HEART
HEALTH & EDUCATION ADVICE & RESOURCE TEAM

Helpdesk: Quality of care in maternal, newborn and child health (MNCH) and sexual and reproductive health (SRH)

Date: 15th June 2016

Query: Which interventions in promoting quality of care in MNCH and SRH are likely to have the best impact on service outputs and health outcomes?

Content

1. Overview

This helpdesk query looks at interventions to improve the quality of care in maternal, newborn, and child health (MNCH) and sexual and reproductive health (SRH). It includes evidence assessing which interventions are likely to have the best impact on service outputs and health outcomes, with an emphasis on cost effectiveness. Firstly, the issues to be included under each area are outlined, then the meaning of quality of care and the types of interventions to be considered are presented.

The report is divided into sections presenting evidence on each topic area, but due to the time limitations of this report it has had to focus on literature on MNCH and SRH as a whole, rather than going into detail about specific issues related to each. There is also a section specifically on cost effectiveness.

Section 2 focuses on the definitions and areas covered by MNCH and SRH as well as some of the literature on quality and interventions.

Section 3 focuses on MNCH, and specifically the importance of continuum of care interventions. The continuum for MNCH usually refers to continuity of individual care through pre-pregnancy, pregnancy, childbirth, postpartum, newborn care and care of the child. Continuity of care is necessary throughout the lifecycle (adolescence, pregnancy, childbirth, the postnatal period, and childhood) and also between places of caregiving (including households and communities, outpatient and outreach services, and clinical-care settings). Several high quality studies have reviewed the literature and assessed different interventions and their outcomes, these have been included as they provide an excellent overview of which are likely to have the greatest effects on health outcomes and service delivery. Several overview tables outline which interventions have the greatest impact on health outcomes and service delivery.

Section 4 is dedicated to the issue of cost effectiveness and includes several diagrams which can be used to assess this issue as well as a study showing key ways to improve cost effectiveness including increasing spending, efficiency, equity and ensuring there are incentives and integration.

Section 5 includes literature on SRH. Health and rights in sexuality and reproduction are an integrated package, which includes SRH services (family planning, maternity care, safe abortion, prevention and treatment of sexually transmitted infections and HIV, among others); comprehensive sexuality education; and protection of SRH and rights. People cannot be healthy if they have one element of the

package but miss others. Progress on the components of SRH and rights has been uneven. While acknowledging that certain components may be more difficult or more costly to implement, progress in many instances has been hindered on ideological, rather than scientific, public health and cost-effectiveness grounds. There have been many accomplishments but aggregate gains mask stark inequalities, with low coverage of services for the poorest women (Snow et al., 2015, see page 28).

While there have been notable declines in HIV incidence and prevalence, women affected by HIV are too often bereft of other SRH services, including family planning. Achieving universal access to SRH will require substantially greater investment in comprehensive and integrated services that reach the poor. There are three critical gaps, raised in other papers: inequalities in access to SRH information and services; the widespread need to improve SRH services to meet public health, human rights and medical ethics standards for quality of care; and the absence or inadequate use of accountability mechanisms to track and remedy the other two. The literature in this section includes priority actions to achieve equality, quality and accountability in SRH and rights policies, programmes and services, especially those that should be included in the post-2015 development agenda.

One important issue to also consider is that almost all maternal, neonatal, infant and child deaths (99%) arise in low- and middle-income countries (LMICs), yet most research is focused on the 1% of these deaths that occur in high-income countries (HICs). This report focuses on research from LMICs as this is the most relevant.

HEART has also produced an online learning resource called *Quality of Maternal & Newborn Services.* This can be accessed freely online at: http://qos.heart-resources.org/

2. Definitions

Areas included in SRH

https://www.unfpa.org/sites/default/files/pub-pdf/SRH_Framework.pdf

A major breakthrough at the International Conference on Population and Development (ICPD), reaffirmed repeatedly since, is that these services are essential for all people, married and unmarried, including adolescents and youth. For people to realise their reproductive rights, the ICPD Programme of Action calls for and defines reproductive and sexual health care in the context of primary health care to include (Para 7.6): (a) Family planning; (b) Antenatal, safe delivery and post-natal care; (c) Prevention and appropriate treatment of infertility; (d) Prevention of abortion and management of the consequences of abortion; (e) Treatment of reproductive tract infections; (f) Prevention, care and treatment of STIs and HIV/ AIDS; (g) Information, education and counselling, as appropriate, on human sexuality and reproductive health; (h) Prevention and surveillance of violence against women, care for survivors of violence and other actions to eliminate traditional harmful practices, such as FGM/C; (i) Appropriate referrals for further diagnosis and management of the above.

Areas included in MNCH

http://www.who.int/pmnch/knowledge/publications/201112_essential_interventions/en/

Poor MNCH remains a significant problem in developing countries. Worldwide, 358 000 women die during pregnancy and childbirth every year and an estimated 7.6 million children die under the age of five. 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. 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.

'*The choices [a woman or adolescent girl] can make for herself and her child… make a fundamental difference to current and future generations across the developing world*.'

Partnership for Maternal, Newborn and Child Health and University of Aberdeen, 2010

Quality
This section will outline what is meant by quality of care, but a key point that was raised in several works is: '*The question should not be why do women not accept the service that we offer, but why do we not offer the service that women will accept*' (Fathalla, M. F., (1998) Paediatric and Perinatal Epidemiology, 1998, 12 (preface) http://onlinelibrary.wiley.com/doi/10.1046/j.1365-3016.12.s2.8.x/abstract)

In fact, it is not possible to 'assure' or guarantee quality of care or services. Rather, initiatives can only aspire to improve quality of care, to make it 'good' or 'better' (see Donabedian 2003).

What does quality improvement seek to change?

- Better impact – expressed for example, as reduction in mortality.
- Better outcomes e.g. performance of the health system.
- Better outputs e.g. increased use of services, improved motivation of providers.

There are several issues to consider when thinking about quality. Safety (doing no harm) was a concern in past and present discourse. Methodological rigour in producing high quality evidence for action in improving our approaches to providing a high quality MNH service is key. As well as the extent of the problem of acceptable MNH services. http://qos.heart-resources.org/?sfwd-lessons=introduction-why-quality-matters

Key resources
Batalden PB and Davidoff F, (2007) What is "quality improvement" and how can it transform healthcare?
Donabedian, A., (2003) An introduction to quality assurance in health care
Organisation for Economic Co-operation and Development (OECD), Improving Value in Health Care: Measuring Quality Forum on Quality of Care, Paris, 7-8 October 2010, http://www.oecd.org/health/ministerial/46098506.pdf

Interventions
The QQUIP (Quest for Quality and Improved Performance) research initiative of The Health Foundation (UK): This framework considers six main categories of quality enhancing interventions when reviewing evidence of the influence on quality of health services. These are:

1. Patient focused interventions
2. Regulatory interventions
3. Incentives
4. Data-driven and IT based interventions
5. Organisational interventions
6. Healthcare delivery models

Effects of strategic interventions on quality
In addition to quality improvement strategies a number of recent systematic reviews have investigated the effects of various strategic interventions. Some examples are listed in the following table.

Reference	Category	Type of strategy	Percentage change reported[a] (range)	Ratio LMIC settings to all studies	Health area
1. Forsetlund, L et al, 2009	Professional interventions	Educational meetings & workshops	PP = 6.0 (1.8 to15.9) HO = 3.0 (0.1 to 4.0)	11/45	General
1. Giguere, A. et al, 2012		Printed educational materials (PEM)	PP = 0.02 (-0.06 to 0.29)	1/45	General
1. O'Brien, M. et al, 2008		Educational outreach visits	PP = 5.6 (3.0 to 9.0)	3/69	General
1. Akl, E. et al, 2013		Educational games	No effect (knowledge tests only)	0/2	General
1. Ivers, N. et al, 2012		Audit and feedback	PP = 4.3 (0.5 to 16.0) HO = 0.4 (-1.3 to 1.6)	4/140	General
1. Flodgren, G. et al, 2011		Local opinion leaders	PP = 12 (6 – 14.5)	2/18	General
1. Arditi, C. et al, 2012		Reminders	[b]POC = 11.2 (6.5 – 19.6)	0/32	General
1. Opiyo, N. et al, 2010		In-service training	PP = 2.45 (1.75 – 3.42) HO = 0.77 (0.40 – 1.48)	2/2	Newborn & Child health
1. Kredo, T. et al, 2014	Organisational interventions	Task shifting	HO=0.96 (0.82 to 1.12)	10/10	HIV
1. Reeeves, S. et al, 2013		Interprofessional education	Improvements in patient satisfaction, error rates and other indicators of care	Unclear (total 15 studies)	General
1. Scott, A. et al, 2011	Financial interventions	Provider incentives	Mixed results for patient assessments of quality and other POC	Unclear (total 7 studies)	General
1. Witter S. et al 2012		Pay for performance	Mixed results for POC, provider performance, utilisation and health outcomes	9/9	General

a Effect on professional practice (PP) and/or health care outcomes (HO), b Processes of care (POC)

Table 3.3 – Systematic Reviews on Effectiveness http://qos.heart-resources.org/?sfwd-topic=quality-improvement-strategies

Also outlined in the literature is the idea of continuum of care. The continuum of care has become a rallying call to reduce the yearly toll of half a million maternal deaths, 4 million neonatal deaths, and 6 million child deaths. The continuum for MNCH usually refers to continuity of individual care. Continuity of care is necessary throughout the lifecycle (adolescence, pregnancy, childbirth, the postnatal period, and childhood) and also between places of caregiving (including households and communities, outpatient and outreach services, and clinical-care settings). Care interventions refer to specific actions provided within the continuum of care. Strategic interventions, or strategies, refer to the strategic approaches used to deliver care interventions.

Examples of care interventions across the continuum of care

The effectiveness of care interventions is well developed, in comparison with the evidence on effectiveness of strategic interventions, but too extensive to summarise in this resource.

