



Global Maternal Health & Mortality

**Lesley Regan
November 2011**

Maternal Health: Scope of Problem



- 180–200 million pregnancies per year
- 75 million unwanted pregnancies
- 50 million induced abortions
- 20 million unsafe abortions (same as above)
- 600,000 maternal deaths (1 per minute)
- 1 maternal death = 30 maternal morbidities

Lifetime risk of maternal death



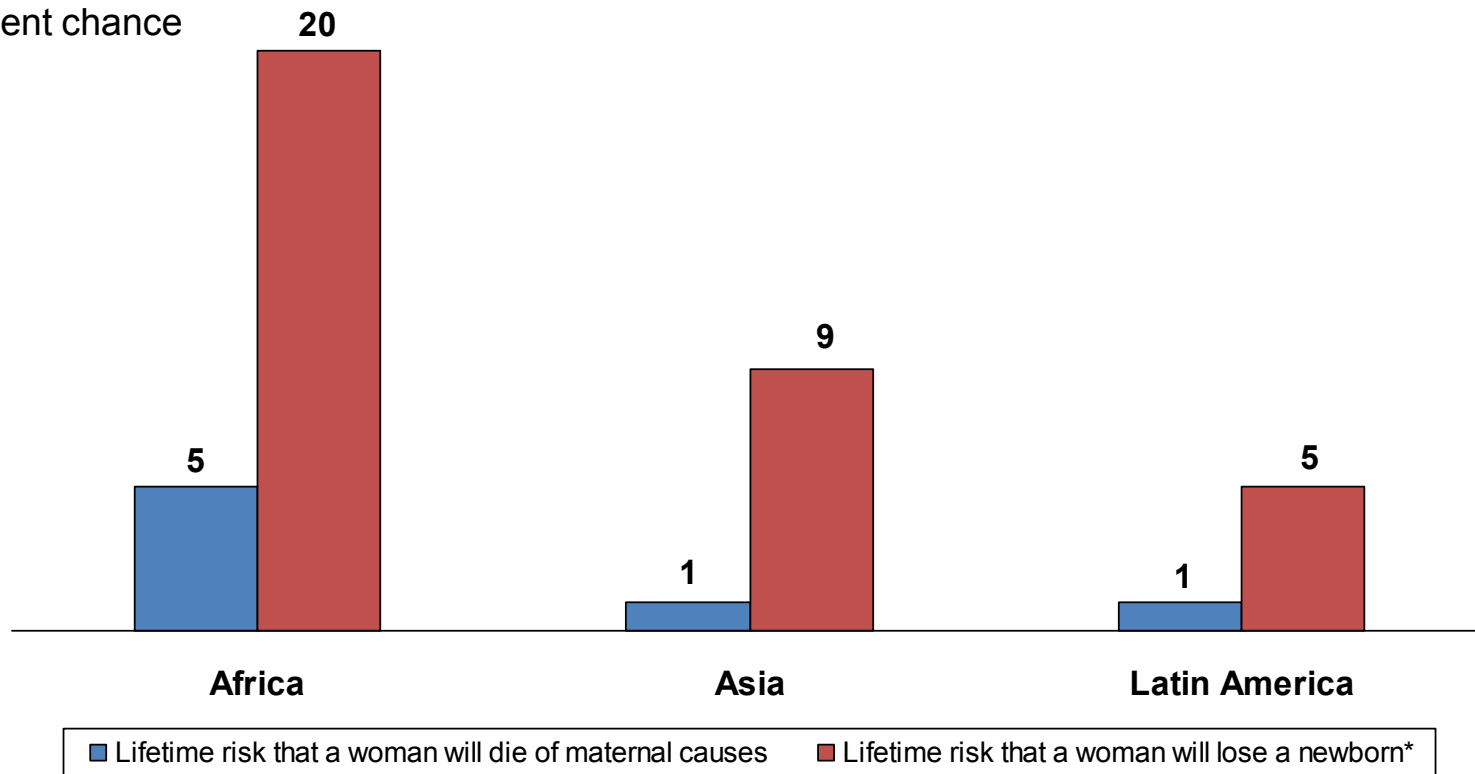
- Developed regions: 1 in 7300
- Asia: 1 in 94
- North Africa: 1 in 210
- Sub-Saharan Africa: 1 in 22
- Niger: 1 in 17
- Chad: 1 in 8
- Sweden: 1 in 17400

Lifetime Risks to Mothers



Risk of Dying of Maternal Causes or of Losing a Newborn*

Percent chance



Maternal and child health



- **Maternal mortality ratio:**
no. of maternal deaths per 100,000 births
- **Infant mortality rate:**
no. of infant deaths < age 1y per 1000 live births in a given year
- **Neonatal mortality rate:**
no. of infant deaths < 28 days per 1000 live births in a given year
- **Under 5 mortality rate:**
the probability that a newborn baby will die before reaching age 5, as a no. per 1000 live births

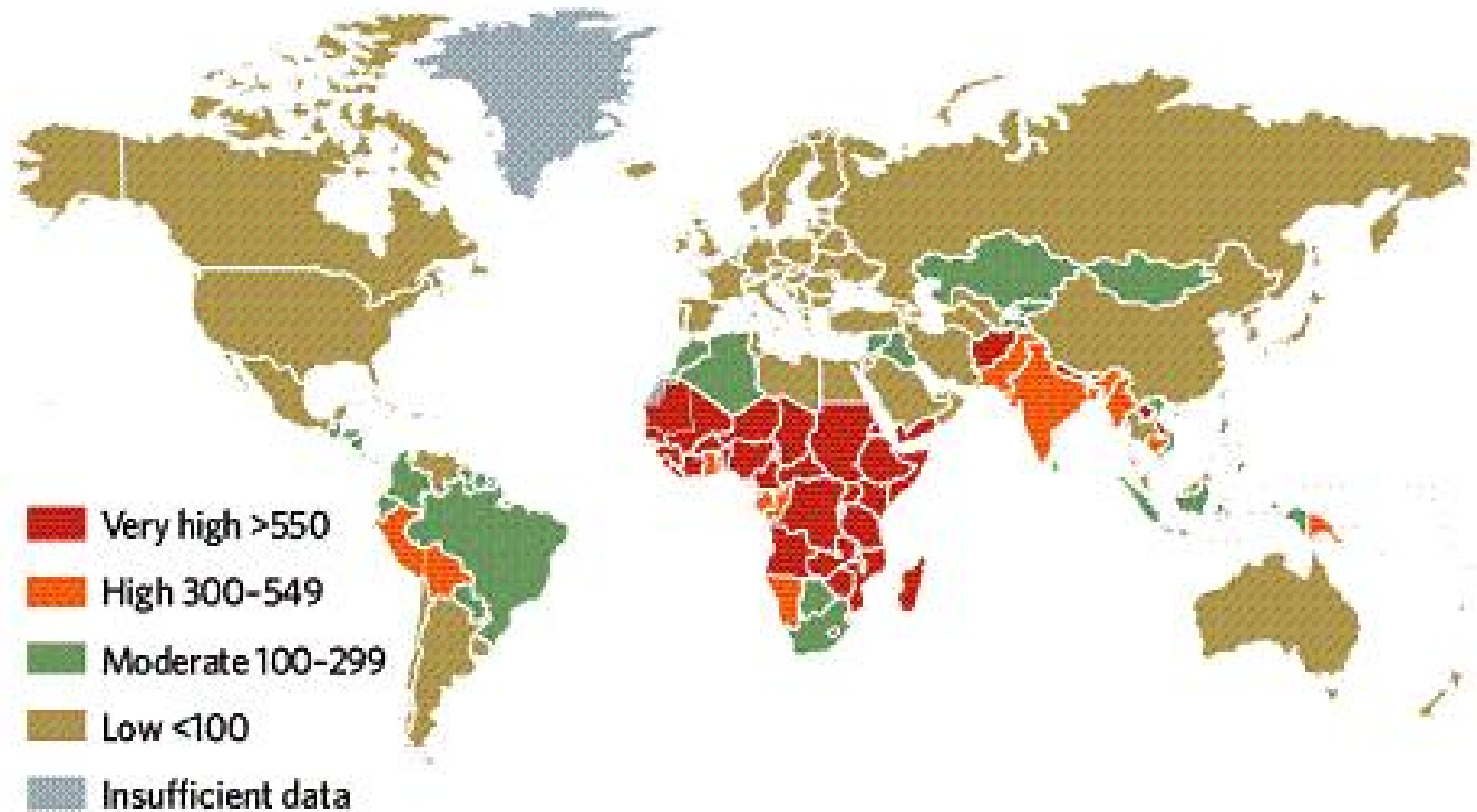
Maternal Death





- In 1631, Shah Jahan, emperor of the Mughal Empire was grief-stricken when his third wife, Mumtaz Mahal, died during the birth of their 14th child.
- She was married at 14
- 7 of her children died

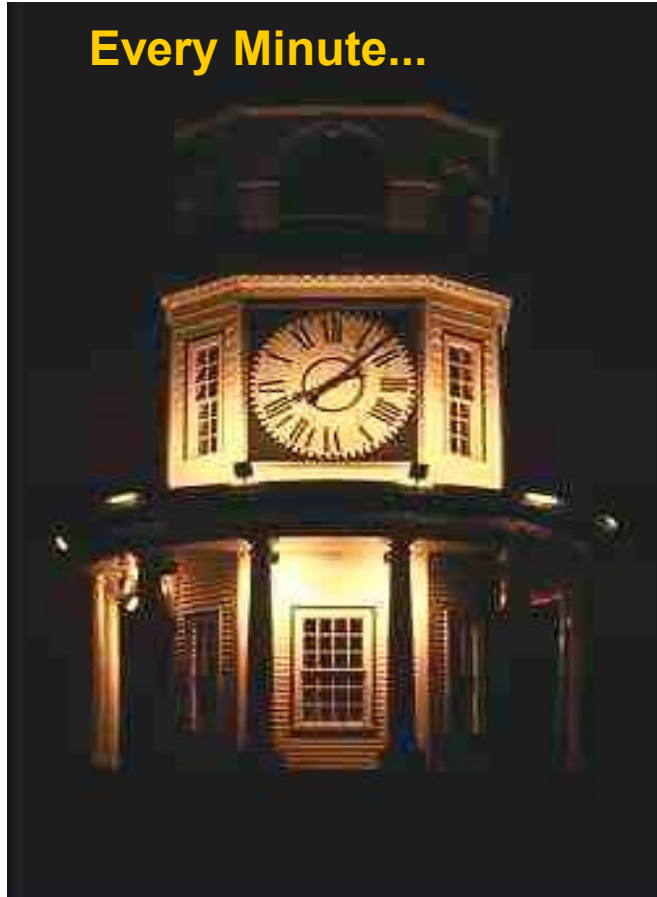
Levels of Maternal Mortality



Maternal Death Watch



Every Minute...

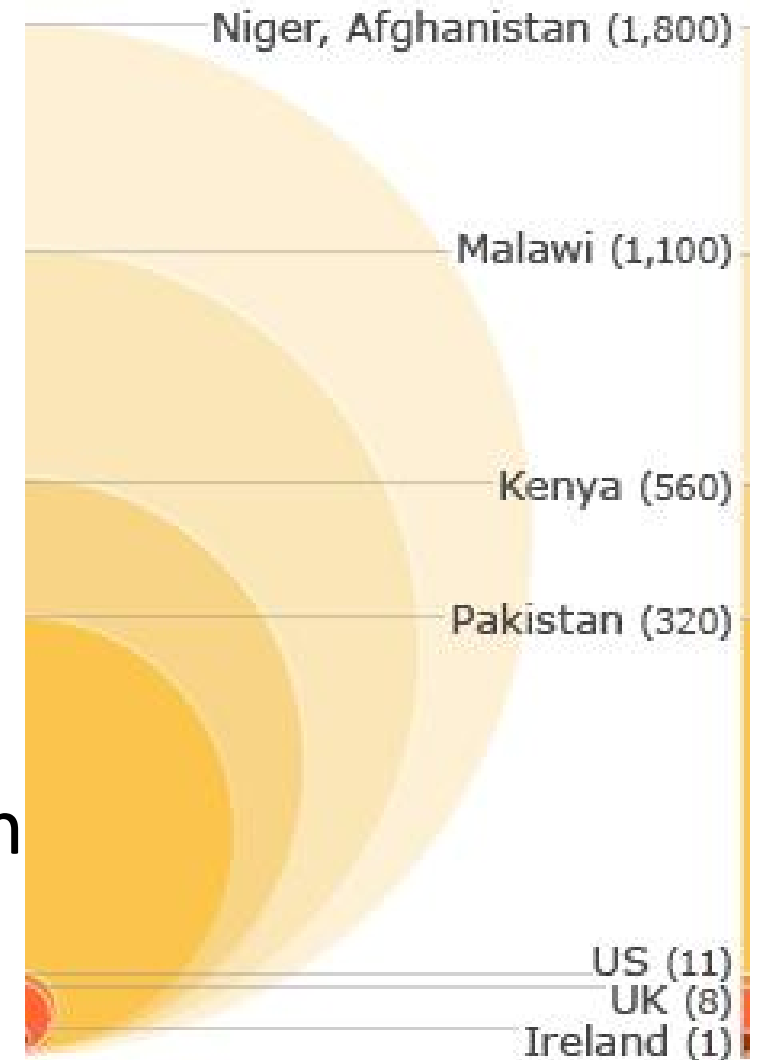


- 380 women become pregnant
- 190 women face unplanned or unwanted pregnancy
- 110 women experience a pregnancy related complication
- 40 women have an unsafe abortion
- 1 woman dies from a pregnancy-related complication

The scale of maternal mortality

- A woman dies each minute – of every day
- Maternal mortality is the public health indicator with the greatest gap between rich and poor countries

How countries compare
Maternal Mortality Rates 2005*



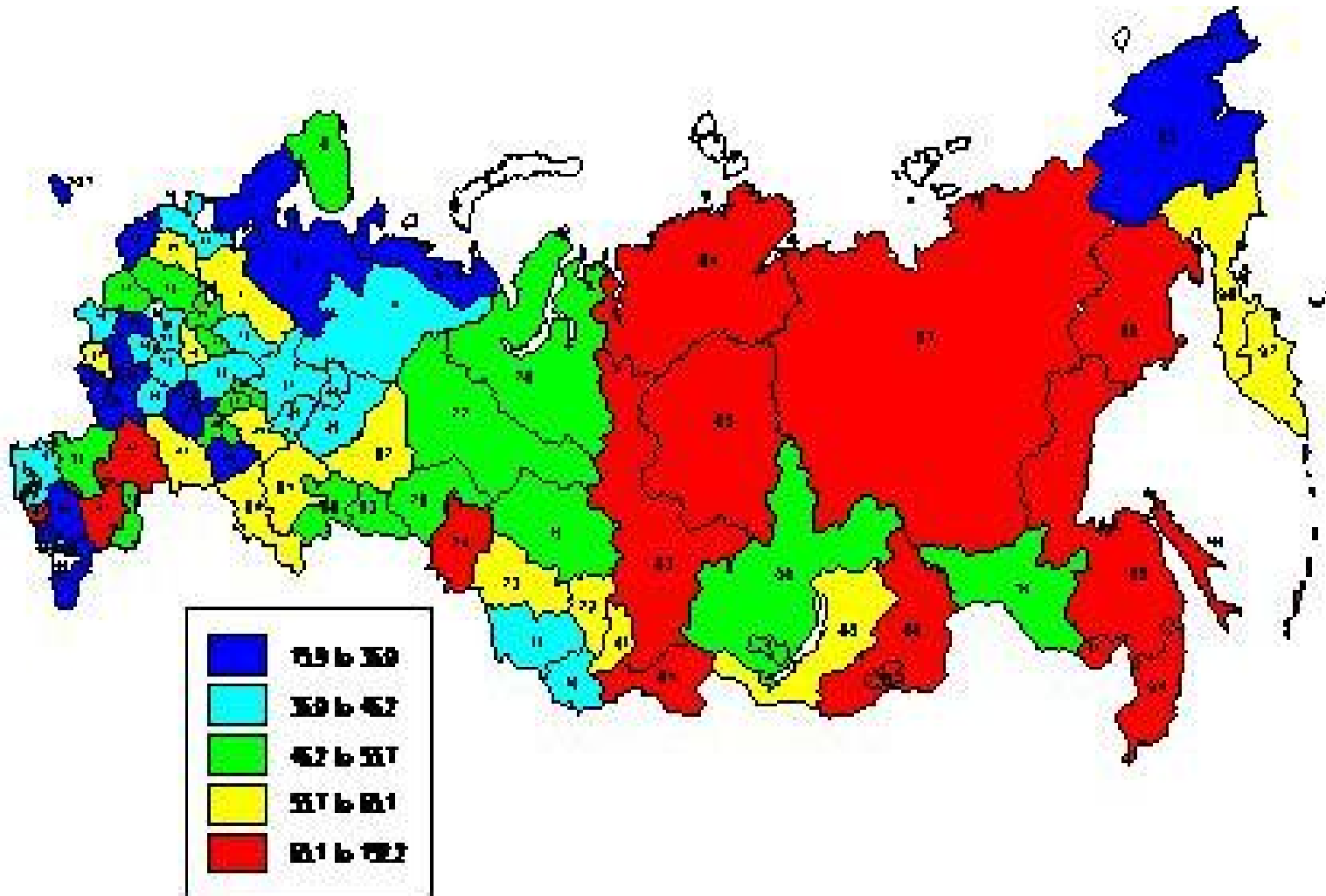
*Deaths per 100,000 births
Source: United Nations Population Fund

