

# Ultrasound Education and the Global Crisis in Infant and Maternal Mortality



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**Eastern Virginia Medical School**

# The Road To Maternal Death

*The story of Jane Doe*

# The Road To Maternal Death

*Jane Doe*

- **39 years' old, had given birth to 7 children, 5 were still alive**
- **She had scant prenatal care**
- **Experienced 2 episodes of bleeding in the third trimester**
- **Started bleeding profusely at term**

# The Road To Maternal Death

*Jane Doe*

- After a period of observation, Jane's husband decided to take her to the hospital
- Took her 4 hours to get to the hospital
- Admitted in a state of shock
- She received intravenous fluids
- Only 1 unit of blood was available at the hospital for transfusion

# The Road To Maternal Death

*Jane Doe*

- **A cesarean section was performed 3 hours later when an obstetrician and an anesthesiologist could be called**
- **She died during the operation from severe bleeding and heart failure**

*Looking into Jane's personal life:*

**Never had a chance**

# The Road To Maternal Death

*Jane Doe*

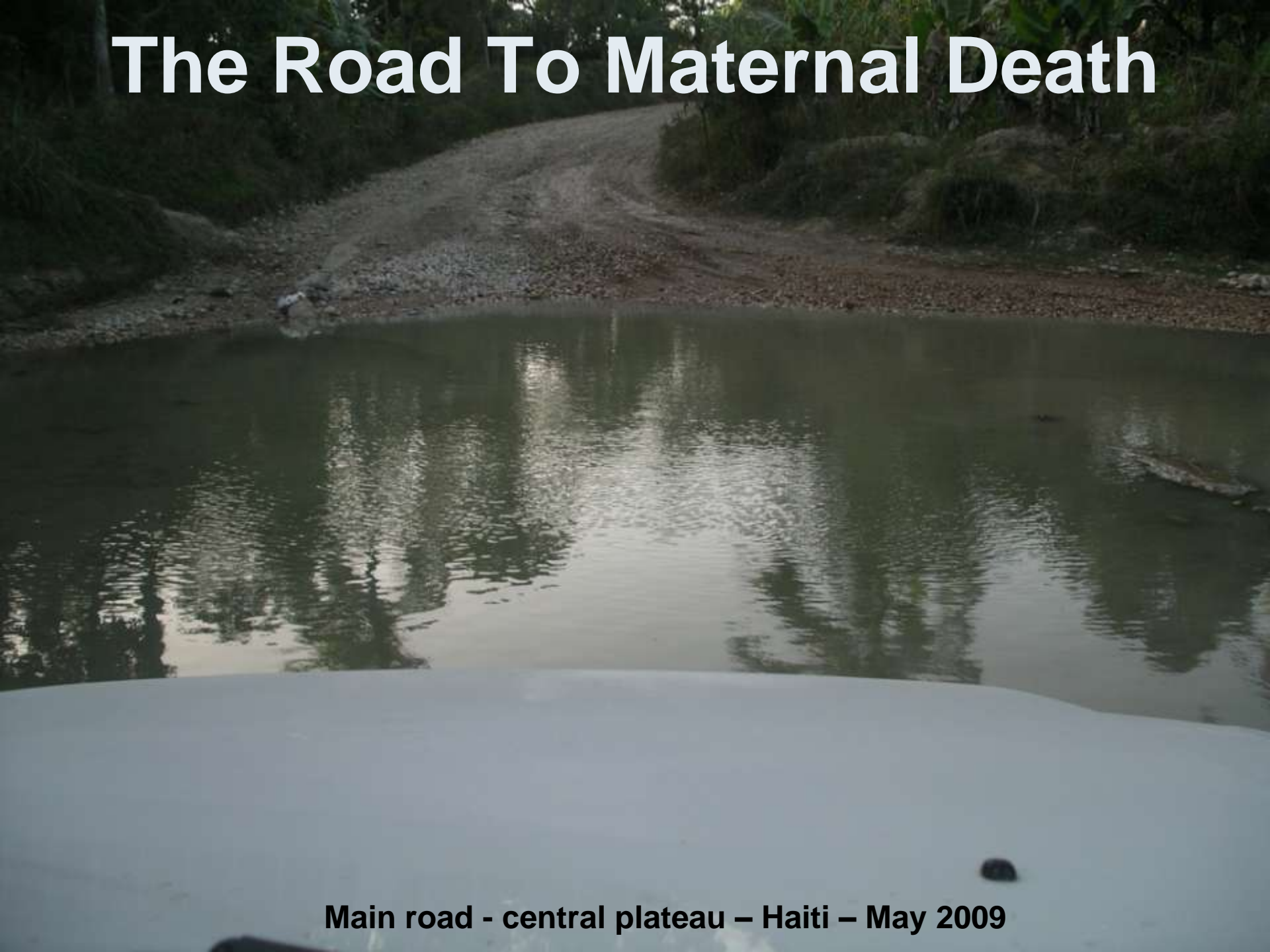
- **Illiterate wife of a poor agricultural laborer**
- **Never used family planning methods**
- **All her pregnancies were unplanned**
- **As a child did not have same access to education as her brothers**
- **Her status in society dependent on her role as a mother**

