

Maternal and Child health

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Pre-seminar Questions

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Q1: what's the most medical condition encountered during pregnancy?

- A. Diabetes
- B. Hypertension
- C. Depression
- D. Kidney diseases

Q2: percentage of miscarriage due to chromosomal abnormalities?

- A. 40%
- B. 50%
- C. 60%
- D. 80%

Pre-seminar Questions

— — —

Q3: full clinical examination after delivery for the newborn includes:

- A. Vit K prophylaxis and measles vaccination.
- B. Rubella and measles vaccination
- C. TB vaccination
- D. Vit K prophylaxis and hepatitis B vaccination

Q4: Which one of the following is the major cause of maternal mortality in Saudi Arabia?

- A. Infection
- B. Hemorrhage
- C. High blood pressure
- D. Unsafe abortion

Objectives:

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- Health behaviors and health systems indicators that affect the health, wellness, and quality of life of women, children, and families.
- Factors affecting pregnancy and childbirth, including preconception health status, Age, access to appropriate preconception and interconnection health care, and poverty
- Health risks that include hypertension and heart disease, diabetes, depression, genetic conditions, sexually transmitted diseases (STDs), inadequate nutrition, unhealthy weight, tobacco use and alcohol abuse.
- Social and physical determinants of maternal health.
- Social and physical determinants of infant and child health.
- How to improve the health and well-being of women, infants, children, and families.

Health behaviors and health systems indicators that affect the health, wellness and quality of life of women, children and families.

Definitions

Maternal health: refers to the health of women during pregnancy, childbirth and the postpartum period.

Health indicators: a measurable characteristic that describes the health of a population (e.g., life expectancy, mortality, disease incidence or prevalence, or other health states)



Definitions

Maternal and child health: refers to the promotive, preventive, curative and rehabilitative health care for mothers and children.



Maternal, Newborn and child mortality indicators: (match)

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1. Maternal mortality ratio
2. Maternal mortality rate
3. Perinatal mortality rate
4. Neonatal mortality rate
5. Postnatal mortality rate
6. Under-5 mortality

- A. Deaths between 28 week of gestation to less than 7 days of life expressed as per 1000 of total births.
- B. Deaths in the first 28 days of life expressed as per 1000 of total live births
- C. Number of maternal deaths in a given period per population of women who are reproductive age
- D. Deaths between 28 days of life to < 1 year expressed as per 1000 of total live births
- E. Number of maternal deaths per live births
- F. Deaths below 5 years expressed as per 1000 of the number of children below the age of 5 years.

1)E. 2)C. 3)A. 4)B. 5)D. 6)F.

Why Are Maternal, Infant, and Child Health Important?

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Pregnancy can provide an opportunity to identify existing health risks in women and to prevent future health problems for women and their children. These health risks may include:

1. HTN and heart diseases.
2. Diabetes.
3. Depression.
4. Intimate partner violence.
5. Genetic conditions.
6. STD's.
7. Tobacco, alcohol and substance abuse.
8. Inadequate nutrition.
9. Unhealthy weight.



Factors affecting pregnancy and childbirth:

Many factors can affect pregnancy and childbirth including:

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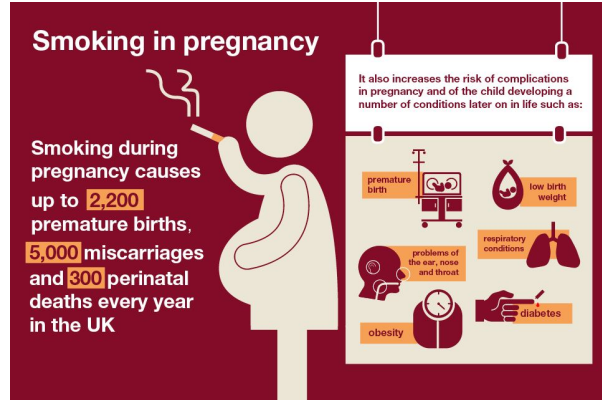
1. Preconception health status.
2. Age.
3. Access to appropriate preconception, prenatal and interconception health care.
4. Poverty.



