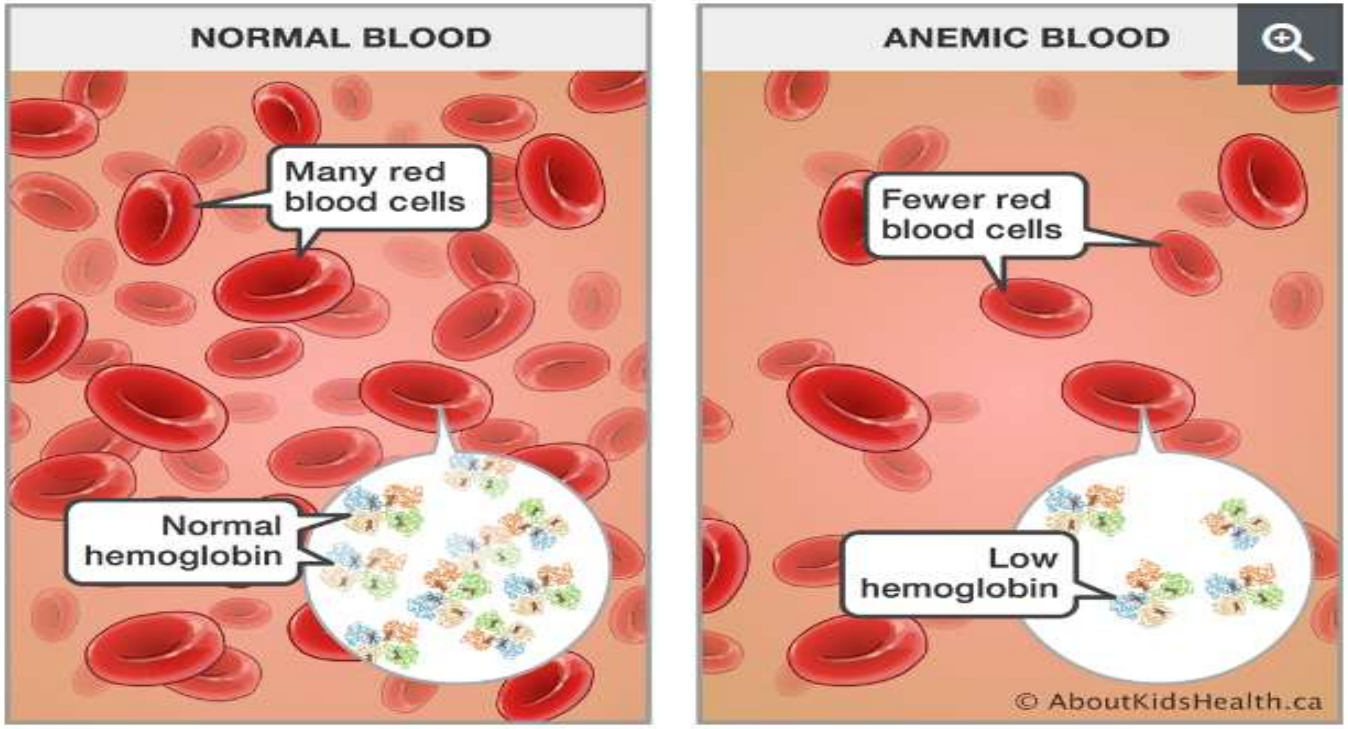
Maternal Morbidity and Mortality

Anemia



In normal blood, there are lots of red blood cells. These cells contain a normal type and amount of hemoglobin molecules which work to deliver oxygen to the body. In a person with anemia there are fewer red blood cells or there is less or abnormal hemoglobin in the red blood cells. This can result in less oxygen being delivered to various body tissues.

Anemia during pregnancy

- **Anemia** is a medical condition in which there are not enough healthy red blood cells to carry oxygen to the tissues in the body. When the tissues do not receive an adequate amount of oxygen, many organs and functions are affected.
- Anemia during pregnancy is especially a concern because it is associated with low birth weight, premature birth, and maternal mortality.
- Women who are pregnant are at a higher risk for developing anemia due to the excess amount of blood the body produces to help provide nutrients for the baby.
- Anemia during pregnancy can be a mild condition and easily treated if caught early on. However, it can become dangerous, to both the mother and the baby, if it goes untreated.