Key resources on effective MNH care interventions

- World Health Organization's Documents on Integrated Management of Pregnancy & Childbirth (IMPAC)
- The Lancet Global Health series (articles pertaining to maternal and newborn health)
- The Cochrane Pregnancy and Childbirth Group
- *Lawn JE, Cousens S, Zupan J, for the Lancet Neonatal Survival Steering Team. Neonatal survival. 1.4 million neonatal deaths: when? where? why? Lancet 2005;* ***365****:891–900.*

This question aligns with the pillars of DFIDs 2010 Framework for Results for Improving Reproductive Maternal and Newborn Health, particularly pillar 3.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/67640/RMNH-framework-for-results.pdf

Pillar 3 'Expand the supply of quality services, delivering cost effective interventions delivered through stronger health systems with public and private providers'; the programme will support implementation and scale up of a package of high impact and cost-effective interventions that evidence demonstrates contribute to a reduction in maternal and under-5 mortality (MDGs 4 and 5) and numbers of underweight under-5s (MDG 1c), and that help combat HIV, malaria and other diseases (MDG 6). The interventions will include maternity and newborn care, immunisation, treatment of common childhood illnesses, nutrition and improving access to Anti-retroviral treatment for adults and children living with AIDS.

Equity

Finally, equity is also an important issue to consider; timely access to health services by women during pregnancy, delivery and the puerperium period is important should complications occur. This could be influenced by several aspects of access to health care, such as affordability, availability, geographical

location and acceptability of the health service. There is evidence that access to health care is not equitably distributed in many low and middle income countries. The following figure shows the median levels of various types of health care use across 47 to 55 LMICs, among population quintiles within countries. Source: http://qos.heart-resources.org/?sfwd-topic=indicators-for-mnh#references

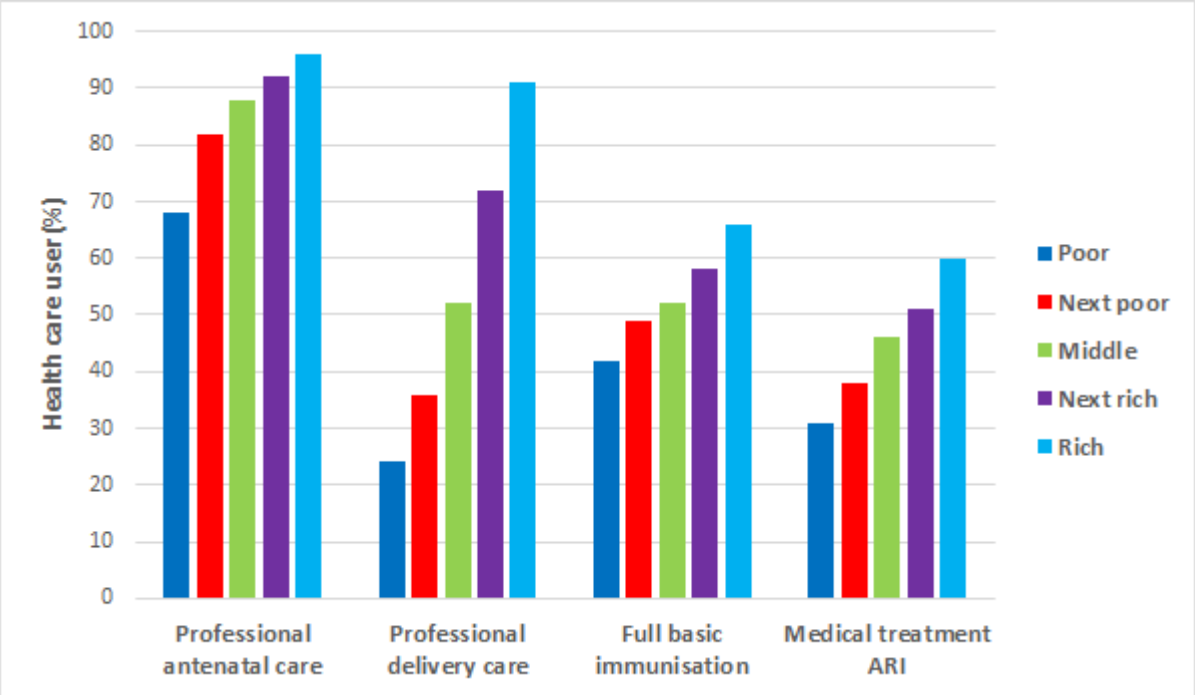


Figure: Median levels of health care use across 47 to 55 low- and middle-income countries (number of countries varies according to data availability for the four types of health care use), among population quintiles within countries.

3. Maternal and newborn child health (MNCH)

A Global Review of the Key Interventions Related to Reproductive, Maternal, Newborn and Child Health (RMNCH)

The Partnership for Maternal, Newborn & Child Health (2011) Geneva, Switzerland: PMNCH.
http://www.who.int/pmnch/topics/part_publications/essential_interventions_18_01_2012.pdf?ua=1

Evidence on the efficacy of single components of interventions is readily available today. However, while interventions have been combined into packages across the 'continuum of care', there is insufficient evidence on the efficacy of these packages. Developing consensus on a core package, derived from the variety of packages available for MNCH, is critical to efforts to reduce child mortality and improve maternal health and requires input from implementation research.

PMNCH with partners, the WHO and the Aga Khan University have spent several years consulting and developing the core package to define and guide the actions that need to be by national governments and local stakeholders, as well as international partners.

A new global consensus has been agreed on the key evidence-based interventions that will sharply reduce the 358,000 women who still die each year during pregnancy and childbirth and the 7.6 million children who die before the age of 5, according to a massive, three-year global study. The study, Essential Interventions, Commodities and Guidelines for Reproductive, Maternal, Newborn and Child Health, is designed to facilitate decision-making in LMICs about how to allocate limited resources for maximum impact on the health of women and children.

The study reviewed more than 50,000 scientific papers to determine the proven effectiveness of interventions and impact on survival, identifying 56 essential interventions that when implemented in "packages" relevant to local settings, are most likely to save lives.

Some of the interventions include:

- Manage maternal anemia with iron;
- Prevent and manage post-partum haemorrhage;
- Immediate thermal care for newborns;
- Extra support for feeding small and preterm babies;
- Antibiotics for the treatment of pneumonia in children.

"What is new," says Dr. Elizabeth Mason, Director of WHO's department of Maternal, Newborn, Child and Adolescent Health, and an author of the study, "is putting together information in a different way and building consensus among physicians, scientists and professional organisations to lay out an evidence-based path to help women before, during and after birth and their children. Everyone now agrees on the 56 essential interventions."

Essential, evidence-based interventions to reduce reproductive, maternal, newborn and child mortality, and promote reproductive health

Continuum of care	Adolescence & pre-pregnancy	Pregnancy (Antenatal)	Childbirth	Postnatal (mother)	Postnatal (newborn)	Infancy & childhood
All levels: Community Primary Referral	• Family planning (advice, hormonal and barrier methods) • Prevent and manage sexually transmitted infections, HIV • Folic acid fortification/ supplementation to prevent neural tube defects	• Iron and folic acid supplementation • Tetanus vaccination • Prevention and management of malaria with insecticide treated nets and antimalarial medicines • Prevention and management of sexually transmitted infections and HIV, including with antiretroviral medicines • Calcium supplementation to prevent hypertension (high blood pressure) • Interventions for cessation of smoking	• Prophylactic uterotonics to prevent postpartum haemorrhage (excessive bleeding after birth) • Manage postpartum haemorrhage using uterine massage and uterotonics • Social support during childbirth	• Family planning advice and contraceptives • Nutrition counselling	• Immediate thermal care (to keep the baby warm) • Initiation of early breastfeeding (within the first hour) • Hygienic cord and skin care	• 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 • Routine immunization plus *H.influenzae*, meningococcal, pneumococcal and rotavirus vaccines • Management of severe acute malnutrition • Case management of childhood pneumonia • Case management of diarrhoea
Primary and referral	• Family planning (hormonal, barrier and selected surgical methods)	• Screening for and treatment of syphilis • Low dose aspirin to prevent pre-eclampsia • Antihypertensive drugs (to treat high blood pressure) • Magnesium sulphate for eclampsia • Antibiotics for preterm prelabour rupture of membranes • Corticosteroids to prevent respiratory distress syndrome in preterm babies • Safe abortion • Post abortion care	• Active management of third stage of labour (to deliver the placenta) to prevent postpartum haemorrhage (*as above plus controlled cord traction)* • Management of postpartum haemorrhage (*as above plus manual removal of placenta)* • Screen and manage HIV (if not already tested)	• Screen for and initiate or continue antiretroviral therapy for HIV • Treat maternal anaemia	• Neonatal resuscitation with bag and mask (by professional health workers for babies who do not breathe at birth) • Kangaroo mother care for preterm (premature) and for less than 2000g babies • Extra support for feeding small and preterm babies • Management of newborns with jaundice ("yellow" newborns) • Initiate prophylactic antiretroviral therapy for babies exposed to HIV	• Comprehensive care of children infected with, or exposed to, HIV
Referral*	• Family planning (surgical methods)	• Reduce malpresentation at term with External Cephalic Version • Induction of labour to manage prelabour rupture of membranes at term (initiate labour)	• Caesarean section for maternal/foetal indication (to save the life of the mother/baby) • Prophylactic antibiotic for caesarean section • Induction of labour for prolonged pregnancy (initiate labour) • Management of postpartum haemorrhage *(as above plus surgical procedures)*	• Detect and manage postpartum sepsis (serious infections after birth)	• Presumptive antibiotic therapy for newborns at risk of bacterial infection • Use of surfactant (respiratory medication) to prevent respiratory distress syndrome in preterm babies • Continuous positive airway pressure (CPAP) to manage babies with respiratory distress syndrome • Case management of neonatal sepsis, meningitis and pneumonia	• Case management of meningitis
Community strategies	• Home visits for women and children across the continuum of care • Women's groups					

* Family planning interventions at Referral level include those provided at the Primary level

Continuum of care for maternal, newborn, and child health: from slogan to service delivery
Katie Kerber, Joseph E de Graft-Johnson, Zulfiqar A Bhutta, Pius Okong, Ann Starrs, Joy E Lawn (2007)
The Lancet; 370: 1358-69
http://www.who.int/pmnch/topics/20071003lancet.pdf

The continuum of care has become a rallying call to reduce the yearly toll of half a million maternal deaths, 4 million neonatal deaths, and 6 million child deaths. The continuum for MNCH usually refers to continuity of individual care. Continuity of care is necessary throughout the lifecycle and also between places of caregiving (including households and communities, outpatient and outreach services, and clinical-care settings). The articles defines a population-level public-health framework based on integrated service delivery throughout the lifecycle, and propose eight packages to promote health for mothers, babies, and children. These packages can be used to deliver more than 190 separate interventions, which would be difficult to scale up one by one. The packages encompass three which are delivered through clinical care (reproductive health, obstetric care, and care of sick newborn babies and children); four through outpatient and outreach services (reproductive health, antenatal care, postnatal care and child health services); and one through integrated family and community care throughout the lifecycle. Mothers and babies are at high risk in the first days after birth, and the lack of a defined postnatal care package is an important gap, which also contributes to discontinuity between maternal and child health programmes. Similarly, because the family and community package tends not to be regarded as part of the health system, few countries have made systematic efforts to scale it up or integrate it with other levels of care. Building the continuum of care for MNCH with these packages will need effectiveness trials in various settings; policy support for integration; investment to strengthen health systems; and results-based operational management, especially at district level.

