Maternal Morbidity and Mortality

Anemia of 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. Most women with Hb levels below this limit have normal pregnancies. Using the above definition, 20 to 50% of women, and even more in some areas, are considered as anemic.

Anemia

- Anemia is very prevalent among women in developing countries, as a result of iron and/or folate deficiency and of malaria and other parasitic diseases.

- WHO estimated that around 60 percent of pregnant women in developing countries (other than China) had nutritional anemia despite efforts in iron supplementation, fortification and dietary modification?

Some Infectious Diseases

- Another risk to expectant women is malaria. It can lead to anemia, which increases the risk for maternal and infant mortality and developmental problems for babies.

- Anemia contributes to maternal mortality by making women more susceptible to infection and less able to withstand infection or the effects of hemorrhage.

- Anemia is known to give rise to considerable long-term morbidity in women, and at extreme levels may be associated with low birth weight.

PATHOPHYSIOLOGIC CAUSES

- ~ 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 DEFICIENC1 due to Increased turnover or 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

- Twin or multiple pregnancy
- Poor nutrition, especially multiple vitamin deficiencies
- Smoking, which reduces absorption of important nutrients
- Excess alcohol consumption, leading to poor nutrition
- Any disorder that reduces absorption of nutrients
- Use of anticonvulsant medications

EPIDEMOLOGY

- **Region % of women Hb <11**
- World 51
- Developing 56
- Developed 18
- Africa 52
- Asia (except Japan ..) 60
- Latin America 39
- North America 17
- Europe 17

Iron Supplementation

- Pregnant women should take iron tablets for at least 90 days during pregnancy to prevent anemia and other complications.
- Half of women (49%) received the recommended 90 days of iron supplements;22% received no iron supplements during their last pregnancy.

Urinary Tract Infection UTIs(Why) :

- The short urethra & its intimate relationship with the vagina considerably increase the risk of a woman developing UTIs.

UTIs aetiology in pregnancy (Why)?

1. During pregnancy, urinary tract changes predispose women to infection. Ureteral dilation is seen due to compression of the ureters from the gravid uterus.
2. Hormonal effects of progesterone also may cause smooth muscle relaxation leading to dilation and urinary stasis, and vesicoureteral reflux (VUR) increases.
3. The organisms which cause UTI in pregnancy are the same uropathogens seen in non-pregnant individuals. As in non-pregnant patients, these uropathogens have proteins found on the cell-surface which enhance bacterial adhesion leading to increased virulence.
4. Urinary catheterization, frequently performed during labor, may introduce bacteria leading to UTI. In the postpartum period, changes in bladder sensitivity and bladder overdistention may predispose to UTI.
5. Pregnancy is a state of relative immunocompromise. This immunocompromise may be another cause for the increased frequency of UTIs seen in pregnancy.

Gestational Diabetes mellitus

- Gestational diabetes is high blood sugar that develops during pregnancy and usually disappears after giving birth.

GDM

- 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.

GDM

- Gestational diabetes can cause problems to the mother as well as her baby during and after birth.
- But the risk of these problems happening can be reduced if it's detected and well managed.

PREVELANCE OF GDM

- The prevalence of GDM, as reported in different studies, varies between 1% and 14% in all pregnancies depending on the genetic characteristics and environment of the population under study, screening and diagnostic methods employed as well as on prevalence of type 2 diabetes mellitus.

. Risk factors for gestational diabetes (GDM)

- Age
- Family or personal history
- Excess weight.
- Non-white race.

- 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

- induced labour (labor induction) or a caesarean section
- Polyhydramnios: the excessive accumulation of amniotic fluid — the fluid that surrounds the baby in the uterus during pregnancy.
- premature birth
- pre-eclampsia
- Stillbirth
- Type 2 diabetes

Sexually transmitted diseases:

- These are diseases that are transmitted through sexual contact.
- Can cause pain, infertility & death if not treated .
- Each year, there are about 330 million new cases of STD & 1 million case of AIDS in the world .