Determinants of Maternal Mortality

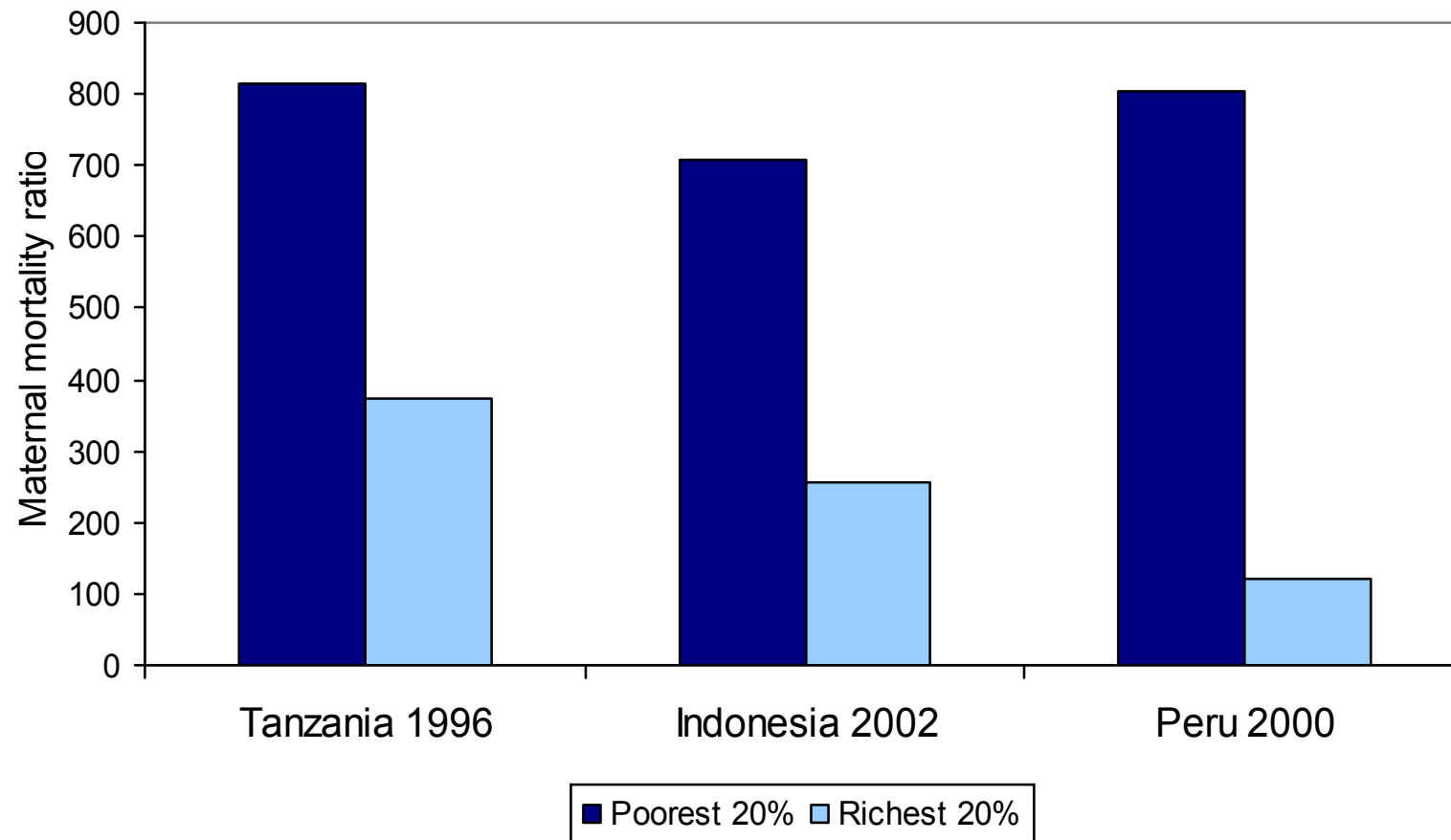


- Clinical
- **Socio-demographic / Cultural**
- Economic
- **Gender status**
- **Literacy**
- Access to health care
- Quality of health care
- **Political will**

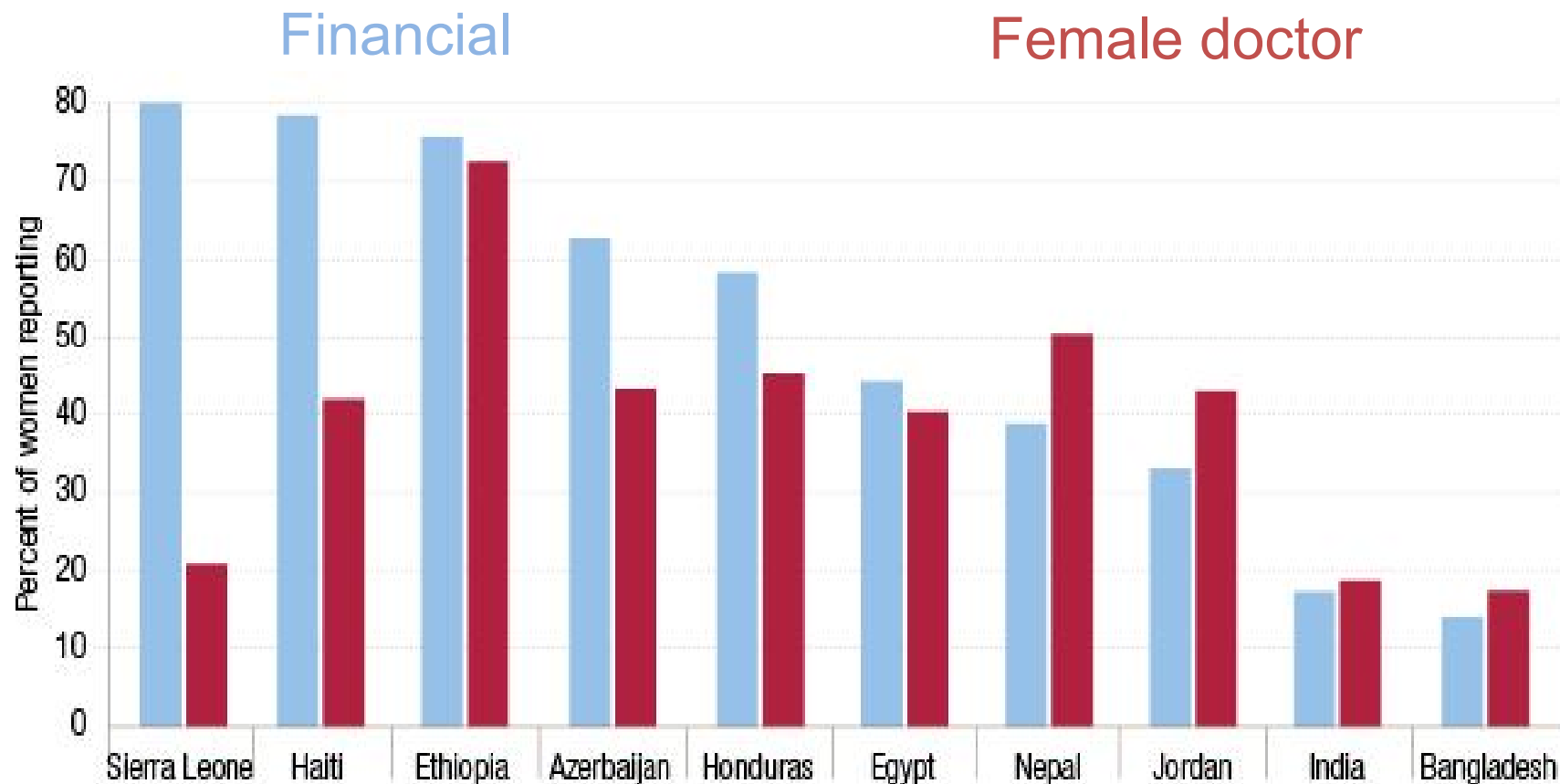
Regional Variation in MMR: Russia



The poor are hardest hit



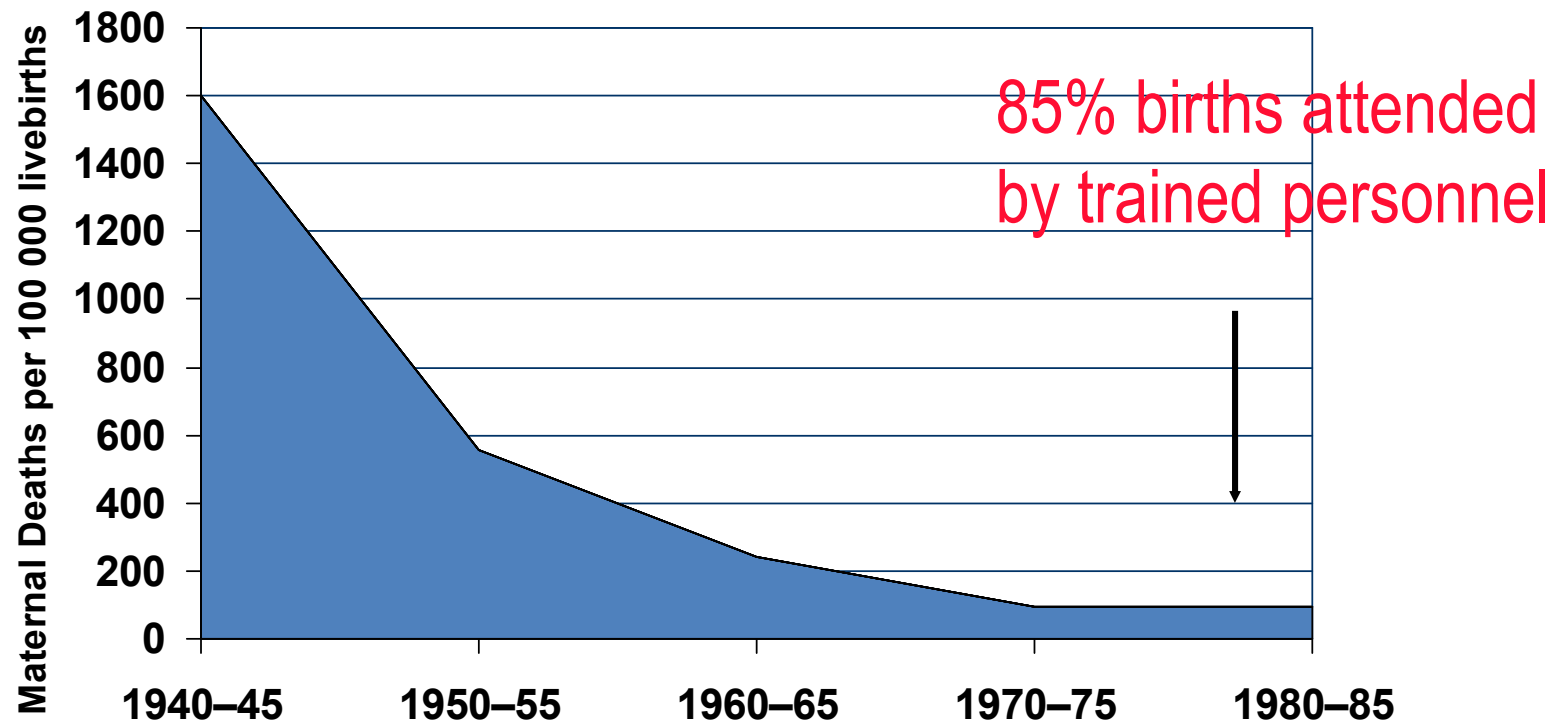
Blocks to access to health care



Source: UN Women elaboration using MEASURE DHS 2010.

Note: Data refer to the most recent year available (2004–2008). Values calculated for women aged 15 to 49 years.


Maternal Mortality Reduction Sri Lanka 1940–1985



Maternal Mortality Reduction Sri Lanka 1940–1985



Health system improvements:

- Introduction of system of health facilities
- Expansion of midwifery skills
- Decreased use of home delivery and delivery by untrained birth attendants
- Spread of family planning
- Improvement in literacy
- Political will  crucial factor

What works?



- Matlab Bangladesh
- Investment in midwives,
emergency obstetric care
safe termination of pregnancy
are always important
- But also need
 - Expansion of female education
 - Better finances for poor
 - Poverty reduction

Factors (Matlab)



- Mortality 3 times lower in women who had at least 8 years education
- Women in poorest quintile had double the mortality compared to those in the richest
- Multivariate analysis showed that poverty appeared to affect outcome via education

Interventions: Traditional Birth Attendants



Advantages

- Community-based
- Sought out by women
- Low tech
- Teaches clean delivery

Disadvantages

- Technical skills limited
- May keep women away from life-saving interventions due to false reassurance

Interventions: Traditional Birth Attendants



Conclusion:

TBAs are useful in the maternal health network, but there will not be a substantial reduction in maternal mortality by TBAs delivering clinical services alone

Global Causes of Maternal Mortality



Table 4 Estimated incidence of major global causes of *Direct* maternal deaths: 2000^{4*}

Cause	Incidence of complication (% of live births)	Number of cases (2000)	Case fatality rate	Maternal deaths (<i>n</i>)	Percentage of all <i>Direct</i> deaths (%)
Haemorrhage	10.5	13,795,000	1.0	132,000	28
Sepsis	4.4	5,768,000	1.3	79,000	16
Preeclampsia, Eclampsia	3.2	4,152,000	1.7	63,000	13
Obstructed labour	4.6	6,038,000	0.7	42,000	9
Abortion	14.8	19,340,000	0.3	69,000	15

* These estimates have been developed for WHO calculations of the global burden of disease and are based upon both literature review and expert consensus; the full results will be published in future issues of the World Health Report