# The Road To Maternal Death

- **Delays in deciding to seek care**
- **Delays in reaching the place of care**
- **Delays in receiving appropriate treatment at place of care**

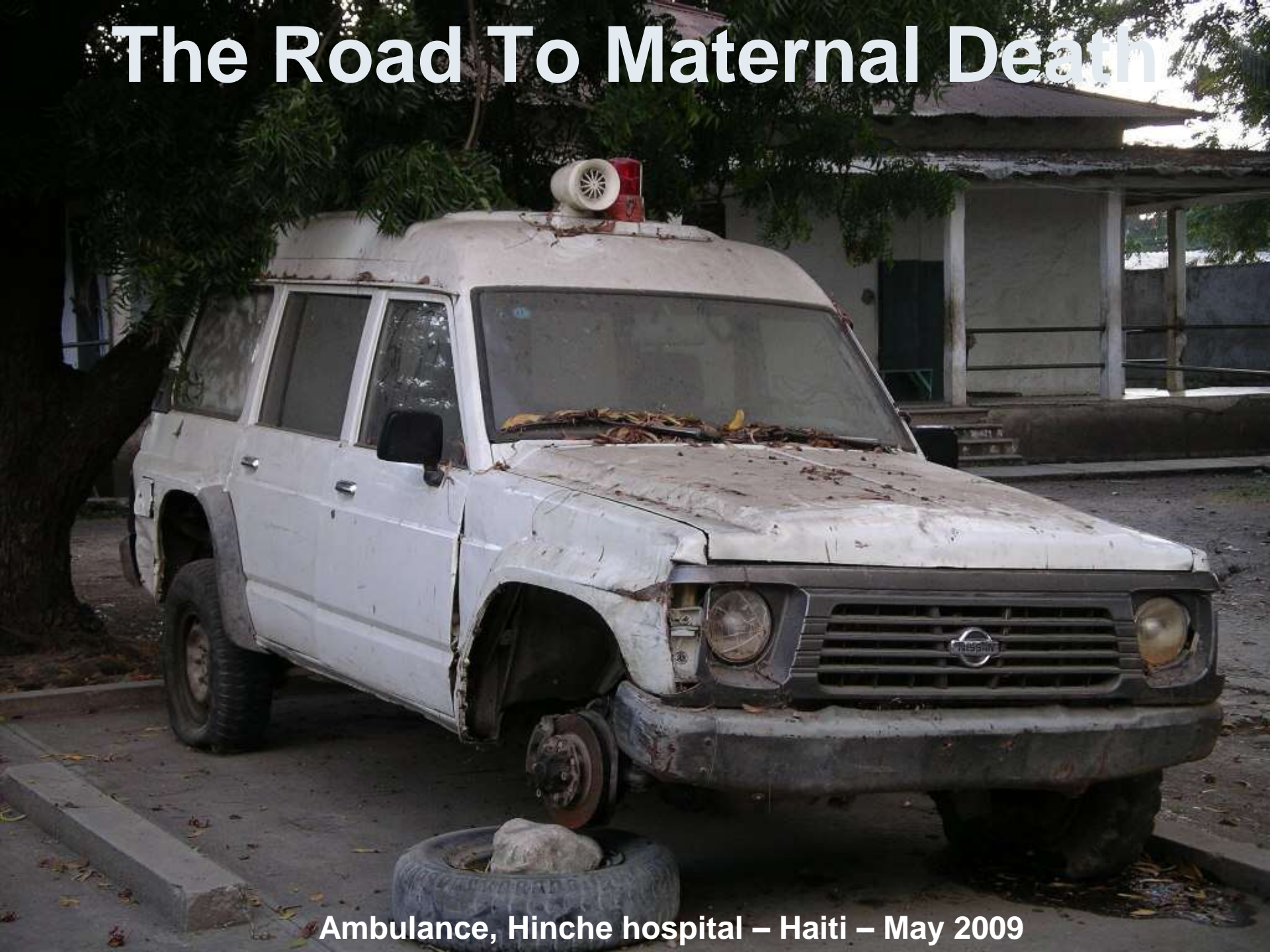


# The Road To Maternal Death



Main road - central plateau – Haiti – May 2009

# The Road To Maternal Death



Ambulance, Hinche hospital – Haiti – May 2009



# The Road To Maternal Death



Transporting a patient with eclampsia to the hospital, Central Plateau – Haiti – May 2009

# Average Interval to Maternal Death

<b>Untreated Obstetric Condition</b>	<b>Time in hours</b>
<b>Ruptured uterus</b>	<b>24</b>
<b>Antepartum hemorrhage</b>	<b>12</b>
<b>Postpartum hemorrhage</b>	<b>2</b>

# Maternal Mortality

- Defined as a death occurring anytime during pregnancy and up to 42 days postpartum



