **Slide 14C-16** asking participants to suggest possible reactions of parents whose baby is born with a serious illness or birth defect. Explain how a parent's reaction to having a baby born with a serious illness or birth defect can evolve:
 - During the first phase, parents typically feel grief from the loss of the healthy child expected. The first phase is one of **shock, panic** ("I cannot look after this child.") and **denial** ("This is not my child.") Parents may also feel **guilt** or **anger**.
 - Parents then begin to accept and cope with the reality of situation. They may also feel **anxiety** about caring for the child. It is at this point that medical workers should make contact with the parents to discuss the plan future care of the child.
 - Some parents, however, cannot adapt and remain in continual grief.
 - Explain that although parents may experience grief and it may be difficult for them to accept (and even look at) the condition of the child, a mother should not be separated from her child. To the contrary, with the support of health care providers, close contact between the mother, family, and child is essential for forming bonds between parents and the child. Feeding the baby can help the mother understand and feel her unique importance for the baby.
 - Some parents may **withdraw** emotionally and physically from the child ("anticipatory mourning") even before doctors lose hope that the child will survive. This might be in reaction to something health care providers said – a grave diagnosis or even an accidental remark concerning the prognosis. Explain that it is important that health care providers are cautious about way they say.
 - Show **Slide 14C-17** and describe what assistance can health care providers provide to a family if the child was born with a serious illness or birth defect:
 - Allow and encourage parents to have a contact with the baby
 - Allow mother to express milk if she wants.
 - Be prepared to answer parents' questions
 - Be prepared to repeat information or respond to the same question many times
 - Be prepared to accept outbursts of anger and distress directed at the health care providers
 - Give parents a photograph of the ill baby.

- Show **Slide 14C-18** and explain that, of course, parents always expect and hope to have a healthy child. If their expectations do not come true (e.g. the baby is born dead or dies shortly after birth) parents feel a great sense of **shock** and **loss**. Grief after the death of a newborn is no different from the grief of a loss of other loved one. In addition to the grief and shock, parents may feel a sense of **despair**, doubting that they will ever be able to have a healthy baby. They may also begin to **doubt doctors** and medical practice. They may feel angry and blame the medical workers. This is particularly so when the death is unexpected and the feeling intensifies with lack of “scientific explanations”. By providing support and full information about the cause of the tragedy, health care providers can help prevent a more serious or pathological reaction.
- Show **Slide 14C-19**. Discuss possible reactions and stages of grief (grief, shock, panic, denial, guilt and anger, bargaining). Explain that parents may also:
 - Search for an explanation or reason for the death
 - Experience the “empty hands” syndrome – the mother can hallucinate or hear things such as the baby crying
 - Feel negative feelings toward other children
 - Distress and surprise at lactation
 - Sense of self inferiority in being a mother
 - Some evidence show that fathers come to consciousness after grief faster than mothers do. This may result in relationship problems (sexual or communication) between the husband and wife.
- Show **Slides 14C-20 to 14C-22** with information about how to help parents whose child dies. Explain:
 - The parents and other family members of a child born seriously ill, with a birth defect or dead need help from a specialist.
 - Health care providers can do a lot to help this family cope with grief.
 - It is important to provide parents with an opportunity to have contact with the dead child – especially at the end when the baby is free of any medical equipment.
 - Allow mother to express milk if she wants.
 - Allow parents to keep a few things to remember the baby.
 - It is very important to let parents have time to talk about their tragedy and have a chance to listen to other people who have experienced the same type of tragedy. Social support helps with psychological rehabilitation and the return to a normal life. Therefore, it is important to identify an appropriate place to care for mothers who lost their babies and to provide counselling.
 - Provide full postpartum care for the mothers who lost their babies.
- Show **Slide 14C-23** and draw attention to the fact that the medical institution also can help parents whose baby dies with death registration and funeral services. It may be a good idea to develop a booklet for parents on the procedures and resources for registering the death and arranging the funeral.
- Show **Slide 14C-24** and remind participants that healthcare providers have to provide overall psychological assistance and support to parents whose baby dies by:
 - Organizing help while mother is in in-patient department
 - Providing the important information to the Women’s Clinic (or the department where the woman is cared for)
 - Organizing good counselling
 - Contacting and involving a professional psychologist in care and treatment of the mother
- Discuss with participants why this kind of assistance and support is important.

