

## Safer birth in Chad - Maternal mortality today

### Introduction

This activity focuses on health problems in Chad, to demonstrate that even when a scientific theory has been strongly supported by evidence and used for many years it will not always be adopted for complex social and economic factors.

It introduces a discussion of some reasons for poor health in Low Income Countries today.

### Resources

Students will need access to the internet to use the Safer Birth in Chad website [www.saferbirthinchad.org](http://www.saferbirthinchad.org). They may need to use the textbook to refer to the Semmelweis story.

They will need a selected list of How Science Works statements. The statements below are a useful set for this activity

### The activity

**The questions** Make sure the class is familiar with the work of Semmelweis. The intention of this activity is to think about developments in society – scientific and social - and the factors that influence the decisions we make.

Students can work on the web-site unaided and answer the questions 1- 8 or 9. This could be set as a homework (reduce time by 45 mins).

**The discussion** should be done in small groups with a possible plenary session.(could follow Worksheet or act as a post homework consolidation.) Allow 10 - 15mins + plenary.

**The How science works** section encourages students to think about this aspect of Science in Society at an early stage in the course. It is probably best to provide a selected list going beyond those in the specification for 1.1 and 1.2. Some students will find plenty of links. One approach is to give each 2-3 students a set of 4 or 5 HSW statements to consider and feed back to the whole class. This means that students have thought about all of the HSW ideas during the activity and thus they should be familiar with them when they meet them in new contexts. The whole activity takes 2 X 1 hour sessions.

### References

Specification 3.1.2. plus How Science Works statements.

Further information in a special issue of the Lancet Oct 2007

<http://www.thelancet.com/online/focus/women-deliver>

### How science works – short list

**Ba** If something happens only when a factor is present, we say there is a correlation between the factor and the outcome.

**Bd** To investigate the relationship between a factor and an outcome, it is important to control all other factors that might affect the outcome. Then changes in the outcome can be attributed to the factor that is being changed.

**Bj** We are more likely to accept that there is a correlation between a factor and an outcome and much more likely to believe that the factor is a cause of the outcome if we can identify a plausible mechanism that would link them.

**Cc** An event is often explained by relating it to a particular scientific theory (or theories). A scientific theory proposes an underlying process that results in the observations we have made. Many scientific theories involve objects or properties that cannot be directly observed.

**Cd** Scientists test an explanation by seeing if specific predictions based upon it are in agreement with data from a planned observation (or set of observations) or from an experiment (a deliberate intervention to generate data). The aim is to rule out alternative explanations, and so reach a single explanation that most scientists can agree on.

**CEH** Scientists are more confident about theories that include a plausible mechanism for causing the events observed.

HSW further statements that apply to these stories

3.5.1

3.5.2 Ea Ef

3.5.3 F (a), (b), (c)

3.5.3 G (a), (b), (c),(e), (h)

3.5.3 H (a), (b), (f) (i)

*but students will find other connections too in the last part of the activity*

## Suggested answers to questions

1. How many “third world” women die every year in pregnancy and childbirth?  
*More than 500,000 or 529,000*
2. Chad is a very poor African country, Britain is a very wealthy European country.
  - a) What is the lifetime chance of a Chadian woman dying in pregnancy or childbirth? *1 in 11*
  - b) What is the lifetime chance of a British woman dying in pregnancy or childbirth? *1 in 5000*
  - c) What was the maternal mortality rate in Semmelweis’s first hospital? *20%*

Look at the **About Chad** page of the web-site

3. How many people in Chad live on less than \$1 per day?  
(This was about 50p when the web site was set up)  
*80% of the population or 6 million people*
4. How many patients are there for each Doctor in Chad?  
*30,000 patients per Doctor*
5. a) What is meant by child mortality rate?  
*Child mortality rate is the number of children who die before they reach the age of 5.*
  - b) What is the child mortality rate in Chad?  
*1 in 5 or 20%*
6. What is the life expectancy in Chad for
  - a) men *Male life expectancy is 44*
  - b) women? *Female life expectancy is 47*
7. Students will approach this in different ways. Some may produce a list of points based on the text from the web site. Others may be more creative and write a persuasive charity letter.