Factors affecting pregnancy and childbirth:

Many factors can affect pregnancy and childbirth including:

1. **Preconception health status.**
 - a. Existing health conditions.
 - i. High BP
 - ii. PCOS
 - iii. DM
 - iv. Kidney diseases.
 - b. Lifestyle factors.
 - i. Tobacco
 - ii. alcohol



Factors affecting pregnancy and childbirth:

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Many factors can affect pregnancy and childbirth including:

1. **Preconception health status.**
2. **Age.**
 - a. Pregnant teens are more likely to develop pregnancy-related high blood pressure and anemia and to go through preterm labor
 - b. After 35 it shows that women are at higher risk for certain problems, including:
 - i. Gestational hypertension) and gestational diabetes
 - ii. Pregnancy loss
 - iii. Ectopic pregnancy
 - iv. Cesarean delivery
 - v. Delivery complications, such as excessive bleeding
 - vi. Prolonged labor (lasting more than 20 hours)
 - vii. Genetic disorders, such as Down syndrome.
 - viii. Multiple gestations.

Factors affecting pregnancy and childbirth:

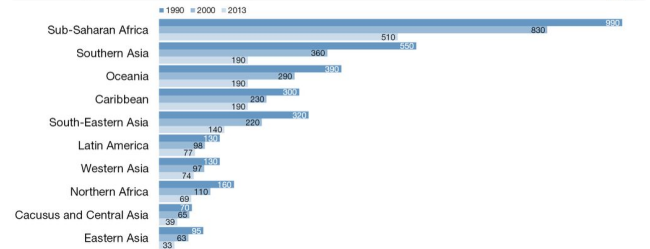
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Many factors can affect pregnancy and childbirth including:

1. Preconception health status.
2. Age.
3. Access to appropriate preconception, prenatal and interconception health care.
4. **Poverty.**
 - a. Almost all maternal deaths (99%) occur in developing countries.

Maternal deaths per 100,000 live births

Women aged 15–49 in 1990, 2000, and 2013



Source: The Millennium Development Goals Report 2015

The risk of maternal and infant mortality and pregnancy-related complications can be reduced by increasing access to quality of:

— — —

1. **preconception (before pregnancy) care.**

- a. Lifestyle modification.
- b. Medical conditions.
- c. Medications.

2. **Prenatal (during pregnancy) care.**

- a. Folic acid and vit D supplements
- b. Nutrition, diet and food hygiene.
- c. Antenatal screening tests.
- d. Complications or infections in previous pregnancies.
- e. Treatment of chronic diseases.

3. **Interconception (between pregnancies) care.**

- a. Wait at least 18 months before becoming pregnancy again to help optimize birth outcome.



Health Risks

Health Risk Factors

1. Hypertension



2. Heart disease



3. GDM



4. Depression



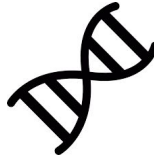
5. Tobacco and alcohol use



6. Sexually transmitted disease



7. Genetic factors



8. Nutrition



9. Unhealthy weight



Hypertension

- Hypertensive disorders are the most common medical problem encountered during pregnancy complicating up to **10% of pregnancies worldwide!**
 - **Leading cause of perinatal morbidity and mortality worldwide**
- What are some of the hypertensive disorders affecting maternal health?



Hypertension

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Hypertensive disorders affecting pregnant women:

Chronic hypertension is high blood pressure that was present before pregnancy or that occurs in the first half (before 20 weeks) of pregnancy. The guidelines for blood pressure are the following:

- Normal: Less than 120/80 mm Hg
- Elevated: Systolic between 120–129 and diastolic less than 80 mm Hg
- Stage 1 hypertension: Systolic between 130–139 or diastolic between 80–89 mm Hg
- Stage 2 hypertension: Systolic at least 140 or diastolic at least 90 mm Hg

Gestational hypertension is high blood pressure that first occurs in the second half (after 20 weeks) of pregnancy. Although gestational hypertension usually goes away after childbirth, **it may increase the risk of developing hypertension in the future.**

Preeclampsia

Eclampsia



Hypertension

What kinds of problems can hypertension cause during pregnancy?

