Executive Summary

Why reproductive, maternal, newborn and child health?

Poor maternal, newborn and child health remains a significant problem in developing countries. Worldwide, 358 000 women die during pregnancy and childbirth every year[1] and an estimated 7.6 million children die under the age of five.[2] The majority of maternal deaths occur during or immediately after childbirth. The common medical causes for maternal death include bleeding, high blood pressure, prolonged and obstructed labour, infections and unsafe abortions. A child's risk of dying is highest during the first 28 days of life when about 40% of under-five deaths take place, translating into three million deaths.[2] Up to one half of all newborn deaths occur within the first 24 hours of life and 75% occur in the first week. Globally, the main causes of neonatal death are preterm birth, severe infections and asphyxia. Children in low-income countries are nearly 18 times more likely to die before the age of five than children in high-income countries.[2]

Good maternal health and nutrition are important contributors to child survival. The lack of essential interventions to address these and other health conditions often contribute to indices of neonatal morbidity and mortality (including stillbirths, neonatal deaths and other adverse clinical outcomes).

The highest maternal, neonatal and under-five mortality rates are in sub-Saharan Africa and in Southern Asia.[2] Although substantial progress has been made towards achieving the Millennium Development Goals (MDGs) 4 and 5, the rates of decline in maternal, newborn and under-five mortality remain insufficient to achieve these goals by 2015. Interventions and strategies for improving reproductive, maternal, newborn and child health and survival are closely related and must be provided through a continuum of care approach. When linked together and included as integrated programmes, these interventions can lower costs, promote greater efficiencies and reduce duplication of resources. However, few efforts have been made to identify synergies and integrate these interventions across the continuum of care. Despite the existing plethora of knowledge, there is a lack of consensus on how best to move forward in a coordinated manner so as to achieve progress towards the MDGs. Furthermore, consensus is also needed on the level of evidence.

The foremost aim of this global review is to compile existing evidence on the impact of different interventions on the main causes of maternal, newborn and child deaths. The specific objectives of this review were to serve as a first step towards:

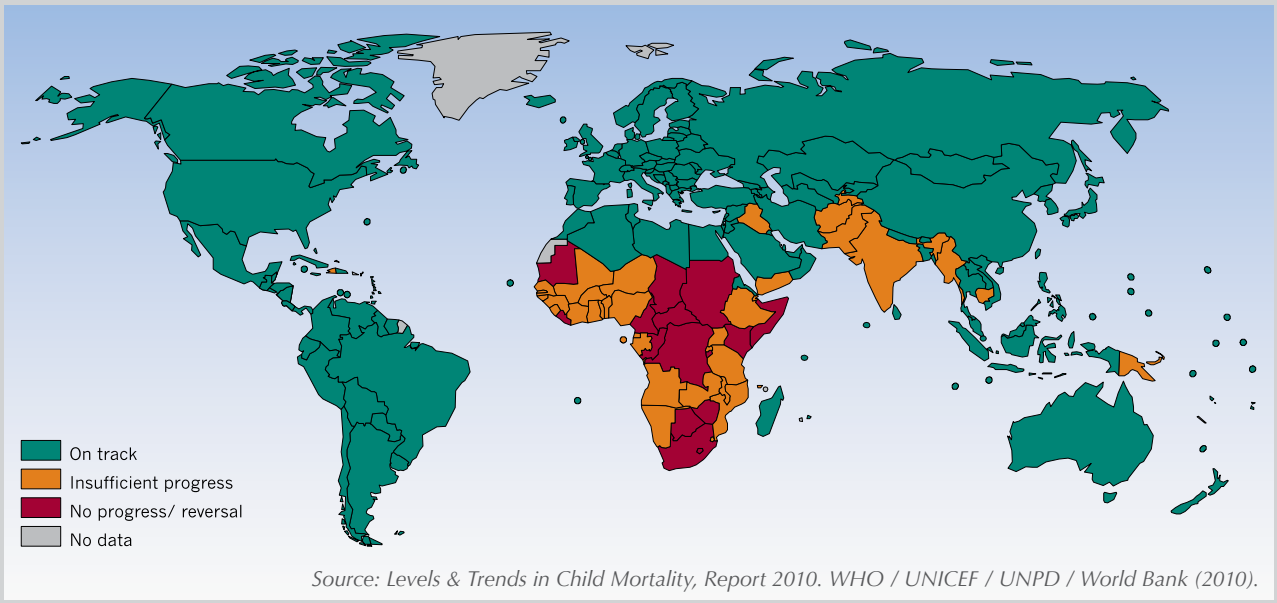
- Developing consensus on the content of RMNCH packages of interventions at each level of the health system across the continuum of care.
- Facilitating the scaling-up of these interventions.
- Identifying research gaps in the content of core packages of interventions.