Anemia during pregnancy

- Anemia is defined during pregnancy as a hemoglobin (Hb) level below 11 gr/ dL (WHO, 1992).
- During pregnancy, the Hb level is lower than normal, and it varies according to gestational age.
- The critical role of Hb to carry oxygen to the tissues explains the most common clinical symptoms of anemia, which include fatigue, shortness of breath and palpitations.
- Using the above definition, 20 to 50% of women, and even more in some areas, are considered as anemic.

Anemia during pregnancy

- Anaemia in pregnancy is a major public health issue throughout the world, particularly in the developing countries where it is an important contributor to maternal morbidity and mortality.

- In 2011,38% of pregnant women aged 15–49 years were anaemic worldwide .

- The World Health Organization aims to reduce the rate of anaemia in women of reproductive age by 50% by 2025, because of the adverse effect anaemia has on women's and children's health.

Anemia during pregnancy

- Research has shown iron deficiency anaemia can affect immune system making women more susceptible to infection and less able to withstand infection or the effects of hemorrhage.

- Anemia may be associated with low birth weight.

Plasma Volume Expansion (PVE) during pregnancy

- Plasma volume expansion is a well-documented aspect of pregnancy physiology that is essential to supporting successful pregnancy outcomes.
- The physiologic process of plasma volume expansion achieves a 30–50% increase from pre-pregnancy concentrations near full term.
- Plasma volume expansion, along with increases in red blood cell (RBC) volume, results in an expansion of the total blood volume in pregnancy.
- Increased RBC volume is driven by progesterone-mediated increases in erythropoietin, although to a lesser extent than plasma volume.
- This effect results in a dilutional decrease in hematocrit, which is known as the physiologic anemia of pregnancy.
- Hematocrit (HCT):Hematocrit level is the percentage of red cells in the blood
- In adults, normal levels of HCT for men range from 41%-50%. For women, the normal range is slightly lower: 36%-44%.

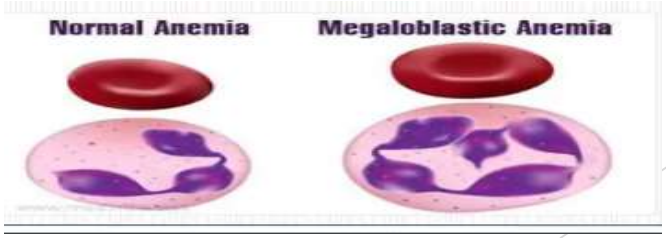
PATHOPHYSIOLOGIC CAUSES

- During pregnancy, maternal plasma volume increases to meet the greater circulatory needs of the placenta and maternal organs (e.g., uterus, breasts, skin), with an average increase of 45%.

- HEMODILUTION: Haemodilution occurs physiologically in pregnancy. This may result in lower haemoglobin concentrations than in the non-pregnant state. However, many women function well and do not require iron supplementation.

- IRON DEFICIENCY is responsible for 95% of anemia of pregnancy.

- FOLATE DEFICIENCY due to increased requirements of folate can occur during pregnancy - because of the transfer of folate to the fetus- and during lactation; giving rise to Megaloblastic anemia.



RISK FACTORS FOR ANEMIA

- Twin or multiple pregnancy
- Poor nutrition, especially multiple vitamin deficiencies
- Smoking, which reduces absorption of important nutrients
- Excess alcohol consumption, leading to poor nutrition
- Use of anti-seizure medications (ASMs)

Anemia Management

- Dietary changes alone are insufficient to correct iron deficiency anaemia and iron supplements are necessary.
- Ferrous iron salts are the preparation of choice. The oral dose for iron deficiency anaemia should be 100-200mg of elemental iron daily.
- Women should be counselled as to how to take oral iron supplements correctly.
- This should be on an empty stomach, 1 hour before meals, with a source of vitamin C (ascorbic acid) such as orange juice to maximise absorption.