# Maternal Mortality



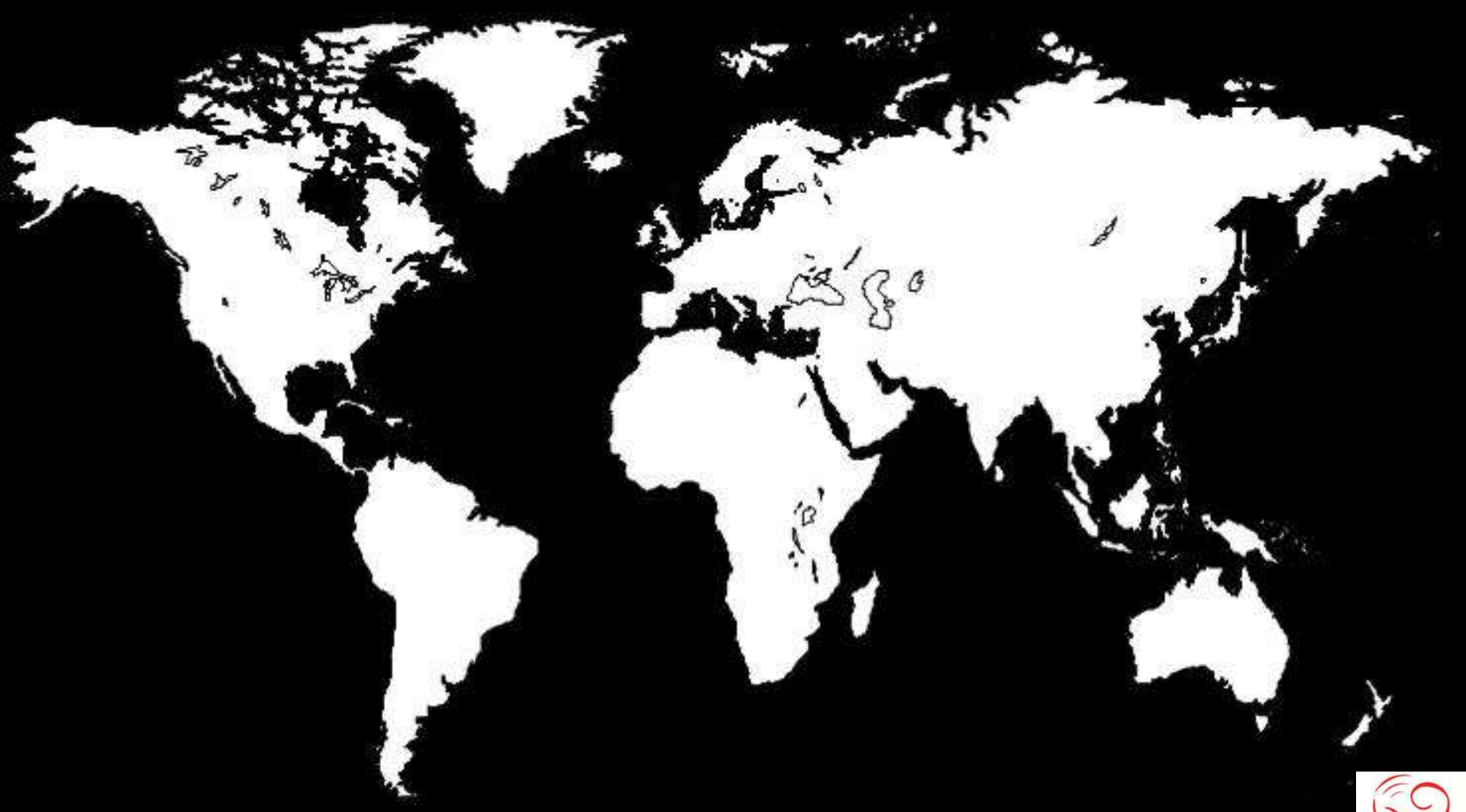
- Estimated at 529,000 per year in the world
- 99 % of maternal mortality occur in the developing world

*Paula Bronstein*

<http://blog.gettyimages.com/tag/afghanistan/>

WHO report 2005. Make every mother and child count, pp.61-62

# Maternal Mortality



# Maternal Mortality

- **Over 80 % could be prevented through timely interventions proven to be effective and affordable**