High blood pressure during pregnancy can place extra stress on the heart and kidneys **which can increase the risk of heart disease, kidney disease, and stroke**. Other possible complications include the following:

- **Fetal growth restriction**—(why?)
- **Preeclampsia**
- **Eclampsia**
- **Preterm** delivery and risk of **developing hypertension later in life**.
- **Placental abruption**—**This condition is a medical emergency that requires immediate treatment**.
- **Cesarean delivery**—Women with hypertension are more likely to have a cesarean delivery than women with normal blood pressure. A cesarean delivery carries risks of infection, injury to internal organs, and bleeding.



Preeclampsia

What is preeclampsia?

Preeclampsia is a serious blood pressure disorder that can affect all of the organs in a woman's body. A woman has preeclampsia when she has high blood pressure and other signs that her organ systems are not working normally. One of these signs is **proteinuria** (an abnormal amount of protein in the urine). A woman with preeclampsia whose condition is worsening will develop other signs and symptoms known as “severe features.” These include a low number of **platelets** in the blood, abnormal kidney or liver function, pain over the upper abdomen, changes in vision, fluid in the lungs, or a severe headache. A very high blood pressure reading also is considered a severe feature.

When does preeclampsia occur?

It usually occurs after 20 weeks of pregnancy, typically in the third trimester.

What causes preeclampsia? It is not clear why some women develop preeclampsia, but the risk of developing preeclampsia is increased in women who

- are pregnant for the first time
- have had preeclampsia in a previous pregnancy or have a family history of preeclampsia
- have a history of chronic hypertension, kidney disease, or both
- are 40 years or older
- are carrying more than one fetus
- have certain medical conditions such as **diabetes mellitus**, **thrombophilia**, or **lupus**
- are obese

What are the maternal risks if preeclampsia occurs? Women who have had preeclampsia—especially those whose babies were born preterm—have an increased risk later in life of **cardiovascular disease** and kidney disease, including heart attack, stroke, and high blood pressure. Having preeclampsia once increases the risk of having it again in a future pregnancy. Preeclampsia also can lead to seizures, a condition called **eclampsia**. It also can lead to **HELLP syndrome**.

Heart Disease

- Cardiovascular disease (CVD) complicates 1% to 4% of pregnancies

1- Myocardial infarction

2- Cardiomyopathy

3- Rheumatic heart disease

4- Congenital heart diseases.



Diabetes in pregnancy

- Approximately 7% of all pregnancies are complicated by GDM more than 200,000 annually.

Gestational diabetes: when a woman without diabetes, develops high blood sugar levels during pregnancy, usually blood sugar returns to normal soon after delivery. **But still at risk for type 2 diabetes.** Who is at risk of GD?

- are overweight or obese
- are physically inactive
- had GD in a previous pregnancy
- had a very large baby (9 pounds or more) in a previous pregnancy
- have high blood pressure
- Family history of gestational diabetes
- Excess weight (30 or higher BMI)
- have a history of heart disease
- have polycystic ovary syndrome (PCOS)
- are of African American, Asian American, Hispanic, Native American, or Pacific Island background

How can GD affect a pregnant woman?

A large fetus (weighing 9 pounds or more) can lead to complications for the woman, including:

- labor difficulties
- **cesarean delivery**
- heavy bleeding after delivery
- severe tears in the vagina or the area between the vagina and the anus with a vaginal birth



Depression

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Perinatal depression affects as many as
one in seven women.

ACOG recommends all pregnant women be screened
at least once during the perinatal period.



The American College of
Obstetricians and Gynecologists
www.acog.org | 1-877-ACOG-4388

Depression is very common in women, especially in women of reproductive age. It is estimated that 14%-23% of pregnant women experience depression during pregnancy, and 5%-25% experience depression postpartum.

Signs and symptoms?

Screening recommendations: It is recommended that all obstetrician–gynecologists and other obstetric care providers complete a full assessment of mood and emotional well-being (including screening for postpartum depression and anxiety with a validated instrument) during the comprehensive postpartum visit for each patient. If a patient is screened for depression and anxiety during pregnancy, additional screening should then occur during the comprehensive postpartum visit. There is evidence that screening alone can have clinical benefits, although initiation of treatment or referral to mental health care providers offers maximum benefit. Therefore, clinical staff in obstetrics and gynecology practices should be prepared to initiate medical therapy, refer patients to appropriate behavioral health resources when indicated, or both.