Maternal Mortality in Zimbabwe Evidence, Costs and Implications
United Nations Zimbabwe, 2013, Periodic Publication, Paper 1
http://www.zw.one.un.org/sites/default/files/UN-ZW_IssuePaperSeries-1_MMR_June2013.pdf

Key message: Maternal mortality remains high despite high levels of antenatal care (ANC) and skilled birth attendance. **Implication**: Renewed efforts required to ensure quality of care in the provision of maternal health services.

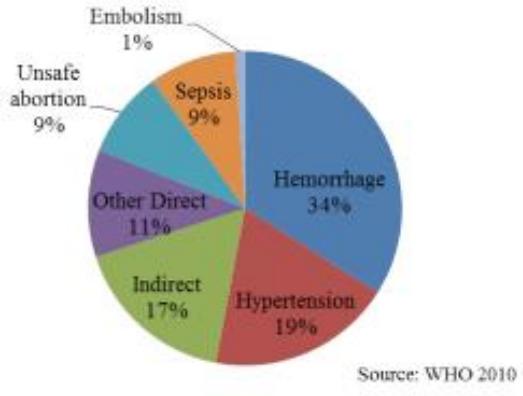
An estimated 3000 women die every year in Zimbabwe during child birth and at least 1.23% of GDP is lost annually due to maternal complications. According to the MMIEG, maternal mortality has worsened by 28% from 1990 to 2010. Most of what needs to be done is known. Past efforts have managed to sustain high levels of ANC visits among pregnant women and skilled birth deliveries yet maternal mortality estimates remain high. While innovative thinking supported by a stronger vital registration system is needed for progress towards reducing maternal mortality, quality of care in maternal health services seems to be the missing link. In addition, there is need to progressively expand the scope and entitlements of maternity protection and provide perspectives for policy and action.

In 2010, an estimated 285,000 maternal deaths occurred globally marking a decline in the maternal mortality ratio (MMR) of 47% from the 1990 levels. However, the decline has not been uniform across the globe as Sub-Saharan Africa shoulders over half (56%) of the maternal mortality burden. For every woman who dies, roughly 20 suffer serious injury or disability. **Babies and young children who have lost their mothers in childbirth are up to ten times more likely to die prematurely than their peers.** Inequities and challenges such as armed conflict, natural disasters and HIV/ AIDS hamper progress, with child and maternal mortality concentrated in the world's poorest countries, primarily in sub-Saharan Africa and South Asia.

Zimbabwe is ranked among the 40 countries in the world with high MMR of over 960 maternal deaths per 100,000 live births. Having made remarkable progress during the first decade of independence in improving access to health services through the Primary Health Care approach. This enabled access to basic health care services for about 85% of the population and resulted in a 20% decline in mortality rate. Unfortunately the country then failed to sustain this progress. As a result, the country has not made any progress from the 1990 MDGs base year maternal mortality levels. This is partly due to the prolonged political and economic crisis in the country and has been exacerbated by the HIV/AIDS epidemic for the last two decades. It is estimated that around 3,000 maternal deaths occurred in Zimbabwe in 2010.

The Zimbabwe Maternal and Perinatal Mortality Study (ZMPMS) of 2007 identified the leading direct causes of maternal mortality in Zimbabwe as post-partum haemorrhage, pregnancy induced hypertension and puerperal sepsis. Leading indirect causes include HIV and AIDS which account for about 26% of all maternal deaths. The MMIEG attributes about 39% of maternal deaths to AIDS related indirect causes.

Figure 2: Causes of maternal deaths in Sub-Suharan Africa, 1997-2007



Most causes of maternal deaths could be addressed successfully by access to emergency obstetric care (EmOC). Findings from the ZMPMS show that **skilled antenatal care (ANC) and birth attendance** are facilitators to addressing the delay in deciding to seek health care services and the delay to access care at the health facility which happen to account for about 67% of maternal deaths in Zimbabwe. Studies elsewhere have shown that higher skilled birth attendance is associated with lower maternal mortality rates. The country has sustained high levels of ANC visits (90%) among pregnant women and skilled birth deliveries (66%) over the past five years yet maternal mortality remains high. **Part of the problem lays in the quality of care.**

The National Integrated Health Facility Assessment (NIFA) offers some explanation to the phenomenon. Of the observed ANC case management by health workers, **only 14% met the standard** to identify danger signs in pregnancy with only 4% and 2% inquiring for fever and convulsions respectively. **Only about were 2% screened** for pre-eclampsia signs during ANC while only about 11% were assessed for pre-eclampsia/eclampsia (testing urine for protein) during labour and delivery. Of the observed health workers, **less than half (46%) provided all routine preventative medicines**. Slightly more than a third (36%) provided education on birth preparation, while only 12% provided adequate counselling on danger signs in pregnancy. **The deterioration in quality of care in health institutions could be partly responsible for the increasing maternal mortality in Zimbabwe.**

Maternal, Newborn and Child Health Framework
International Federation of Red Cross and Red Crescent Societies, Geneva, 2013
http://www.ifrc.org/PageFiles/93927/1232600-MNCH%20Framework%20report_LR%20(2).pdf

In 75 countries with the highest prevalence of maternal and child death (Countdown countries), the most common gaps in national coverage for essential interventions and selected approaches across the pregnancy-to-childhood continuum are as follows:

- Pre-pregnancy: low prevalence of contraceptive use which demonstrates unmet need for family planning.
- During pregnancy: low coverage of preventive treatment for malaria in pregnant women and of prevention of mother-to-child transmission (PMTCT) of HIV – both indicative of low coverage of skilled antenatal care.
- At childbirth and during a postnatal period: poor access to skilled attendance, emergency obstetric and neonatal care; low prevalence of early initiation of breastfeeding.
- During infancy: low average rates of exclusive breastfeeding.
- During childhood: low use of insecticide treated nets (ITN) by children; poor access to treatment for pneumonia, malaria and diarrhoea.

Gaps in the home-to-hospital continuum include:

- Health workforce shortages combined with limited task shifting: only 28% of the Countdown countries have a minimum health worker/per 10,000 people ratio required to deliver essential health services.
- Poor quality of care attributed to health worker shortages, poor infrastructure and inadequate supply of commodities and medical equipment.
- Low demand for care due to high out-of-pocket costs, provider attitude; low awareness, inadequate knowledge, local beliefs and misconceptions around health issues and health care services.
- Ineffective referral systems and weak links between facility-based staff and community-based workers.

A single major factor affecting health and survival across the entire continuum of care is undernutrition. Good maternal health and nutrition are important contributors to child survival. Undernourished women give birth to smaller infants than those nourished adequately. Low-birth infants, in turn, are at a higher risk of death due to infections and asphyxia. Further, undernutrition increases the likelihood that children will be stunted when they reach adulthood. As adults, those children tend to have lower educational attainment and hence lower economic status.

On the other hand, maternal survival is also affected by the women's nutritional status. Specifically, maternal short stature and iron deficiency are associated with a higher risk of death of the mother at delivery and account for at least 20% of maternal deaths. Addressing the issues of undernutrition through high coverage of proved interventions greatly increases the impact of all other services across the continuum and accelerates the achievement of goals for both maternal and child survival.

The selection of communities and the women, newborns and children groups can be determined taking into consideration one or more of the factors below, which are not mutually exclusive:

- Geographic factors: remoteness combined with poor roads, geographic obstacles, and proneness to natural hazards often referred to as "geographic targeting"
- Socio-economic factors (social determinants of health): poverty (i.e. targeting the rural or urban poor – poverty targeting), unemployment, high illiteracy rate, ethnicity, etc.
- Vulnerability factors: targeting the most vulnerable households (vulnerability targeting) identified based on household-level data collected through a community census
- Health problem factors: targeting selected communities, populations or groups with interventions that are designed to address specific health problems that disproportionately affect the poor i.e. malnutrition, tuberculosis, malaria.

It is important to ensure that interventions are:

- evidence-based and can be effectively delivered by Red Cross Red Crescent volunteers with appropriate training in coordination with primary health care (see section 5)
- consistent with national/regional health priorities as described in national health plans and programme-specific strategies
- address the identified gaps in the coverage of key interventions across the continuum and/or improve the quality of their delivery
- have gender and equity issues incorporated in their design and implementation
- promote the adoption of healthy behaviours, self-care, and skilled care seeking; and where possible and appropriate, provide prevention and treatment
- empower communities to demand and access quality, skilled care through the mobilisation of community resources
- allow to balance demand and supply by ensuring that supply of services is in place to match the increase in demand
- encourage male involvement and responsibilities in MNCH
- improve linkages between communities and their health facilities and strengthen referral systems
- use creative and innovative approaches that would contribute to better health outcomes for most vulnerable women, newborn and children

Figure 1: MNCH continuum of care

PMNCH (2011). Adapted from WHO (2005) - Make every mother and child count

Table 2: Essential evidence-based MNCH interventions suitable for delivery at the community/home and first levels

Intervention	Referral level	First 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 of 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-sclampsia • 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	First 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 message)	✓	✓	✓
Caesarean section for maternal/foetal indication	✓	–	–
Prophylatic 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	✓	–	–

Intervention	Referral level	First level	Community
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. influenza, 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	–	–	✓

Source: Essential Interventions, commodities and guidelines for Reproductive, Maternal, Newborn and Child Health.

