

Maternal and Perinatal Conditions

Course

World Health
Research

Unit VIII

Perinatal
Diseases

Essential Question

How can
worldwide
maternal and
perinatal
mortality be
reduced?

TEKS

130.209.(c)
1 A, 3 A

Prior Student Learning

N/A

Estimated time

3-4 hours

Rationale

With one woman dying during pregnancy or complications of childbirth every minute of every day, and 3.6 million neonatal deaths per year, maternal and perinatal health need to be brought into focus.¹

Objectives

Upon completion of this lesson, the student will be able to

- Examine life threatening and disabling maternal conditions
- Examine life threatening and disabling perinatal conditions
- Research and present ways to reduce maternal and perinatal disabilities and mortality

Engage

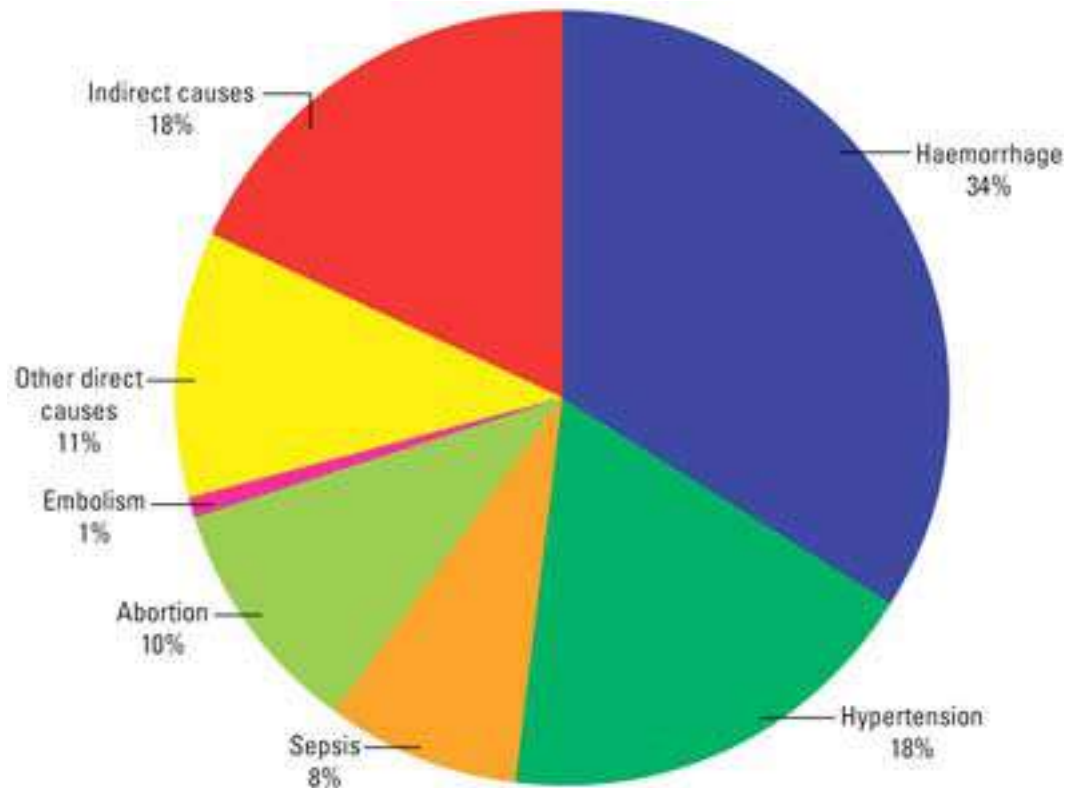
"Each year more than 500,000 women die in pregnancy or childbirth and more than 10 million children die before their fifth birthday— nearly 40% of these in the first month of life. But evidence shows that at least 7 million of these lives can be saved each year with proven, cost-effective interventions."
~The Partnership for Maternal, Newborn & Child Health

Key Points

(Instructional PowerPoint accompanies this lesson)