Examples of STDs:

- 1) Gonorrhea
- 2) syphilis
- 3) Chlamydia.
- 4) Genital herpes
- 5) Trichomonas vaginatis

Sexually Transmitted Infections (STIs) /JPFHS 2017

- One-third of ever-married women and all men have heard of STIs other than HIV/AIDS.
- Among the ever-married men who have heard of STIs, 11% report having had an STI in the year before the survey.
- Men's self report of STIs is highest in Aqaba (24%) and Balqa (21%).

Causes of maternal morbidities in Jordan

- Urinary tract infections
- Vaginal infections
- Anemia
- Early bleeding
- Hypertension
- Gestational diabetes
- Preeclampsia
- Late bleeding
- Multiple pregnancy
- Kidney diseases
- Thyroid disorders
- Disseminated intravascular coagulopathy
- Heart Disease

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).

- • The maternal mortality rate is sometimes referred to as a **maternal mortality ratio** as the rate is not calculated using an accurate count of all pregnancies that can result in a maternal death, with stillbirths not included and infants in multiple birth sets over represented in live birth figures.

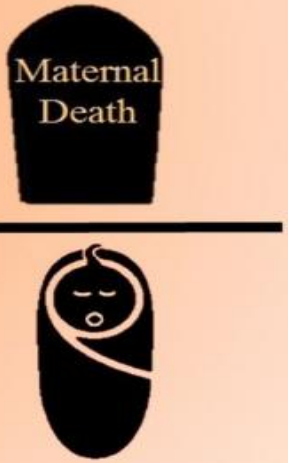
Maternal mortality rate or ratio

- **Maternal mortality ratio**: the number of maternal deaths per 100,000 live births, a measure of the risk of death once a woman has become pregnant.
- Example: There is town which has 1,000 people. Eleven women in the town become pregnant. One baby miscarries. Ten women give birth to ten live babies. One of the women who gave birth dies due to complications in the pregnancy. The maternal mortality ratio is 1 out of 10

Maternal mortality ratio: the number of maternal deaths per ***live births***

Numerator: Maternal deaths

Denominator: Live births



Population Research Institute: pop.org

Maternal mortality rate

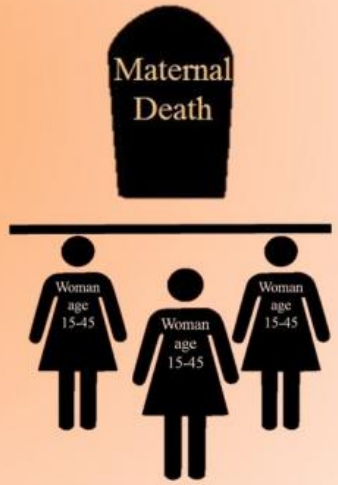
- the number of maternal deaths (direct and indirect) in a given period per 100,000 women of reproductive age during the same time period.
- Example: There is a town which has 1,000 people. 500 are women. 400 are women of reproductive age. Last year, ten women gave birth to ten live babies. One of the women died due to complications in the pregnancy. The maternal mortality rate is 1 out of 400: it is 0.25%.

Maternal mortality rate:

the number of maternal deaths in a given period per population of ***women who are of reproductive age***

Numerator: Maternal deaths

Denominator: Women of reproductive age



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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. It is the statistical indicator, which shows the greatest disparity between developed, and developing countries.