Maternal and child health interventions in Nigeria: a systematic review of published studies from 1990 to 2014
Musa Abubakar Kana, Henry Victor Doctor, Bárbara Peleteiro, Nuno Lunet, and Henrique Barros,
BMC Public Health. 2015; 15: 334.
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4429684/

Background: Poor maternal and child health indicators have been reported in Nigeria since the 1990s. Many interventions have been instituted to reverse the trend and ensure that Nigeria is on track to achieve the MDGs. This systematic review aims at describing and indirectly measuring the effect of the MNCH interventions implemented in Nigeria from 1990 to 2014.

Methods: PubMed and ISI Web of Knowledge were searched from 1990 to April 2014 whereas POPLINE® was searched until 16 February 2015 to identify reports of interventions targeting MNCH in Nigeria. Narrative and graphical synthesis was done by integrating the results of extracted studies with trends of maternal mortality ratio (MMR) and under five mortality (U5MR) derived from a joint point regression analysis using Nigeria Demographic and Health Survey data (1990–2013). This was supplemented by document analysis of policies, guidelines and strategies of the Federal Ministry of Health developed for Nigeria during the same period.

Results: The authors identified 66 eligible studies from 2,662 studies. Three interventions were deployed nationwide and the remainder at the regional level. Multiple study designs were employed in the enrolled studies: pre- and post-intervention or quasi-experimental (n = 40; 61%); clinical trials (n = 6;9%); cohort study or longitudinal evaluation (n = 3;5%); process/output/outcome evaluation (n = 17;26%). The national MMR shows a consistent reduction (Annual Percentage Change (APC) = −3.10%, 95% CI: −5.20 to −1.00 %) with marked decrease in the slope observed in the period with a cluster of published studies (2004–2014). Fifteen intervention studies specifically targeting under-five children were published during the 24 years of observation. A statistically insignificant downward trend in the U5MR was observed (APC = −1.25%, 95% CI: −4.70 to 2.40%) coinciding with publication of most of the studies and development of MNCH policies.

Conclusions: The development of MNCH policies, implementation and publication of interventions corresponds with the downward trend of maternal and child mortality in Nigeria. This systematic review has also shown that more MNCH intervention research and publications of findings is required to generate local and relevant evidence.

Strategies for improving the quality of health care in maternal and child health in low- and middle-income countries: an overview of systematic reviews
Althabe, F., Bergelb, E., Cafferatac, M.L., Gibbonsa, L., Ciapponia, A., Colantonioa, A.A.L. and Palaciosa, A.R. (2008) Paediatric and Perinatal Epidemiology
http://www.ncbi.nlm.nih.gov/pubmed/18237352

The study identified 30 systematic reviews that fulfilled inclusion criteria, covering a wide range of interventions and several specific behaviours related to MCH. One of the main challenges in developing countries is to make interventions of demonstrated efficacy widely available to underserved populations, thus bridging the 'know-do gap.' There is a series of interventions that could, if implemented, result in a significant reduction of maternal, infant and child morbidity and mortality globally. However, those interventions are not widely used in LMICs. Effective interventions to reduce neonatal mortality, such as newborn temperature management, are only used in 20% of births, and the administration of antenatal steroids is used in no more than 5% of preterm births. Theoretically, the implementation of known interventions could reduce neonatal and child mortality by 40–70% in less developed countries. There is an urgent need to use effective approaches in order to disseminate and scale up effective interventions.

Decision-makers in LMICs should have access to evidence-based information regarding which strategies have been proven to be effective in ensuring that health care providers involved in maternal and child care administer beneficial, preventive or therapeutic interventions to the population of mothers and children. There is support for the concept that quality-improvement interventions (broadly defined as strategies to ensure delivery of effective services efficiently and equitably) can be used effectively to disseminate evidence-based practices among clinicians in industrialised countries. Whether this can be

shown in resource-poor developing countries is uncertain, as there is little research done in LMICs. Therefore, any summary of effective strategies needs to discuss their applicability in LMICs settings. Approximately 50% of births in LMICs occur at home; often, these births take place in rural areas without skilled attendants. Ignoring this fact could result in the selection of inappropriate strategies that fail to promote the use of beneficial practices among those who most need them, thus increasing health inequalities.

It is widely recognised that a systematic approach to judging and summarising the evidence helps protect against errors, resolve disagreements, facilitate critical appraisal and communicate information. Therefore, when making decisions, policymakers should have access to information from systematic reviews of research studies.

Interactive workshops, reminders and multifaceted interventions can improve professional practice, and they generally have moderate effects. Educational outreach visits consistently improve prescribing but have variable effects on other behaviours. Audit and feedback interventions have variable effects on professional practice, but most often these are small to moderate effects. Mass-media and patient-mediated interventions may change professional practice. Multifaceted interventions that combine several quality-improvement strategies are also effective but may not be more so than single interventions. While all of these strategies are applicable to MCH in LMICs, the applicability of the results to rural settings, in particular, may be limited. Use of these strategies could exacerbate inequalities, and this should be taken into consideration when planning implementation. Scaling up and sustainability may be difficult to achieve in LMIC contexts and need careful consideration.

The use of financial interventions has not been well studied; financial incentives and disincentives may be difficult to use effectively and efficiently, although their impact on practice needs to be considered. Organisational interventions are likely to be important, given that there are often underlying organisational or system problems. Regulatory interventions have not been well evaluated, but may sometimes be both inexpensive and effective. There are no ‘magic bullets’ or simple solutions for ensuring the quality of health care services. Interventions should be selected or tailored to address the underlying reasons for a failure to deliver effective services. Decision-makers should select the most appropriate interventions for specific problems. This requires a governance structure that clearly assigns responsibility for quality-improvement activities, priority setting, selection and design of interventions, and evaluation.

There are many systematic reviews of continuing education programmes and educational strategies for quality improvement in health care. Most of the reviewed studies are one-off evaluations rather than impact evaluations with long-term follow-up. There are few systematic reviews of organisational, financial and regulatory interventions, and few high-quality studies. These interventions are probably as or more important than educational strategies, although they are less well evaluated. Few studies have been undertaken in LMICs or that address MCH. Thus, the results of the available studies and reviews need to be interpreted cautiously when applied to LMICs.

Table 1. Summary of findings for each category of strategy

Continuing education and quality assurance

Intervention	Description	Targeted health care providers	Number of reviews (range of studies included in the reviews)	Review quality	Observed results			Comments
					Professional practice	Health care outcomes	Compared with other single strategies?	
Distribution of educational materials	Passive distribution of printed or audiovisual educational materials	Any health care provider (2 reviews), primary care health providers (4 reviews)	6 reviews (1–28 studies)	4.5–6	Mostly ineffective (4 reviews) or modest effect (1 review). Median effect +8.1% absolute improvement in performance (range +3.6 to +17.0)	No statistically significant differences (1 review)	Not compared (5 reviews). Less effective (1 review)	Usually ineffective unless combined with other strategies
Audit and feedback	Any summary of clinical performance of health care over a specified period of time. The summary may also include recommendations for clinical action. The information may be given in a written, electronic or verbal format	Any type of health care professionals responsible for patient care	10 reviews (2–51 studies)	Median 5 (range 4.5–6)	Small to moderate positive effects reported in the 9 reviews. Not effective in 1 review The magnitude of the effect varied from −17% to +49% change	No statistically significant differences (1 review)	Less effective than reminders (2 reviews) and opinion leaders (1 review). More effective than incentives (1 review). As effective as patient education, self-study education and practice-based education (1 review)	–
Reminders	Any intervention (manual or computerised) that prompts the provider to perform a clinical action	All type of providers	7 reviews (3–52 studies)	4.5–6	All reviews showed some degree of positive change (small to moderate changes). The effect size range from −1.0% to +34.0%)	No statistically significant differences in most studies (1 review)	Equally effective as giving the patient a handout and a questionnaire about her or his current preventive care status (1 review)	–
Educational meetings	Planned educational activities: meetings, conferences, lectures, workshops, seminars, symposia, and courses that occurred off-site from the practice setting	All types of health care providers	7 reviews (3–45 studies)	4.5–6	Small to moderately large effects (absolute change 1%–30%) observed in the 5 reviews with active approaches (interactive workshops, small group sessions, tutorial sessions). More passive approaches	Unclear. Only one study in one review showed beneficial effects in asthma symptoms in children	Less effective than multifaceted strategies that included education meetings as one component (3 reviews). Two reviews did not report such comparisons	–

Table 1. Summary of findings for each category of strategy

Continuing education and quality assurance

Intervention	Description	Targeted health care providers	Number of reviews (range of studies included in the reviews)	Review quality	Observed results			Comments
					Professional practice	Health care outcomes	Compared with other single strategies?	
					(didactic sessions like conferences or lectures) did not show effects			
Local consensus processes	Inclusion of participating providers in discussion to ensure agreement that the chosen clinical problem is important and the approach to managing it appropriate	All type of health care providers	1 review (10 studies)	5.5	No evidence of effectiveness	–	Not reported	–
Problem-based learning in continuing medical education	Tutor facilitated, problem-based learning session in which a small, self-directed group starts with a brainstorming session. A problem is posed that challenges their knowledge and experience. Learning goals are formulated by consensus and new information is learnt by self-directed study. It ends with a group discussion and evaluation	General practitioners	1 review (6 studies)	4.5	Not effective	Unclear	More effective than lectures	–
Education outreach visits	Use of a trained person who meets with providers in their practice settings to provide information. The information given may include feedback on the provider's performance	All types of health care providers	5 reviews (1–8 studies)	4.5–6	Effective for prescribing (50% of relative improvement in one study). Unclear if effective for preventive services	Unclear	Outreach visits are more effective than audit and feedback (1 review)	–
Local opinion leaders	Those health providers perceived by their colleagues as 'educationally influential'	Health care professionals in charge of patient care	2 reviews (8–12 studies)	5.5	Likely to produce small positive changes (ARD varied from −0.06 (favours control group) to +0.12 (favours intervention)	–	Shown to be more effective than feedback or didactic educational meetings	–