Policy and regulatory environment

Policy and regulations are crucial to the implementation of any interventions. The recommended list of interventions should be reviewed in light of the existing national policy and regulatory environment. All interventions provided should comply with the laws and policies of the country. When required, these laws and policies may be reviewed and updated to ensure that priority life saving interventions are delivered.

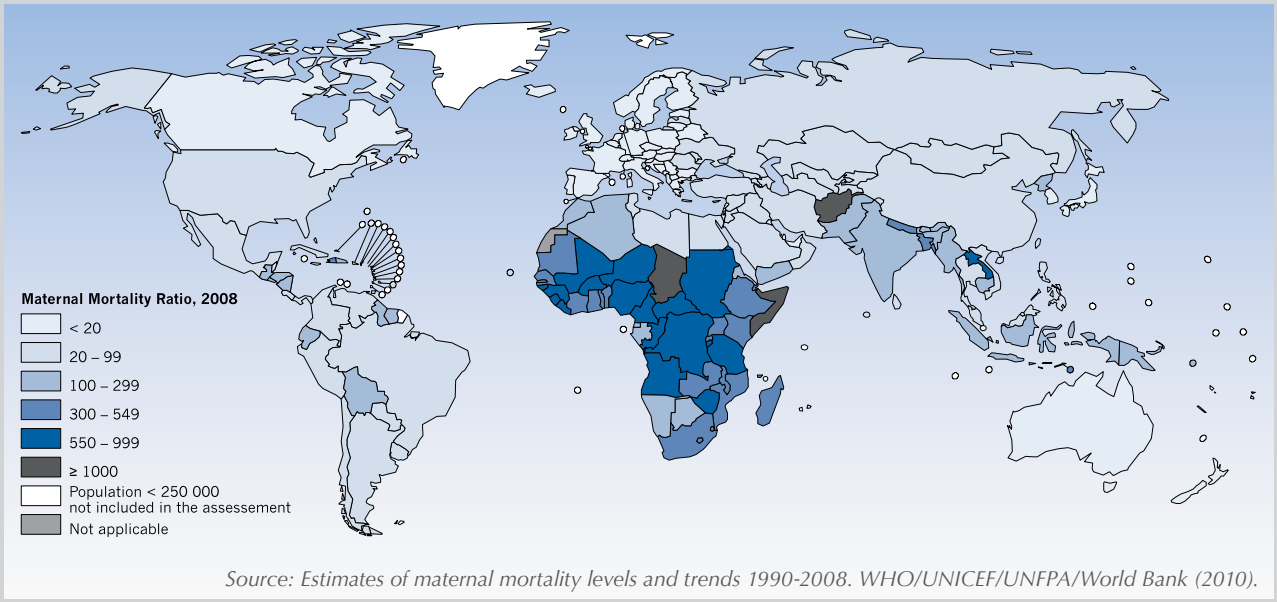
FIGURE 1:

MDG 4: TRENDS IN UNDER-FIVE MORTALITY, 1990 - 2007



Source: Levels & Trends in Child Mortality, Report 2010. WHO / UNICEF / UNPD / World Bank (2010).

MDG 5: TRENDS IN MATERNAL MORTALITY RATIOS, 2008



Source: Estimates of maternal mortality levels and trends 1990-2008. WHO/UNICEF/UNFPA/World Bank (2010).

METHODOLOGY

Search strategy

A total of 142 RMNCH interventions were identified, assessed and selected for this review (there is a 700 page compilation of the evidence which underpins this short summary available at the PMNCH),[3] based on current WHO recommendations contained in the following publications: Guidelines on HIV and Infant Feeding (2010); Integrated Management of Childhood Illness (2008); Integrated Management of Childhood Illness for high HIV settings (2008); the Pocket Book on Hospital Care for Children (2005); Integrated Management of Pregnancy and Childbirth Clinical Guidelines (2007); Recommended Interventions for Improving Maternal and Newborn Health - Integrated Management of Pregnancy and Childbirth (2007). Interventions published in the Child and Neonatal Lancet Series (2003 and 2005, respectively) as well as in the WHO Recommended Interventions for Improving Maternal and Newborn health (2010).