- 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 is much higher in developing countries compared to developed nations owing to lack of adequate medical care; high prevalence of infectious diseases, higher total fertility rate and due to health care system difference.
- Countries with high maternal mortality ratio have less reliable vital statistics registry system; as a result level of maternal mortality is usually underestimated and little information is available regarding locally specific risk factors for maternal death

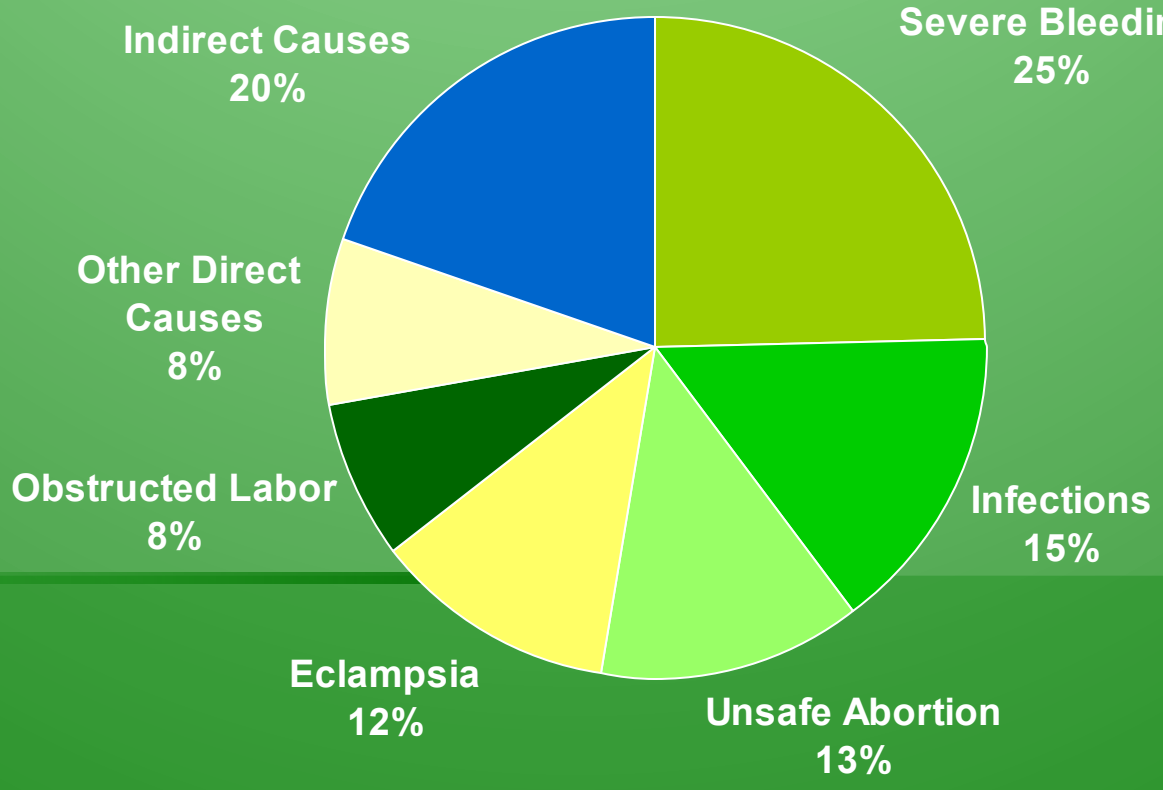
- Most of the deaths, 99%, are in developing countries the magnitude of maternal death is very high in Sub-Saharan Africa and South Asia, where material mortality ratios (material deaths per 100,000 live births) may be as much as 200 times higher than those in industrial countries.

- The risk of maternal mortality is also related to the mother's previous health and nutritional status, issues of gender discrimination, 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.