Key points from Dr Grace Kodindo’s talk to the UN:

*“Poor women in Africa die because the services they need to save their lives are too few and too far away. Even when women do get to a hospital, the services are too often of poor quality – drugs and supplies are not available, equipment is missing or broken, and staff are not adequately trained and supported. In short, the health system does not function as it must to save lives.”*

8. The problem of maternal mortality is really an economic and social problem. The scientific knowledge exists to prevent many of these deaths. The resources are not available. The main barriers are difficulty in accessing health care (too few hospitals and too few staff in the hospitals) The problem is made worse because abortion is illegal in Chad. Women rely on unsafe procedures in unsterile conditions. This kills many women or leads to significant complications the next time they become pregnant. Greater access to contraception and education could help in these situations. The moral issues are not simple. As Dr Grace says *“more resources on their own will not solve the problem”*.

## How science works

The main difference between the situation in Chad today and the Semmelweis situation is that now we do understand the science of germ transmission and control. In Semmelweis's time there was an alternative explanation based on divine judgement.

The main similarities are that the lives of poor women are not valued and basic hygiene procedures are not being followed.

A recent visit by SBICF volunteers (May 2007) found a midwifery assistant "cleaning" the baby weighing scales with a blood encrusted rag in the main maternity unit in the capital city!

The HSW statements listed above are all clearly linked to the Semmelweis story. The following are more specifically related to the Chad situation. Students using the longer list will find many other links.

## Discussion points

This is intended to get students to think about the limits of science. Although it is known how to monitor women and significantly reduce the death rate of mothers and babies these procedures take resources. Somebody has to pay. Some students may feel that "charity begins at home" and thus argue that it is not our responsibility to worry about the situation in LEDCs.

Others may feel that cheap and effective treatments ought to be supplied by international donors or the UN.

It is actually incredibly complex to deliver medicines to poor countries because they may be stolen and sold on, they may be diluted and used inappropriately, they may be used for the wrong conditions or they may end up being sold to the wealthy at the expense of the poor. All these problems have been encountered by SBICF whilst trying to improve conditions in only 2 hospitals.

Skilled personnel are needed to bring about improvements in services. However, with overstretched staff and little money for training there are too few new midwives and obstetricians being trained. Once they are trained they may be attracted to work in Europe or the US where the pay and conditions will be significantly better than in their country of origin.

*October 2007*



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### Introduction

You will have learned about Semmelweis's work and how an understanding of the germ theory of disease has led to safer childbirth for many women.

### The activity

Use the website of **Safer Birth in Chad Foundation** [www.saferbirthinchad.org](http://www.saferbirthinchad.org) to find answers to the questions and to prepare for the discussion points.

Read the **Home Page**

### Questions

1. How many "third world" women die every year in pregnancy and childbirth?
2. Chad is a very poor African country, Britain is a very wealthy European country.
  - a) What is the lifetime chance of a Chadian woman dying in pregnancy or childbirth?
  - b) What is the lifetime chance of a British woman dying in pregnancy or childbirth?
  - c) What was the maternal mortality rate in Semmelweis's first hospital?

Look at the **About Chad** page of the web-site

3. How many people in Chad live on less than \$1 per day?  
(This was about 50p when the web site was set up)
4. How many patients are there for each Doctor in Chad?
5.
  - a) What is meant by child mortality rate?
  - b) What is the child mortality rate in Chad?
6. What is the life expectancy in Chad for
  - a) Men b) Women?

Look at the **About us** page of the web-site  
Click the link to Dr Grace's address to the UN

7. Imagine you are writing a letter to raise funds for this charity.

Write a 50 – 100 word summary of what should be the top priorities for improving obstetric care for the women of Chad.

Try to be persuasive and accurate!

8. Is the problem of maternal mortality scientific, social, economic or something else? How was the situation different when Semmelweis was working?

## Discussion points

To talk about in small groups and feedback to the class.

- Why are so many women in the poorest nations dying as a consequence of pregnancy and childbirth in the 21<sup>st</sup> Century?
- Is it morally acceptable that the lack of a cheap and plentiful chemical (Magnesium sulphate) should lead to thousands of deaths per year in some countries?
- Are these problems globally important or is it a matter for the government and individuals in each country to organise suitable health care?
- Would more education make a difference?
- More roads?
- More Doctors?
- Are there other factors that need to be considered?

## How science works

Ignaz Semmelweis understood the causal relationship between unclean doctors and childbed fever in women yet his research was largely ignored for many years. Dr Grace Kodindo knows what is causing the maternal mortality yet she cannot change the situation. How are these two stories the same? How are they different?

Use the list of **How science works** to identify relevant ideas that link to the stories of Semmelweis and Kodindo. (You could also look at other scientists whose work helped to develop the germ theory of disease).

## Further activities using this web-site

Look at **Links** page of the web-site to explore the issues that led to this group forming and the work that they are doing in Chad.

## EXTENSION WORK

9. Try to find the life expectancy and child mortality rates for Britain