I. Maternal Death

- A. Defined by the World Health Organization (WHO) – "The death of a woman while pregnant or within 42 days of termination of pregnancy from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes."
- B. Types of maternal deaths
 1. Direct maternal death – deaths which are the result of a pregnancy or delivery complication, or its management
 2. Indirect maternal death – pregnancy-related deaths in patients with preexisting or newly developed health problems
 3. Accidental/incidental maternal death – fatality during, but unrelated to, pregnancy
- C. Major causes of worldwide maternal deaths
 1. Obstetric hemorrhage
 2. Hypertensive disorders
 3. Sepsis
 4. Abortion complications
 5. Obstructed labor
 6. Prolonged labor
 7. Embolism



D. An illness or injury caused or aggravated by pregnancy or childbirth can lead to chronic and/or lifetime pregnancy-related conditions:

1. Severe anemia
2. Permanent incontinence
3. Damage to the reproductive organs resulting in infertility
4. Fistula

E. Risk factors associated with maternal deaths

1. Developing countries where there is generally poor nutrition
2. Preexisting maternal disease(s)
3. Young mothers who do not have fully developed pelvises
4. Limited access to clinics that provide proper prenatal care
5. Lack of skilled health professionals during and after labor

F. Declining maternal deaths in developed countries is largely due to

1. Improved asepsis
2. Advanced prenatal care that includes vitamins and screening tests
3. Blood transfusions
4. Advanced technology and skilled birth attendants

II. Perinatal mortality and perinatal conditions

A. "Perinatal" refers to the period that starts between the 20th and 28th week of gestation and ends between 1 and 4 weeks after birth

1. Derived from the Greek "peri," meaning *around* and the Latin word "natal" meaning *born*

- B. Perinatal mortality defined by the World Health Organization (WHO)
 - “The number of stillbirths and deaths in the first week of life per 1000 live births”
- C. Major causes of perinatal mortality
 - 1. Preterm birth – the most common cause of perinatal mortality
 - a. Infant respiratory distress syndrome – the leading cause of death in premature infants who have a structural immaturity of the lungs
 - i. More frequent in infants of diabetic mothers and in the second born of premature twins
 - 2. Fetal mortality
 - a. Stillbirth – any death of a fetus after 20 weeks of gestation
 - i. Can include death before and during labor
 - ii. Causes could include bacterial infection, birth defects, maternal diabetes, maternal consumption of drugs or alcohol, maternal high blood pressure, physical trauma, radiation poisoning, Rh factor, and umbilical cord problems
 - 3. Neonatal mortality
 - a. Early neonatal mortality – death of a baby within the first 7 days of life (congenital anomalies, infections)
 - b. Late neonatal mortality – death that occurs after 7 days and before 28 days
 - c. Neonatal mortality is affected by the quality of skilled care for the infant
- D. Events that can occur in the perinatal period which can lead to a baby’s death or chronic/lifelong conditions
 - 1. Twin-to-twin transfusion syndrome
 - a. A condition that only occurs in identical twins while still in the womb
 - b. The fetuses share a placenta that contains abnormal blood vessels which connect the umbilical cords and affect the twins’ blood circulation
 - c. A disproportionate blood supply is the result of blood moving from one twin to the other
 - d. The twin that loses blood is called a donor twin, while the twin that receives blood is called a recipient twin
 - e. The donor twin may need blood transfusion and the recipient twin may need the amount of blood in his or her body reduced
 - 2. Prolonged and/or obstructed labor
 - a. Condition caused by:
 - i. Malpresentation of fetus
 - ii. Pelvis too narrow for the fetus’ head to pass
 - iii. Pregnancy before a female’s pelvis is fully developed (inadequate nutrition; hard, manual work; early