Table 1. Summary of findings for each category of strategy

Continuing education and quality assurance

Intervention	Description	Targeted health care providers	Number of reviews (range of studies included in the reviews)	Review quality	Observed results			Comments
					Professional practice	Health care outcomes	Compared with other single strategies?	
Patient-mediated interventions	Any interventions aimed at changing the performance of health care providers for which information was sought from or given directly to patients by others	All types of health care providers	2 reviews (7–10 studies)	5.5–6	Not effective when implemented alone (1 review) Moderate to large effects. Median absolute effects of +20.8% (range +10.0 to +25.4%) (1 review)	–	Not reported	–
Mass media	Channels of mass communication (including radio, television, newspapers, magazines, leaflets, posters and pamphlets) on the utilisation of health services	Health care providers, patients and general public	1 review (20 studies)	5.5	Effective strategy. Change in effect size ranging from 0.1% to −13.1% in the desired direction	–	Not reported	–
Multifaceted interventions	Any intervention that includes two or more of the following interventions: educational materials, conferences, outreach visits, local opinion leaders, patient-mediated, audit and feedback, office systems, and economic incentives	All types of health care providers	10 reviews (1–117 studies)	4.5–6	Effective: 10 reviews found positive changes. The range of the absolute changes found was from 1% to 64%	Unclear: 3 reviews reported evidence in favour and against	Unclear: 3 reviews showed combined strategies were more effective than single; 2 reviews found heterogeneous results	–
Tailored interventions to overcome identified barriers to change	Interventions tailored to address specified barriers to change in health providers: focus group discussions, surveys, interviews	Health providers	2 reviews (3–15 studies)	5.5	Tailored interventions may improve health providers' performance and health care outcomes, but the results are inconclusive. Combined OR in one review: 2.18 [1.09, 4.34] in favour of tailored interventions)	–	–	Effectiveness remains uncertain and more rigorous trials (including process evaluations) are needed

Organisation of care

Intervention	Description	Targeted health care providers	Number of reviews (range of studies included in the reviews)	Review quality	Observed results: Professional practice	Observed results: Health care outcomes	Compared with other single strategies?	Comments
Formal integration of services	Integration of primary health care services	Health workers delivering care at primary level	2 reviews (2 and 5 studies)	6	No consistency in the results, or partially effective (+2.1% relative improvement)	–	No consistent pattern of benefit	–
Improving office systems	Organisation of office systems to increase the use of health service procedures	Health workers	2 reviews (3 and 6 studies)	5–6	Effective to increase use of health services	–	Screening and referral by nurses, more effective than only screening by nurses. Screening during a routine visit more effective than physician reminder. Assistance from facilitators of nurses in the design and implementation of office routines and tools for increasing screening uptake more effective than continuing medical education	–
Structural interventions: changes in medical record systems	Nursing record systems	Nurses, students or health care assistants working under the direction of a qualified nurse	1 review (8 studies)	5.25	Inconclusive. Further research needed	–	–	All RCT

Financial interventions

Intervention	Description	Targeted health care providers	Number of reviews (range of studies included in the reviews)	Review quality	Observed results: Professional practice	Observed results: Health care outcomes	Compared with other single strategies?	Comments
Providers' incentives	Fundholding in practices	Health providers	2 reviews (3–6 studies)	4.5	Unclear	–	–	Well-designed trials of management were rarely found

1. ARD, adjusted risk difference; OR, odds ratio; RCT, randomised controlled trials.

Measuring Quality in Maternal-Newborn Care: Developing a Clinical Dashboard
Ann E. Sprague, RN, PhD, Sandra I. Dunn, RN, PhD, Deshayne B. Fell, MSc, JoAnn Harrold, MD, FRCPC, Mark C. Walker, MD, FRCSC, Sherrie Kelly, MSc, Graeme N. Smith, MD, PhD, FRCSC; J Obstet Gynaecol Can; 35(1):29–38 (2013)
http://www.jogc.com/article/S1701-2163(15)31045-8/pdf

Pregnancy, birth, and the early newborn period are times of high use of health care services. As well as opportunities for providing quality care, there are potential missed opportunities for health promotion, safety issues, and increased costs for the individual and the system when quality is not well defined or measured. There has been a need to identify key performance indicators (KPIs) to measure quality care within the provincial maternal-newborn system. The authors also wanted to provide automated audit and feedback about these KPIs to support quality improvement initiatives in a large Canadian province with approximately 140,000 births per year. They therefore worked to develop a maternal-newborn dashboard to increase awareness about selected KPIs and to inform and support hospitals and care providers about areas for quality improvement.

The authors mapped maternal-newborn data elements to a quality domain framework, sought feedback via survey for the relevance and feasibility of change, and examined current data and the literature to assist in setting provincial benchmarks. Six clinical performance indicators of maternal-newborn quality care were identified and evidence-informed benchmarks were set. A maternal-newborn dashboard with "drill down" capacity for detailed analysis to enhance audit and feedback is now available for implementation. While audit and feedback does not guarantee individuals or institutions will make practice changes and move towards quality improvement, it is an important first step. Practice change and quality improvement will not occur without an awareness of the issues.

Table 2. Final BORN Ontario definitions and benchmarks

Key performance indicators	Target (green) %	Warning (yellow) %	Alert (red) %	Definitions
1. Proportion of newborn screening samples that are unsatisfactory for testing†	< 2	2 to 3	> 3	The number of newborn screening samples that were unsatisfactory for testing, expressed as a percentage of the total number of newborn screening samples submitted to Newborn Screening Ontario (NSO) from a given hospital.
2. Rate of episiotomy in spontaneous vaginal births	< 13	13 to 17	> 17	The number of women who had spontaneous vaginal births with episiotomy, expressed as a percentage of the total number of women who had spontaneous vaginal births at a given hospital.
3. Rate of formula supplementation in term infants whose mothers intended to breastfeed	< 20	20 to 25	> 25	Number of term live babies receiving formula supplementation expressed as a percentage of the total number of term babies whose mothers intended to breastfeed (in a given place and time).
4. Rate of repeat Caesarean section in low-risk women* not in labour at term, with no medical or obstetrical complications, prior to 39 weeks' gestation	< 11	11 to 15	> 15	The number of women with a Caesarean section performed before 39 weeks' gestation, expressed as a percentage of the total number of low-risk women who had a repeat Caesarean section at term (in a given place and time).
5. Proportion of women delivering at term who had GBS screening at 35 to 37 weeks' gestation	> 94	90 to 94	< 90	The number of women having an unplanned Caesarean section in labour who deliver at term and have GBS screening at 35 to 37 weeks' gestation expressed as a percentage of the total number of labouring women delivering at term (in a given place and time).
6. Proportion of women induced with an indication of post-dates who are at less than 41 weeks' gestation at delivery	< 5	5 to 10	> 10	The number of women who were at less than 41 weeks of gestation at delivery, expressed as a percentage of the total number of women who had labour induction with an indication for induction of "post-dates pregnancy" (in a given place and time).

GBS: Group B Streptococcus

*Repeat Caesarean section in low-risk women is defined as a Caesarean section performed before the onset of labour, and in the absence of medical or obstetrical indications for delivery among women with a history of one or more previous Caesarean sections. For this analysis, the definition included women with a singleton live birth, between 37 and 42 weeks of gestational age, with no maternal medical problems, no obstetrical complications, and none of the following indications for the Caesarean section: cord prolapse, fetal anomaly, intrauterine growth restriction/small for gestational age, large for gestational age, non-reassuring fetal status, placenta previa, placental abruption, pre-eclampsia, and preterm rupture of membranes.

†Samples coded as unsatisfactory due only to collection at less than 24 hours of age (i.e., there are no other reasons for the sample to be deemed unsatisfactory) will not be considered unsatisfactory for this analysis, since sample collection at less than 24 hours of age is recommended in cases of early discharge, transfer, or transfusion.

Effect on maternal and child health services in Rwanda of payment to primary health-care providers for performance: an impact evaluation
Basinga, P. Gertler, PJ. Binagwaho, A. Soucat, Agnes LB. Sturdy. Vermeersch, Christel MJ. (2011) The Lancet Volume 377, No. 9775
http://www.thelancet.com/article/S0140-6736%2811%2960177-3/abstract

Background: Evidence about the best methods with which to accelerate progress towards achieving the MDGs was urgently needed. The authors assessed the effect of performance-based payment of health-care providers (payment for performance; P4P) on use and quality of child and maternal care services in health-care facilities in Rwanda.

Methods: 166 facilities were randomly assigned at the district level either to begin P4P funding between June 2006, and October 2006 (intervention group; n=80), or to continue with the traditional input-based funding until 23 months after study baseline (control group; n=86). Randomisation was done by coin toss. Facilities and 2158 households were surveyed at baseline and after 23 months. The main outcome measures were prenatal care visits and institutional deliveries, quality of prenatal care, and child preventive care visits and immunisation. The authors isolated the incentive effect from the resource effect by increasing comparison facilities' input-based budgets by the average P4P payments made to the treatment facilities. A multivariate regression estimated specification of the difference-in-difference model in which an individual's outcome is regressed against a dummy variable, indicating whether the facility received P4P that year, a facility-fixed effect, a year indicator, and a series of individual and household characteristics.

