

Evidence-based best practices to reduce maternal mortality

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Why is maternal health important?



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- Maternal mortality is sensitive not only to problems with the health care system but also living conditions and societal problems
 - The status of women
 - Access to clean water and sanitation
 - Social disruption such as war, instability
 - Reductions in maternal mortality reflect a nation's entry into the obstetric and demographic transitions

Evidence

Trends in Assessing Maternal Mortality

- Recently there has been much discussion regarding rates of maternal mortality
 - Widespread perception that progress on maternal mortality was lagging behind other key health indicators
 - Data were cited to suggest that MM rates were high and not decreasing
 - Many articles stated that a major cause of maternal mortality was unsafe abortion, and that many maternal deaths were due to restrictions on abortion

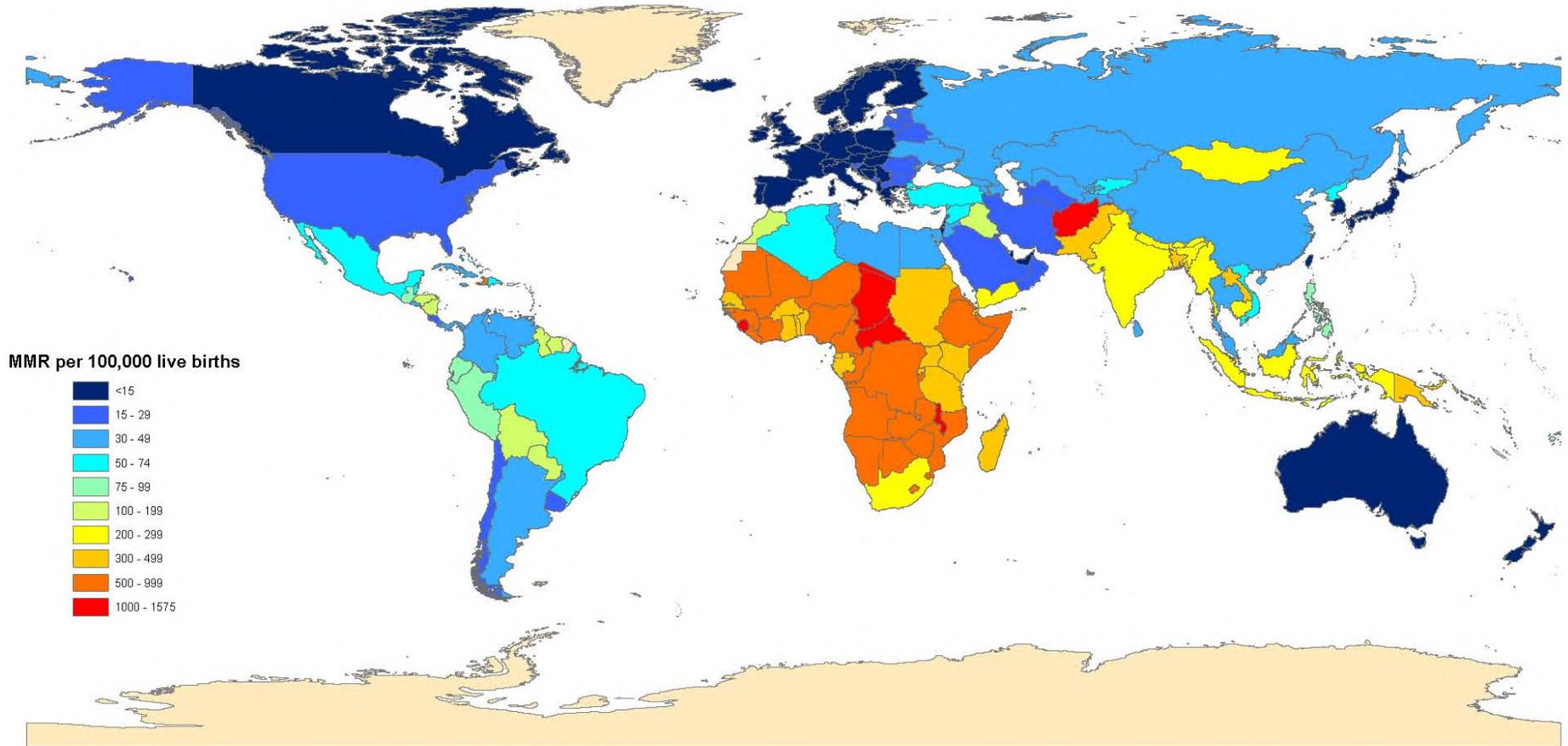


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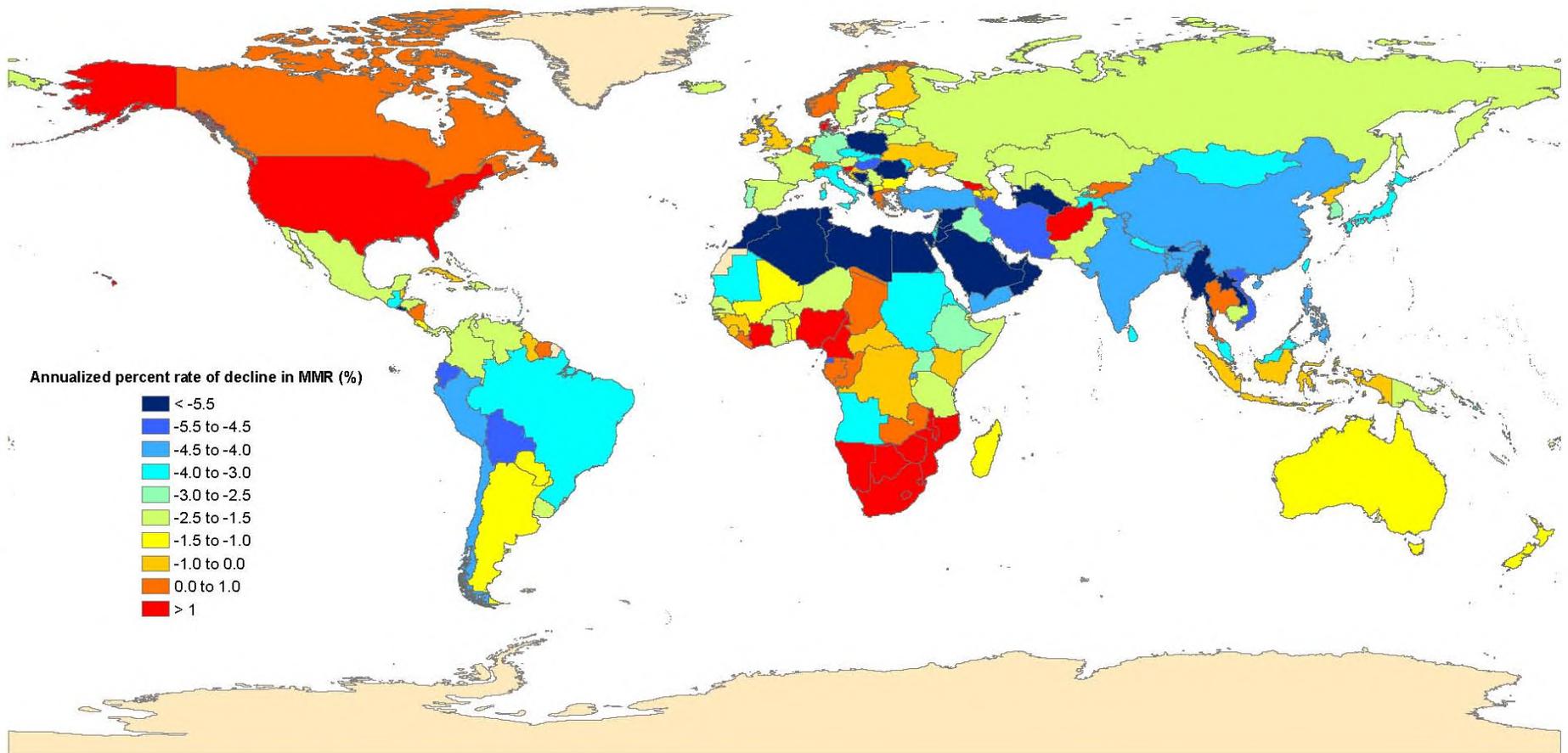
Maternal mortality for 181 countries, 1980-2008