- marriage)
 - iv. Uterine contraction irregular or not strong enough
 - v. Cervix fails to dilate properly
 - b. Risks to the fetus are oxygen deprivation, intracranial hemorrhage, and brain damage
- 3. Chorioamnionitis
 - a. Inflammation of the fetal membranes due to a bacterial infection
 - b. Typically results from bacteria ascending into the uterus from the vagina and is most often associated with prolonged labor
 - c. A risk factor for cerebral palsy and other brain-related disorders
- 4. Other perinatal infections in developing countries
 - a. Infections of the umbilical cord that can lead to sepsis
 - i. Many at-home births
 - ii. Don't use sterile instruments to cut the cord
- 5. Nuchal cord
 - a. A common disorder that occurs when the umbilical cord is wrapped around the fetal neck 360 degrees
 - b. Rarely leads to asphyxia
- 6. Cord prolapse
 - a. A rare complication that occurs when the umbilical cord precedes the baby's exit from the uterus
 - b. The most common cause of this condition is premature rupture of the amniotic sac; other causes might include
 - i. Premature delivery of the baby
 - ii. Multiple births
 - iii. Excessive amniotic fluid
 - iv. Breech delivery
 - v. Unusually long umbilical cord
 - c. Pressure on the umbilical cord as the baby exits can diminish or cut off oxygen and blood to the fetus
 - d. This condition is a medical emergency
- E. Factors associated with a higher risk of preterm birth
 - 1. Maternal age at the upper and lower end of reproductive years (older than 35 years and younger than 18 years)
 - 2. Poor maternal health and nutrition
 - 3. Short pregnancy intervals (6 month span or less between pregnancies)
 - 4. Previous surgically induced abortions
 - 5. Previous preterm birth(s)
 - 6. Limited access to skilled healthcare
- F. Reduction of maternal and infant mortality in developing countries
 - 1. Better prenatal care and proper nutrition during pregnancy
 - 2. Screening tests

3. Delivery attended by a trained healthcare worker
- G. Decline of perinatal deaths in developed countries largely due to
 1. Better access to prenatal care
 2. The availability of skilled birth attendants
 3. Advanced technology and specialized facilities

Activity

- I. Complete the Terms for Maternal and Perinatal Conditions.
- II. Create and present Poster Project on Maternal & Perinatal Conditions.
- III. Class reading and discussion: students will read about the organization The Bangladesh Rehabilitation Assistance Committee (BRAC) and discuss their efforts to reduce maternal and perinatal mortality and conditions in Bangladesh. Visit the BRAC homepage online:
<http://www.brac.net/>

Assessment

Successful completion of unit terms and poster project

Materials

Instructional PowerPoint Maternal and Perinatal Conditions

Class computers for student investigations

Handouts:

- Terms for Maternal and Perinatal Conditions
- Rubric for Poster Project
- Handouts for Activity #3

Accommodations for Learning Differences

For reinforcement, the student will develop flash cards for key terms.

For enrichment, the student will view and report on the award-winning documentary, [A Walk to Beautiful](#). (Run time: 54 min.) This video is presently online at YouTube. You can also buy this video at amazon.com for approximately \$15.00.

National and State Education Standards

HLC02.01

Health care workers will know the various methods of giving and obtaining information. They will communicate effectively, both orally and in writing.

HLC04.01

Health care workers will use information technology applications required within all career specialties. They will demonstrate use as appropriate to health care applications.

HLC08.02

Health care workers will understand accepted ethical practices with respect to cultural, social, and ethic differences within the health care environment. They will perform quality health care delivery.

TEKS

130.209 (c) 1C contract health problems in developing and developed countries;

130.209 (c) 1F identify and describe the challenges in global health, which can have the greatest impact on health in developing nations;

130.209 (c) 2A compare the availability of health care in developing and developed countries;

130.209 (c) 3A describe technologies that support the prevention and treatment of infectious diseases;

130.209 (c) 6C analyze factors that affect the dissemination of new medical technologies.

Texas College and Career Readiness Standards

English Language Arts

II. A. Locate explicit textual information and draw complex inferences, analyze, and evaluate the information within and across texts of varying lengths.

II. B. Understand new vocabulary and concepts and use them accurately in reading, speaking, and writing.

III. B. Develop effective speaking styles for both group and one on one situations.

IV. A. Apply listening skills as an individual and as a member of a group in a variety of settings.

Science

III. B. 1. Read technical and scientific articles to gain understanding of interpretations, apparatuses, techniques or procedures, and data.

III. C. 1. Prepare and present scientific/technical information in appropriate formats for various audiences.

III. D. 1. Use search engines, databases, and other digital electronic tools effectively to locate information.

Social Studies

III. A. 3. Analyze how and why diverse communities interact and become dependent on each other.

Cross-Disciplinary

I. A. 1. Engage in scholarly inquiry and dialogue.

I. B. 4. Support or modify claims based on the results of an inquiry.

I. E. 1. Work Independently.

- I. E. 2. Work collaboratively.
- II. C. 1. Understand which topics or questions are to be investigated
- II. C. 2. Explore a research topic.
- II. C. 4. Evaluate the validity and reliability of sources.
- II. C. 6. Design and present an effective product.
- II. C. 7. Integrate source material.
- II. C. 8. Present final product.