Findings: The model estimated that facilities in the intervention group had a 23% increase in the number of institutional deliveries and increases in the number of preventive care visits by children aged 23 months or younger (56%) and aged between 24 months and 59 months (132%). No improvements were seen in the number of women completing four prenatal care visits or of children receiving full immunisation schedules. The authors also estimate an increase of 0·157 standard deviations (95% CI 0·026–0·289) in prenatal quality as measured by compliance with Rwandan prenatal care clinical practice guidelines.

Interpretation: The P4P scheme in Rwanda had the greatest effect on those services that had the highest payment rates and needed the least effort from the service provider. P4P financial performance incentives can improve both the use and quality of maternal and child health services, and could be a useful intervention to accelerate progress towards MNCH development targets.

National, regional, and worldwide estimates of stillbirth rates in 2009 with trends since 1995: a systematic analysis
Cousens et al (2011) The Lancet, Volume 377, No. 9774, p1319–1330
http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(10)62310-0/abstract

This study draws attention to the dearth of reliable data in regions where most stillbirths occur. The estimated trend in stillbirth rate reduction is slower than that for maternal mortality and lags behind the increasing progress in reducing deaths in children younger than 5 years. Improved data and improved use of data are crucial to ensure that stillbirths count in global and national policy.

Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care
Renfrew, MJ. McFadden, A. Bastos, MH. Campbell, J. Channon, AA. Cheung, NF and others, (2014) The Lancet, Volume 384, No. 9948, p1129–1145
http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)60789-3/fulltext

The authors identified more than 50 short-term, medium-term, and long-term outcomes that could be improved by care within the scope of midwifery; reduced maternal and neonatal mortality and morbidity, reduced stillbirth and preterm birth, decreased number of unnecessary interventions, and improved psychosocial and public health outcomes. Midwifery was associated with more efficient use of resources and improved outcomes when provided by midwives who were educated, trained, licensed, and regulated. Findings support a system-level shift from maternal and newborn care focused on

identification and treatment of pathology for the minority to skilled care for all. This change includes preventive and supportive care that works to strengthen women's capabilities in the context of respectful relationships, is tailored to their needs, focuses on promotion of normal reproductive processes, and in which first-line management of complications and accessible emergency treatment are provided when needed. Midwifery is pivotal to this approach, which requires effective interdisciplinary teamwork and integration across facility and community settings. Future planning for maternal and newborn care systems can benefit from using the quality framework in planning workforce development and resource allocation.

There are established and documented associations between maternal survival and child outcomes. These include clinical associations such as obstetric complications contributing to stillbirths and early neonatal deaths, and other repercussions such as low survival rates of infants following the death of their mother.

Figures 1.8, 1.9 and 1.10 show global and regional variations in the maternal mortality data, overlaid with key neonatal and child indicators.

Maternal mortality and early neonatal deaths

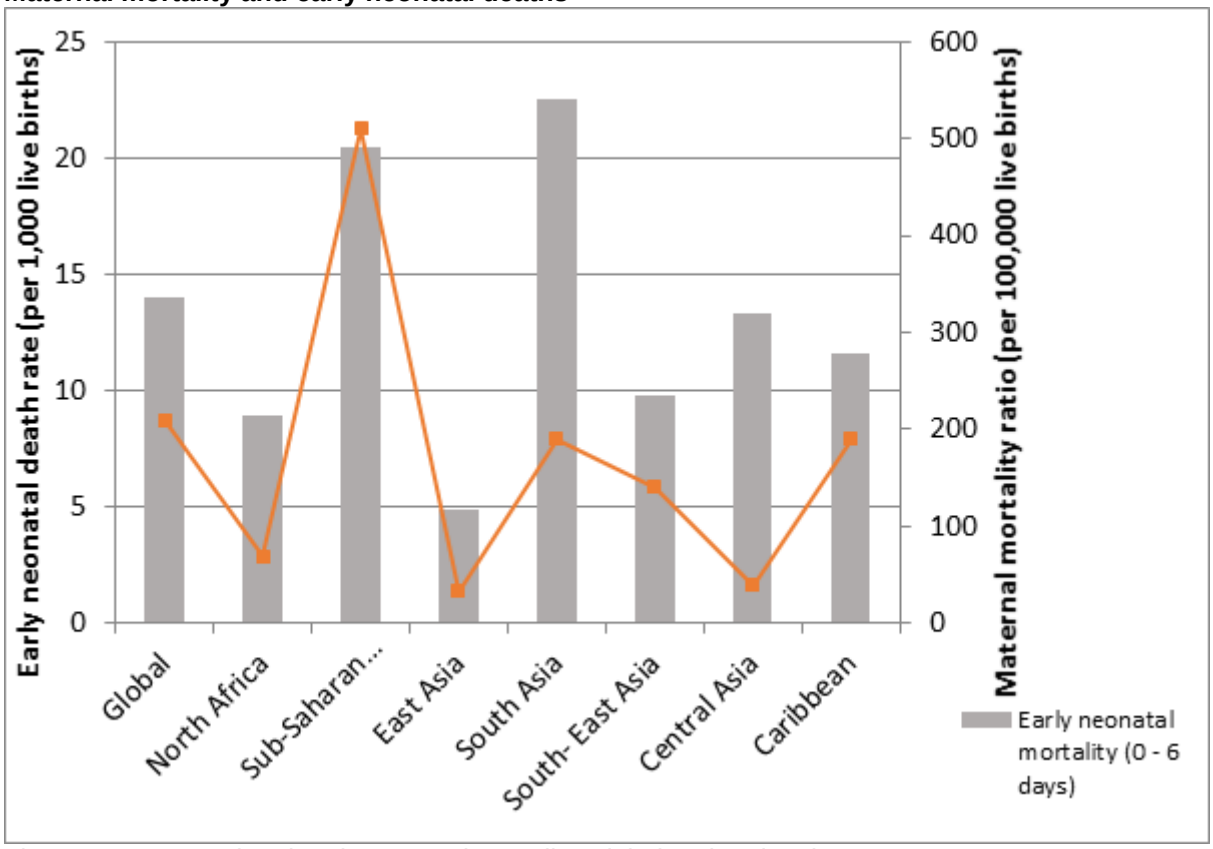


Figure 1.8: Maternal and early neonatal mortality, global and regional

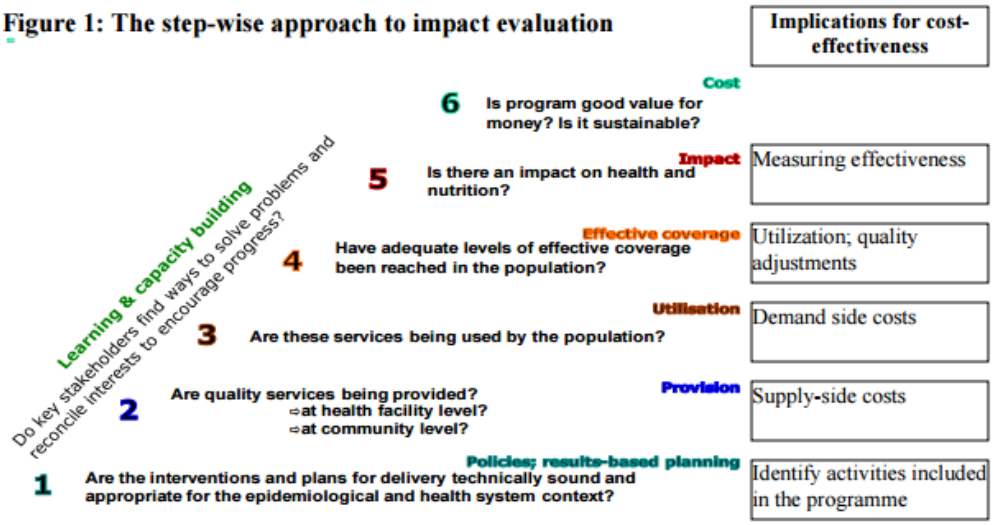
Data sources: WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division 2014. | Wang, H., Liddell, C., Coates, M., Moobey, M., Levitz, C et al 2014.

4. Cost effectiveness

Packages of interventions: Family planning, safe abortion care, maternal, newborn and child health
UNICEF, UNFPA, WHO, World Bank, 2010
http://apps.who.int/iris/bitstream/10665/70428/1/WHO_FCH_10.06_eng.pdf

The evidence shows that high maternal, perinatal, neonatal and child mortality rates are associated with inadequate and poor quality health services. Evidence also suggests that explicit, evidence-based, cost effective packages of interventions can improve the processes and outcomes of health care when appropriately implemented. This document describes the key effective interventions organised in packages across the continuum of care through pre-pregnancy, pregnancy, childbirth, postpartum, newborn care and care of the child. The packages are defined for community and/or facility levels in developing countries and provide guidance on the essential components needed to assure adequacy and quality of care.

Figure 1: The step-wise approach to impact evaluation



Source: [3,4]

Assessing the costs and cost-effectiveness of rapid-scale up for the maternal, neonatal and child health: The economic component of the impact evaluation strategy for the Catalytic Initiative
Johns, B, Opumi-Akuamoa, M, Walker, D, Draft version
http://www.jhsph.edu/research/centers-and-institutes/institute-for-international-programs/_documents/rapid_scaleup/CI_costeffectiveness.pdf

Table 2: What interventions are included and how much do they cost?

Category	Examples of interventions	Examples of strategies to support delivery of interventions	Additional cost per capita per year (US$)
Core package	Antenatal care, skilled birth attendance, basic family planning, essential newborn care, promotion of exclusive breastfeeding, immunization, vitamin A supplementation, oral rehydration, case management of childhood diseases (for example, pneumonia, diarrhea, malaria), hand-washing promotion, insecticide-treated bednets	Conditional cash transfers, provider incentives for home visits, improved training and supervision	Less than 3
Expanded package	In addition to core interventions: Complementary and therapeutic feeding, zinc supplementation, new vaccines, family planning	Performance incentives and health systems investments to strengthen human resources and infrastructure at primary health care level	4-6
Comprehensive package	In addition to core and expanded interventions: emergency obstetric and neonatal care, anti-retrovirals for HIV/AIDS, water and sanitation	Performance incentives and health systems investments to strengthen human resources and infrastructure at referral-level care	8-12

Source: estimates based on ongoing inter-agency analysis by individuals in the Maternal, Newborn and Child Health Network for Asia and the Pacific for the development of country-specific investment cases. Strategies and numbers vary depending on the country-specific context.