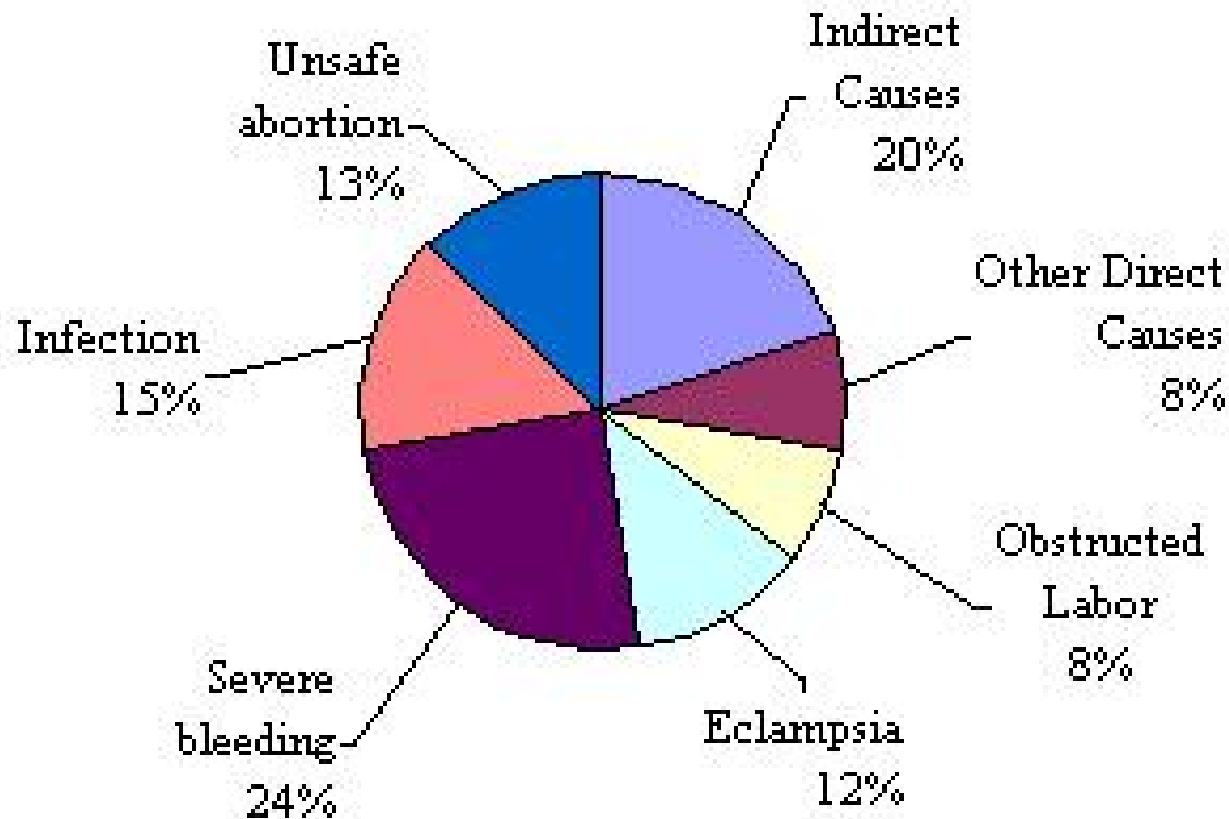
Management of PPH



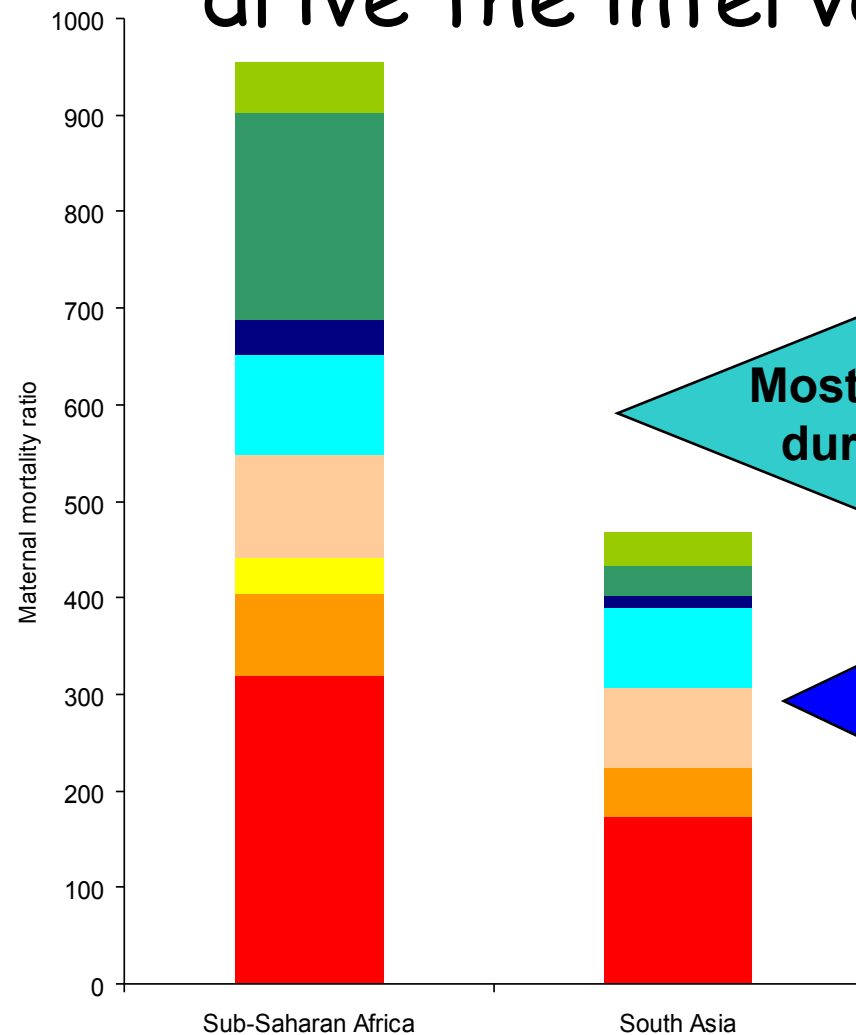
Causes of Maternal Mortality



Causes of Maternal Death Worldwide



The causes of maternal death should drive the interventions



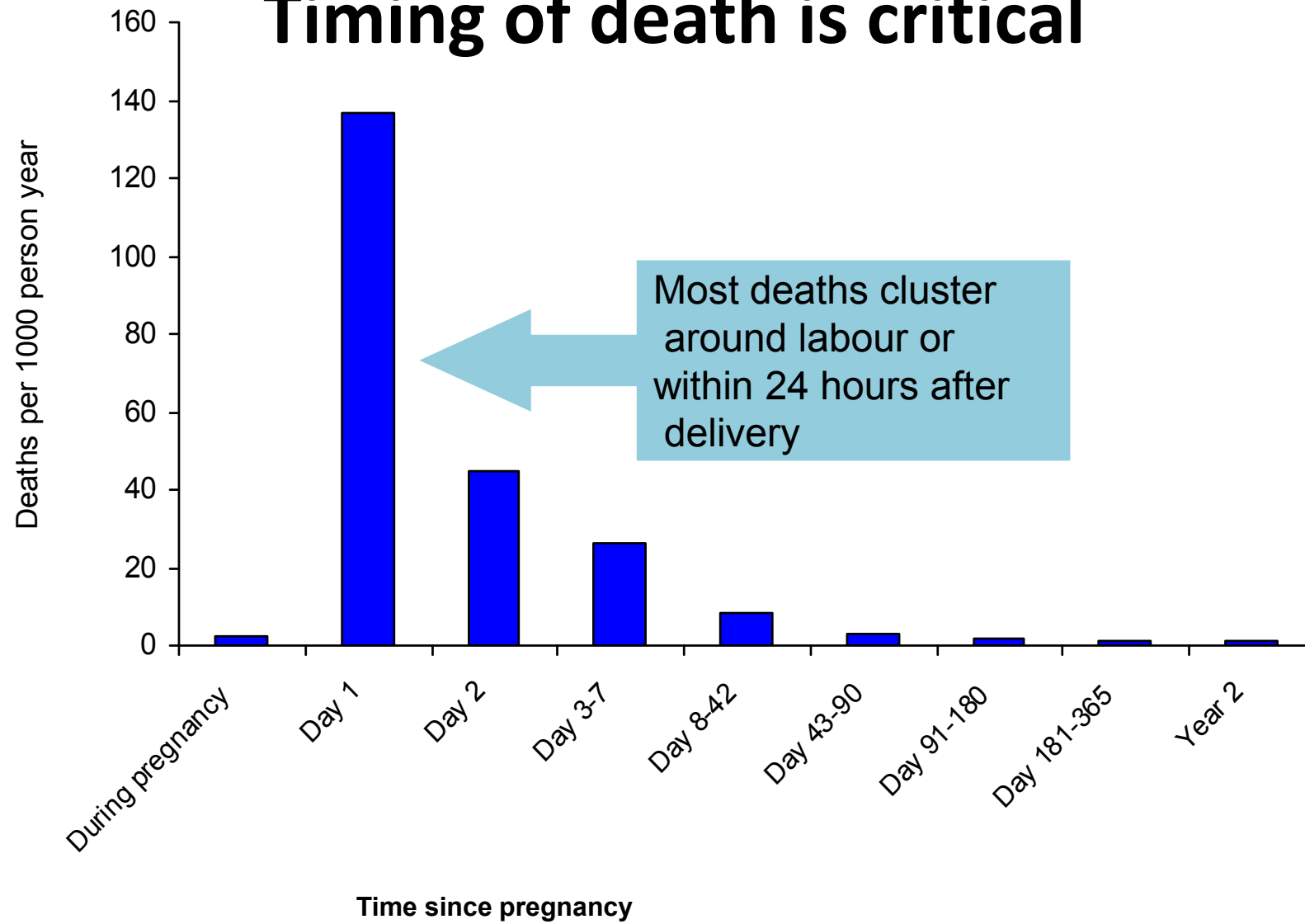
Most problems can be prevented or treated during delivery or immediate postpartum

Most problems cannot be predicted or prevented ante-natally

Excessive bleeding is the main cause of death

- Haemorrhage
- Sepsis/Infection
- Other direct
- Indirect causes
- Hypertensive diseases
- Obstructed labour
- Abortion
- Unclassified

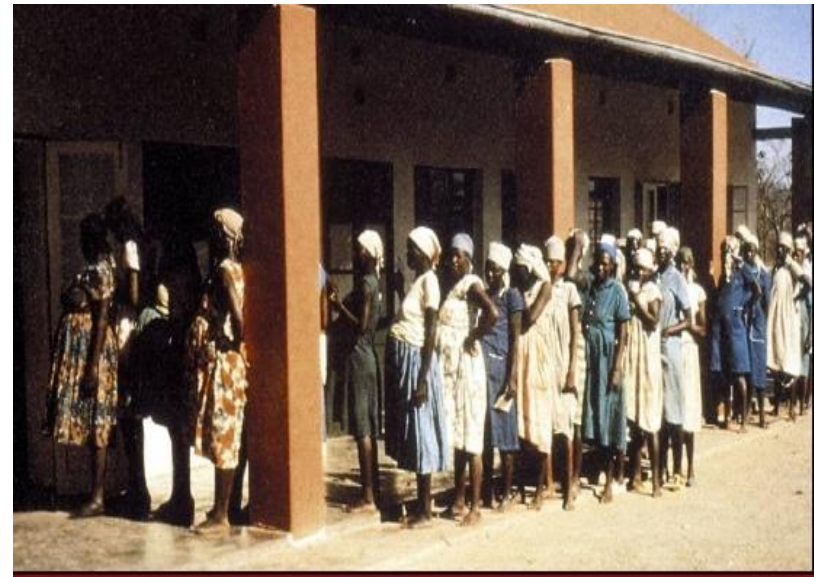
Timing of death is critical



The 3 Delays Model



- Delay in decision to seek care
- Delay in reaching health care
- Delay in receiving health care



But WHY Do These Women Die?



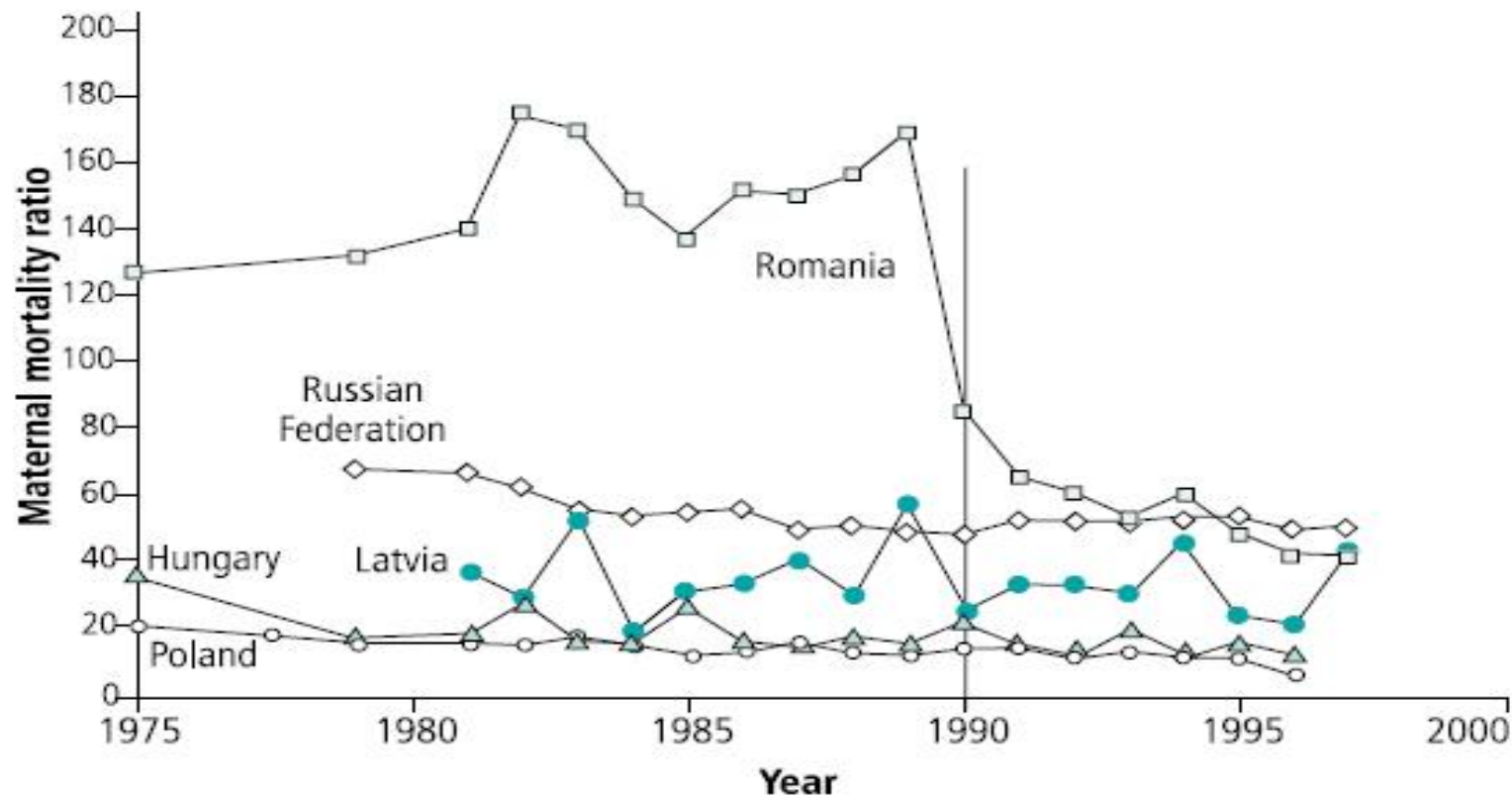
Three Delays Model

- **Delay in decision to seek care**
 - Lack of understanding of complications
 - Acceptance of maternal death
 - Low status of women
 - Socio-cultural barriers to seeking care
- **Delay in reaching care**
 - Mountains, islands, rivers — poor organization, transport
 - Lack of escalation pathways
- **Delay in receiving care**
 - Supplies, personnel
 - Poorly trained personnel with punitive attitude
 - Finances

Trends in Maternal Mortality



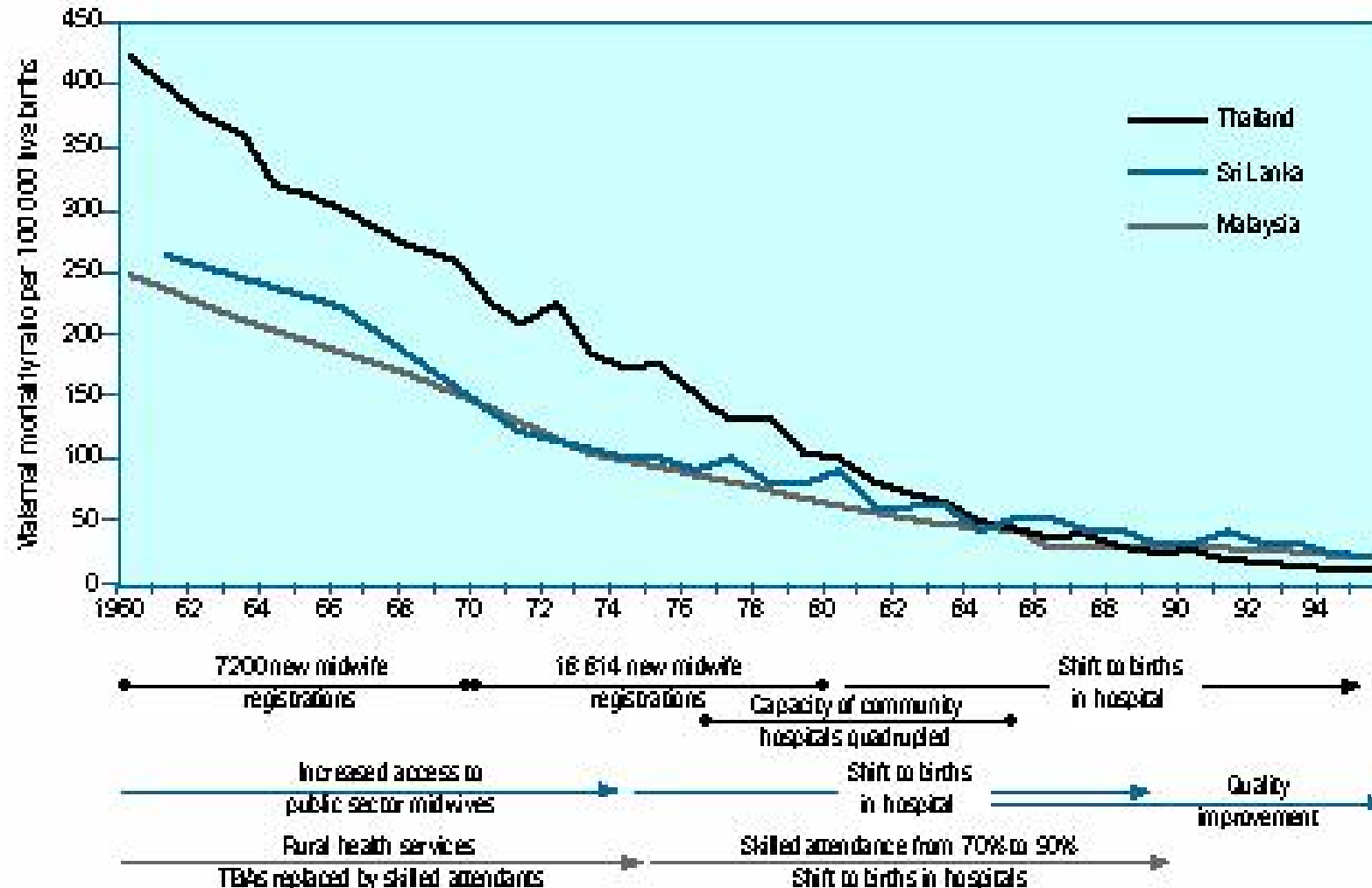
Annex Fig. C. Trends in maternal mortality, 1975–97, for selected countries with vital registration in Eastern Europe^a



Trends in Maternal Mortality



Figure 4.2 Maternal mortality since the 1960s in Malaysia, Sri Lanka and Thailand

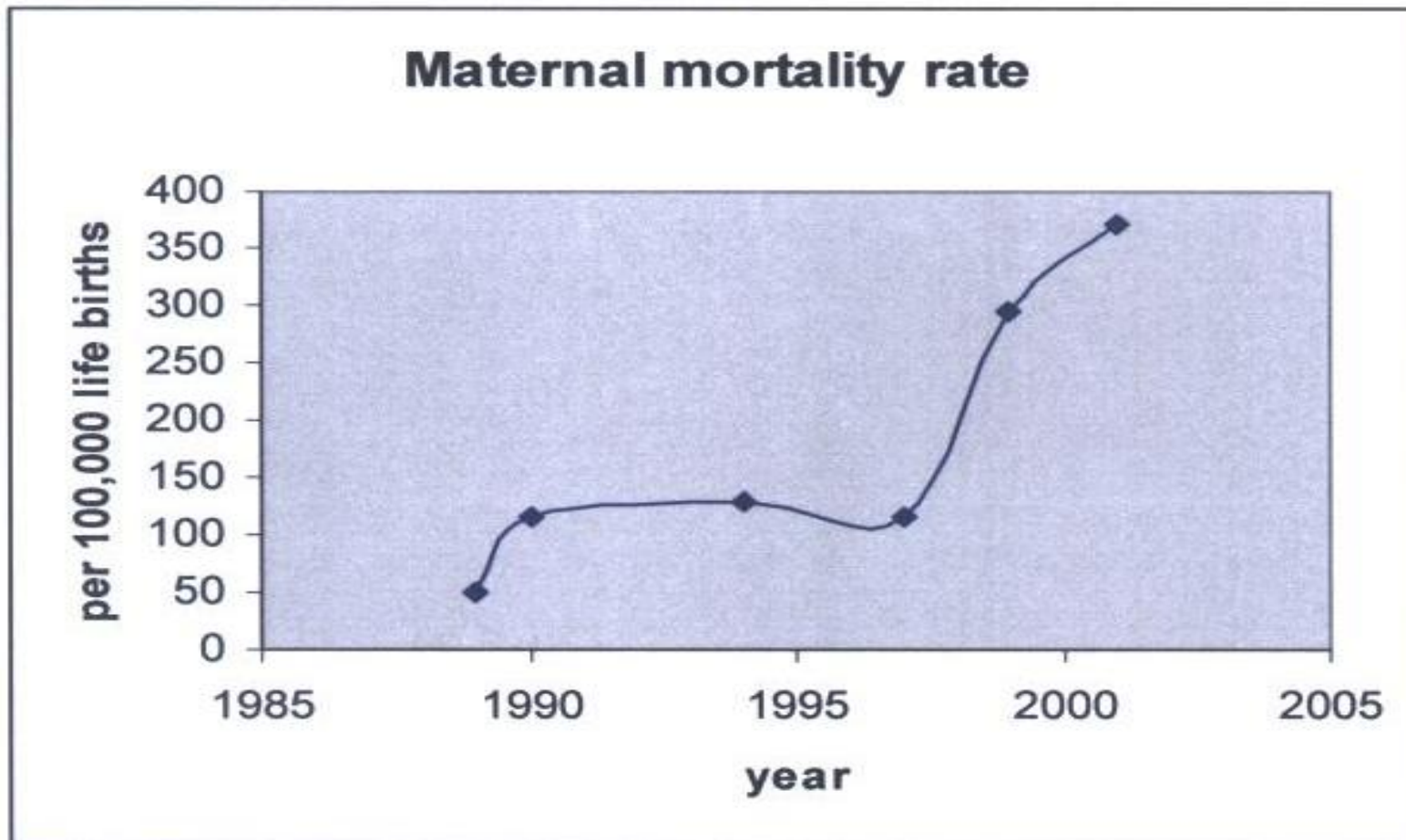


Source (3).

Maternal Mortality in Iraq



Figure 2: Maternal mortality rate.



A Continuum of Maternal Health



NORMAL PREGNANCY →
MORBIDITY → SEVERE MORBIDITY →
NEAR MISS → DEATH

An iceberg floating in the ocean. The tip of the iceberg, which is above the water line, is relatively small and jagged. The much larger part of the iceberg is submerged below the water line, appearing as a massive, dark blue mass. The sky is a pale, hazy blue, and the water is a deep, dark blue. The horizon line is visible in the distance.