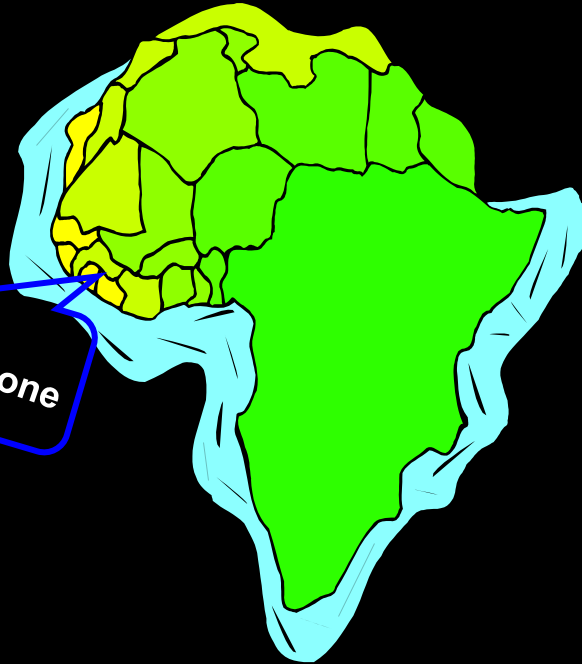
# Maternal Mortality

## *Rates per Country*

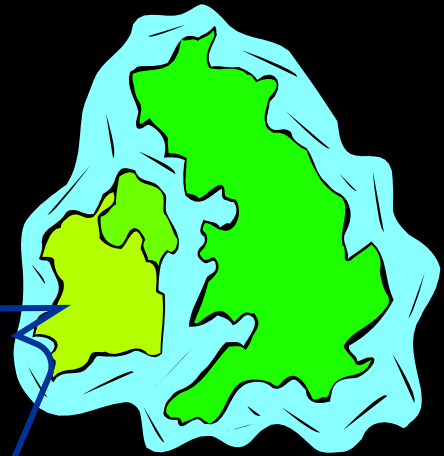
Country	Maternal mortality (per live births)
Sweden	3 / 100,000
USA	11 / 100,000
India	450 / 100,000
Haiti	670 / 100,000
Afghanistan	1800 / 100,000

# Maternal Mortality

## Lifetime Risk of Dying



**1 in 8**



**1 in 47,600**

**Giving birth safely is largely a privilege of the rich**

# Maternal Mortality

## *Primary causes in developing world*

- Hemorrhage: 25 %
- Infections: 15 %
- Eclampsia: 12%
- Unsafe abortions: 13 %
- Obstructed labor: 8 %
- Indirect causes: 20 %



# Maternal Mortality

*Secondary causes in developing world*

- **Extreme poverty**
- **Social injustice**
- **Lack of healthcare workers**
- **Discrimination against women**
- **Corrupt Governments**

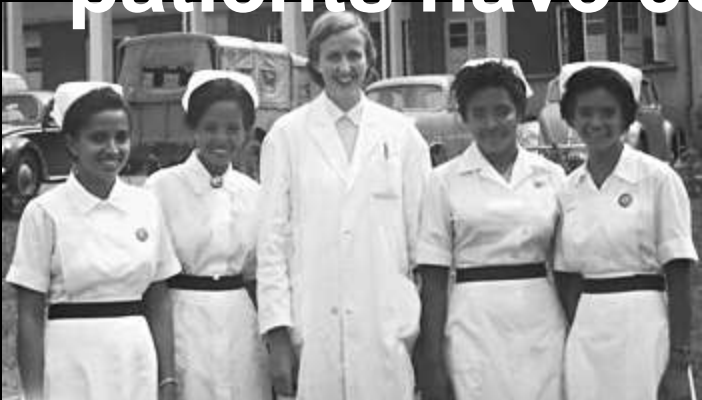


# Maternal Morbidity

- **Over 300 million women in the developing world currently suffer from short- or long-term illnesses related to pregnancy and childbirth**

# Maternal Morbidity

- It is estimated that up to 100,000 new cases of fistula develop each year in Africa alone
- Two million women are living with fistulas
- Almost all are due to obstructed labor
- Most are pushed out of society due to personal hygiene
- It is estimated that about 90% of fistula patients have contemplated suicide







# END POVERTY 2015

MILLENNIUM DEVELOPMENT GOALS

*Make it happen*



A Gateway to the UN System's Work on the MDGs

## Target 1:

Reduce by three quarters the maternal mortality ratio

- ❖ The high risk of dying in pregnancy or childbirth continues unabated in sub-Saharan Africa and Southern Asia
- ❖ Little progress has been made in saving mothers' lives
- ❖ Skilled health workers at delivery are key to improving outcomes

## Target 2:

Achieve universal access to reproductive health

- ❖ Antenatal care is on the rise everywhere
- ❖ Adolescent fertility is declining slowly
- ❖ An unmet need for family planning undermines achievement of several other

## MILLENNIUM DEVELOPMENT GOALS



End Poverty and Hunger



Universal Education



Gender Equality



Child Health



Maternal Health



Combat HIV/AIDS



Environmental Sustainability



Global Partnership

# Reducing Maternal Mortality

## *International consensus*

- **Skilled attendance at all births**
- **Basic emergency obstetric care in peripheral units**
- **Comprehensive emergency obstetric care in referral hospitals**
- **Rapid transport of women in need of special care**