Investing in Maternal, Newborn and Child Health
WHO, 2009
http://www.who.int/pmnch/topics/investinginhealth.pdf

Why is spending critical? This article focuses on Asia but makes some useful points on cost effectiveness, with detail on the five areas below. Spending in the region – on MNCH and health in general – must not only be increased but must also be improved. It currently suffers from five problems that governments and their development partners can fix.

1. Increase spending

2. Increase efficiency

Dramatic reductions of mortality achieved in low-resource settings: evidence from Sri Lanka In 1950, the maternal mortality ratio (MMR) in Sri Lanka was very high, at more than 500 deaths per 100,000 live births. In the same period, gross national product (GNP) per capita was only US$270. Despite being constrained by its limited resources, Sri Lanka managed to reduce the MMR to below 100 by the mid-1970s – far lower than many countries with similar or higher income levels. Today Sri Lanka's MMR is about 50. A recent evaluation of Sri Lanka's experience identified several critical success factors headed by political will to invest in maternal health. Services were free to those who could not pay, and the decision was taken to expand access to underserved areas, with a focus on the most appropriate interventions. Emergency obstetric care was developed. More skilled birth attendants were made available to help mothers in labour. This was achieved by training a large number of midwives and by promoting the service and improving its quality. Pregnant women were encouraged to consider they had a right to a skilled birth attendant. Progressive and sequenced investment was an important part of the programme's success. This focused initially on recruiting more midwives and strengthening their capacity. Investments were then made in the primary health care system, and finally in hospitals.

3. Increase equity

Inequity in health access and outcomes is rising – with adverse social and political consequences. Where do households spend their money for health care for children less than five years of age? The Multi-Country Evaluation of the Integrated Management of Childhood Illness (IMCI) found that household out-of-pocket expenditure per child in Bangladesh was US$4.50 lower in areas with IMCI compared to areas without IMCI. Households were paid twice as much per child out of their own pockets in areas without IMCI. On the other hand, the costs per child to service providers almost doubled in IMCI areas. This apparent shift in source of funding for child health care in IMCI and comparison areas has important implications for programmatic and budgeting decisions. Clearly, providing services for under-fives through the IMCI model was beneficial to households by reducing their financial burden of seeking and obtaining care. Further work should explore if the poorest households were those who benefited the most. Equally important, the intervention in the study areas was associated with an additional cost to the provider of US$ 5.5 per child per year - more than doubling these costs.

4. Incentives matter

Using the power of financing to influence incentives and improve access to maternal health services In India, the State Government of Gujarat launched the Chiranjeevi Scheme in 2005, which aims to improve access to institutional delivery among families living below the poverty line. This is accomplished through a voucher scheme that provides free treatment during delivery including all medicines. The scheme also covers the mother's out-of-pocket travel costs to reach the health care facility, and offers financial support to cover loss of wages for the person who accompanies her. Private medical practitioners (mainly gynaecologists) have been enrolled in the scheme to provide maternal health services. The providers are reimbursed at a fixed rate for the deliveries they carry out. Recent evaluations of the scheme found that in 2007-2008 it led to a doubling of the number of deliveries taking place in health care facilities in the State. It has been estimated that the programme has helped to avert close to 1,000 maternal deaths and close to 1,000 newborn deaths. It has also been successful in reducing financial barriers. People using the scheme spent on average 727 Rupees (about US$14.50) on a delivery, compared to 1,658 Rupees (about US$33.50) previously. Almost all (96%) of women using the scheme had used antenatal care services before delivery (the average number of visits was 2.84). Only one delivery among beneficiaries of the scheme was conducted at home, whereas 21% of non-beneficiaries delivered at home. Beneficiaries of the scheme were also more likely to be attended by a skilled provider than non-beneficiaries. In recognition of its success, the Chiranjeevi Scheme

received the Asian Innovation Award in 2006 from the Wall Street Journal. The programme is being expanded to other areas in Gujarat and is also being replicated in other states of India.

5. Integration matters

Too often, key programmes that build health systems and determine reproductive, MNCH outcomes are not fully implemented or their funding is curtailed. The reasons are often a fall in support from donors and inconsistent domestic political and financial support. Furthermore, programmes and interventions are often not integrated according to the continuum of care approach. This promotes access to care in line with levels of care (families and communities, outreach services, and clinical services) and at critical times for MNCH (including adolescence, pre-pregnancy, pregnancy, childbirth, the postnatal period, and childhood). There is often a lack of "one country" health plans and budgets that reflect all levels of care for MNCH along the continuum of care. This often results in fragmented and uncoordinated financing by donors and governments, which prevents a holistic and integrated approach to implementation and financing of MNCH interventions.

Cost effectiveness analysis of strategies for child health in developing countries.
Edejer TT, Aikins M, Black R, Wolfson L, Hutubessy R, Evans DB, BMJ. 2005 Nov 19;331(7526):1177. Epub 2005 Nov 10.
http://www.ncbi.nlm.nih.gov/pubmed/16282378

Objective: To determine the costs and effectiveness of selected child health interventions-namely, case management of pneumonia, oral rehydration therapy, supplementation or fortification of staple foods with vitamin A or zinc, provision of supplementary food with counselling on nutrition, and immunisation against measles.

Design: Cost effectiveness analysis.

Data Sources: Efficacy data came from published systematic reviews and before and after evaluations of programmes. For resource inputs, quantities came from literature and expert opinion, and prices from the WHO Choosing Interventions that are Cost Effective (WHO-CHOICE) database.

Results: Cost effectiveness ratios clustered in three groups, with fortification with zinc or vitamin A as the most cost effective intervention, and provision of supplementary food and counselling on nutrition as the least cost effective. Between these were oral rehydration therapy, case management of pneumonia, vitamin A or zinc supplementation, and measles immunisation.

Conclusions: On the grounds of cost effectiveness, micronutrients and measles immunisation should be provided routinely to all children, in addition to oral rehydration therapy and case management of pneumonia for those who are sick. The challenge of malnutrition is not well addressed by existing interventions.

5. Sexual and reproductive health (SRH)

Sexual and reproductive health for all: The challenge still stands
Mahmoud F. Fathalla (2015) Glob Public Health; 10(2): 135–136.
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4318116/

This *Global Public Health* Special Issue 'SRHR for the next decades: What's been achieved? What lies ahead?' assesses progress 20 years after the 1994 International Conference on Population and Development (ICPD), which established the SRH and rights framework for population and health policy (UN, 1995). Contributors from different regions demonstrate that the challenges recognised by the ICPD still stand, and that lessons learned provide a clear way forward for the world's governments as they convene at the UN to agree on priority actions, and a post-2015 global development agenda.

Fulfilment of SRH and rights enables people to have a satisfying and safe sex life, to reproduce if and when they desire and to have access to the health services and information necessary to make informed decisions, free of discrimination, coercion and violence (UN, 1995). According to a recent UN Global

Review Report, progress has been made in the implementation of the ICPD agenda, but still falls short of the ICPD goal of SRH for all (UN, 2014). International and national commitments have not been matched with action to improve the lives of people, particularly women, across the UN's *one* world. One of the starkest examples is the persistent pandemic of violence against women.

Global and national indicators of progress are welcome, but mask harsh inequity, between and within countries (Barros et al., 2012). The better-off drive progress indicators upwards, while the marginalised and the underprivileged are left behind. The penalties for these shortfalls are heavy in terms of avoidable human suffering and lost opportunities for economic and human development.

Health and rights in sexuality and reproduction are an integrated package (Fathalla, 2002), which, the ICPD agreed, includes SRH services (family planning, maternity care, safe abortion, prevention and treatment of STIs and HIV, among others); comprehensive sexuality education; and protection of sexual and reproductive rights. People cannot be healthy if they have one element of the package but miss others (Germain, Dixon-Mueller, & Sen, 2009). The papers in this Special Issue show that progress on the components of SRH and rights has been uneven. While acknowledging that certain components may be more difficult or more costly to implement, progress in many instances has been hindered on ideological, rather than scientific, public health and cost-effectiveness grounds.

This Special Issue also considers the central role of addressing the underlying social and political determinants of SRH and rights, as well as work towards universal health coverage, currently facing an uphill struggle (*The Lancet*, 2012). Papers and commentaries stress that a human rights platform is essential for all of this work, along with strengthening of health systems, and design and delivery of comprehensive and integrated packages of health services and information.

Sexual and reproductive health: Progress and outstanding needs
Rachel C. Snow, Laura Laski & Massy Mutumba (2015) Global Public Health, Issue 2, Volume 15, pages 149-173.
http://www.tandfonline.com/doi/abs/10.1080/17441692.2014.986178?src=recsys

The authors examine progress towards the 1994 ICPD commitment to provide universal access to SRH services by 2014, with an emphasis on changes for those living in poor and emerging economies. Accomplishments include a 45% decline in the maternal mortality ratio (MMR) between 1990 and 2013; 11.5% decline in global unmet need for modern contraception; ~21% increase in skilled birth attendance; and declines in both the case fatality rate and rate of abortion. Yet aggregate gains mask stark inequalities, with low coverage of services for the poorest women. Demographic and Health Surveys and Multiple Indicator Cluster Surveys from 80 developing countries highlight persistent disparities in skilled birth attendance by household wealth: in 70 of 80 countries (88%), ≥80% of women in the highest quintile were attended by a skilled provider at last birth; in only 23 of the same countries (29%) was this the case for women in the lowest wealth quintile. While there have been notable declines in HIV incidence and prevalence, women affected by HIV are too often bereft of other SRH services, including family planning. Achieving universal access to SRH will require substantially greater investment in comprehensive and integrated services that reach the poor.