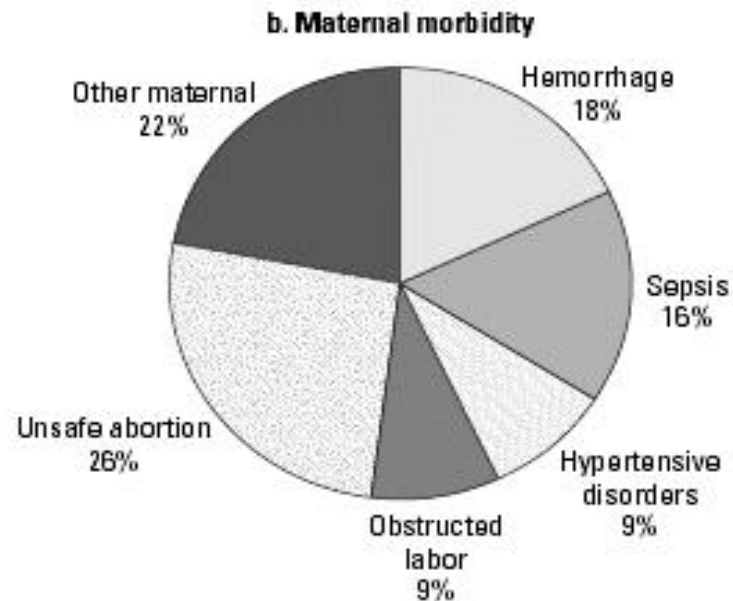
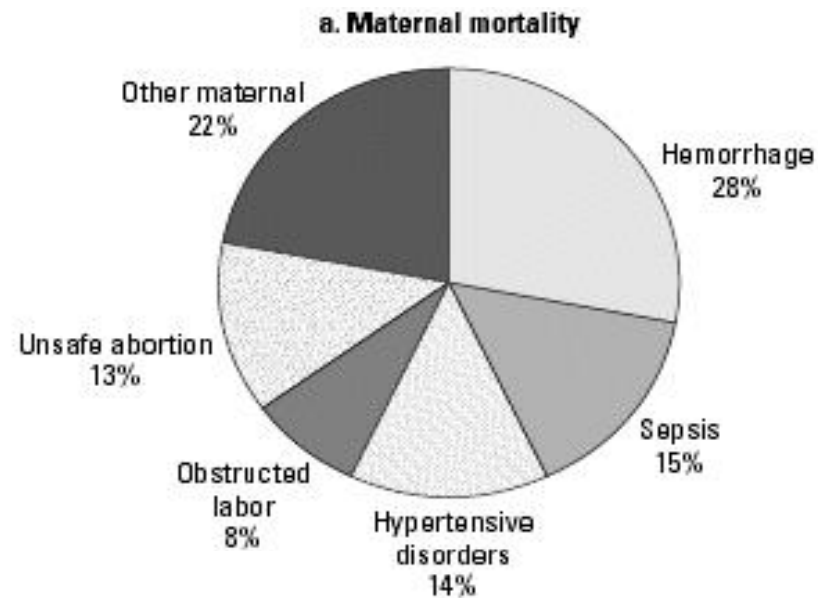
Mortality

Morbidity



Maternal mortality and morbidity

under resourced world



Waiting outside the fistula hospital



Is mortality just the tip of the morbidity iceberg?



- In the under resourced world
 - Yes
 - Similar problems
 - Lack of intervention
- In the resourced world
 - Maybe
 - But intervention means that most do not die
 - Different things cause morbidity
- So measure but it is a different question

14 categories of severe morbidity

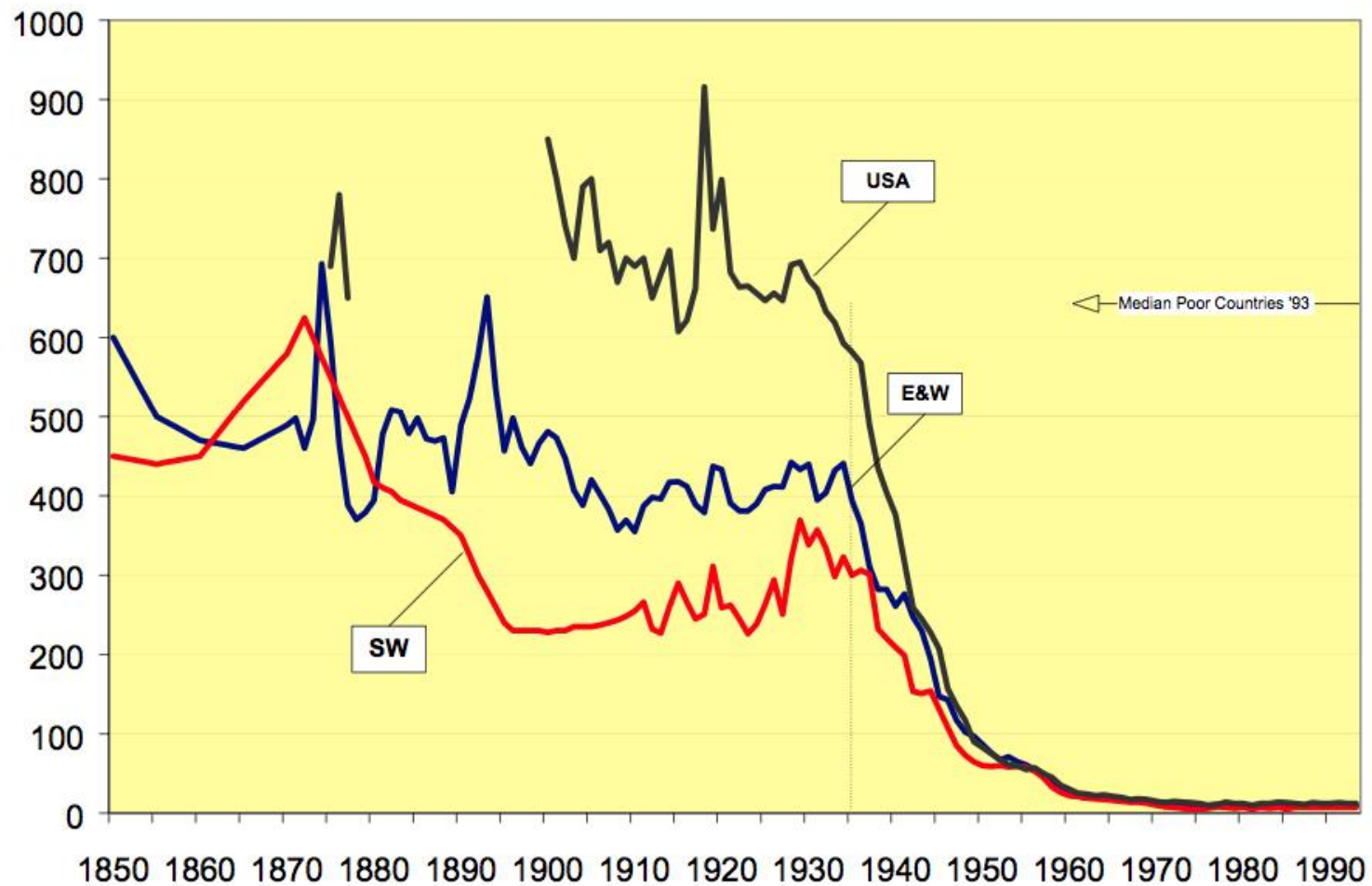


- Major haemorrhage
- Eclampsia
- Renal/liver dysfunction
- Cardiac arrest
- Pulmonary oedema
- Respiratory dysfunction
- Coma
- Cerebrovascular event
- Status epilepticus
- Anaphylaxis
- Septicaemic shock
- Anaesthetic problem
- Pulmonary embolism
- ITU admission

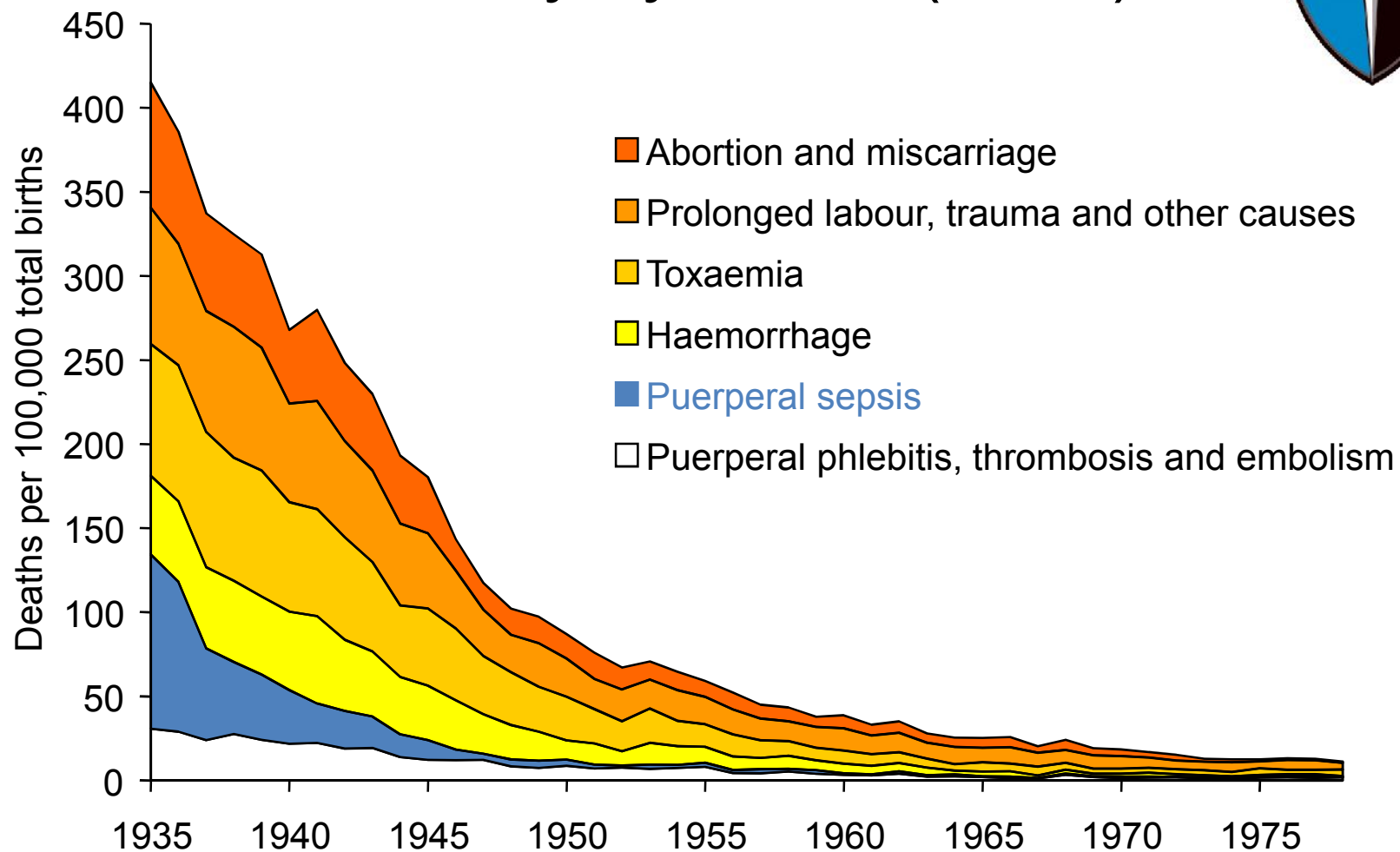
Mantel GD, Buchmann E, Rees H, Pattinson RC. *BJOG* 1998;**105**:985-90.



Figure 3. Maternal mortality from 1870 to 1993 in Sweden, the USA and England & Wales



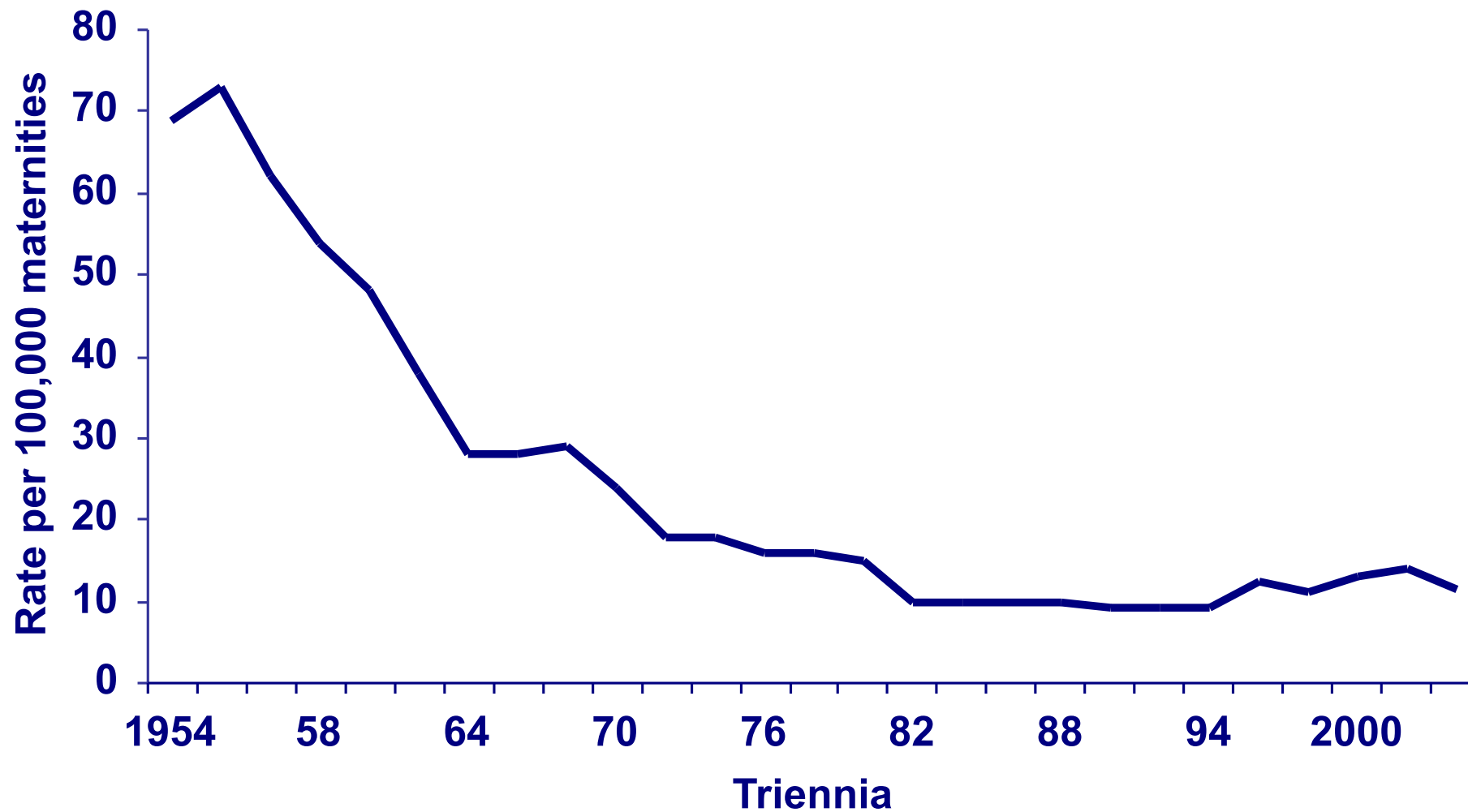
Maternal mortality by cause (E&W) 1935-78



Source: General Register Office and OPCS, Reproduced in Birth counts, Table A10.1.3.

Graph by Alison Macfarlane

UK Maternal Mortality rates 1952-2008



1940 - UK



- Maternal death rate 2.9 per 1000
 - Puerperal fever
 - Haemorrhage
 - Epilepsy
- Sulphonamides
- Blood.
- Ergometrine



NHS established 1948
1952 – first formal central collection of maternal deaths from local practice audits

Reduction in Maternal Mortality

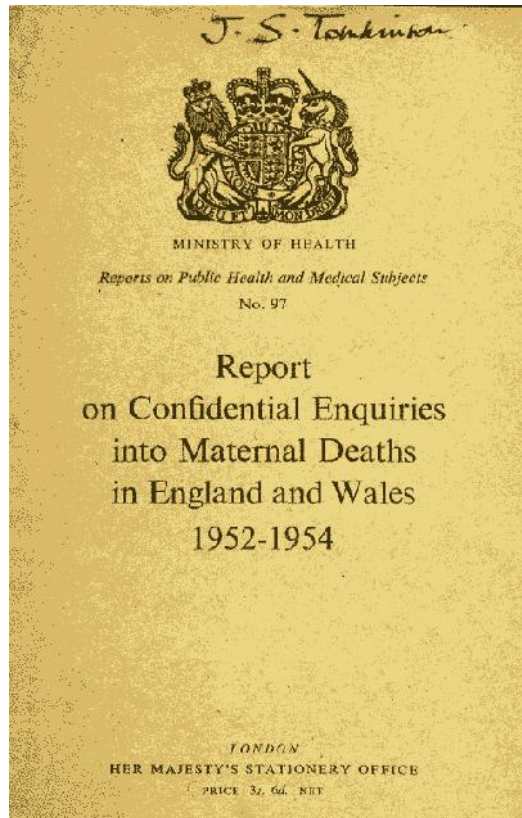


- External Developments
 - Influence of World War II
- Rescue
 - Antimicrobials
 - Safe Anaesthetics
 - Blood Transfusion