A systematic analysis of progress towards
Millennium Development Goal 5

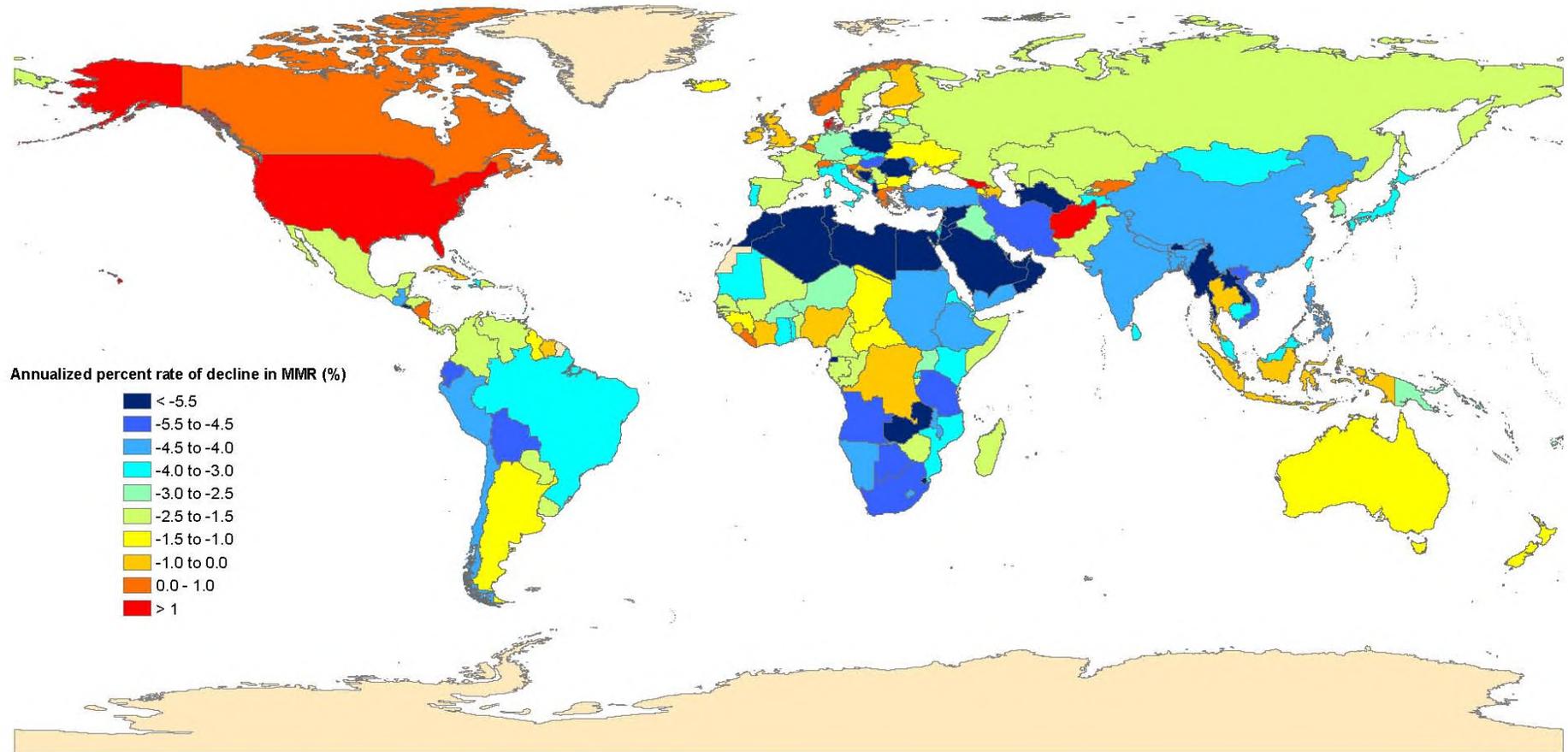
MMR per 100,000 live births, 2008



Annualized Rate of Decline in MMR, 1990 to 2008



Annualized Rate of Decline in MMR, *excluding* HIV, 1990 to 2008



Maternal mortality continues to drop worldwide

- Globally, maternal mortality is declining. Why?
 - Increasing education
 - Increasing income
 - Possibly smaller families
 - Improvements in birth care

STUDY PROTOCOL

Open Access

The world health organization multicountry survey on maternal and newborn health: study protocol