- Show **Slide 14C-25** and explain that sometimes families whose child dies or is born dead may decide to file a complaint or law suit. To prevent unjustified complaints and legal action healthcare providers are recommended to follow “the 10 don’ts.” NEVER:
 - Blame the woman or family
 - Try to prove your innocence
 - Try to avoid questions
 - Give information you are not sure about
 - Lie to the woman or family
 - Postpone giving help you can provide immediately
 - Refer for answers to someone else
 - Avoid relatives of the mother
 - Give discrepant or contradictory information
 - Refuse requests of the woman or family

- Discuss with participants these rules. Ask participants if they have any questions or additions. Listen to participants and give answers to questions that arise.

Activity 6 – Conclusion (5 min)

- Show Slide 14C – 26 Finish the work with the module by emphasizing the following main points:
 - 10-15% of all women experience postpartum depression. Most women and family members don’t understand that women with postpartum depression need care and treatment for this condition.
 - To deal with postpartum depression women need help from all of those surrounding her including relatives, friends, health care providers and social workers.
 - Health care providers need to diagnose the postpartum depression opportunistically in order to provide the necessary individual support and treatment.
 - Providing full information about the cause(s) of illness or death is important for preventing a pathological reaction.
 - The provision of continuous psychological support by health care providers to parents of children born with a serious illness, deformity or death is equally important.
 - Joint participation both parents in all discussions can help them to strengthen their relationship and prevent misunderstandings and disconnect.

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Activity 2

Group 1

Questions to discuss:

What is postpartum depression?

How can we identify it?

Group 2

Questions to discuss:

How do you see medical worker role to provide help to women with postpartum depression?

How else can we help her?

Group 3

Questions to discuss:

What steps are taken in your medical facility to provide necessary help to women with postpartum depression?

Module 15C**How to Improve Existing Practices?****Learning objectives:**

By the end of the session the participants will:

- Be able to define quality medical care
- Understand basic principles and component of quality medical care
- Be able to organize work in a healthcare setting on improvement of medical care quality
- Understand the importance of implementing evidence-based practices
- Understand the main stages in developing clinical guidelines/protocols
- Be able to think critically about and use clinical guidelines/ protocols
- Understand the necessity and main components of a clinical audit
- Be able to organize and implement a clinical audit.

Module outline and duration:**Classroom work - 315 min**

Activity 1 – Presentation	60 min
Activity 2 – General discussion “Is it necessary to change the existing system of perinatal care for women and children in maternities?”	60 min
Activity 3 – Participants develop plan of action	90 min
Activity 4 – Presentation of developed plans of action	105 min

Preparation to the module

- Review up-to-date publications, evidence-based materials and strategies of public health with recommendations for improvement of existing technologies
- Provide all the participants with modules for participants
- Make sure that all facilitators know their respective functions during the work on the module.

Materials and audio-visual equipment**Materials**

- Module for participants
- Local guidelines and state orders

Equipment

Materials and audio-visual equipment

- Multimedia or overhead projector
- Flip-chart
- Markers
- Pens and pencils
- Name badges