Maternal Mortality reports



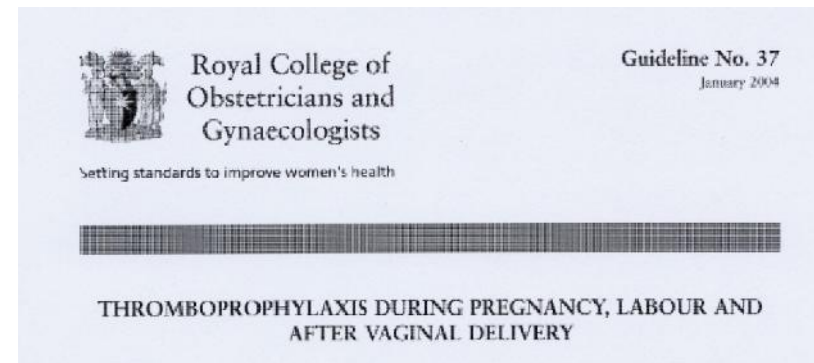
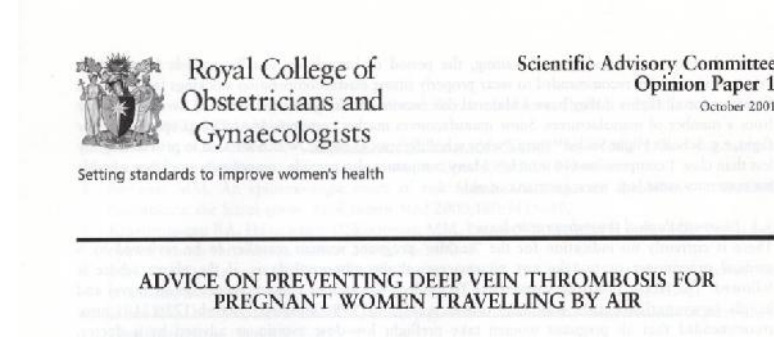
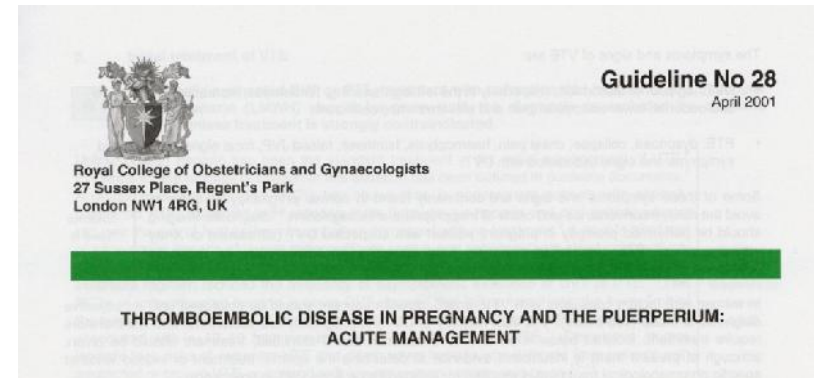
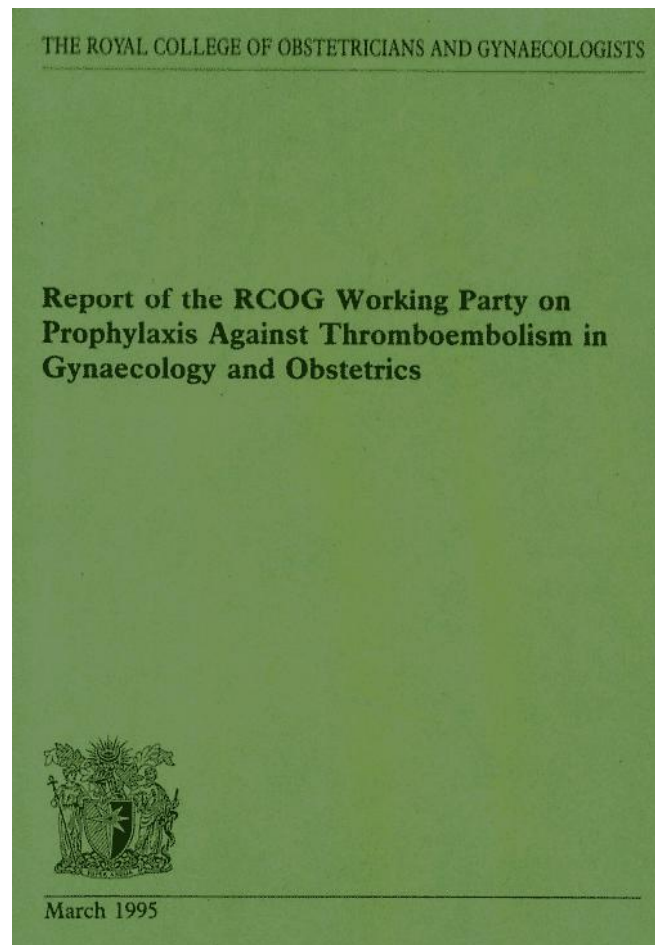
1952-54



2006-08

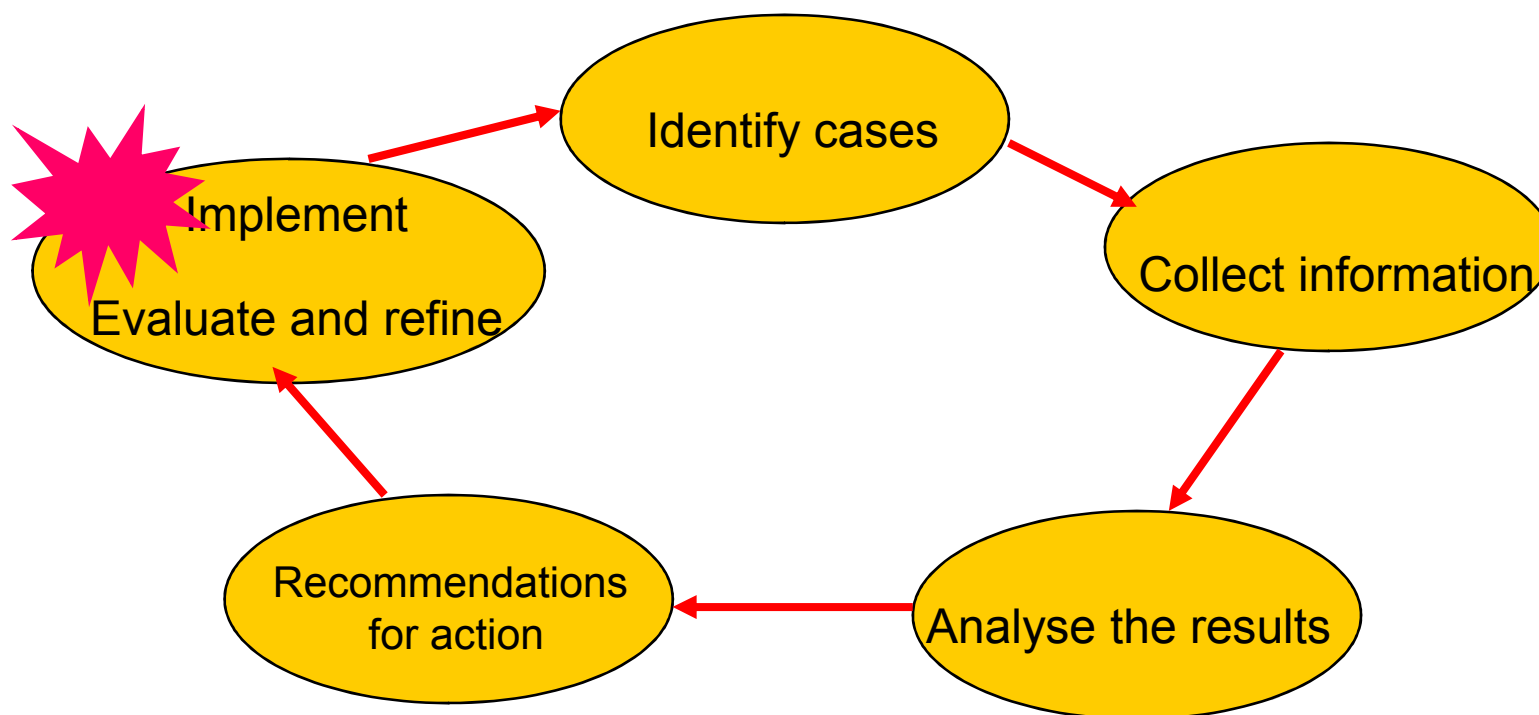


The effect of guidelines





The maternal mortality surveillance cycle



Types of Maternal Death



- *Direct*
- *Indirect*
- *Coincidental* (fortuitous)
- *Late* (between 42 -365 days after delivery)

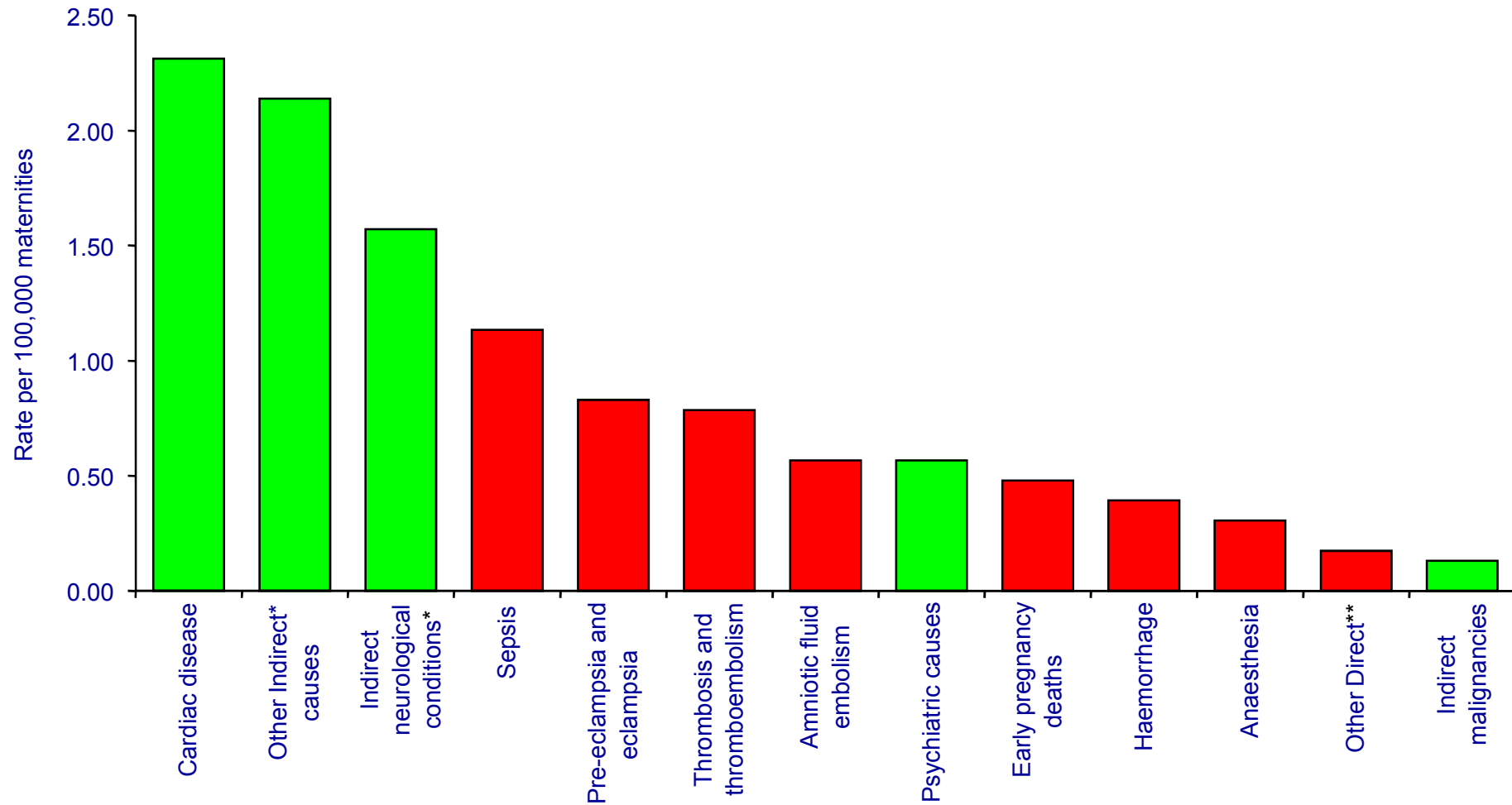


Impact of *Direct* and *Indirect* maternal deaths UK 2006-08

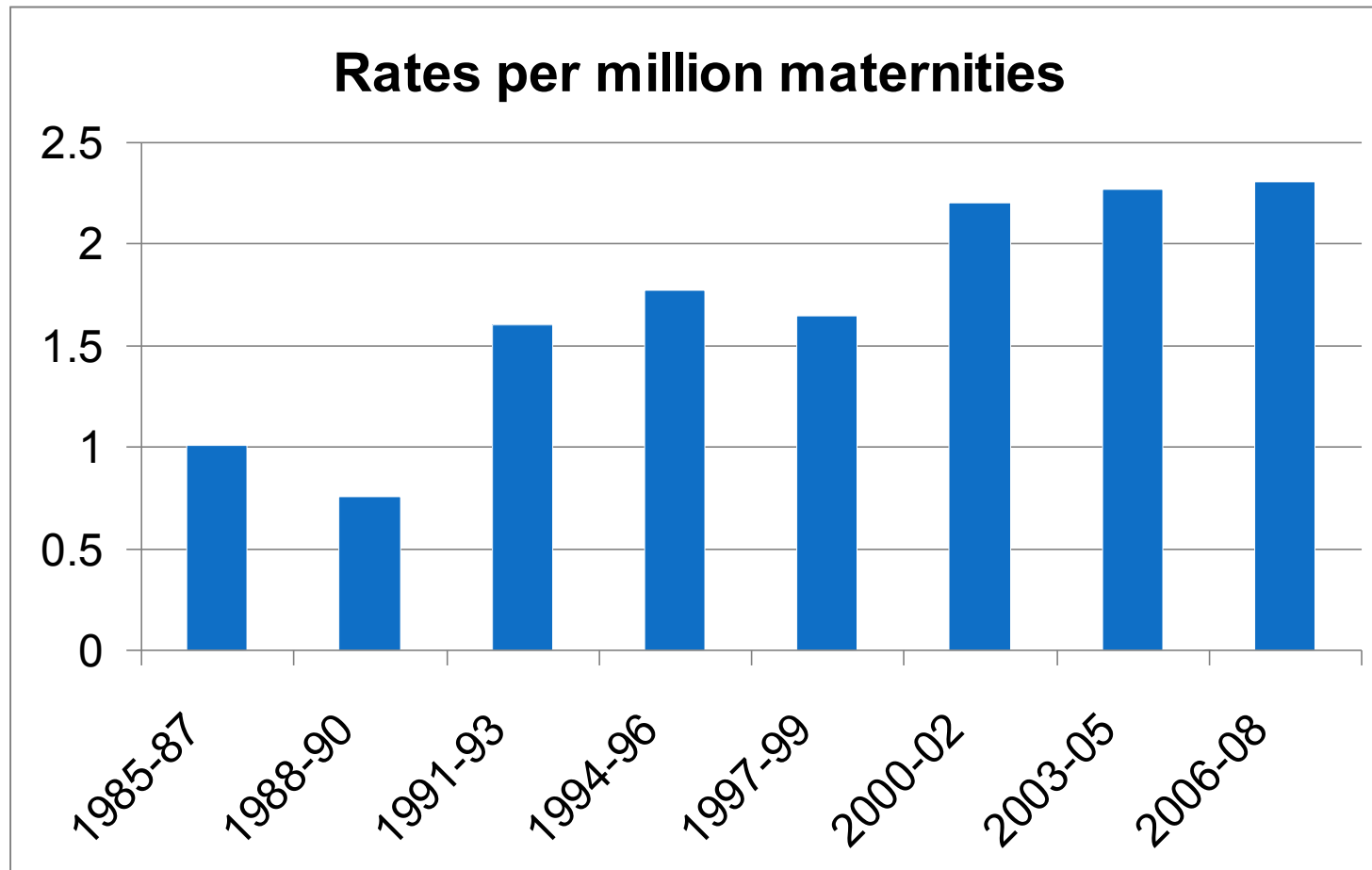
- 261 maternal deaths
- 147 live newborn deaths due to maternal causes
 - 408 lives lost
- 331 existing children lost their mother
- 70 existing children were in “care”



Leading causes of maternal deaths 2006-08 UK

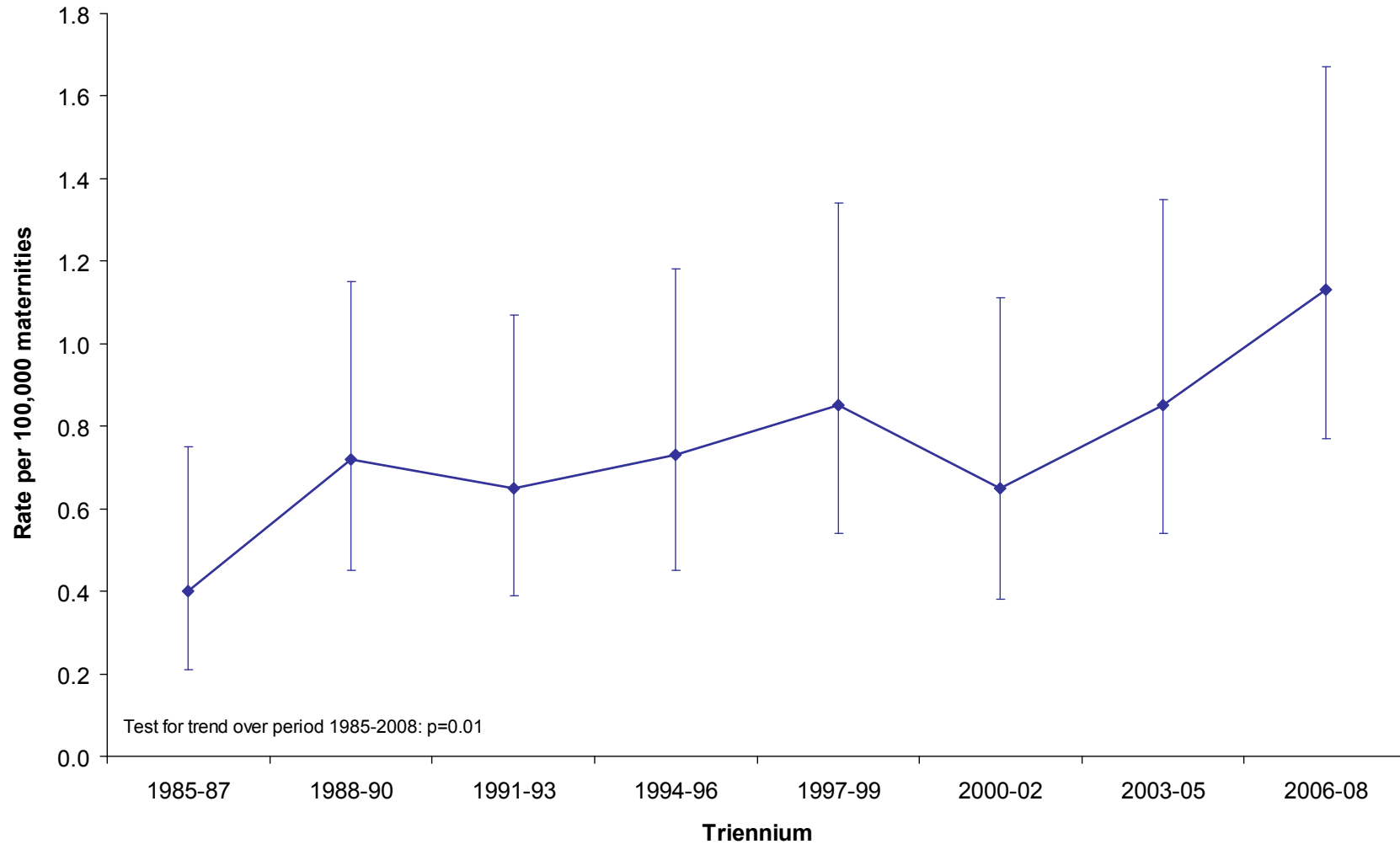


Cardiac Deaths



Deaths from genital tract sepsis

Rates per 100,000 maternities; United Kingdom 1985-2008



Numbers of maternal death



	1950-52	2006-08
• Hypertensive disease	246	19
• Haemorrhage	188	9
• Abortion	153	11
• Thromboembolism	138	18
• Anaesthesia	49	7
• Sepsis	42	26

Method of maternal suicide during pregnancy and up to 6 months after delivery UK 2006-2008



Cause of death	<i>n</i>	%
Hanging	9	31
Jumping from a height	9	31
Cut throat/stabbing	1	3
Self immolation	3	10
Drowning	2	7
Carbon monoxide	1	3
Ingesting of bleach	1	3
Overdose	3	10
Total	29	100

90% violent death

1997 – 2005 74%

Women who died by suicide



Median 30 yrs (16 – 43) old

76% married / stable cohab

76% employed

41% educated A level (28% professional)

90% white

66% serious illness - 80% - 30yrs or older
- married, educated employed

31% substance misuse - single, unemployed, young



Why do mothers really
die?