Tobacco and Alcohol use

- Why is it so dangerous to smoke during pregnancy?

- Cigarette smoke contains more than 4,000 chemicals, including truly nasty things like cyanide, lead, and at least 60 cancer-causing compounds. When mom smokes during pregnancy, that toxic brew gets into her bloodstream, her baby's only source of oxygen and nutrients.

- Smoking effect:

- Placenta can separate
- Pre-term birth
- Cleft lip or cleft palate

Smoking effect on infant:

- Low birth weight .
- Ear infections AND asthma attacks
- Sudden Infant Death Syndrome



Tobacco & Alcohol Use

Second: Alcohol Use

- Can pregnant women drink small amount of alcohol or beer? Why?
- There is No known safe amount of alcohol use during pregnancy.
- Alcohol in the mother's blood passes to the baby through the umbilical cord
- Complication of drinking alcohol during:
 1. Miscarriage, stillbirth
 2. Growth and central nervous system problems
 3. Fetal alcohol spectrum disorders :

- Behavioral and intellectual disabilities :

Learning disabilities and low IQ

Difficulty with attention

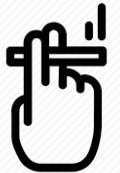
Poor communication

- Physical issues :

Low birth weight

Problem with heart , kidney and other

Affects brain function



FETAL ALCOHOL SYNDROME

© Lineage

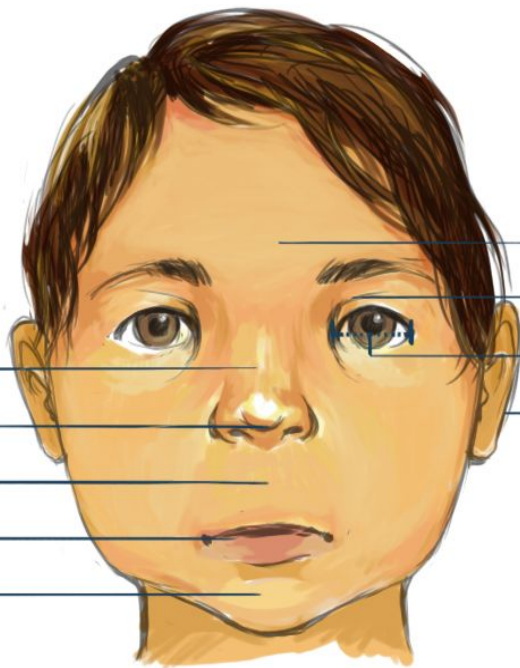
Low nasal bridge

Short nose and flat midface

Smooth philtrum

Thin upper lip

Micrognathia (small jaw)



Microcephaly (small forehead)

Epicanthal folds

Short palpebral fissures

Minor ear abnormalities

Sexually Transmitted Diseases (STD)

— — —

1- Perinatal HIV/AIDS

- It is recommended that all women who are pregnant or planning to get pregnant should get tested for

HIV as early as possible.

- If a woman is treated for HIV early in her pregnancy, the risk of transmitting HIV to her baby can be 1% or less.

How to lower the risk of transmitting HIV from the mothers to their babies?

1. HIV medication
2. Cesarean delivery
3. No breastfeeding
4. No pre-chewing her baby's food.



Sexually Transmitted Diseases (STD)

— — —
2-Chlamydia: Most women have NO symptoms and it is Easy to cure

Chlamydia lesions on genitals are highly contagious and infect the baby during labor

Complications during Pregnancy : early delivery, eye infection or **ectopic pregnancy.**

3-Gonorrhea :

complications during Pregnancy : miscarriage, preterm birth

The complications before and after pregnancy if untreated : cause pelvic inflammatory disease

Gonorrhea in newborns most commonly affects the eyes



Sexually Transmitted Diseases (STD)

4-Syphilis:

Typically occurs during second half of pregnancy

May be transmitted to baby by infected mother.

Complications during Pregnancy : premature birth, stillbirth , death in some cases

5- Herpes simplex virus:

Herpes is safe in pregnant women until she get ready to deliver.