¹The World Health Organization: <http://www.who.int/en/>

Activity #1

Terms for Maternal & Perinatal Conditions

Online Flashcards for these terms at: <http://www.quia.com/jg/2256188.html>

TERM	DEFINITION
abortion	
antepartum	
breeched birth	
cesarean section	
congenital anomaly	
D & C	
ectopic pregnancy	
fetus	
HELLP syndrome	

incontinence	
infant respiratory distress syndrome	
miscarriage	
mortality	
obstetric embolism	
obstetric fistula	
obstetrical hemorrhage	
perinatal	
placenta previa	
placental abruption	
postnatal (puerperium)	

preeclampsia	
prenatal	
sepsis	
stillbirth	
uterine rupture	

KEY - Activity #1

Terms for Maternal & Perinatal Conditions

Online Flashcards for these terms at: <http://www.quia.com/jg/2256188.html>

TERM	DEFINITION
abortion	termination of a pregnancy; can be spontaneous or induced
antepartum	occurring or existing before birth; "prenatal period"
breeched birth	baby enters birth canal with buttocks or feet first as opposed to normal head first presentation
cesarean section	delivery of fetus by surgical incision through abdominal wall & uterus; usually done when baby is breeched, baby is too large, baby is in distress, or multiple births
congenital anomaly	birth defect
D & C	surgical procedure in which cervix is expanded (dilated) so that cervical canal & uterine lining can be scraped with spoon-shaped instrument called a curette; used to treat abnormal uterine bleeding or perform an abortion
ectopic pregnancy	pregnancy in which fertilized egg implants outside of uterus, usually in fallopian tube; potentially life threatening to woman & results in death of developing fetus
fetus	term used to refer to unborn child from 8 weeks after fertilization to birth
HELLP syndrome	rare but serious illness in pregnancy, which can start quickly (third trimester); can also start soon after delivery of baby. HELLP stands for Hemolysis, Elevated Liver enzyme levels & Low Platelet count
incontinence	involuntary urination or defecation

infant respiratory distress syndrome	syndrome in premature infants usually caused by developmental insufficiency & structural immaturity of lungs
miscarriage	usually spontaneous expulsion of a fetus from womb before it is able to survive independently
mortality	number of deaths in given time or place
obstetric embolism	cessation of blood flow through an artery during pregnancy due to sudden blockage from thrombus, air, or amniotic fluid
obstetric fistula	medical condition in which a hole develops between either rectum & vagina or between bladder & vagina following prolonged or obstructed labor
obstetrical hemorrhage	heavy bleeding during pregnancy, labor, or right after birth; bleeding may be vaginal & external, or, less commonly but more dangerously, internal, into abdominal cavity
perinatal	period of time occurring just before or just after birth
placenta previa	pregnancy in which placenta is implanted in lower part of uterus (instead of upper part); can cause bleeding late in pregnancy; delivery by cesarean section may be necessary
placental abruption	separation of placenta from wall of uterus before childbirth, which causes severe bleeding that threatens life of mother & fetus
postnatal (puerperium)	period beginning immediately after birth of child & extending for about six weeks
preeclampsia	abnormal state of pregnancy characterized by hypertension & fluid retention & protein in urine
prenatal	occurring or existing before birth
sepsis	presence of pus-forming bacteria or their toxins in blood or tissues

stillbirth	birth of infant that has died in womb after having survived through at least first 28 weeks of pregnancy (earlier instances being regarded as abortion or miscarriage)
uterine rupture	rare but potentially tragic pulling apart of uterus; more common after previous uterine surgery or c-section, but can occur without labor or even without previous c-section

Activity #2

Group Poster and Presentation: Maternal & Perinatal Conditions

Objectives

- Students will apply teaming and collaboration skills
- Student groups will develop a poster that communicates information about their assigned condition
- Students will demonstrate oral presentation skills

Materials

- Computers or books for investigation of the assigned condition
- A poster or sheet of butcher paper for each group
- Note cards
- Map colors and/or markers
- *Group Poster & Presentation: Maternal and Perinatal Condition* rubric for each group