Ageing and Reproduction



There have been significant societal changes in our reproductive patterns

In UK between 1985 and 2001,

- the number of babies born to mothers aged 35 years or more doubled

- from **8% to 16%**

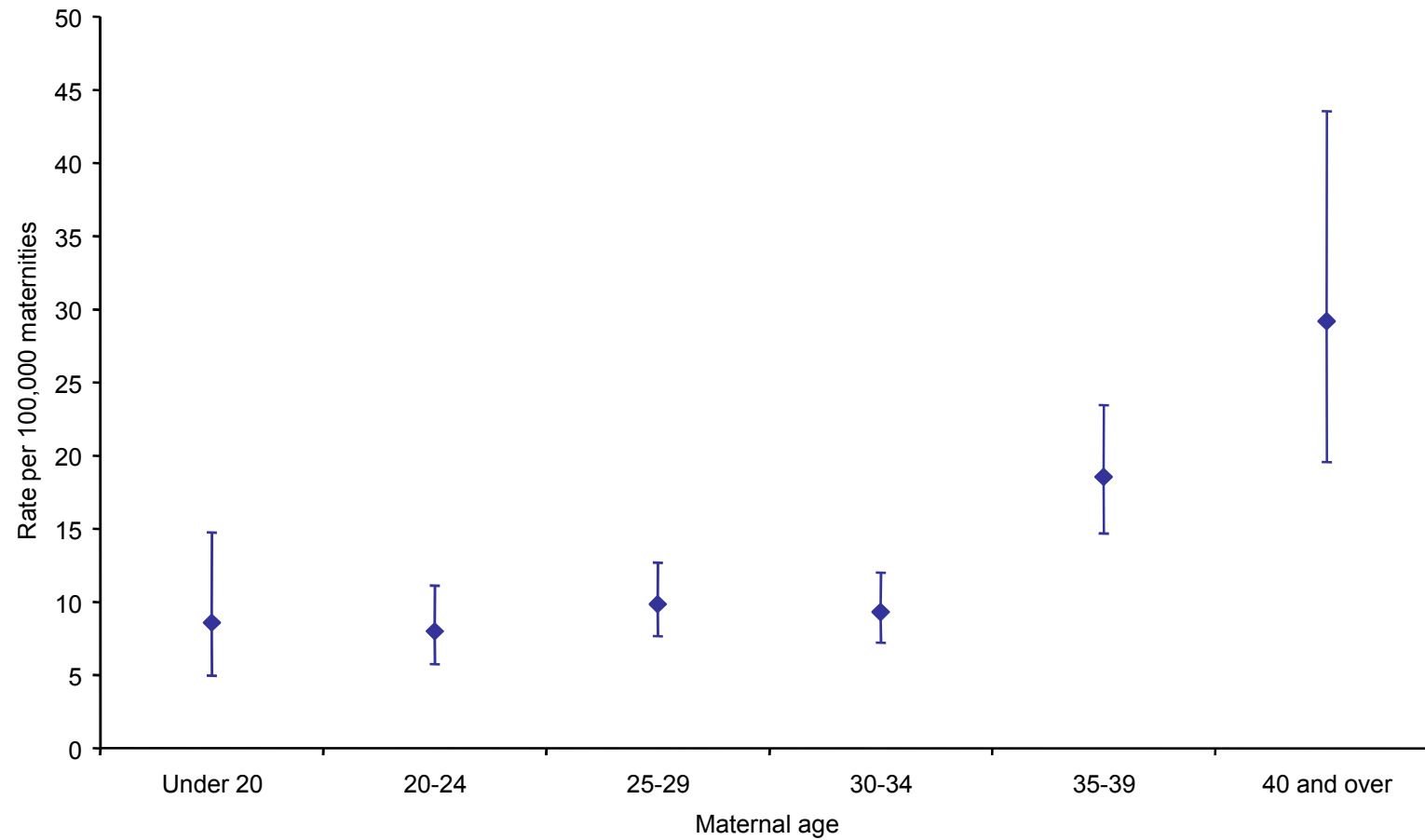
Increasing birth rates in over 35s: 1994-2010



UK census data (723,200 births p.a.)

	1994	2004	2010	<i>Increase</i>
35-39	63061	102228	115800	83.6%
≥40	10729	20793	27700	158%

Maternal death rates by age UK 2006-08

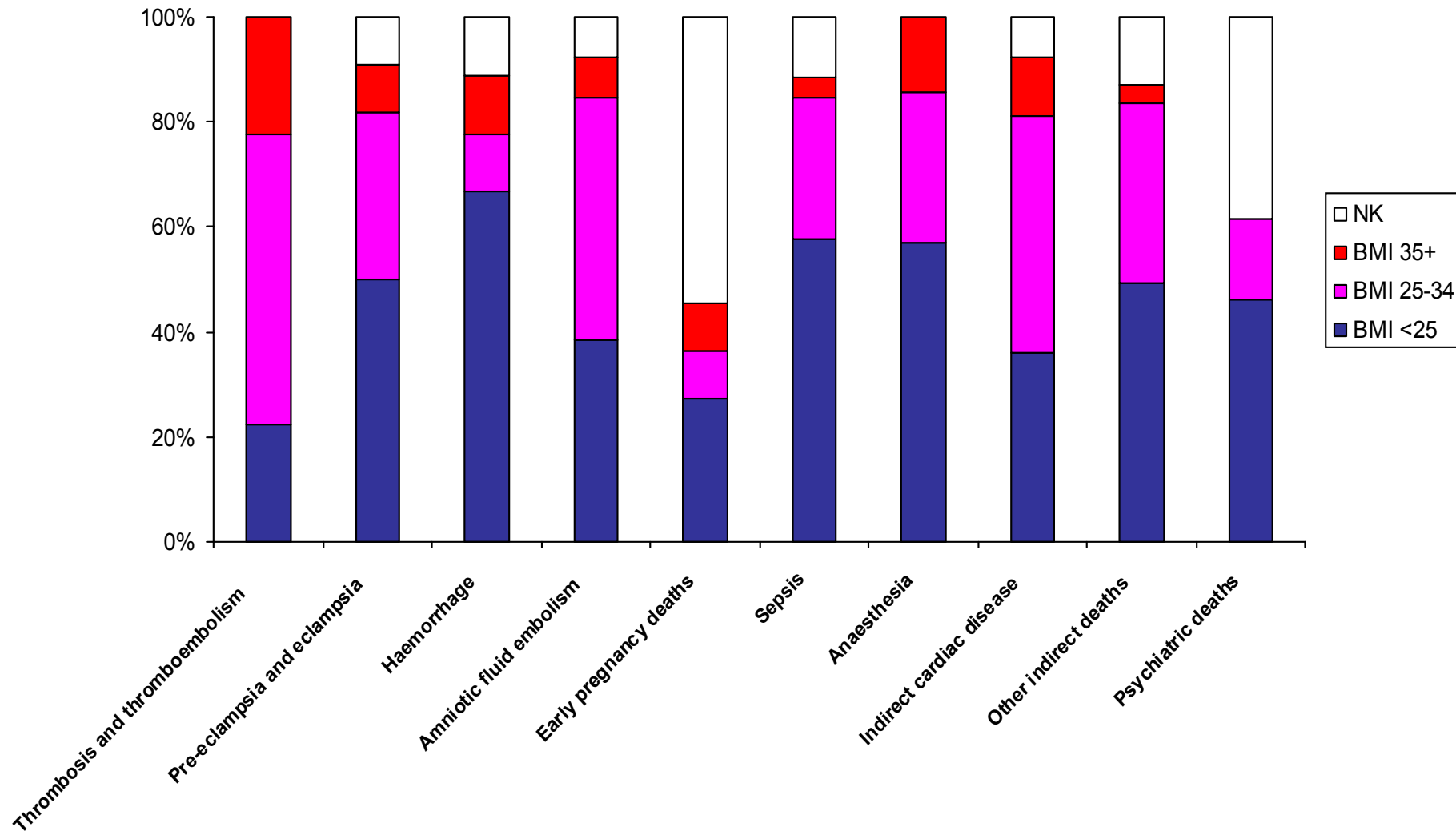


Percentage of maternal deaths by raised BMI UK 2006-08



	25+	30+	35+	Total
<i>Direct</i>	16	19	12	47%
<i>Indirect</i>	26	17	7	50%
Total	22	18	9	49%

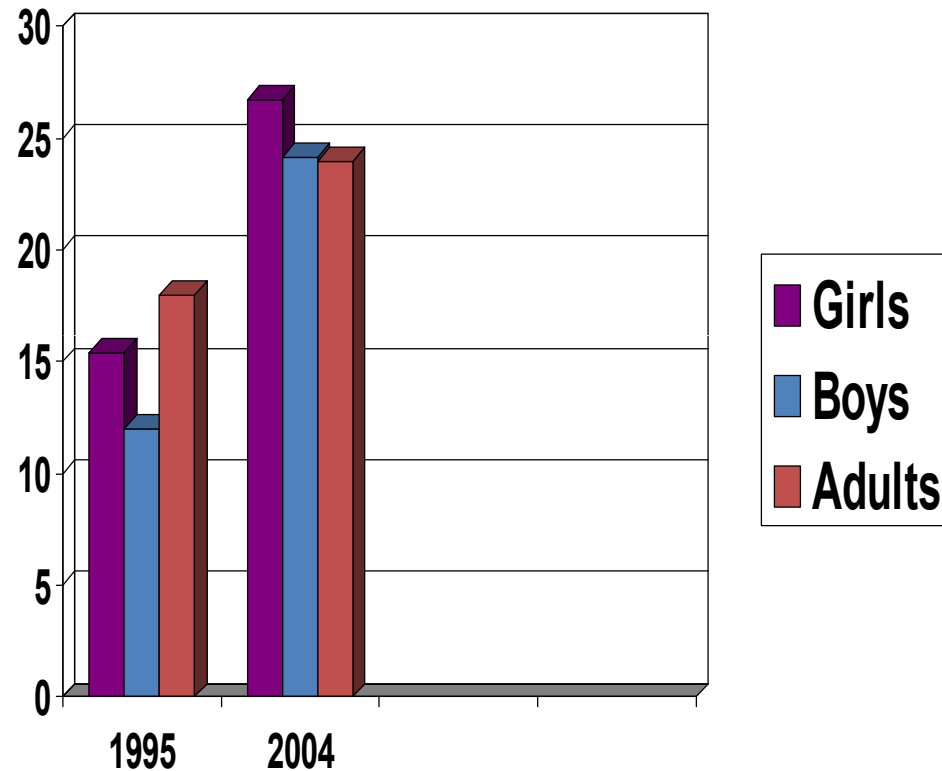
Maternal deaths obesity by cause UK 2006-08



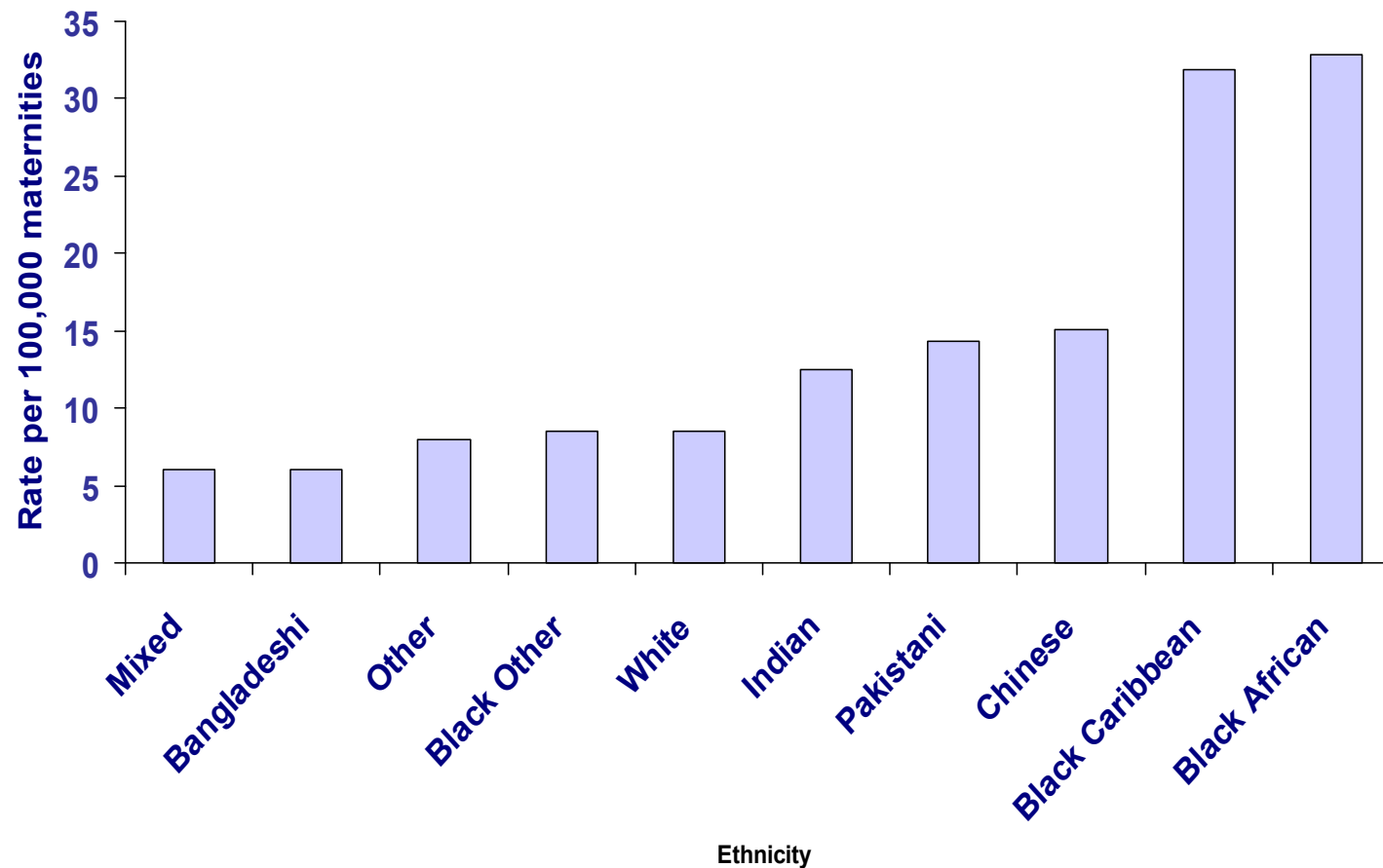
The Epidemic



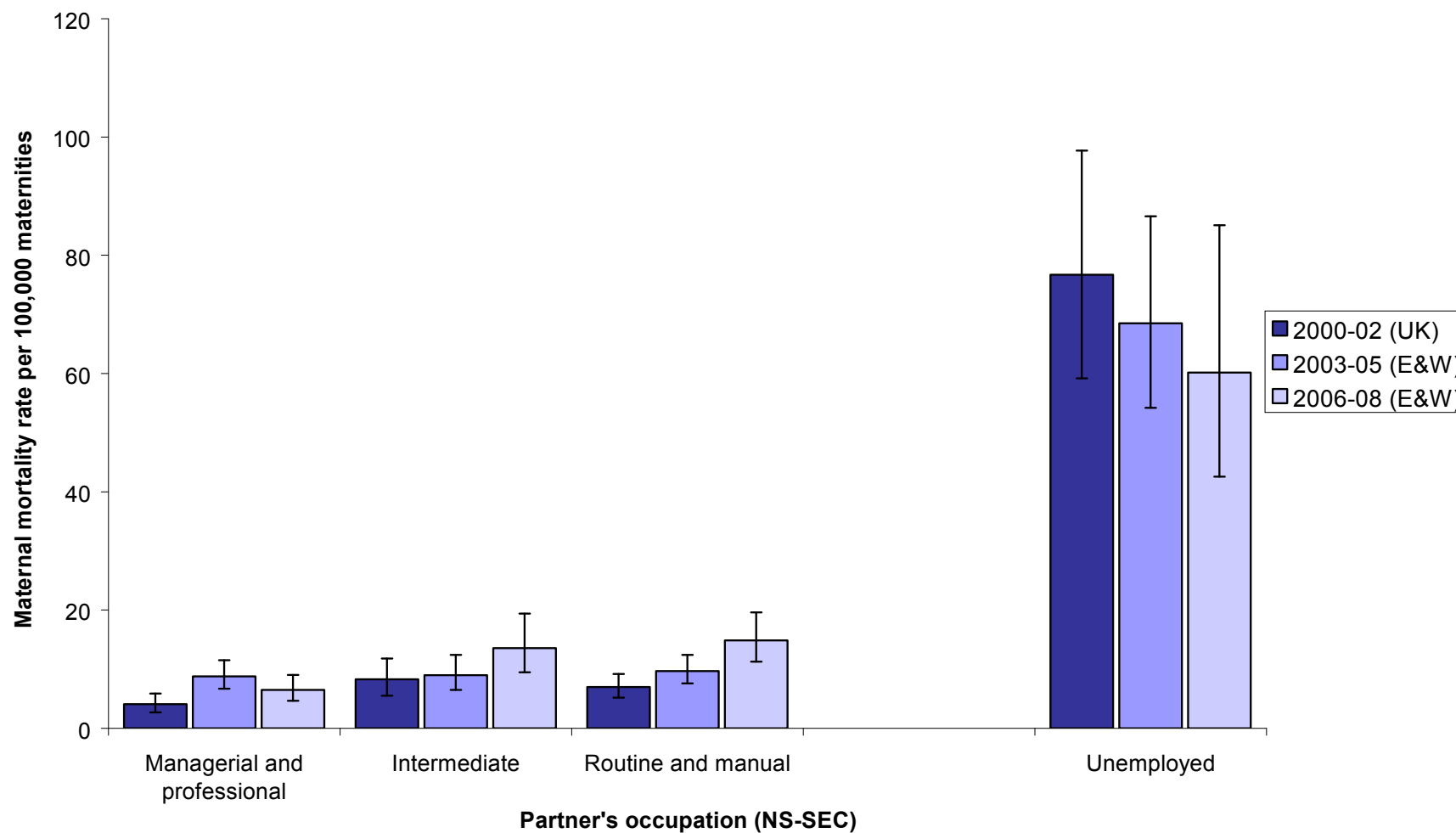
- “Child obesity has doubled in a decade”
- 21% increased risk of cancer in girls
- Double the risk of dying before 50