Inclusion criteria comprised the following: (i) the intervention has an alleged impact on reducing maternal, neonatal and child mortality; (ii) the intervention is suitable for delivery in low- and middle-income countries, and/or settings where minimal essential care is generally available; and (iii) the intervention is delivered through the health sector (community level up to the referral level of health care).

Relevant reviews for each intervention were identified from the following electronic databases: the Cochrane database of systematic reviews, the Cochrane database of abstract reviews of effectiveness (DARE), the Cochrane database of systematic reviews of randomized control trials (RCTs), and PubMed. The reference lists of reviews and recommendations from experts in the field were also used as sources to obtain additional publications. The principal focus was on the existing systematic reviews and meta-analysis.

Selection on interventions

The interventions were prioritized according to the following criteria:

- Interventions expected to have a **significant impact on maternal, newborn and child survival**, addressing the main causes of maternal, newborn and child mortality.
- Interventions suitable for implementation in **low- and middle-income countries**; minimal essential care.
- Interventions delivered through the **health sector**, from the community up to the first referral level of health service provision.

Classification of interventions

The interventions were classified into categories A, B and C, according to the framework provided in **Box 1.**

Box 1:

Category	Evidence for intervention categories	Delivery strategies	Action
A	Intervention evidence agreed	Delivery strategy agreed	Disseminate for rapid scale-up
B	Intervention evidence agreed	Delivery strategy no consensus	Collate evidence and define gaps in evidence for delivery strategies – seek consensus
C	Intervention evidence still questioned	Delivery strategy no consensus	Further research required

The classification of the effect of interventions according to the evidence available was done based on that used by the Cochrane group, as follows:

A	B	C	D	E
Interventions that are beneficial	Interventions likely to be beneficial	Interventions with a trade-off between beneficial and adverse effects	Interventions of unknown effect, including absence of reviews	Interventions likely to be ineffective or harmful

This classification benefited from being broadly known, recognized and accepted since it is the classification used by the Cochrane systematic review process that has guided this exercise from the beginning. The "evidence" was restricted to published systematic reviews; not including single studies.

The origin of evidence included the following three different levels of delivery of interventions and these were defined in the publication by the World Bank "Priorities in Health":[4]

Community level/home

(1) Community level/home - Health care providers at this level include community health workers and outreach workers. It utilizes resources such as volunteers' time, local knowledge and community confidence and trust as channels for delivery of interventions generally related to safe motherhood, nutrition and simple prevention and treatments. Many countries have attempted to construct links between community-based health care resources and households for a range of health programmes. These programmes do not substitute for a health system, but provide a channel for reaching families with information and resources. Community health workers (CHWs) not only promote healthy behaviours and preventive action but can mobilize demand for appropriate services at other levels. The success of community health efforts depends critically on the context, including level of development of infrastructure, services and socioeconomic resources.

First level/outreach

(2) First level/outreach - Health care providers at this level of care include professionals, outreach workers as well as the community health workers. It includes a range of initiatives that are associated with the Alma Ata Declaration on Primary Health Care approved by WHO in 1978. More recently, the WHO Commission on Macroeconomics and Health described the need for developing services that are close to the client. The basic notion is a common one: recognition that a certain range of health care services must act as an interface between families and community programmes on the one hand, and hospitals and national health policies on the other. There has been substantial convergence in the content of general first level primary care over time: maternity related care (for instance, prenatal care, skilled birth attendance and family planning), interventions to address childhood diseases (such as vaccine preventable diseases, acute respiratory infections, diarrhoea) and prevention and treatment of major infectious diseases.

Referral level/district hospital

(3) Referral level - This level of delivery of interventions refers to hospitals in general. These can be either district hospitals or referral hospitals. The health care providers at this level are professionals.

***District hospitals* -** Generally designed to serve people with services that are more sophisticated, technically demanding and specialized than those available at a primary care facility/first level care, but not as specialized as those provided by referral hospitals. Their range of services includes diagnostics, treatment, care, counselling and rehabilitation. District hospitals may also provide health information, training and administrative and logistical support to primary and community health care programmes. They concentrate skills and resources in one place for the delivery of interventions for conditions that are either uncommon or difficult to treat. They are also a repository of knowledge and diagnostic tools for assessing whether referral to an even more specialized facility is indicated.