Herpes lesions on genitals are highly contagious and infect the baby during labor

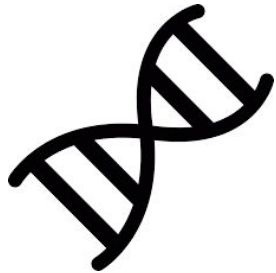
6- Hepatitis : Acute viral hepatitis is the most common cause of jaundice in pregnancy.

Breast feeding is safe in type B and C hepatitis , unless the nipples are cracked or bleeding since the virus spreads through blood.



Genetic factor

- More than **50 percent of miscarriages** in the early stages of pregnancy are due to abnormalities of the chromosomes



Nutrition

— — —

1. Malnutrition: fail to gain weight in pregnancy Mother die while pregnant

2. Important nutrients for the mother and child

- Mother : - Child

Iron: preterm birth , Neurological dysfunction ,risk of death from bleeding during childbirth

VitA: night blindness

Folate: neural tube defect

Calcium: poor skeletal development

Iron: low birth weight



Weight

1. A women weight before and during pregnancy are important indicators of health for both mother and child.
2. Recent studies showed overweight or obese before pregnancy associated with a higher pregnancy complication like :
 - Preeclampsia.
 - GDM.
 - Stillbirth.
 - cesarean delivery



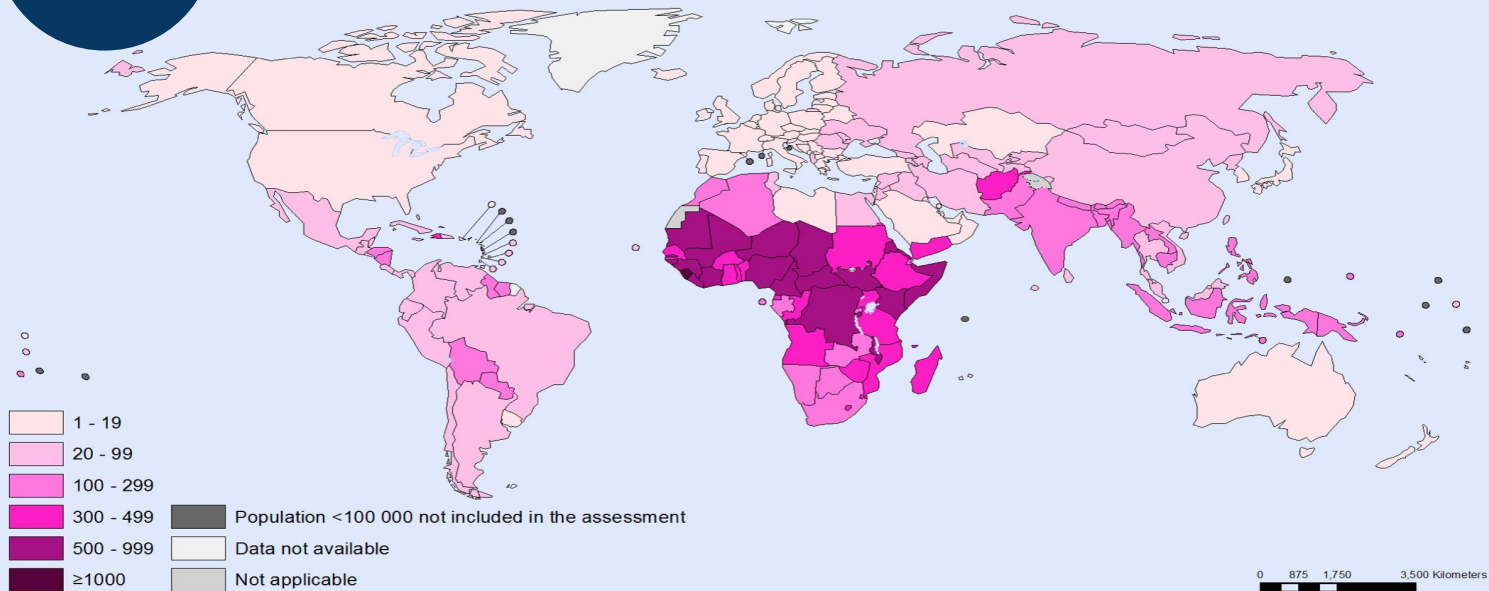
As defined by the WHO

the conditions in which people are born, grow, live, work and age.
These circumstances are shaped by the distribution of money,
power and resources at global, national and local levels.