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Abstract

Background: Effective interventions to reduce mortality and morbidity in maternal and newborn health already exist. Information about quality and performance of care and the use of critical interventions are useful for shaping improvements in health care and strengthening the contribution of health systems towards the Millennium Development Goals 4 and 5. The near-miss concept and the criterion-based clinical audit are proposed as useful approaches for obtaining such information in maternal and newborn health care. This paper presents the methods of the World Health Organization Multicountry Study in Maternal and Newborn Health. The main objectives of this

The WHO Multicountry Study, 2014

- Special Issue of the *British Journal of OB/GYN*, March 2014: “Maternal and Perinatal Morbidity and Mortality: Findings from the WHO Multicountry Survey”

Countries included in the WHO Multicountry Study, 2014

Afghanistan	Angola	Jordan	Argentina	Cambodia
India	DCR	Lebanon	Brazil	China
Nepal	Kenya	Palestinian territory	Ecuador	Japan
Pakistan	Nigeria	Qatar	Mexico	Mongolia
Sri Lanka	Niger		Nicaragua	Philippines
	Uganda		Paraguay	Thailand
			Peru	Viet Nam

WHO Multicountry Study, 2014

Cause	Number of deaths/number of women with problem	Number of women in sample	Notes
Postpartum hemorrhage	105 /3349	274,985	95% received uterotonics
High blood pressure in pregnancy	61 /8542	313,030	40-100% received magnesium sulfate
Indirect causes of severe maternal outcomes	122 /457	314,574	Largest aggregate % of maternal deaths
Anemia	61 (50%)	---	
Infection	51 (42%)	---	
Malaria/dengue	19 (16%)	---	
Lung disease	17 (14%)	---	
HIV	14 (12%)		

WHO Multicountry Study, 2014, cont'd

Cause	Number of deaths/number of women with problem	Number of women in sample	Notes
Indirect causes, continued	457 /2365	314,574	Largest % of maternal deaths
Liver disease	14 (12%)	---	
Heart disease	12 (10%)	---	
Abortion, spontaneous <u>and</u> induced	27*	314,623	*Includes both miscarriages and induced abortions; page 29 "it is not possible to distinguish between miscarriage and abortions in this sample"

Causes of maternal mortality

- #1 – Postpartum hemorrhage
- #2 – High blood pressure in pregnancy
- #3 – Anemia
- #4 – Infection
- #5 – Malaria/dengue
- #6 – Lung disease
- #7 – HIV
- #8 – Liver disease
- #9 – Heart disease
- #10 – Miscarriage or induced abortion

Causes of maternal mortality

- In this study, 27 women died from **either** spontaneous **or** induced abortion
- So one cannot state, based on WHO's own best data, that induced abortion is one of the most important contributors to maternal mortality
 - *If* 1/3 of the abortion-related deaths in this sample were due to induced abortion, abortion would be the 10th cause of death

Addressing Maternal Mortality

- In no way does this minimize the tragedy of abortion-related maternal death; these deaths are devastating
- However, abortion is an elective procedure, and more importantly,
- ***To reduce maternal mortality, we must address its most common causes***

Best practices

Evidence-based best practices to reduce maternal mortality

- #1 – Postpartum hemorrhage
 - Provide skilled birth attendants
 - Treat anemia
 - Use uterotonics (drugs that make the uterus contract after birth to reduce bleeding, such as oxytocin [preferred] or misoprostol)
 - Develop transfusion capability (not farfetched; this is being done in South Sudan)

Evidence-based best practices to reduce maternal mortality

- #2 – High blood pressure in pregnancy
 - Provide skilled birth attendants
 - Follow blood pressures during pregnancy, identify women with high blood pressure and refer if possible
 - Manage and treat elevated blood pressures
 - Give blood pressure lowering medications
 - Give magnesium sulfate to prevent seizures (fits)
 - Follow up long-term: women with high blood pressure *during* pregnancy are at risk for developing high blood pressure *after* pregnancy

Evidence-based best practices to reduce maternal mortality

- #3 – Anemia
 - Provide pre-natal care
 - Check women's blood count – inside of eyelids, palms of hands
 - Treat women with iron
 - Encourage women to eat a nutritious diet
 - Identify and treat causes of anemia such as worms, malaria, kidney disease, malnutrition

Evidence-based best practices to reduce maternal mortality

- #4 – Infection (possibly including HIV)
 - Provide pre-natal care
 - Identify infections and treat
 - Vaccinate, especially for tetanus!
 - During childbirth, trained birth attendants should use clean technique
 - Quickly identify and treat severe infections that occur soon after giving birth