- 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



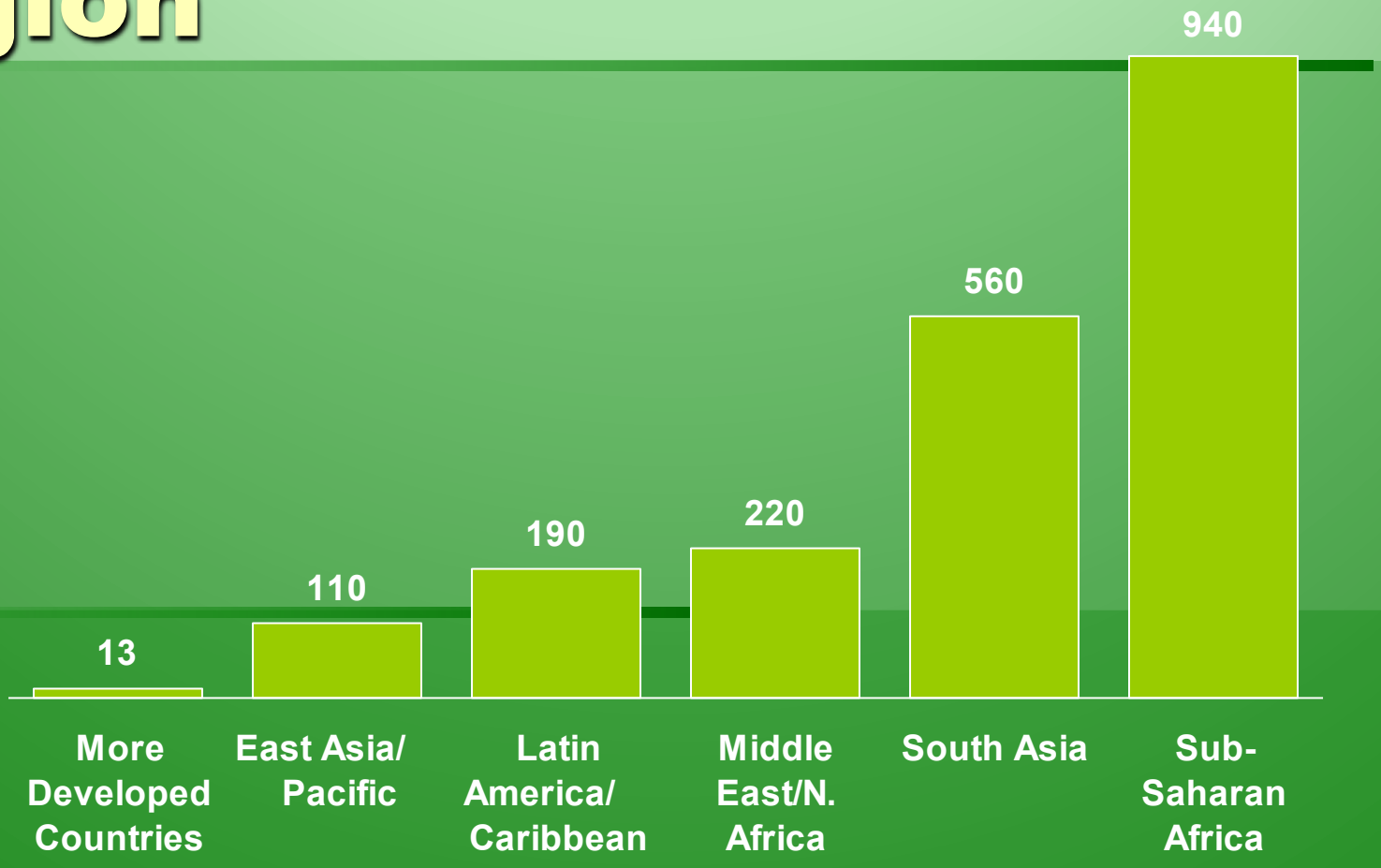
Note: Total exceeds 100 percent due to rounding.
Source: World Health Organization, *Reduction of Maternal Mortality: A Joint WHO/UNFPA/UNICEF/World Bank Statement*, Geneva, 1999.

Notes on Causes of Maternal Mortality

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

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

Maternal Mortality, by Region



Source: UNICEF, *Maternal Mortality in 2000: Estimates Developed by WHO, UNICEF, and UNFPA*, 2003.