Social and physical determinants of maternal, infants and child health

Maternal mortality ratio (per 100 000 live births), 2015

Interacti
ve map



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization
Map Production: Health Statistics and
Information Systems (HSI)
World Health Organization



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Social and physical health determinants

- Birth weight
- Maternal age
- Multiple births
- Birth spacing**
- Multiparity

Individual attributes

- Age
- Number of children
- Knowledge
- Self efficacy

Community factors

Biological determinants

Health system factors

According to the WHO, the leading causes of death among children under five in 2017 were preterm birth complications, acute respiratory infections, intrapartum-related complications, congenital anomalies and diarrhea. Neonatal deaths accounted for 47% of under-five deaths in 2017.

Family planning and methods of contraception

Methods of contraception

WHO definitions

Family planning allows individuals to anticipate the desired number of children they want, spacing and timing of birth between them.

WHO recommendations

Recommendation for the minimum interval between a live birth and attempting next pregnancy should be 24 months, which is consistent with the WHO/ UNICEF recommendation of breastfeeding for at least 24 months

Importance of family planning in maternal and infantile health

1. Can delay pregnancies in young women at increased risk of health problems and death from early childbearing.
2. It prevents unintended pregnancies, including those of older women who face increased risks related to pregnancy
3. By reducing rates of unintended pregnancies, family planning also reduces the need for unsafe abortion.
4. Family planning can prevent closely spaced and ill-timed pregnancies and births, which contribute to some of the world's highest infant mortality rates
5. Family planning reduces the risk of unintended pregnancies among women living with HIV, resulting in fewer infected babies and orphans

Methods of contraception

Long lasting:

- IUD
 - Hormonal (3-5 yr)
 - Copper (10 yr)
- Subcutaneous implants

99
%

Sterilization:

- Females
 - Tubal Ligation
 - Tubal adhesions
- Males
- Ectopic pregnancy
- Protection against PID
- Decresed risk of ovarian cancer

99
%

Breastfeeding

Intrauterine injections:

- Weight gain
- Amenorrhea
- Fertility lag after stopping

97
%

Barriers:

- Female/male condoms
- Diaphragm
- Spermicide
- Protection against STDs

71
%

Hormonal (combined):

- Oral Contraceptive Pills (OCPs)
- Patches
- Rings
- DVT

92
%

Natural family planning

**How to improve the health and well-being of
women, infants, children, and families.**

Pregnancy	Delivery	Post Delivery
Antenatal Care (mentioned previously)	<ul style="list-style-type: none">- Prevent complications- Assess for Vaginal bleeding, Uterine contractions, Temp and HR in the 1st 24hrs.	<ul style="list-style-type: none">- Assess breastfeeding- Ask about the emotional well-being. Why?- Ask about sexual intercourse and dyspareunia as part of overall well being.- Supplements and vaccination

What are the symptoms of Postpartum Depression?

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- Depressed mood & mood swings
- Crying and reduced interests and pleasure
- Difficulty bonding with the baby
- Feeling you're not a good mother