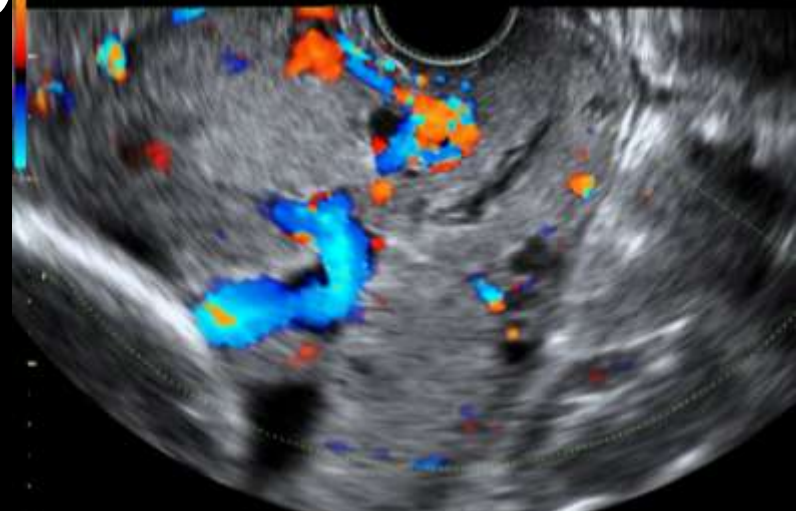
# Pregnancy Care in Developing World

- Antenatal care is the most utilized of the maternal services
- Antenatal care should be used as a platform to promote health and ensure safe delivery
- Ultrasound services may play a critical role in this regard

# **What is the Potential Impact of Ultrasound on Maternal Mortality?**

# Impact of Ultrasound

- **Hemorrhage**
  - Placental abnormalities
  - Retained placenta postpartum
  - Ectopic pregnancy



# Impact of Ultrasound

- **Labor**

- **Multiple pregnancy**
- **Abnormal fetal presentation**
- **Estimating fetal weight**
- **Obstructed labor**

# Impact of Ultrasound

- **Perinatal asphyxia**
  - **Accurate pregnancy dating**
  - **Diagnosing growth restriction**
  - **Assessing fetal wellbeing**
  - **Assessing amniotic fluid volume**

# **Impact of Ultrasound**

- **Identifying at-risk pregnancies**
- **Directing at-risk pregnancies to deliver in a hospital setting**
- **The use of US in managing obstetrical complications**

# Impact of Ultrasound

## *Outreach*

**Goes beyond the ultrasound examination**

# Impact of Ultrasound

- **Encouraging Prenatal Care**
  - Self referral of pregnant patients
  - Improvement in follow-up of care
  - Enhanced compliance with inpatient care



# Impact of Outreach

*Beyond the ultrasound examination*

- Interaction with health care providers
- Understanding health needs
- Protocol development beyond ultrasound
- Ongoing support



**Bakri Balloon – Cook Pharmaceutical**



isuog.org

International Society of Ultrasound in Obstetrics and Gynecology

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# ISUOG Outreach

# ISUOG Outreach

## *Mission*

- To promote the education, training and the availability of ultrasound in underserved communities around the world with the goal of improving maternal and perinatal health.