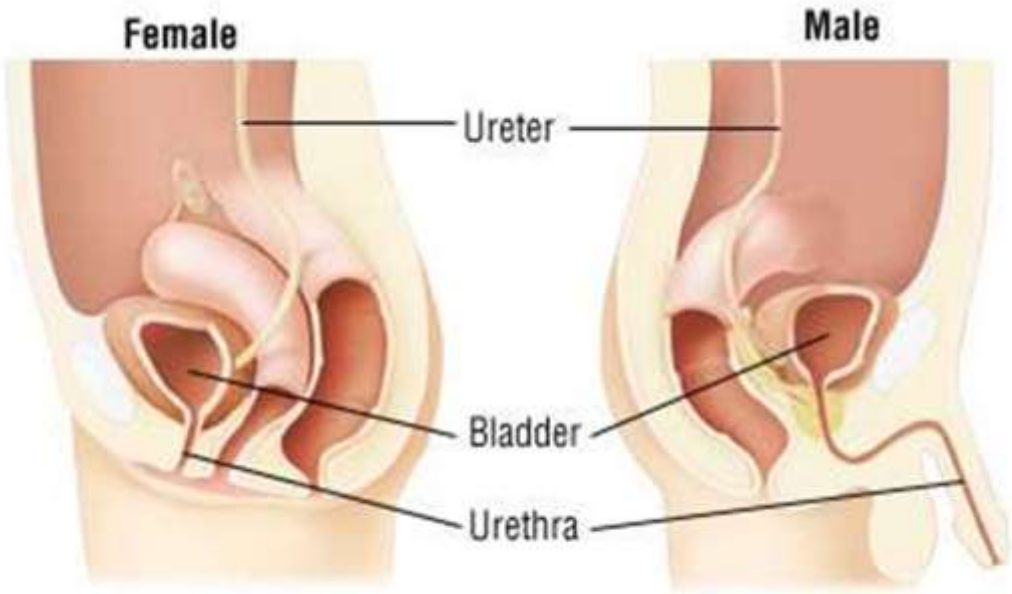
Anemia Management

Urinary Tract Infections (UTIs)

- The short urethra (The tube from the bladder to where the urine comes out of the body)&its intimate relationship with the vagina considerably increase the risk of a woman developing UTIs.

- Pregnancy is a state of relative immunocompromise. This immunocompromise may be cause for the increased frequency of UTIs seen in pregnancy

Urinary Tract Infections



Male-Vs-Female-Urethra

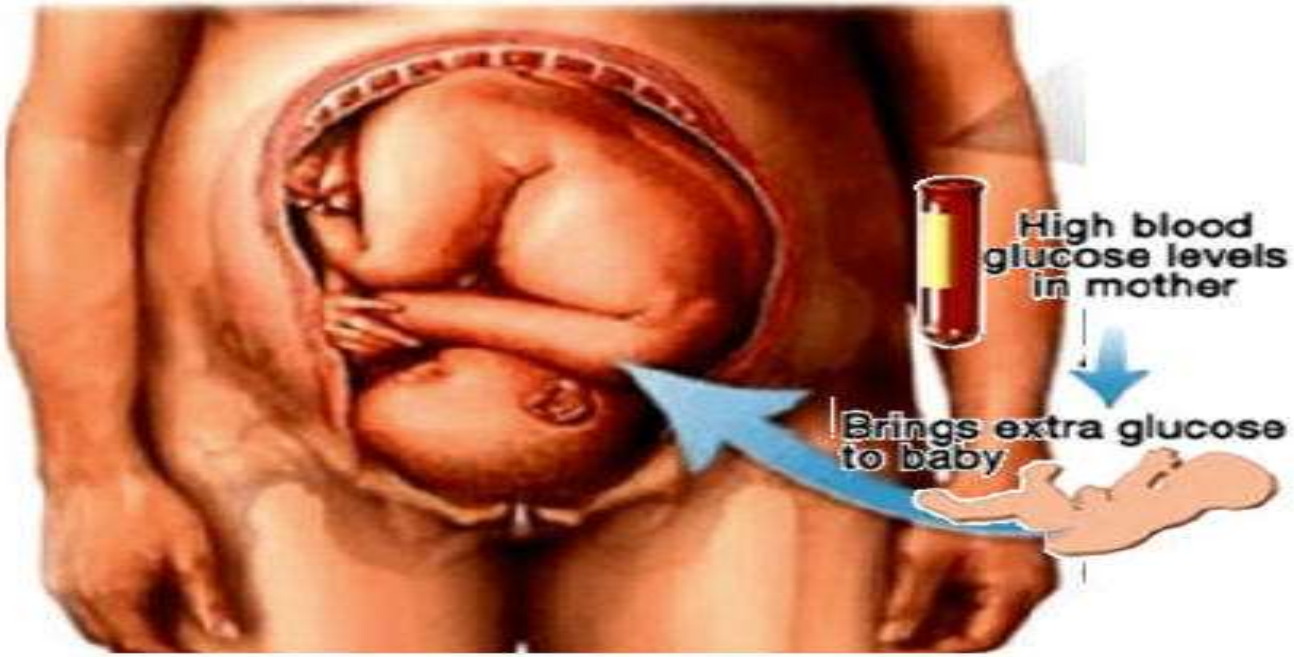
Gestational Diabetes mellitus (GDM)