Maternal death rates by major ethnic group E & W 2006-08



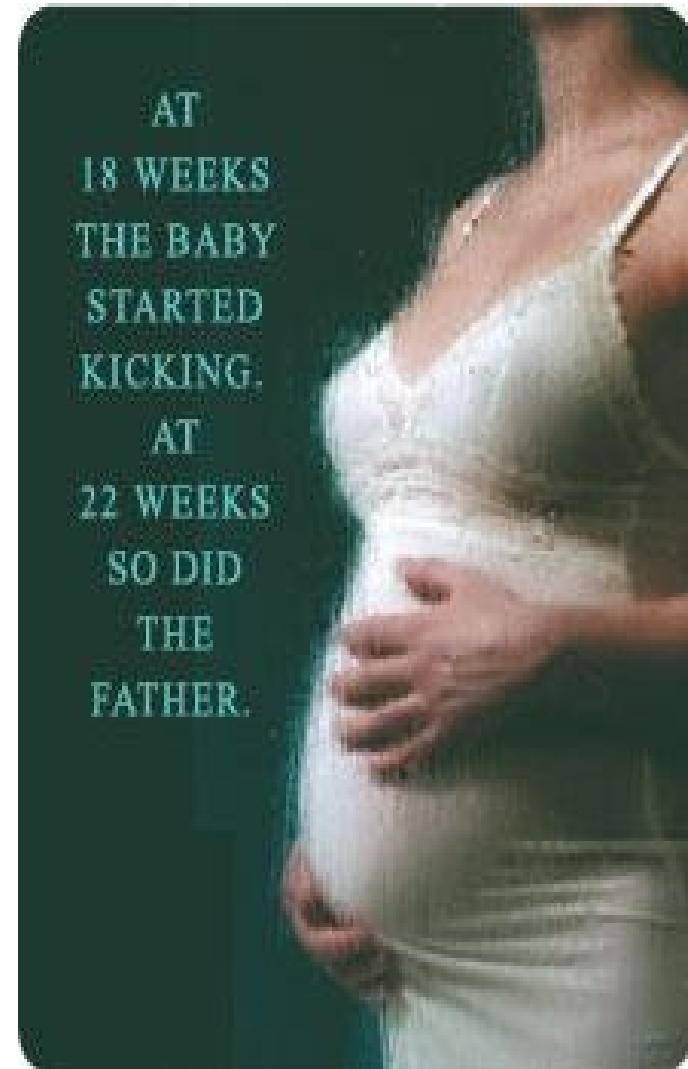
Maternal mortality rates by occupational group E&W: 2003-08.



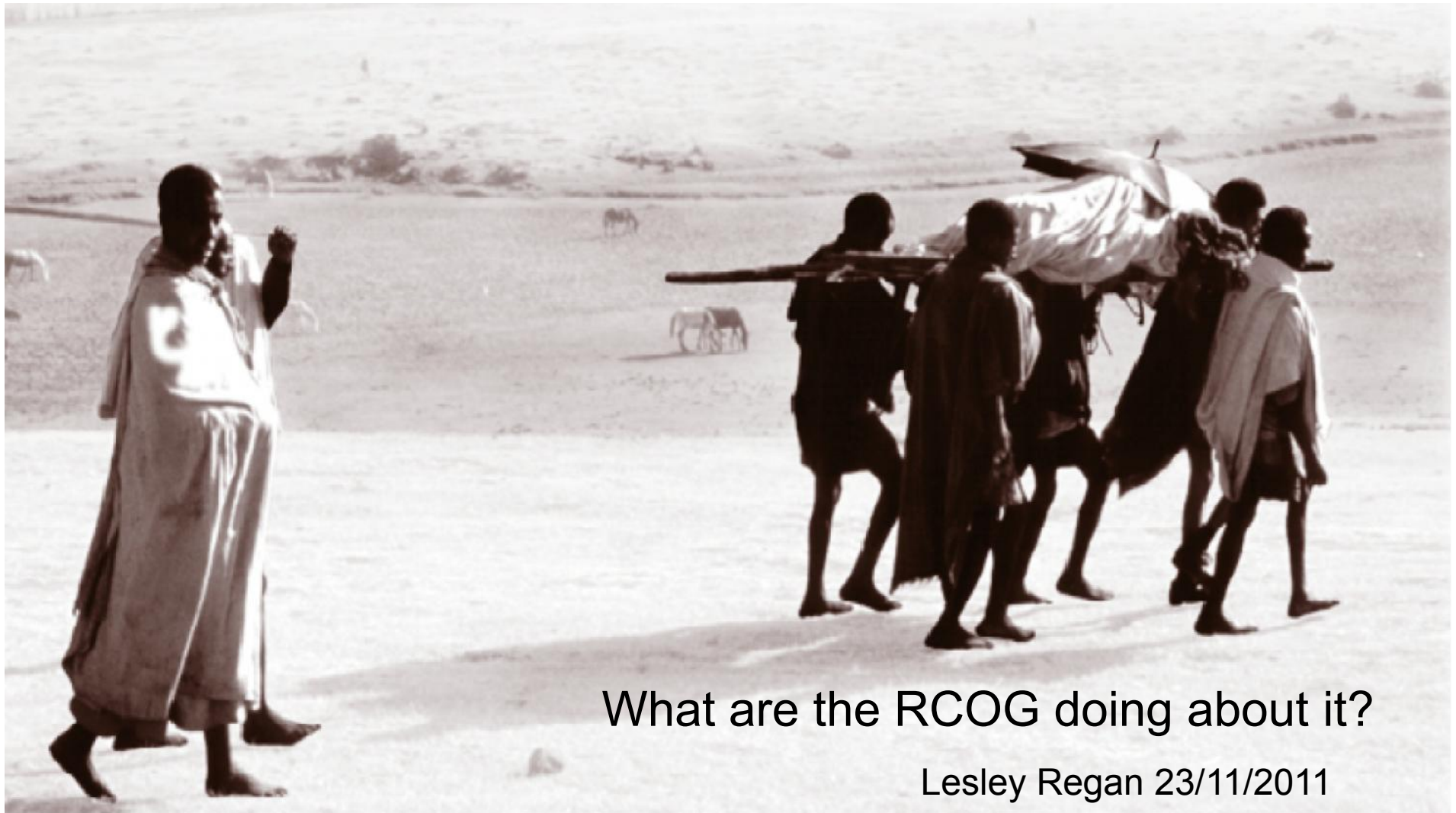
Domestic abuse



- 12% of all of the women known to this Enquiry.
- Eleven were murdered.
- 38% were poor attenders or late bookers for ANC (56% in the last Report.)
- 17 mothers declared that they had been sexually abused as a child by a relative, usually their father.



Global Advocacy



What are the RCOG doing about it?

Lesley Regan 23/11/2011

The purpose of advocacy is to change people's minds and persuade them to act differently



Over 500,000 women die in childbirth every year and 80% of these deaths are avoidable – not by the application of Western standards of health care but by the adoption of measures that lie within the fiscal resources of the societies in which they live.

That means that their deaths could be avoided if the leaders of their societies are persuaded to act differently.

We need to persuade them now.

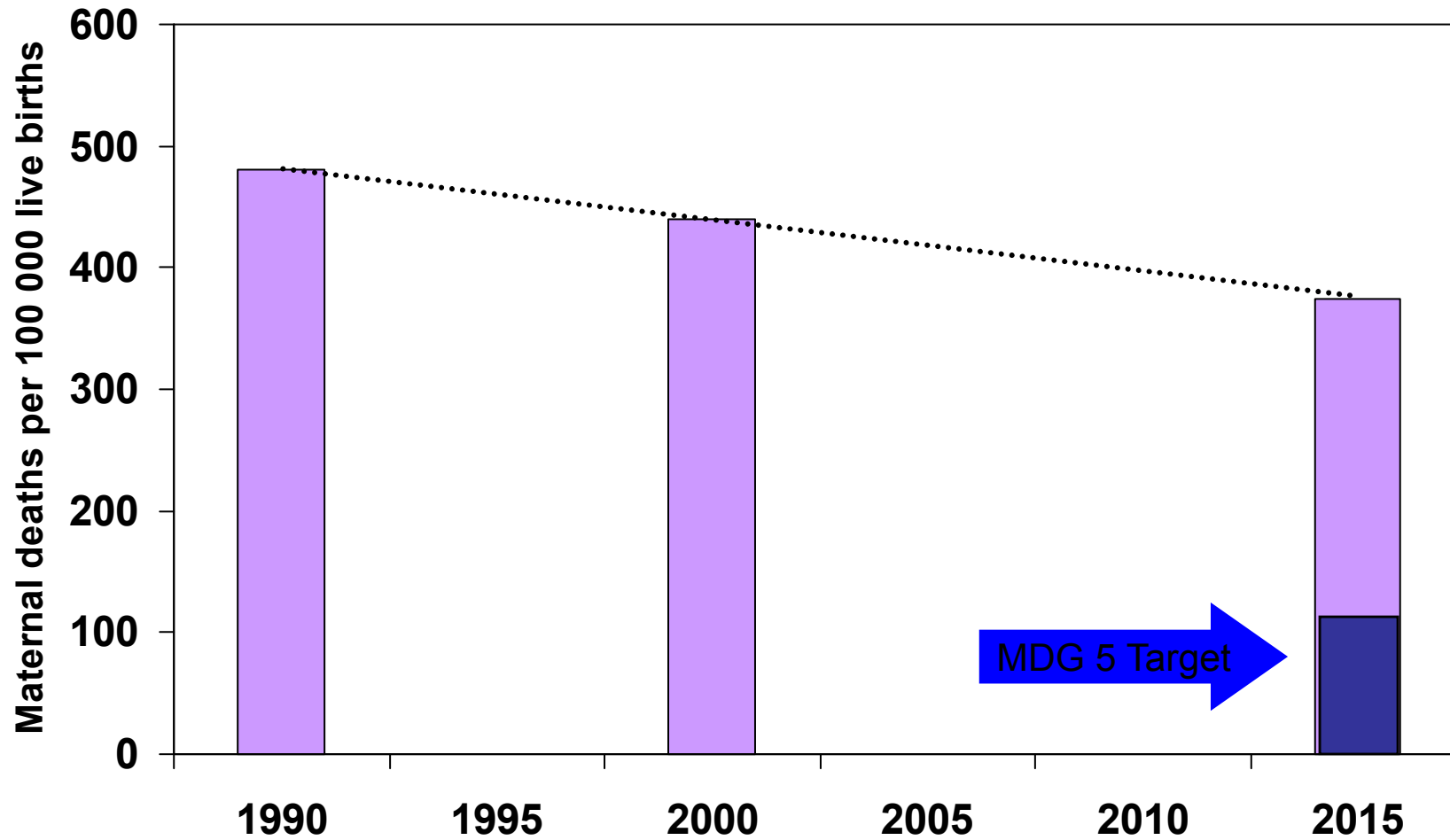
Lesley Regan
Chair RCOG Advocacy Group

RCOG Advocacy



- RCOG Advocacy works with other professional bodies and NGOs to raise awareness of global maternal and infant mortality
- Particular focus on Millennium Development Goals 4 and 5 – to reduce newborn and maternal mortality by 75% by 2015
but
- Progress has been disappointing

Have we made progress ?



Millennium Development Goals – by 2015



[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](#)

How can RCOG help?



- We are a membership organisation at the front line of maternity care and the first to experience the problems of maternal mortality and morbidity
- This makes us ideal advocates in calling for more action to improve maternal and infant health
- RCOG can call upon membership of 12,000 in over 90 countries to influence global political decision making affecting mothers and babies everywhere
- Raising awareness of the problem is key

The Solutions



- Partnership
 - In country
 - With other agencies
- Ensure political and health ministry support
- Building national leadership and champions
 - Ensuring capacity building
 - Evidence based learning
 - Pilot then scaling up of education and training
 - Retaining what is good

Working in Partnership



Women, Midwife, TBA, Doctors, Local leaders, Politicians

- Instilling Trust
- Embedding a safety culture
- Learning and developing safer practices
- Risk assessment
- Designing care pathways and escalation
- Demonstrating improvements

Stop working in silos, think collaboratively

RCOG Country Partnerships



- Advocacy
- Technical Assistance
 - Life saving skills
 - EBL training
- Fellowship programme
- Strategic and programme work
 - Governments/local societies
 - Capacity Building
- Outcome assessment
 - Audit training

RCOG Agency Partnerships



Organisations we are currently working with:

- Department for International Development DfID
- International Federation of Obstetrics and Gynaecology FIGO
- International Confederation of Midwives ICM
- Women & Children First WCF
- White Ribbon Alliance WRA
- Liverpool School of Tropical Medicine LSTM
- London School of Hygiene and Tropical Medicine LSHTM
- Royal College of Midwives RCM Royal Society of Medicine RSM
- Royal College of Paediatrics & Child Health RCPCH
- NHS South Central Deanery
- THET WHO MCAI MSF MERLIN GLOWM UNFPA

THET multi-country partnership charged to spend DfID budget of £25m



- Improve access and quality of reproductive health services
- Build capacity of health systems
- Improve quality of training and education
- Promote progressive change and sustainability
- Audit outcomes

THET

Capacity Building and Sustainability in Leadership in Maternal and Infant Health in an Under-Resourced Environment



£1.8 million – concept paper accepted October 2011
next stage definitive grant proposal – in preparation

Partners

Royal College Obstetricians Gynaecologists

NHS South Central Deanery

Institute of Global Health Innovation Imperial (Lord Darzi)

Royal College Midwives

Association of Anaesthetists Great Britain & Ireland AAGBI

Women and Children First (WCF)

Royal Society of Medicine (RSM)

Country 1 Kampala Uganda

Country 2 Nairobi Kenya

Country 3 Tabora Tanzania

Country 4 Cambodia

Country 5 Kathmandu Nepal LRegan 2011

Country 6 South Africa

LRegan 2011

RCOG Global Projects



Life Saving Skills courses



- In collaboration with LSTM
 - DfID funding
 - £150,000 per country setup
 - Now in 12 countries and increasing
 - Training the Trainers
 - Sustainability
 - Malaysia – self sustaining
 - Expanding into Brunei and Myanmar
 - Libya – self sustaining (suspended)
 - Expanding into North Africa

Life Saving Skills courses



Fellowship programmes



- With VSO
 - 3mths to a year
- With RSM
 - 3mths to a year
- RCOG
 - Yearly programme at present
- Self developed

VSO/RCOG fellowships



- In 2011 there were **7 vacant roles to fill**
 - Kratie Province, Cambodia, 3 months, 10th Feb 2011
 - Stung Treng Province, Cambodia, 3 months, 10th Feb 2011
 - Banteay Meanchey Province, Cambodia, 3 months, 10th Feb 2011
 - Ethiopia, 6 months, 6th Feb 2011
 - Kenya, 12 months, 4th March 2011
 - Lesotho, 12 months, 3rd March 2011
 - Sierra Leone, 12 months, 20th Jan 2011