Referral hospitals - Referral hospitals provide complex clinical care interventions to patients referred from the community, primary/first, or district hospital levels. Referral hospitals need to provide many forms of support, including advice on which patients to refer, proper post discharge care and long-term management of chronic conditions. Referral hospitals can also provide important managerial and administrative support to other facilities, serving as gateways for drugs and medical supplies, laboratory testing services, general procurement, data collection from health information systems and epidemiological surveillance. They are also the vehicle for disseminating technologies by training new staff and providing continuing professional education for existing staff at different facilities.

Evidence-based findings

The following table lists the interventions classified as "A" based on the criteria defined in Box 1.

Classification of interventions according to the level of health care delivery

Intervention	Referral level	1st level	Community
Adolescents & Pre-Pregnancy			
Family planning	✓	✓	✓
Prevent and manage Sexually Transmitted illnesses including Mother-to-Child Transmission of HIV and syphilis	✓	✓	✓
Folic acid fortification and/or supplementation for preventing Neural Tube Defects	✓	✓	✓
Pregnancy			
Management of unintended pregnancy ▪ Availability and provision of safe abortion care when indicated ▪ Provision of post abortion care	 ✓ ✓	 - ✓	 - -
Appropriate antenatal care package: ▪ Screening for maternal illnesses ▪ Screening for hypertensive disorders of pregnancy ▪ Screening for anaemia ▪ Iron and folic acid to prevent maternal anaemia ▪ Tetanus immunization ▪ Counselling on family planning, birth and emergency preparedness ▪ Prevention and management of HIV, including with antiretrovirals ▪ Prevent and manage malaria with insecticide treated nets and antimalarial medicine ▪ Smoking cessation	✓	✓	-
Reduce malpresentation at term with External Cephalic Version	✓	-	-
Prevention of pre-eclampsia ▪ Calcium to prevent hypertension ▪ Low dose aspirin to prevent hypertension	 ✓ ✓	 ✓ -	 - -
Magnesium Sulphate for eclampsia	✓	✓	-
Induction of labour to manage prelabour rupture of membranes at term	✓	-	-
Antibiotics for preterm prelabour rupture of membranes	✓	✓	-
Corticosteroids to prevent respiratory distress syndrome in newborns	✓	-	-

Intervention	Referral level	1st level	Community
Childbirth			
Induction of labour for prolonged pregnancy	✓	-	-
Prophylactic uterotonics to prevent postpartum haemorrhage	✓	✓	✓
Active management of third stage of labour to prevent postpartum haemorrhage	✓	✓	-
Management of postpartum haemorrhage (e.g. uterotonics, uterine massage)	✓	✓	✓
Caesarean section for maternal/foetal indication	✓	-	-
Prophylactic antibiotics for caesarean section	✓	-	-
Postnatal (mother)			
Family planning	✓	✓	✓
Prevent and treat maternal anaemia	✓	✓	-
Detect and manage postpartum sepsis	✓	✓	-
Screen and initiate or continue antiretroviral therapy for HIV	✓	✓	-
Postnatal (newborn)			
Immediate thermal care	✓	✓	✓
Initiation of exclusive breastfeeding (within first hour)	✓	✓	✓
Hygienic cord and skin care	✓	✓	✓
Neonatal resuscitation with bag and mask (professional health worker)	✓	✓	-
Case management of neonatal sepsis, meningitis and pneumonia	✓	✓	-
Kangaroo mother care for preterm and for less than 2000g babies	✓	✓	-
Management of newborns with jaundice	✓	✓	-
Surfactant to prevent respiratory distress syndrome in preterm babies	✓	-	-
Continuous positive airway pressure (CPAP) to manage babies with respiratory distress syndrome	✓	-	-
Extra support for feeding small and preterm babies	✓	✓	-
Presumptive antibiotic therapy for newborns at risk of bacterial infections	✓	-	-
Infancy and Childhood			
Exclusive breastfeeding for 6 months	✓	✓	✓
Continued breastfeeding and complementary feeding from 6 months	✓	✓	✓
Prevention and case management of childhood malaria	✓	✓	✓
Vitamin A supplementation from 6 months of age	✓	✓	✓
Comprehensive care of children infected with or exposed to HIV	✓	✓	-
Routine immunization and *H. influenzae*, meningococcal, pneumococcal and rotavirus vaccines	✓	✓	✓
Management of severe acute malnutrition	✓	✓	-
Case management of childhood pneumonia	✓	✓	✓
Case management of diarrhoea	✓	✓	✓
Cross-cutting community strategies			
Home visits for women and children across the continuum of care	-	-	✓