Notes on Maternal Mortality, by Region

- Over 99 percent of maternal deaths occur in less developed countries, particularly in Asia and Africa.

- While high-quality, accessible health care has made maternal death a rare event in more developed countries, the lack of such health care has fatal consequences for pregnant women in less developed countries.


SUSTAINABLE
DEVELOPMENT
GOALS
2030

Millennium Development Goals

-
- The United Nations Millennium Development Goals were 8 goals that all 189 UN Member States have agreed to try to achieve by the year 2015. The United Nations Millennium Declaration, signed in September 2000, committed world leaders to combat **poverty, hunger, disease, illiteracy, environmental degradation, and discrimination against women.**
- The MDGs were derived from this Declaration, and had specific targets and indicators. The MDGs have been superseded by the Sustainable Development Goals, a set of 17 integrated and indivisible goals that build on the achievements of the MDGs but are broader, deeper and far more ambitious in scope.

Post-2015 UN development agenda

- MDG 1: eradicate extreme poverty and hunger
- MDG 2: Achieve universal primary education
- MDG 3: promote gender equality and empower women
- MDG 4: reduce child mortality
- MDG 5: improve maternal health
- MDG 6: combat HIV/AIDS, malaria and other diseases
- MDG 7: ensure environmental sustainability
- MDG 8: develop a global partnership for development

Improve maternal health Targets and Indicators

Target 5a: Reduce by three quarters the maternal mortality ratio

- 5.1 Maternal mortality ratio
- 5.2 Proportion of births attended by skilled health personnel

Target 5b: Achieve, by 2015, universal access to reproductive health

- 5.3 Contraceptive prevalence rate
- 5.4 Adolescent birth rate
- 5.5 Antenatal care coverage (at least one visit and at least four visits)
- 5.6 Unmet need for family planning

Maternal Mortality in Jordan

1990-2008 WHO, UNICEF, UNFPA, WB

(SEP, 2010)

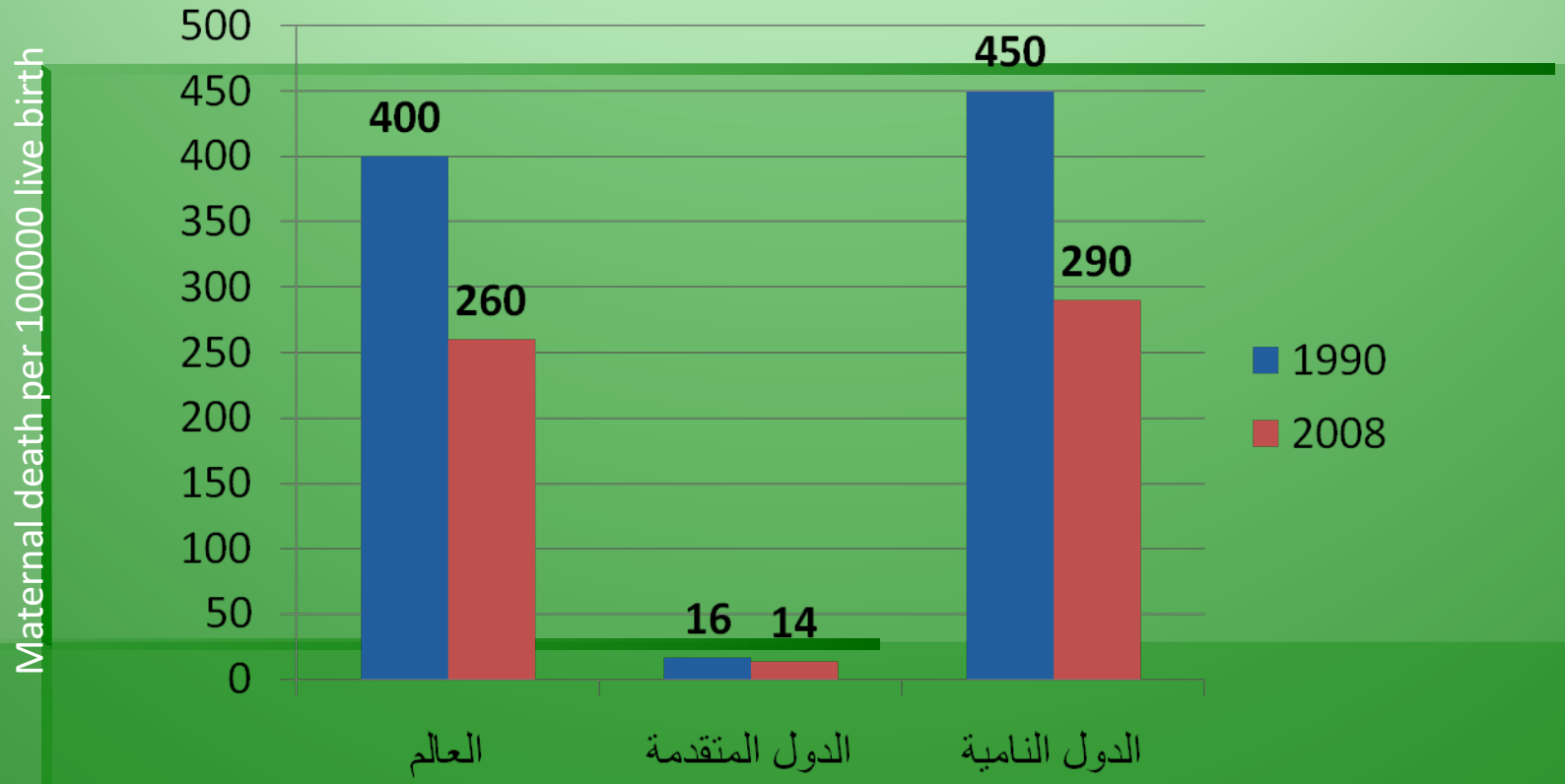
What does that mean for Jordan?