Key Points

- Quality of medical care – is the application of medical science and technology with utmost benefit to man's health without increased risk
- Continuous Quality Improvement – continuous work with the aim to evaluate and improve medical care quality
- Clinical guidelines – statements that are based on clinical methodology and directed to improve quality of medical care quality in different clinical situations
- In principal, guidelines can be developed for each topic and medical intervention. However, the development process requires resources. Additionally, one has to select the areas where the new guidelines are most needed
- Clinical guidelines should be developed by multidisciplinary groups of specialists in collaboration with healthcare providers (HCP) whom the interventions will affect. This group would include doctors, patients and other medical staff
- Clinical audit – systematic and critical analysis of medical care quality
- A clinical audit is a continuous process where HCP systematically change their practices according to the results of the analysis
- The aim of the clinical audit is the improvement of medical care with analysis of health care provider's practices and identification of which practices should and need to be improved.
- A clinical audit is a process which identifies priorities for quality improvement and develops a plan of action.

Classroom work

Activity 1 – Presentation (60 min.)

- Sow **Slide C15-1** and explain to the participants that during their work over the module modern strategies of quality improvement of existing practices will be discussed.
- Ask the participants to define the quality of medical care. Listen to their opinions and show **Slide C15-2** with quotation of Dr. Avedis Donabedian (1980). Also give participants other definitions including the WHO definition that quality is the "... appropriate running of all activities (according to the standards) which are safe, economically acceptable in the present society and influence mortality, disability and inappropriate nutrition." WHO (2000).
- Tell the participants that there is much simpler definition of quality "Do it perfectly the first time, next time do it better." (URC, 2000). In a healthcare setting the task is to hire HCP who know how to do things correctly and create systems that enable and encourage correct practices.
- Go to **Slide C15-3** and tell the participants that problems of quality care assurance are reflected in a wide variation in the use of health care services between countries, regions and even various health care facilities, underuse of some services which results in lack of necessary care; as a result of overuse of other services people are exposed to unnecessary interventions, and misuse of services that leads to disability or even death, including an unacceptable level of errors.
- Show **Slide C15-4** and present the concept of continuous improvement of medical care and tell participants that continuous quality improvement (CQI) is an integral part of quality management. Continuous quality improvement is defined as "the process of quality improvement is directed towards understanding complicated processes and achieving certain goals a high quality final product."
- Explain that there are several tasks related to quality improvement, namely:
 - Services should be acceptable to patients, providers and society
 - Services should match the needs
 - Treatment should be effective and reach desirable results
 - Treatment should be economical
 - Means should be equally distributed among those who really need them.
- Go to **Slide 15C-5**. Give the next definitions:
 - Standard of care –official definition of an action or practice should be followed by health care providers in the same (similar) clinical case
 - Clinical practice guidelines have been defined as "systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances." They are designed to help practitioners assimilate, evaluate and implement the ever-increasing amount of evidence and opinion on best current practice

- Regulation (enactment, order) – gives legal authority to recommendations or guidelines.
- Explain the difference between Standard and Clinical practice guidelines (protocols):
 - Give an example of Standard – “Every newborn after birth must be kept warm”
 - Give an example of Clinical practice guidelines (protocols) - “Warm Chain” which represents the ways of keeping baby warm and hypothermia prevention.
- Show **Slide 15C-6**. Present the definition of clinical guidelines (protocols). Explain that the aim of clinical guidelines (protocols) is improvement of medical care quality. Correctly developed guidelines (protocols) reduce expenses on hospitals.
- Explain that guidelines on different topics should be developed. Guidelines can describe the specifics of managing different medical states such as haemorrhage and pre-eclampsia or managing medical procedures such as hysterectomy.
- Explain the main advantages and disadvantages of clinical protocols/guidelines:

Advantages for patients:

 - Improve the quality of care
 - Reduce morbidity and mortality
 - Standardize treatment
 - Inform patients about treatment (through brochures, leaflets, video, magazines)
 - Can serve as a mechanism of payment for services rendered
 - Shape public opinion

Disadvantages:

 - Can be developed with mistakes
 - Frequently treatment and diagnostic options are not evidence- based
 - Protocols developers may feel responsible
 - Opinion of leading specialists can prevail
 - Sometimes the needs of the patients are not prioritized.
- Show **Slide 15C-7**. Explain to the participants the structure of protocols/guidelines. Encourages the participants to use the structure and develop a protocol for “active management of the third stage of labour”. Correct answers are listed in the comments to the slide.
- Go to **Slide 15C-8**. Tell the participants that there is often a gap between the development of guidelines and their implementation into practice. Implementing guidelines is not simple or straightforward. List the steps need to be taken for successful implementation and maintenance of Clinical Guideline.
 - Identifying barriers to implementation
 - Internal to the guideline itself
 - External barriers relating to the clinical environment and particular local circumstances: Structural factors (e.g. financial disincentives); Organisational factors (e.g. inappropriate skill mix, lack of facilities or equipment); Peer group (e.g. local standards

- of care not in line with desired practice); Individual factors (e.g. knowledge attitudes, skills); professional-patient interaction (e.g. problems with information processing).
 - Implementation initiatives
 - Distribution
 - Monitoring implementation
- Explain that protocol's implementation:
 - Requires time, enthusiasm and resources
 - Accompanies continuous training
 - Requires an audit and regular update.
- Show **Slide 15C-9**. Explain to the participants that there are several definitions of clinical audit. Site the following definitions of audit:
 - “Clinical audit is a quality improvement process that seeks to improve the patient care and outcomes through systematic review of care against explicit criteria and the implementation of change. Aspects of the structures, processes and outcomes of care are selected and systematically evaluated against explicit criteria. Where indicated, changes are implemented at an individual team, or service level and further monitoring is used to confirm improvement in healthcare delivery”
- Clinical audit is not research. Research is about obtaining new knowledge; about finding out what is best practice. Clinical audit is about quality; about finding out if best practice is being followed
- Tell the participants' that recently audits have become an integral part of the health system, and a medical and clinical audit is accepted as a normal practice in many Western healthcare settings
- Explain that an audit is a systematic, formal means of assessment and improvement in the quality of healthcare. An audit is the evaluation of clinical practices with the purpose to determine if they are appropriate and successful.
- Go to **Slide 15C-10**. Explain the “audit spiral.” Audits can be considered to have five principle stages, which together form the “audit spiral”.
 - Topic identification
 - Standards identification
 - Data collection to confirm the necessity of standards implementation
 - Implementation of changes to improve medical care (if needed)
 - Data collection for secondary identification of the practices needing improvement.
- Program of uninterrupted quality improvement:
 - Set standards which are to be achieved
 - Identify means for the audit, the assessment of work and the final indicators of appropriate practices
 - Determine areas for improvement
 - Identify areas where the system currently works well.
- Show **Slide 15C-11**. Explain the different types of audits in detail.

Basic clinical audit

- Provides several indicators; usually registered in clinical records or computerized information centres. This alone is not an audit but is often the first stage of the process and can be useful to identify what will be audited.

Collection of documentation

- Collects required records to be reviewed independently by colleagues. This method is best used to study how records are filed.

Prospective audit

- The availability of a control list for a patient to be sure that all procedures have been implemented and that additional protocols are available in the case of abnormal results. Such an audit will be time consuming and has minimal effectiveness.

Thematic audit

- Auditing a specific topic that is based on concerns at local level. Additional data collection may be required.

Monitoring of unwanted outcomes

- This is a special form of thematic audit which reviews all undesirable outcomes such as maternal mortality, perinatal mortality or neonatal morbidity.
- Go to **Slide 15C-12**. Explain that an audit can be conducted at different levels.
 - **At local level:** audit of variations within a department, facility or professional group
 - **At national or regional level:** audit of regional tendencies or variations within a country
 - **At international level:** audit of differences among countries.
 - Show **Slide 15C-13**. Explain the main audit principles/steps.
 - Choose an audit topic/question
 - Form an audit team
 - Set audit objectives and standards
 - Consider ethics
 - Plan and carry out data collection
 - Analyze your data
 - Write a report
 - Implement changes and re-audit.
 - Tell the participants that use of available data needs to be used: information, necessary for audit, will depend upon the audit topic. In all possible cases routine data should be used; additional data should be collected when needed. Countries are different in terms of scales and kinds of data collection systems.
 - Go to **Slide 15C-14**. Show the participants the data collection process. Explain, that data collection in criterion-based audit is generally undertaken to determine the proportion of cases where care is in accordance with the criteria.
 - Data collection includes:
 - Identification of data items are needed in order to answer the audit question
 - Identification of sources of data