Evidence-based best practices to reduce maternal mortality

- #5 – *Malaria/dengue*
 - Provide prenatal care
 - Encourage pregnant women, and children, to use bed nets if possible
 - Diagnose women with malaria or dengue and treat or support them
 - Observe for complications of malaria such as anemia, and treat

Evidence-based best practices to reduce maternal mortality

- #6 – Lung disease
 - This was not further defined in study; possibly tuberculosis, measles, pneumonia?
 - Vaccinate for measles
 - Identify women with tuberculosis and treat
 - Once referred to as the “Captain of the Men of Death”
 - Observe for severe complications of tuberculosis

Evidence-based best practices to reduce maternal mortality

- #7 - HIV
 - One of the most difficult problems to overcome but one of the most important
 - Saves mother's lives
 - Saves children's lives
 - Therapy for HIV is expensive, difficult, has multiple side effects
 - Prevention of mother-to-child transmission of HIV has been prioritized over treatment of HIV in many maternal-child health programs

Evidence-based best practices to reduce maternal mortality

- #8 – Liver disease
 - Difficult to treat once established
 - One of the most common causes is hepatitis B, for which a vaccine is available
 - This will prevent liver disease in children and uninfected adults
 - Treat other causes including parasitic infections such as schistosomiasis

Evidence-based best practices to reduce maternal mortality

- #9 – Heart disease
 - Common causes in developing countries:
 - Rheumatic heart disease (from strep infection)
 - Tuberculosis
 - Infections, especially parasitic
 - Anemia (high-output cardiac failure)

Evidence-based best practices to reduce maternal mortality

- #10 – Abortion – spontaneous and induced
 - Treat miscarriage appropriately
 - Reduce induced abortion



Lack of maternal education is a powerful risk factor for maternal mortality

- Koch et al (2012), in a study from Chile, found that women's education was one of the most powerful predictors of risk for maternal mortality
- Tuncalp et al, as part of the WHO Multicountry Study, found that maternal mortality among women with the lowest education level was more than 5 times greater than for women with the highest level

Education and severe maternal outcomes in developing countries: a multicountry cross-sectional survey

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Objective To assess the relationship between education and severe maternal outcomes among women delivering in healthcare facilities.

Design Cross-sectional study.

Setting Twenty-nine countries in Africa, Asia, Latin America, and the Middle East.

confidence interval, 95% CI, 1.46–2.95), maternal near miss (aOR 1.80; 95% CI 1.25–2.57), and maternal death (aOR 5.62; 95% CI 3.45–9.16) was observed. This relationship persisted in countries with medium HDIs (aOR 2.36; 95% CI 1.33–4.17) and low HDIs (aOR 2.65; 95% CI 1.54–2.57). Less educated women also had increased odds of presenting to the hospital in a severe

Lack of maternal education is a powerful risk factor for maternal mortality

- The association was seen in both developing and developed countries
- It was also seen regardless of age, marital status, number of pregnancies or access to health care
- Education of women is one of the key drivers of the obstetric transition

Summary of Best Practices

- Because resources are usually limited, prioritize and address major causes of maternal mortality
 - Focus on the most important causes of death during and after childbirth
- Implement the use of proven interventions
 - Many are surprisingly simple and inexpensive
 - Use what you have

The top causes of maternal mortality

- #1 – Postpartum hemorrhage
- #2 – High blood pressure in pregnancy
- #3 – Anemia
- #4 – Infection
- #5 – Malaria/dengue
- #6 – Lung disease
- #7 – HIV

Summary of Best Practices

- Evaluate the effectiveness of interventions
- Use the results of evaluation to guide changes in policy and practice
 - “The health services landscape in developing countries is littered with the corpses of good ideas that never translated into effective projects”

Summary of Best Practices

- Improve the quality of data collection
 - Can't fight what you can't see
 - Interventions and programs can be partly data driven
 - Whose statistics and how were they obtained?
 - Do not be afraid to question the “20,000-foot view”
- Prioritize women's education

Hogan Study - Encouragement

- “Our assessment suggests that we should be optimistic about our ability to improve maternal mortality. The dramatic progress occurring in some countries should be closely examined to learn how these successes could be replicated...”

Maternite

by Marc Chagall