Reduction of MMR from 41 maternal death per 100,000 live births in 2000

To

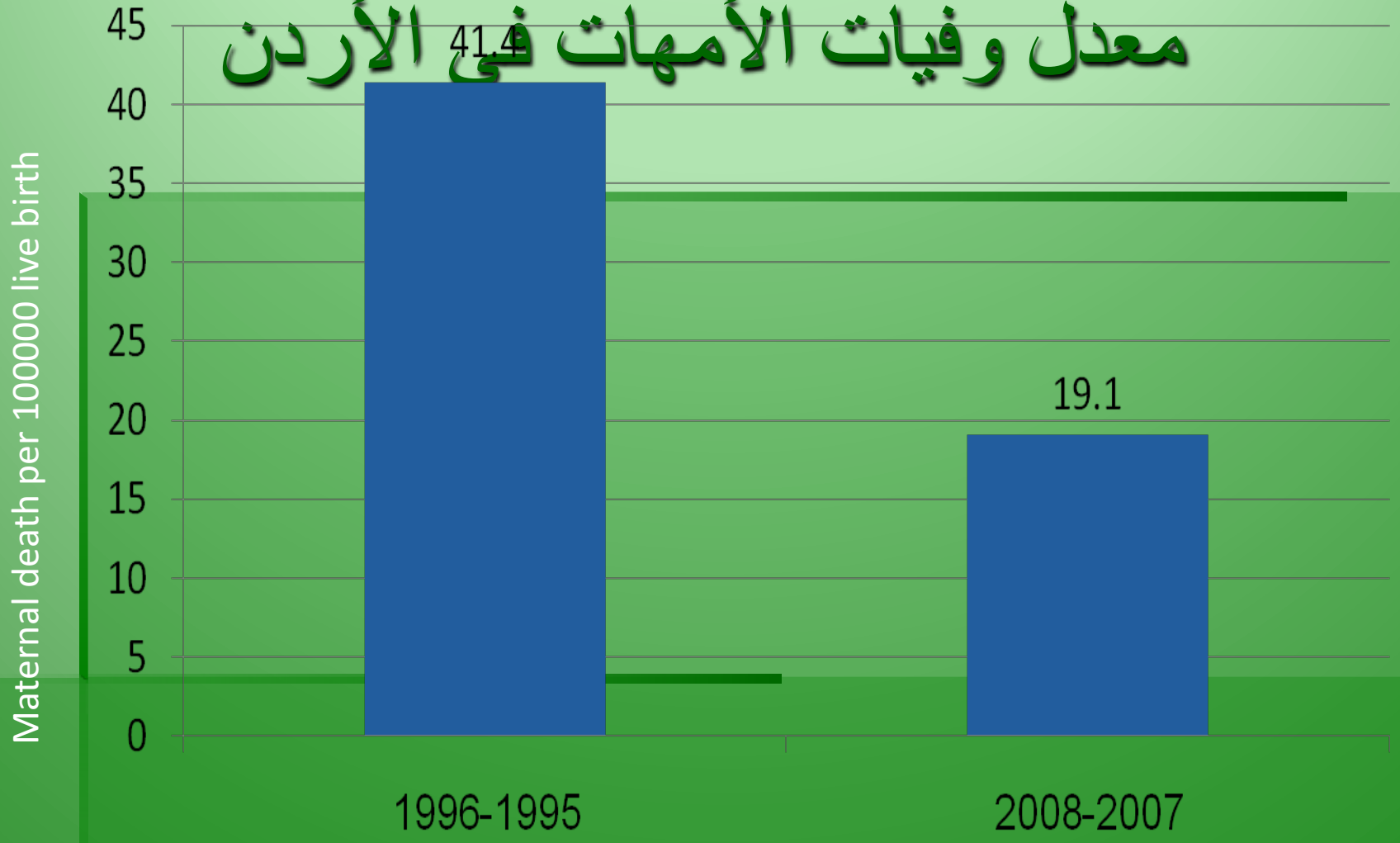
12/100,000 by the year 2015

اتجاهات معدل وفيات الأمهات عالميا



Trends in Maternal Mortality 1990-2008 WHO, UNICEF, UNFPA, WB (SEP, 2010)

معدل وفيات الأمهات فى الأردن



Maternal Mortality Study – Jordan 2007-2008- Higher Population Council, 2009

وفيات الأمهات في الأردن مقارنة بالدول العربية

Direct Causes of maternal mortality in Jordan

1. haemorrhage .

2. Thromboembolism

3.Septicemia

أسباب وفيات الأمهات في الأردن(2007-2008)
(الاسباب غير المباشرة)

%26.3	الاسباب غير المباشرة
%10.5	امراض القلب
%7.9	امراض الجهاز العصبي المركزي: الحوادث الوعائية الدماغية،الصرع
%5.2	الامراض السارية
%1.3	فقر الدم المزمن
%1.3	الفشل الكلوي

المصدر:الدراسة الوطنية لوفيات الامهات في الاردن(2007-2008)،المجلس الاعلى

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.