- Nomination of responsible team
 - Data management
 - Data analysis.
- Show **Slides 15C-15 – 15C-16**. Summarize the first part of the presentation. Draw participants' attention to the following:
 - Improving the quality of care and reducing medical errors are priority areas for any health care system
 - A central goal of health care quality improvement is to maintain what is good about the existing health care system while focusing on the areas that need improvement
 - The purpose of the clinical audit is to improve quality of care for patients by analyzing current interventions and identifying what interventions need to be added or improved
 - A clinical audit is the process by which priorities are identified; plans of action are developed; and assessments and implementations of results are carried out.
 - Ask whether the participants have questions on the above-stated material. Answer the participants' questions.

Activity 2 – General discussion: “Is it necessary to change the existing system of perinatal care for women?” (60 min)

- Show **Slide 15C-17** and explain that the second part of this presentation will consider the questions of strategy, specifically how to convey information to their colleagues and implement a new healthcare model.
- Go to **Slide 15C-18**. Explain that we have practiced behaviours. We do things automatically and follow the same patterns of work from year to year. Thus changing our behaviour will be difficult. Implementation of perinatal technologies requires changes in routine.
- Show **Slide 15C-19**. Ask the participants to recall a case when they had underwent or experienced serious changes. Ask them:
 - What was your first impression about the change?
 - What difficulties did you face at the different stages?
 - What helped you adopt the changes?
 - How difficult was it was to implement the changes?
- Emphasize the fact that changes in professional work are difficult. Ask one of the participants to clench his hands tightly then to unclench and clench again but with different fingers' position. If an index finger of the right hand was on the top place the index finger of the left hand on the top. Ask the participant if it was difficult to do. Emphasize the fact that it's difficult to change habits. Additional examples, such as putting on your jacket, can be used.
- Go to **Slide 15C-20**. Ask the participant why do people resist new changes? Write all the options on the flipchart. Then, using the slide, show them the list of notions that reinforce resistance. Probably most of what participants have named can also strengthen resistance. Discuss with the participants each reason why people refuse to change their stereotypes.

Reasons:

- Expense
 - Work volume
 - Danger
 - Conflict of interest
 - Fear to fail
 - Fear to become disorganized.
- Ask the participants which strategies they propose in order to incorporate the new behaviour.
 - Show Slide **15C-21**. Present the strategies which can help to decrease resistance to change:
 - Support of senior management at different levels
 - Interest of the participants
 - Joint development of unanimous decision
 - Feedback
 - Open to new opinions.
 - Ask: In your opinion which personal qualities are required for change? Possible answers could include: flexibility, persistence, socially concerned, empathy to people, ability to get other interested and motivated to change.
 - Focus on the fact that quick changes might be dangerous. It's important not to rush.
 - Introduce and discuss with participants every step of **Lewin's Change Theory**.

Lewin's model

“Unfreezing”: At first systems are disorganized. As a result people start to:

- Feel that they need to put things in order; organize work in a new mode
- Become morally prepared to change.

At this stage it can be helpful to organize a study tour to visit a new model that is well implemented; or a new experimental model can be proposed and tried. It is important to avoid extreme innovations to prevent aggressive resistance.

“Moving to a new level”: Conditions that are favourable for change are created.

- These conditions are flexible and encourage education and innovation.