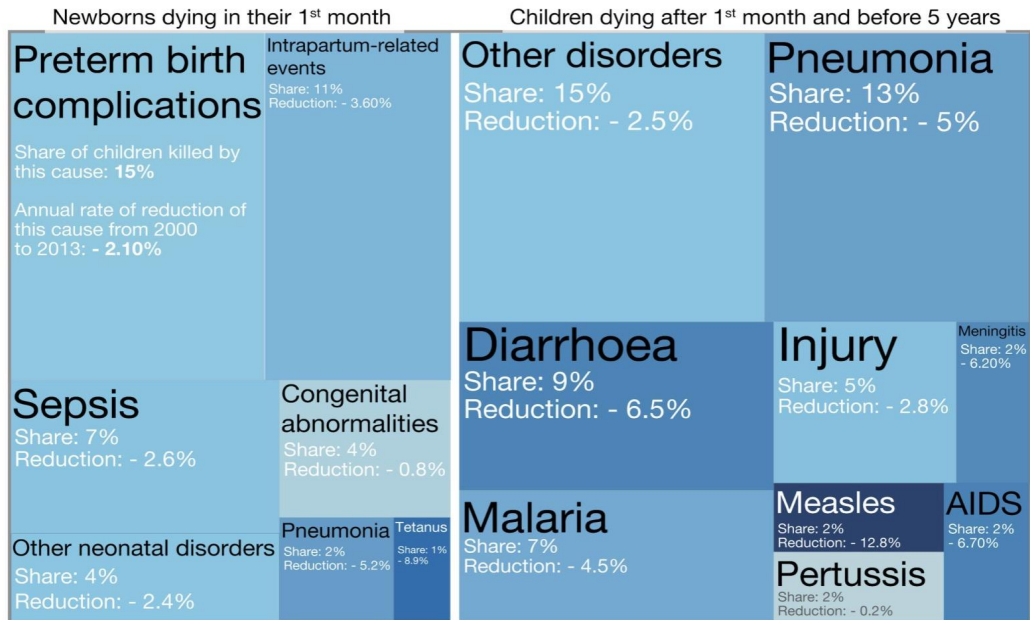
Infant and child health

Causes of child mortality in 2013 and annual rate of reduction since 2000

6.3 million children died before the age 5 years in 2013 (44% of which died in the first month of their life). In 2000 9.9 million children died.

- The size of the rectangle shows the share of children killed by each cause

- The color indicates the annual reduction of that cause since 2000 (child mortality from all causes declined). -0.2%  -12.8%



Pregnancy related:

- Birth defects
- Preterm birth
- Birth Injuries (suffocation)

Non-pregnancy related:

- Malnutrition
- Infections
- Diarrhea
- Sudden Infant Death Syndrome (SIDS)

Promote early and exclusive breastfeeding (EBF)

— — —

Evidence shows EBF reduces the risks of mortality and morbidity and improves post-neonatal outcomes.

Preterm and low-birth-weight babies

should be identified as soon as possible and should be provided special care.

> A full clinical examination should be done 1 hour after birth. This includes giving vitamin K prophylaxis and hepatitis B vaccination (within 24 hours).

Vaccinations

For Mom:

- Rubella, Measles

For baby:

- Hepatitis B, TB

<u>Timing</u>	<u>Vaccine name</u>
Birth	BCG, HBV1
2 months	Hexa1 (HBV, DTaP, HiB, IPV), Rota1, PCV1
4 months	Hexa2 (HBV, DTaP, HiB, IPV), Rota2, PCV2
6 months	Hexa3 (HBV, DTaP, HiB, IPV), OPV1, PCV3
9 months	Measles, MCV1
12 months	OPV2, MMR1, PCV4, MCV2
18 months	OPV3, DTaP, Hib, MMR2, varicella, HAV1
24 months	HAV2

BCG - bacille calmette guerin,

HBV - hepatitis B vaccine, DTaP - diphtheria-tetanus-acellular pertussis,

Hib - haemophilus influenzae type B vaccine, Rota - rotavirus vaccine,

PCV - pneumococcal conjugate vaccine, IPV - injectable polio vaccine,

OPV - oral polio vaccine, MMR - measles-mumps-rubella vaccine,

HAV - hepatitis A vaccine, MCV - meningococcal vaccine

MCQ's answers

— — —

Q1: what's the most medical condition encountered during pregnancy?

- A. Diabetes
- B. Hypertension**
- C. Depression
- D. Kidney diseases

Q2: percentage of miscarriage due to chromosomal abnormalities?

- A. 40%
- B. 50%**
- C. 60%
- D. 80%

MCQ's answers

— — —

Q3: full clinical examination after delivery for the newborn includes:

- A. Vit K prophylaxis and measles vaccination.
- B. Rubella and measles vaccination
- C. TB vaccination
- D. **Vit K prophylaxis and hepatitis B vaccination**

Q4: Which one of the following is the major cause of maternal mortality in Saudi Arabia?

- A. Infection
- B. **Hemorrhage**
- C. High blood pressure
- D. Unsafe abortion

References:

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