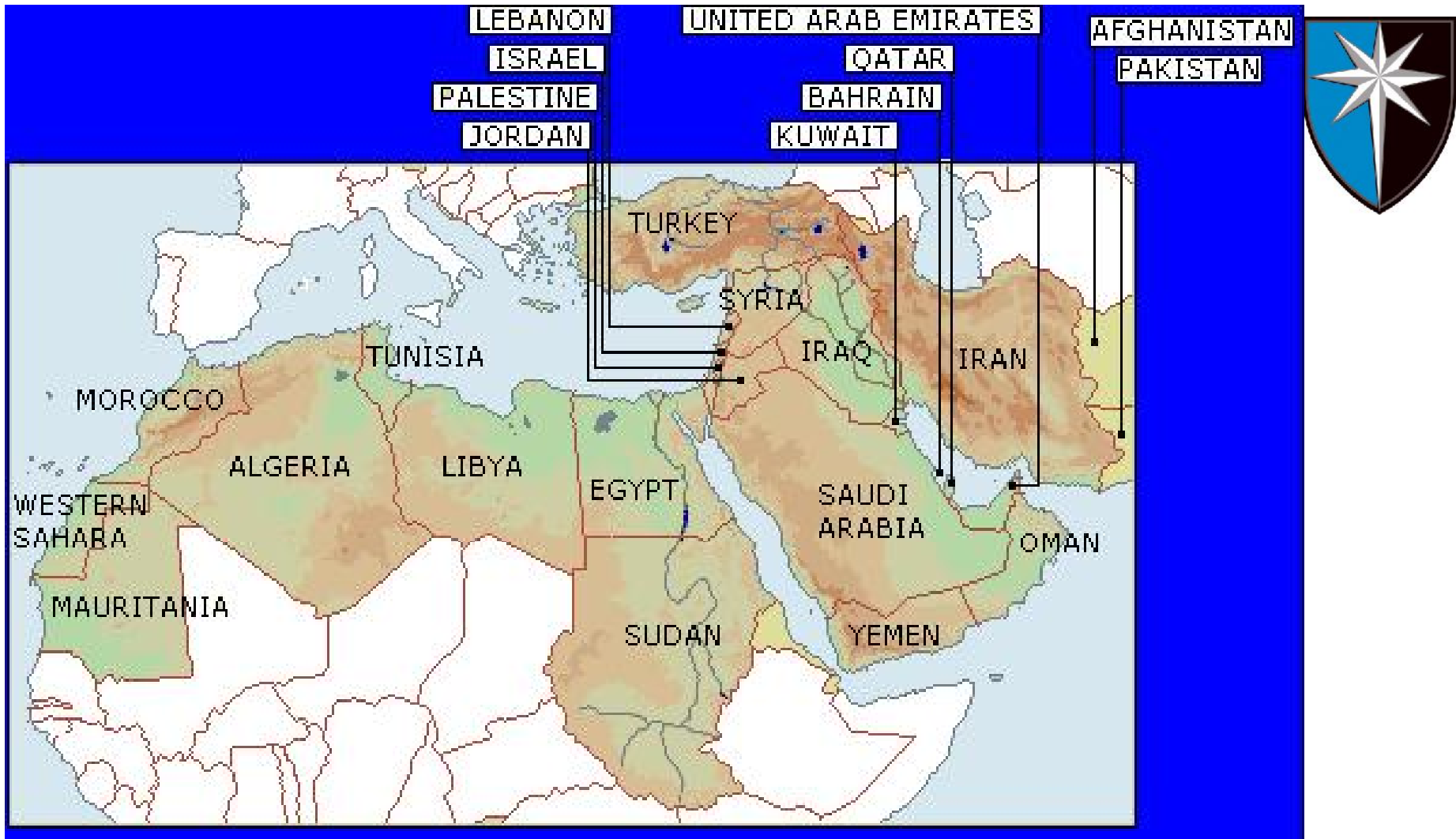
We are active in

Lithuania, Latvia, Kosovo,
Albania

Discussing links with

Turkey, Rumania, Hungry,
Russia

Kazakstan, Uzbekistan



We are active in

Libya (currently suspended), Egypt, Sudan, Abu Dhabi, Jordan, Kuwait, Iraq

Discussing links with

Lebanon, Oman, Turkey



We are active in

Afghanistan
Pakistan
India
Nepal
Bangladesh
Sri Lanka,
Malaysia
Singapore

Discussing links with

Myanmar
Bhutan

Map of sub-Saharan Africa

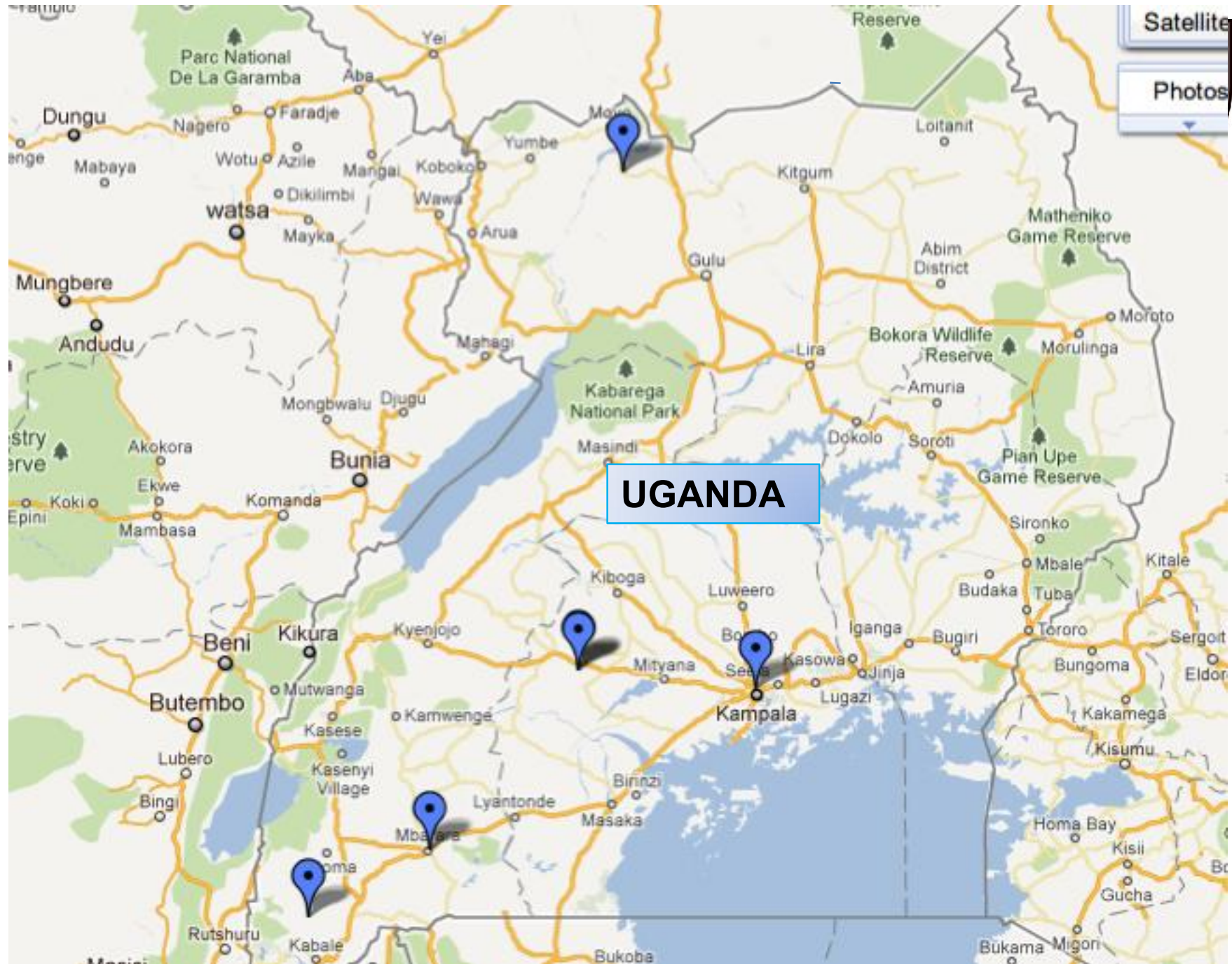


We are active in

Gambia
Sierra Leone
Nigeria
Ethiopia
Uganda
North Sudan
Kenya
Somaliland
Swaziland
Tanzania
Zimbabwe
Malawi
South Africa

Discussing links with

Ghana
Liberia
Equatorial Guinea
South Sudan
Rwanda,



UGANDA

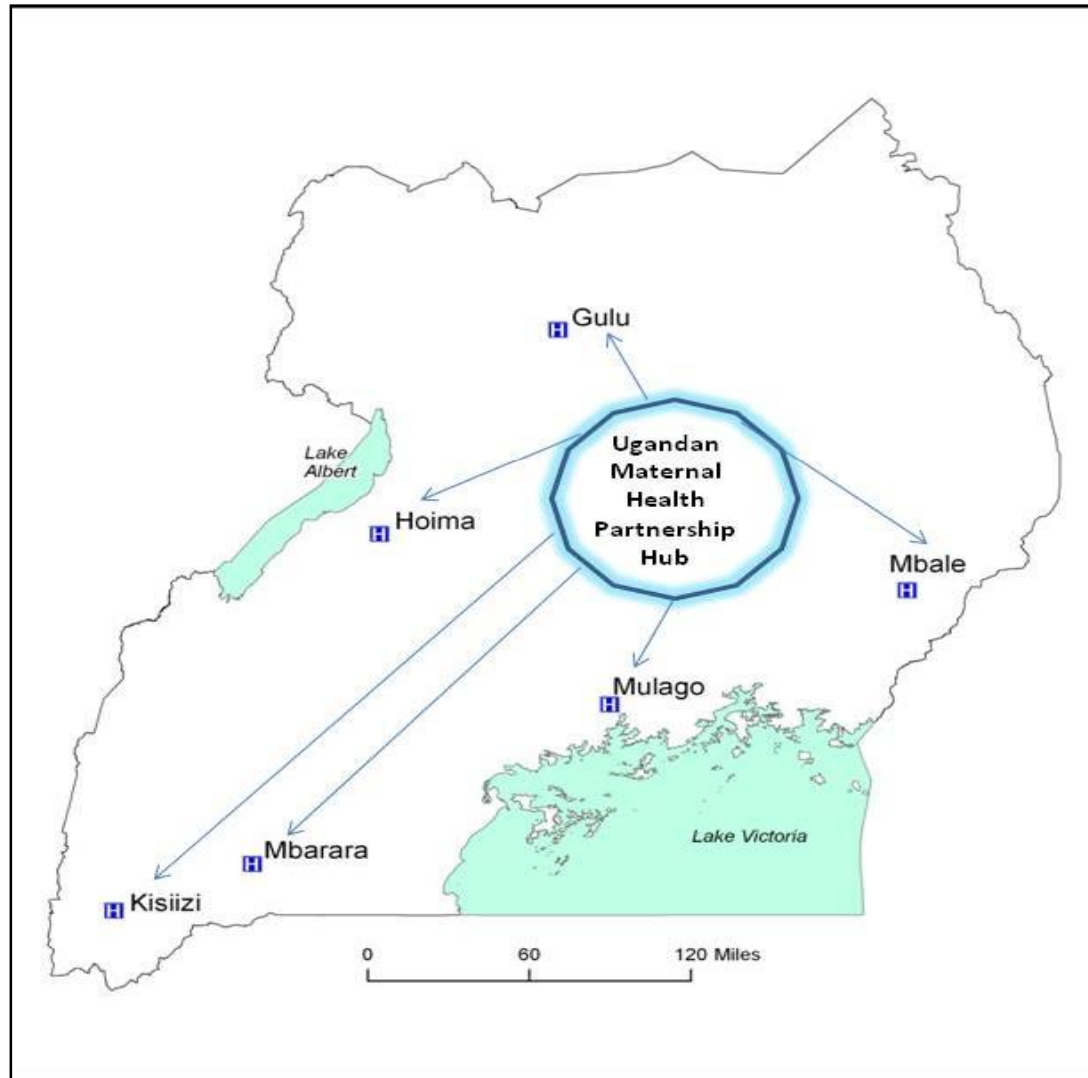
Projects in Uganda



- Liverpool Mulago Partnership – **Mulago Hospital**
- Cwm Taf Health Board - **Mbale Regional Referral Hospital**
- Countess of Chester - **Kisiizi Hospital**
- Univ of S Manchester - **Gulu Regional Hospital**
- Royal Berkshire NHSFT, Helen Allott - **Kisiizi Hospital**
- Basingstoke & N Hants Trust - **Hoima Referral Hospital**
- University Hospitals Bristol - **Mbarara Univ Hospital**
- Quicken Trust - **Kabubbu Health Centre**

..... and many more individuals visiting unofficially

Projects in Uganda



Maternal
Health
Partnership
Hub

Sustainable
Capacity
Building

Kampala



Mulago Hospital, Uganda



- National Referral and Teaching Hospital
 - delivers approximately 33000 babies per year
 - In 1999 there were 186 maternal deaths
 - 6-7% of the babies delivered are either stillborn, or die within a few days of birth.
 - Hospital handles around 80-100 deliveries/day
 - between 3 and 8 midwives per shift.
 - one operating theatre
 - a queue of women waiting to go to theatre
 - average decision to delivery is 7.5 hours

RCOG Fellowship



- Yearly Trainee Fellowship scheme
 - at Mulago Hospital, Kampala
- In partnership with the Body Trust and Universities of Cardiff and Liverpool, UK
- Planning to expand
 - Further fellow in Mbarara, Uganda
 - Sierra Leone
- Aim for 10 fellows overseas at any one time
- ATSM



Mulago Maternity Ward



Management of PPH



Caesarean Section saves life



YMET -Drills

- PPH
 - Train as a team
- Think of everything
 - How to set up
 - Who to involve
 - Follow a checklist
 - Have a note taker



Mulago HDU first 4 weeks



- 12 Ruptured Uteri
- 7 eclamptic fits
- 8 severe PET
- 2 Cardiac Failures
- 1 severe anaemia
- 1 pericarditis
- 5 Caesarean Hysterectomies



Fellowship programmes



- RCOG requirements
 - Established links
 - Learning possibilities
 - Mutual Benefits
 - Mentors available
 - Safety
- We provide
 - Training/mentorship
 - Programme goals and training milestones
 - ATSM

Key Achievements 2010-11



- Life Saving Skills- Essential Obstetric and Newborn Health Courses
- Eleanor Bradley Fellowship to Mulago Hospital, Uganda
- RCOG Eurovision
- Member of the FIGO's Women's Sexual and Reproductive Rights Committee
- Hosted Tom Burke Lecture on "Healing Southern Sudan"
- Advising UK Parliamentarians on Women's Health issues in developing countries
- Responded to consultation on Developing a UK International Development Framework for the NHS and partners
- Responding to DFID consultation: Choice for Women: wanted pregnancies, safe birth
- Responding to Public consultation on DFID's Research Strategy 2008-2013
- RCOG Survey of International Fellows and Members



FIGO

INTERNATIONAL FEDERATION
OF
GYNECOLOGY & OBSTETRICS



**Integrating Human Rights
and
Women's Reproductive Health
-an educational approach**

**WSRR - Women's Sexual and Reproductive Rights Committee
Curriculum approved by FIGO Executive Board 2011**



- **Aims:** To ensure that a clear understanding of women's sexual and reproductive rights becomes an integral part of the core training of medical students globally.
- **Project:** Generic medical school curriculum to be adapted globally to local and national needs. This curriculum will provide standards that ensure every graduate doctor has the necessary skills to help women protect their sexual and reproductive rights.
- **Design:** to integrate teaching of women's reproductive health and human rights and make them inseparable.

Physicians must be able to apply the principles of human rights to the daily practice of women's health care. This requires that they develop the following 10 competencies:



Competency 1. Right to life: Everyone has the right to life

- Discuss the impact of provision and denial of emergency healthcare services
- Provide emergency lifesaving treatment independent of their own personal beliefs
- Describe how health care systems can ensure or compromise the right to life.

Case Histories

Training Handbook: Clinical, Ethical, Legal

www: resources for clinical and legal issues





FIGO - WSRR

Women's Sexual & Reproductive Rights Committee



Funding Costs



LSS EO and NC courses £150,000 per country start

RCOG Eurovision £20,000 for 2 meetings per year

International Fellow £15-20,000 per year

Funding Costs - on a smaller scale



- £50** transport and accommodation for 1 local participant to attend a Life Saving Skills – Essential Obstetric and Newborn Care course LSS-EOandNC
- £100** newborn silicone resuscitator for training courses
- £125** cardio compression torso to train medical staff in developing countries
- £1,000** training for one healthcare worker in an under-resourced country in maternal and newborn care

Every donation makes a difference



Royal College of
Obstetricians and Gynaecologists

Bringing to life the best in women's health care



Advocacy Fact Sheet

The RCOG International Office works closely with other professional bodies and NGOs to raise awareness of global maternal and infant mortality, with a particular focus on the Millennium Development Goals (MDG) 4 and 5 – to reduce newborn and maternal mortality. MDG 5 aims to reduce maternal mortality by 75% by 2015. However, very little progress has been made over the past 8 years. We are actively lobbying G20 and G8 leaders, Heads of State, MPs and MEPs in both developed and under-resourced countries to highlight the needs and demand more resources to be directed towards achieving this goal.

As a membership organisation for professionals at the front line of maternity care, we experience the problems of maternal and infant mortality first, making us ideal advocates in calling for more action to prevent maternal deaths, and we can call on our membership of 11,500 in over 90 countries to influence global political decision making, that affects mothers and babies everywhere. Raising awareness of the problem is key if we are to be able to get governments to commit more resources to tackling maternal mortality and encourage and aid others to do the same.

Key achievements:

- Life Saving Skills-Essential Obstetric and Newborn Health Courses
- Eleanor Bradley Fellowship to Mulago Hospital, Uganda
- RCOG Eurovision
- Member of the FIGO's Women's Sexual and Reproductive Rights Committee
- Hosted Tom Burke Lecture on "Healing Southern Sudan"
- Advising UK Parliamentarians on Women's Health issues in developing countries
- Responded to consultation: UK International Development Framework for the NHS and partners
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- RCOG Survey of International Fellows and Members

By working with these organisations, responding to consultation documents, hosting high profile debates and meetings, providing standards and education worldwide, travelling and working in centres in under-resourced countries and relaying the problems and solutions that we develop, the RCOG champions the rights of the mother and child at all levels.



Organisations we are currently working with:

- Academy of Royal Colleges
- Liverpool School of Tropical Medicine
- International Federation of Obstetrics and Gynaecology
- London School of Hygiene and Tropical Medicine
- International Confederation of Midwives
- Royal College of Midwives
- Women & Children First
- Royal Society of Medicine
- White Ribbon Alliance
- NHS South Central



Funding Sources

- Department for International Development
- Gibson Trust
- Johnson and Johnson
- Hempsons Solicitors
- BUPA
- SCM Philanthropy

What can you do ?

Tell us your news

Help us to tell others

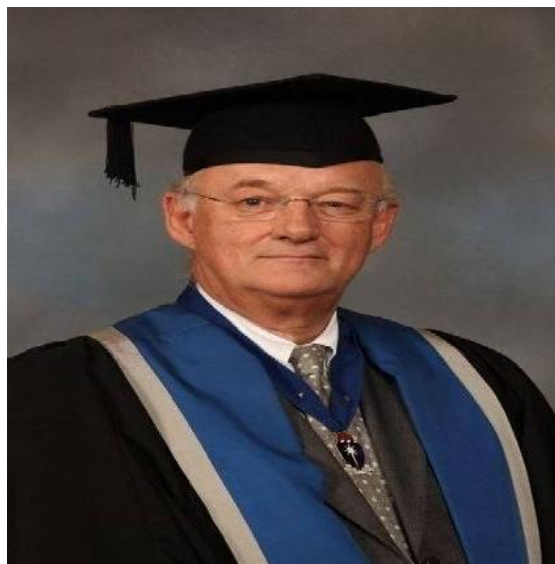
What do you need locally ?

PLEASE

Identify the leaders in your country for the FIGO human rights curriculum project



The Global Health Team



**L-R, Binta Patel, Catherine Wood, Joan Hayman,
Prof Jimmy Walker and Prof Lesley Regan**