- Gestational diabetes is high blood sugar that develops during pregnancy and usually disappears after giving birth.
- It can occur at any stage of pregnancy but is more common in the second half.
- It occurs if your body cannot produce enough insulin – a hormone that helps control blood sugar levels – to meet the extra needs in pregnancy.
- In women with gestational diabetes, blood sugar usually returns to normal soon after delivery. But women had gestational diabetes, has a higher risk of getting type 2 diabetes.

Gestational Diabetes mellitus (GDM)

- Gestational diabetes can cause problems to the mother as well as her baby during and after birth.
- The most frequently reported perinatal consequence of GDM is macrosomia (usually defined as a neonate weighing over 4 kg) which can increase the risk of caesarean section
- But the risk of these problems happening can be reduced if it's detected and well-managed.

Gestational Diabetes



(1) Mother's blood brings extra glucose to fetus

(2) Fetus makes more insulin to handle the extra glucose

(3) Extra glucose gets stored as fat and fetus becomes larger than normal

PREVELANCE OF GDM

- It was estimated that about 15.1% of pregnancies worldwide were affected by GDM , along with 11.5% in Asia , 5.4% in Europe

PREVELANCE OF GDM

- In many countries the prevalence of GDM is rising .

- Some of this is due to:

1. the increasing age at which women are becoming pregnant
2. an increase in obesity amongst women
3. More testing during pregnancy.

Risk factors for GDM

- Age
- Family or personal history
- Excess weight.

GDM

- Most women who have gestational diabetes deliver healthy babies. However, gestational diabetes that's not carefully managed can lead to uncontrolled blood sugar levels and cause problems for the mother and her baby, including an increased likelihood of needing a C-section to deliver.

Complications that may affect the mother from GDM

- Caesarean section
- Polyhydramnios: the excessive accumulation of amniotic fluid — the fluid that surrounds the baby in the uterus during pregnancy.
- Pre-eclampsia (mother)
- Type 2 diabetes : 50% mothers develop type 2 diabetes (T2DM) within five to ten years of delivery.

Complications that may affect the baby from GDM

- An increased risk of macrosomia
- Shoulder dystocia
- A higher prevalence of obesity
- T2DM
- autism spectrum disorders in childhood and early adulthood

Shoulder Dystocia

A shoulder dystocia is defined as the impaction of the anterior fetal shoulder against the maternal pubic bone after delivery of the fetal head.

Maternal mortality

- The death of a woman whilst pregnant or within 42 days of delivery or termination of pregnancy, from any cause related to, or aggravated by pregnancy or its management, but excluding deaths from incidental or accidental causes”(WHO, 1992).

Maternal Mortality
General Consideration

- Maternal mortality is the leading cause of death among women of reproductive age in most of the developing world.

- Globally, an estimated **500,000** women die as a result of pregnancy each year.

Maternal Mortality
General Consideration

- Maternal mortality in developing countries is given least attention, despite the, fact that almost all of the suffering and death is preventable with proper management.
- Maternal mortality constitutes a small part of the larger maternal morbidity and suffering, because for every maternal death there are a lot of women suffering from acute and chronic illnesses during pregnancy, delivery and 6 weeks after.

Maternal Mortality
General Consideration

- Maternal mortality is much higher in developing countries compared to developed nations owing to lack of adequate medical care, higher total fertility rate and due to health care system difference.

Maternal Mortality
General Consideration

- The risk of maternal mortality is also related to the mother's previous health and nutritional status, and access to health services.
- Adolescent pregnancy carries a higher risk due to the danger of incomplete development of the pelvis, and there is a higher prevalence of hypertensive disorders among young mothers.
- Frequent pregnancies also carry a higher risk of maternal and infant death.