At this stage it is helpful to provide encouragement and/or incentives for a successful transition to new practices.

“Refreezing”: When the main system is stable it is time to reinforce it:

- Positive feedback can facilitate the implementation of innovations into routine practices. A continuous process of formal assessment will create true understanding of the usefulness of these changes as well as identify areas needing improvement.

- Ask the participant whether they have questions. Listen to their opinions and answer their question.
- Go to **Slide 15C-22**. That even though it is difficult and dangerous to introduce changes and even though the changes can influence attitudes among HCP it's easier to leave things as they are and the changes are necessary to improve quality. Ask the participant whether they agree with the statement. Discuss the participants' opinions.
- Tell the participants that in order to implement changes they will have to analyze their starting conditions.
- Ask the participants within 5 minutes to write down their opinions on the following:
 - What will most effectively facilitate the implementation of improved perinatal technologies?
 - What will interfere the most?
- Ask the participants to make brief notes. Let some of the participants share their answers.
- Show **Slide 15C-23** and distribute printed schemes of situation analysis.

	Knowledge	Skills	Attitudes	Resources
HCP				
Institutions				
Consumers				
Others				

- Explain that this scheme will allow the participants to think over knowledge, skills, viewpoints and that changes are needed in their behaviour. This analysis will help them identify starting points and to focus of the areas which require bigger efforts.
- All aspects should be considered in light of:
 - Medical workers — midwives, obstetricians and gynaecologists, neonatologists and other medical specialists
 - Institutions — administration, resources, internal rules and regulations;
 - Consumers — women and their families
 - External conditions — laws, instructions, rules, regulations of Oblast health authorities, and public opinion.
- Go point by point in the table and make sure that the participants understand everything.
- Ask the participants to split in to groups with other representatives of their facility and complete the tables. If there a larger group from one maternity ask them to form sub-groups of 3-4 people. Allow 35 min for their work.
- Bring the participants together. Let each maternity (or group) name one of the most important factors in support to implementation of new perinatal technologies (e.g., "to the best of their knowledge HCP promote breastfeeding") and one of the most important obstacles (e.g., "doctors do not entrust midwives to do it"). Mark the similarities and differences in answers of groups' representa-

tives. Select one or more obstacles (as time allows) and ask the participant to brainstorm the strategies to overcome them.

Activity 3 – Participants make-up plan of action (90 min)

- Tell the participants that having now analyzed the situation in their maternities they will have to make-up a plan of concrete actions to implement at effective perinatal technologies in their maternities with regard to identified advantages and obstacles.
- Show Slide **15C-24** “Action Plan” and again ask the participants to split into groups as to their maternities (if all the participant are from the same maternity let them split in small groups). Participants should discuss and develop plans of action paying attention to the following points:
 - Identify responsible people for each task and deadline
 - List resources and necessary support to implement each task, marking what is available and what is needed.
- Distribute the template of Action Plan among participants:

Task	Responsible person	Timeframes	Needed resources and support
What will you do at once?	What can be done later?	Who can help?	Who or what can hinder?

- Ask the participants to write down all the ideas on flipchart paper.

Activity 4 – Presentation of developed plans of action (105 min.)

- Bring the participants together after they have finished their work on the plans of action.
- Ask each group to present developed plans paying attention to the main tasks as well as resources and needed support.
- Discuss with representatives of each group how to access needed resources.
- Praise the participants for their work. Ask them if they have questions, comments, additional statements. Answer the participants’ questions.
- Summarize the work on the module and remind the participants that they will have to work hard to convince their colleagues who have not participated in the training that the changes are vital and will improve mother and baby care and increase overall maternal satisfaction.

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Activity 2

	Knowledge	Skills	Attitudes	Resources
Healthcare providers				
Institutions				
Consumers				
People around				

Activity 3

Task	Responsible person	Timeframes	Needed resources and support
What to do at once?	What can be done later?	Who can help?	Who or what hinders?