Teacher instructions

- Divide the class into groups of 3 to 4
- Assign each group one of the following conditions to investigate:
 - Obstetrical hemorrhage
 - Preeclampsia
 - Puerperal fever
 - Twin-to-twin transfusion syndrome
 - Monoamniotic twins (MoMo Twins)
 - Nuchal cord
 - Cord prolapse
 - Obstetric fistula
 - Placental abruption

Student instructions

- Investigate the assigned condition
- Design a poster for the condition that includes the following:
 - Name of the condition
 - Brief description of the condition
 - Cause of the condition
 - Signs and symptoms of the condition
 - Ways to treat the condition
- Use note cards for presentation details, and only print key terms and an abbreviated description on the poster
- Printing or labeling on the poster should be large enough for the class to read during the presentation
- The poster should be neat with an attractive drawing or picture
- Review the rubric to make sure you have followed the necessary criteria

Activity #2 Rubric

Group Poster and Presentation: Maternal & Perinatal Conditions

Criteria	Excellent 90-100	Very good 80-89	Average 75-79	Marginal 70-74	Failed to meet basic requiremen ts 60 ↓	Not applicable
TEAM WORK						
Team worked amicably						
Each member took part in the project						
Team stayed focused on the project						
Team completed the project on time						
ORAL PRESENTATION						
Lead speaker introduced team members						
Presentation Included						
Name of the condition						
Overview/description of the condition						
Cause of the condition						
Signs and symptoms of the condition						
Ways to treat the condition						
Group members spoke clearly and projected their voices						
Each member took an equal part in the presentation						
A succinct summary concluded the presentation						
POSTER						
Title & labeling was neat						
Title & text were large enough to be readable to the audience						
The poster included a drawing or picture						
The poster has visual appeal or "pop!"						

Give points for each grade category and average _____ Comprehensive Grade _____

Activity #3

Reading and Class Discussion:

Lessons from BRAC

The topic

The Bangladesh Rehabilitation Assistance Committee (BRAC) evolved to address many needs in developing countries, which has resulted in a significant decline in maternal and perinatal mortality.

Materials

- Handouts:
 - Discussion Questions: Maternal Conditions in Bangladesh
 - What are the Millennium Development Goals?
 - BRAC – Who we are
- Online video: Dramatic fall in maternal mortality in Bangladesh
<http://www.brac.net/node/832> (run-time: 12 min, 6 sec)

For more information about BRAC visit their [homepage](#).

Teacher Instructions:

- Discuss the problems that women and newborns face in developing countries
 - Malnourished mothers
 - Very young mothers
 - Mothers with existing medical conditions (HIV/AIDS, TB, malaria, etc.)
 - Very few medical clinics
 - Poor countries with limited infrastructure (bad roads inadequate transportation)
 - Lack of skilled birth attendants
- Hand out the Discussion Questions and have the students read the other two handouts.
- Students can complete the Discussion Question handout as they read the other information.
- Have the class view the 12-minute online video.
- Lead them in a classroom discussion (discussion questions on the following page).

Activity 3

Discussions Questions (Maternal Conditions in Bangladesh)

1. What are the Millennium Development Goals and why were they implemented?

2. What is the name of the organization BRAC established to meet the needs of pregnant mothers and newborns?

3. What strategies has BRAC implemented to better manage pregnancy and childbirth in Bangladesh?

4. What lessons can the international community learn from BRAC?

What are the Millennium Development Goals?

<http://www.undp.org/mdg/basics.shtml>

Adopted by world leaders in the year 2000 and set to be achieved by 2015, the Millennium Development Goals (MDGs) provide concrete, numerical benchmarks for tackling extreme poverty in its many dimensions.

The MDGs also provide a framework for the entire international community to work together toward a common end: making sure that human development reaches everyone, everywhere. If these goals are achieved, world poverty will be cut by half, tens of millions of lives will be saved, and billions more people will have the opportunity to benefit from the global economy.

The **8 MDGs** break down into **21 quantifiable targets** that are measured by **60 indicators**.

- **Goal 1: Eradicate extreme poverty and hunger**
- **Goal 2: Achieve universal primary education**
- **Goal 3: Promote gender equality and empower women**
- **Goal 4: Reduce child mortality**
- **Goal 5: Improve maternal health**
- **Goal 6: Combat HIV/AIDS, malaria, and other diseases**
- **Goal 7: Ensure environmental sustainability**
- **Goal 8: Develop a global partnership for development**