Maternal Mortality
General Consideration

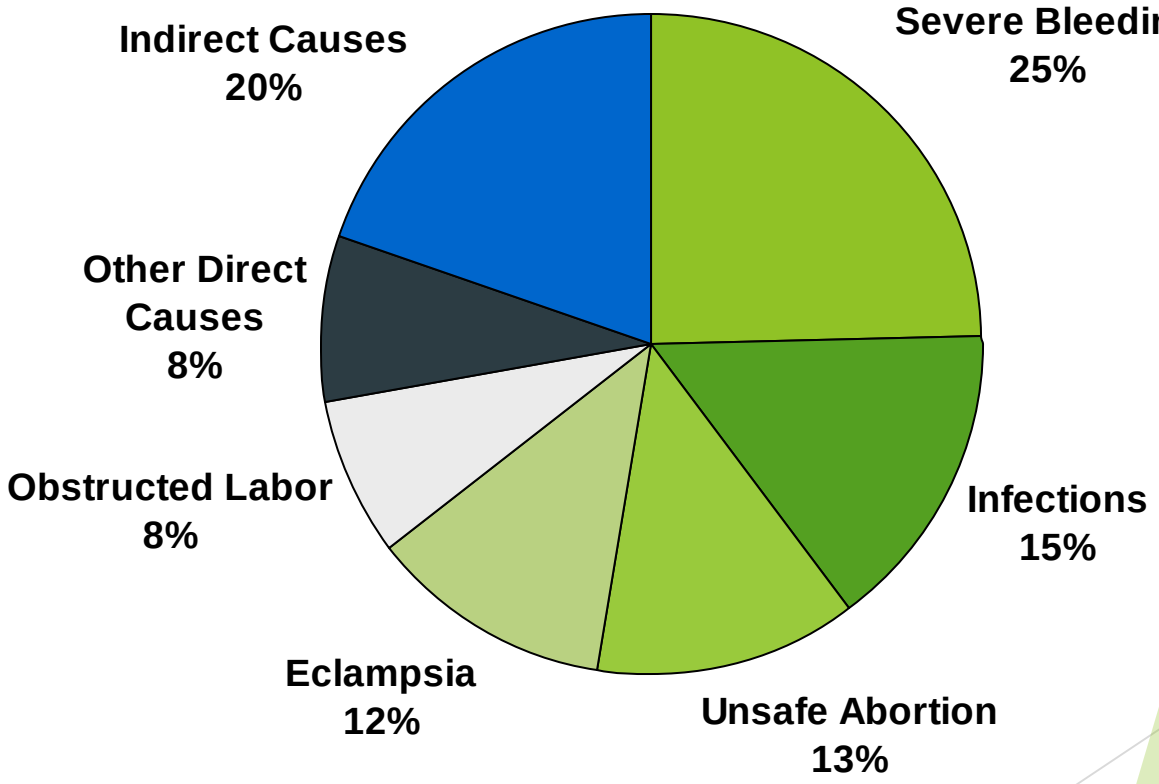
- Concern for maternal mortality is not only for the mother's life. It is related to:

• The health and deaths of the seven million newborns who die annually as a result of maternal health problems and

• The health and socio-economic impact on children, families, and communities.

Causes of Maternal Mortality

Pregnancy and Childbirth-Related Deaths to Women, by Cause, 1997



Note: Total exceeds 100 percent due to rounding.

Source: World Health Organization, *Reduction of Maternal Mortality: A Joint WHO/UNFPA/UNICEF/World Bank Statement*, Geneva, 1999.

Causes of Maternal Mortality

- Nearly three-quarters of maternal deaths are due to direct complications of pregnancy and childbirth, such as severe bleeding, unsafe abortion, and obstructed labor.

- Women also die of indirect causes aggravated by pregnancy, such as diabetes and anemia.

Key Facts WHO 2016

- Every day, approximately 830 women die from preventable causes related to pregnancy and childbirth.
- 99% of all maternal deaths occur in developing countries.
- Maternal mortality is higher in women living in rural areas and among poorer communities.

Post Natal

- Observe physical status
- Advise, and support on breast-feeding
- Provide emotional and psychological support.
- Health education on weaning and food preparation.
- **Advise on Family Planning**

Post Natal

- Postnatal care helps prevent complications after childbirth.
- **Eighty-three percent of women age 15-49 received a postnatal checkup within two days of delivery; 12% received no postnatal check.**
- **Eighty-six percent of newborns received a postnatal checkup within two days of birth; 13% received no postnatal check.**


Thank
you