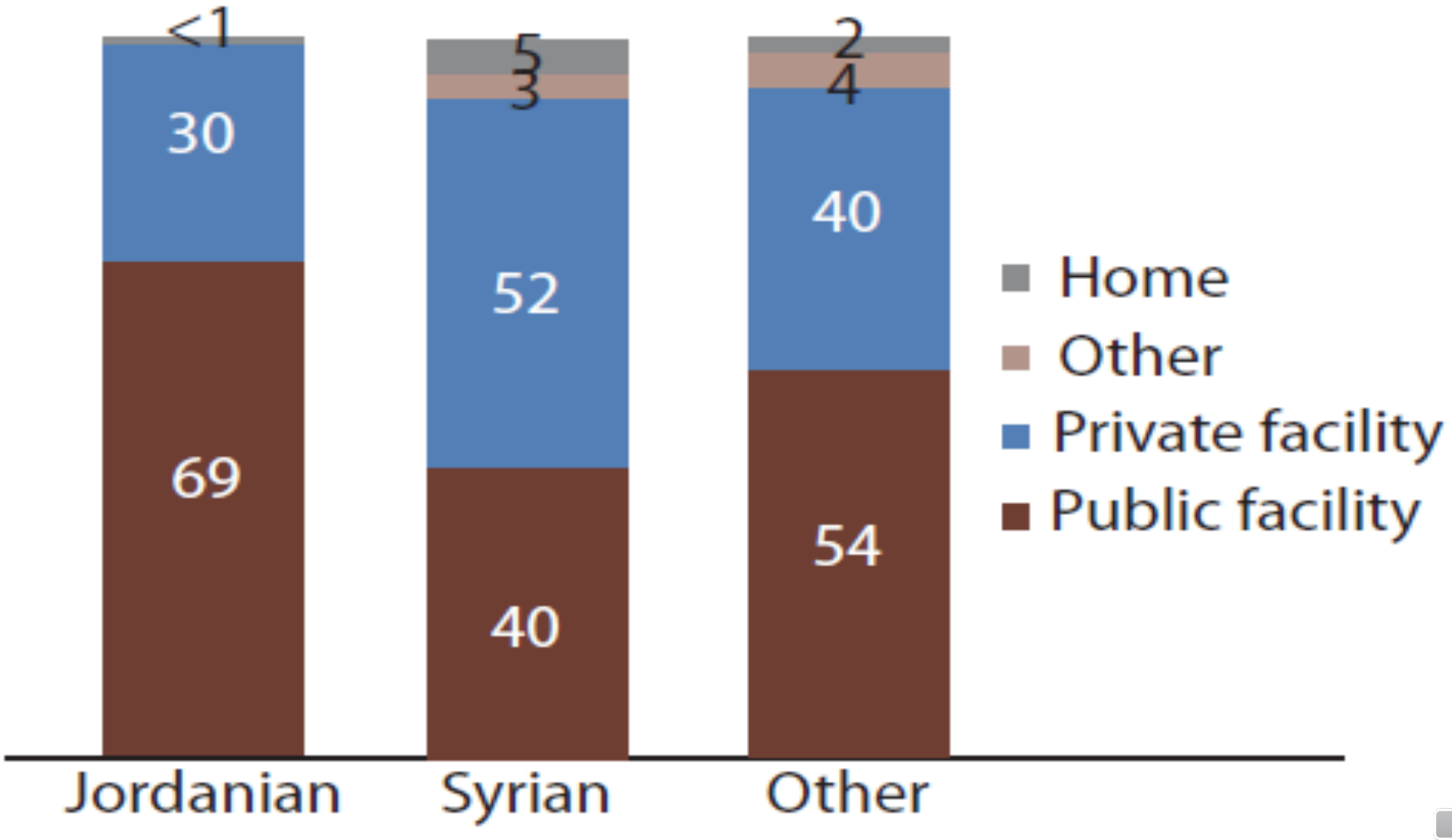
- Young adolescents face a higher risk of complications and death as a result of pregnancy than other women.
- Skilled care before, during and after childbirth can save the lives of women and newborn babies.

Delivery

- 3W When, Where and Who
- 3 c’s
- • Clean hands
- • Clean delivery service
- • Clean cutting of the cord
- How : Normal or CS

Place of Delivery by Nationality

Percent distribution of live births in the five years before the survey



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**

- 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.**

Discussion Questions

- 1. What is the difference between maternal mortality rate and maternal mortality ratio?
- 2. What is the MDG that relates to improvement of maternal health?

3. What are the indirect causes of maternal mortality in Jordan?

Thank you