# ISUOG Outreach

## *Approach*

### Synergistic Partnership

- ISUOG
- US manufacturers
- International organizations
- Local organizations
- Government agencies

# ISUOG Outreach

*What has been done?*

# ISUOG Outreach



Partners  
In Health

## *Haiti Program*

### Synergistic Partnership

- ISUOG – education / training
- GE – US equipment (10 machines)
- Partners in Health – local support
- Three trips; Jan 09, May 09 and Jan 10







# Course Components

- **Classroom setting – power point presentations / pre-posttests  
(3 hrs / day)**
- **Hands-on scanning – 4 stations  
(4 hrs / day)**
- **Scanning in front of class – 1 station  
(1 hr / day)**













Boite à Questions  
Boite à Réponses





# ISUOG Outreach

## Haiti

- **US equipment operational at antenatal clinics**
- **Constant contact between trainers and trainees**
- **Ongoing discussion for full integration of ultrasound in clinical practice and obstetric decision making**







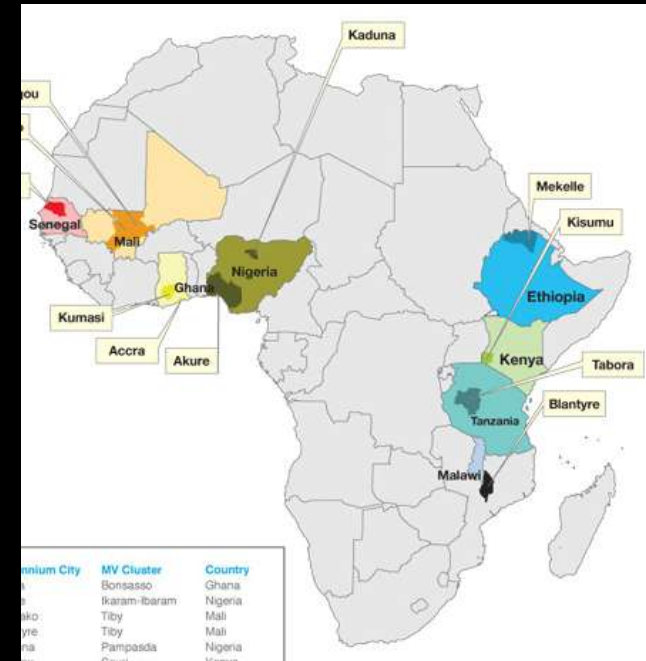


# ISUOG Outreach

## *Ghana Program*

## Synergistic Partnership

- ISUOG – education / training
- Siemens– US equipment (3 machines)
- Physicians for Peace – international support
- Millennium Cities Initiative – local support
- Metro Health District – local support
- One trip; Sept 10













**FAMILY PLANNING  
SERVICES**

**ADOLESCENT REPRODUCTIVE  
HEALTH**

**SUNTRESO HOSPITAL**

# ISUOG Outreach

## *Somaliland Program*

### Synergistic Partnership

- ISUOG – education / training
- Sonosite– US equipment (4 machines)
- Doctors Without Borders – international support
- Edna Adan Hospital – local support
- One trip; Sept 11





Edna Hospital of Somaliland



# ISUOG Outreach

## Somaliland

















# ISUOG Outreach

*Future Plans Under Considerations*

# ISUOG Outreach

## Future trips

- Haiti – 5/2011
- Ghana – 5/2011
- Congo – 9/2011
- Cameroon – 12/2011
- Mongolia – 2012
- Peru - 2012



# ISUOG Outreach

## Tracking Impact

- Pre/post tests
- Competency check lists
- Number of scans
- Number of prenatal visits
- Number of hospital referrals
- New diagnoses
- Healthcare team job satisfaction

# ISUOG Outreach

## What we have learned

- **Selection of training sites**
- **Strong support on the ground**
- **Government support**
- **Partnership of various organizations**
- **Commitment of training team**
- **Equipment maintenance**
- **Maintaining contact over time**

# US Technology



## Hand-Carried Ultrasound

Ultrasound systems that reduce risk and expense by providing high-quality imaging when and where it is needed, regardless of the patient's location.

[Learn more ▶](#)



# **ISUOG Outreach**

**Significant focus on technology / equipment development**

**What is Missing**

**Focus on education and training**

**“Women are not dying because of untreatable diseases. They are dying because societies have yet to make the decision that their lives are worth saving”**

**M F Fathalla, MD,PhD – past president of FIGO**