Advancing sexual and reproductive health and rights in low- and middle-income countries: Implications for the post-2015 global development agenda
Adrienne Germain, Gita Sen, Claudia Garcia-Moreno & Mridula Shankar, (2015) Global Public Health, Issue 2, Volume 15, pages 137-148
http://www.tandfonline.com/doi/abs/10.1080/17441692.2014.986177?src=recsys

The papers and commentaries in this special issue illuminate progress made by low- and middle-income countries towards implementation of the Programme of Action (PoA) agreed by 179 countries during the 1994 ICPD. The PoA presents a path-breaking SRH and rights (SRHR) framework for global and national population and health policies. While progress towards implementation has been made at global, regional and national levels, continuing and new challenges require that high priority be given to SRHR for all, particularly women and girls, during the remaining months of the millennium development goals and in the UN post-2015 development agenda. This paper highlights three critical gaps, raised in other papers: inequalities in access to SRH information and services; the widespread

need to improve SRH services to meet public health, human rights and medical ethics standards for quality of care; and the absence or inadequate use of accountability mechanisms to track and remedy the other two. We discuss priority actions to achieve equality, quality and accountability in SRHR policies, programmes and services, especially those that should be included in the post-2015 development agenda.

Sexual and reproductive health and rights in changing health systems.
Sen G, Govender V. (2015) Glob Public Health.;10(2):228-42. doi: 10.1080/17441692.2014.986161.
http://www.ncbi.nlm.nih.gov/pubmed/25536851

SRH and rights (SRHR) are centrally important to health. However, there have been significant shortcomings in implementing SRHR to date. In the context of health systems reform and universal health coverage/care (UHC), this paper explores the following questions. What do these changes in health systems thinking mean for SRHR and gender equity in health in the context of renewed calls for increased investments in the health of women and girls? Can SRHR be integrated usefully into the call for UHC, and if so how? Can health systems reforms address the continuing sexual and reproductive ill health and violations of sexual and reproductive rights (SRR)? Conversely, can the attention to individual human rights that is intrinsic to the SRHR agenda and its continuing concerns about equality, quality and accountability provide impetus for strengthening the health system? The paper argues that achieving equity on the UHC path will require a combination of system improvements and services that benefit all, together with special attention to those whose needs are great and who are likely to fall behind in the politics of choice and voice (i.e., progressive universalism paying particular attention to gender inequalities).

Adolescent girls are a specific group to consider. Although there is a variation in fertility rates among adolescents, prevention of pregnancy is of key importance because they are at a higher risk of complications and death than older women. However, if pregnancy does occur during adolescence, special needs have to be considered and the risks associated mean that antenatal care and skilled attendance at birth is crucial.

Adolescent Sexual and Reproductive Health in Developing Countries: An Overview of Trends and Interventions
Michelle J. Hindin Adesegun O. Fatusi, First published online: June 26, 2009
https://www.guttmacher.org/about/journals/ipsrh/2009/06/adolescent-sexual-and-reproductive-health-developing-countries-overview

Because most youth obtain at least some education particularly with the international recognition of the importance of schooling (e.g. the MDGs), school-based programmes appear to be a logical choice for SRH education. However, according to recent reviews of school-based HIV interventions, such programmes have had mixed results In addition, such interventions miss adolescents who are not in school. At the same time, the provision of comprehensive SRH interventions in developing countries has been impeded by ideologically driven restrictions. Many community-based programmes have had to focus on HIV prevention rather than comprehensive SRH, again because of funding restrictions.

Another potential avenue for improving SRH outcomes for young people is parent-child communication. However, most of today's parents were not taught about SRH by their own parents or even in school, leaving them unable to pass on crucial knowledge to their children. The discomfort many parents feel about talking to their children about sexuality further impedes their ability to provide guidance.

A review of interventions addressing structural drivers of adolescents' sexual and reproductive health vulnerability in sub-Saharan Africa: implications for sexual health programming
Joyce Wamoy, Gerry Mshana, Aika Mongi, Nyasule Neke, Saidi Kapiga and John Changalucha (2014) Reproductive Health, 11:88
https://reproductive-health-journal.biomedcentral.com/articles/10.1186/1742-4755-11-88

Sub-Saharan Africa (SSA) continues to bear the brunt of the HIV epidemic, with two thirds of those infected residing in the region. Women and girls are the most affected accounting for 60% of the people

living with HIV from the region. Young people aged 15-24 years account for an estimated 45% of new infections globally. In this age group, women aged 15-24 years are eight times more likely to be infected than young men, pointing to the urgent need for prevention efforts to focus on girls to abate the epidemic.

Young people, particularly women, are at increased risk of undesirable SRH outcomes. Structural factors have been reported as driving some of these risks. Although several interventions have targeted some of the structural drivers for adolescent's SRH risk, little has been done to consolidate such work. This would provide a platform for coordinated efforts towards adolescent's SRH. This article provides a narrative summary of interventions in SSA addressing the structural drivers of adolescents' SRH risk, explore pathways of influence, and highlight areas for further work.

Thirty-three abstracts and summary reports were retrieved and narrowed down by suitability. Fifteen documents met the inclusion criteria and were read in full. Papers and reports were manually reviewed and 15 interventions that met the criteria for inclusion were summarised in a table format.

Most of the interventions addressed multiple structural factors, such as social norms, gender inequality, and poverty. Some interventions focused on reducing economic drivers that increased sexual risk behaviours. Others focused on changing social norms and thus sexual risk behaviours through communication. Social norms addressed included gender inequality, gender violence, and child socialisation. The interventions included components on comprehensive sexuality and behaviour change and communication and parenting, using different designs and evaluation methods. Important lessons from the narrative summary included the need for a flexible intervention design when addressing adolescents, the need for coordinated effort among different stakeholders.

There are encouraging efforts towards addressing structural drivers among adolescents in SSA. There is, however, a need for interventions to have a clear focus, indicate the pathways of influence, and have a rigorous evaluation strategy assessing how they work to reduce vulnerability to HIV. There is also a need for coordinated effort among stakeholders working on adolescent vulnerability in SSA.

Sexual and reproductive health for all: a call for action
Mahmoud F Fathalla, Steven W Sinding, Allan Rosenfield, (2006) The Lancet Sexual and Reproductive Health Series
http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(06)69483-X/abstract

At the ICPD in 1994, the international community agreed to make reproductive health care universally available no later than 2015. After a 5-year review of progress towards implementation of the Cairo programme of action, that commitment was extended to include sexual, as well as reproductive, health and rights. Although progress has been made towards this commitment, it has fallen a long way short of the original goal. SRH is achievable if cost-effective interventions are properly scaled up; political commitment is revitalised; and financial resources are mobilised, rationally allocated, and more effectively used. National action needs to be backed up by international action. Sustained effort is needed by governments in developing countries and in the donor community, by inter-governmental organisations, NGOs, civil society groups, the women's health movement, philanthropic foundations, the private for-profit sector, the health profession, and the research community.

The rest of this section is adapted from a previous helpdesk report:
Effective (and cost-effective) approaches to increase access and voluntary use of modern methods of contraception by marginalised and neglected groups
Stephanie Bengtsson (August 2015) HEART Helpdesk (Available on request)

School-based reproductive health programmes: great potential; mixed results

Because most youth obtain at least some education, particularly with the international recognition of the importance of schooling (e.g. the MDGs), school-based programmes appear to be a logical choice for SRH education. However, according to recent reviews of school-based HIV interventions, such programmes have had **mixed results**. In addition, such interventions miss adolescents who are not in school. At the same time, the provision of comprehensive SRH interventions in developing countries

has been impeded by ideologically driven restrictions. Many community-based programmes have had to focus on HIV prevention rather than comprehensive SRH, again because of funding restrictions *(Hindin & Fatusi, 2009, p.58).*

In Speizer et al.'s (2003) extensive review of adolescent reproductive health looks at studies of two different types of SRH school-based programmes – those that focus on HIV/AIDS/STI education and those that focus on general RH programmes. Well-constructed HIV/AIDS education programmes that are sustained over some time are effective in changing the sexual and contraceptive behaviours of sexually active young people and, consequently, indirectly reducing the number of unwanted or unsafe pregnancies among adolescents and young women.

Fourteen of the school-based programmes reviewed focused on HIV/AIDS/STI education and 11 of those demonstrated at least a **short-term effect** on **relevant knowledge and attitudes** post-intervention. 2 programmes failed to demonstrate effect, while the remaining programme did not assess effects on knowledge. Six of the 14 school-based HIV/AIDS interventions demonstrated **behavioural effects**. In Ibadan, Nigeria, an adapted HIV/AIDS curriculum was implemented in two 6-hour sessions over 6 weeks. At 6-month follow-up, intervention youth reported fewer sexual partners than control youth (Fawole et al., 1999). In Namibia, a randomised control study found that female virgins from the intervention group were more likely to remain virgins at 12-month follow-up than female virgins from the control group (Fitzgerald et al., 1999; Stanton et al., 1998). **Behavioural effects** have also been observed in **one-time, in-school interventions**. In Zimbabwe, a skills-based 90-minute intervention using a randomised control group design found that at 4-month follow-up, the study participants reported fewer sexual partners, and fewer episodes of unprotected sex in the last month than the control students (Wilson, Mparadzi & Lavelle, 1991).

Eight of the programmes reviewed were evaluations of general RH programmes. **Impact knowledge** and/or **attitudes** were observed in 6 of the 8 programmes. The 2 programmes that found no effect on knowledge or attitudes were a values-based fertility awareness and education curriculum (Teen Star) tested in private and public schools in Santiago, Chile (Seidman et al., 1995) and an integrated school- and facility-based programme in Brazil (Magnani et al., 2001). In the latter case, sexual RH education was introduced into control schools which likely explains the why there was no observable effect in comparison with control schools.

A more recent but less comprehensive systematic review of school-based health interventions in sub-Saharan Africa found only 12 articles that met its inclusion criteria, suggesting evidence of evaluation of school-based programmes is limited (Ebhohimhen et al., 2008, as referred to in Hindin & Fatusi, 2009). Currently, it seems that "**most interventions led to an improvement in knowledge, attitudes and intentions, but few found evidence of lasting behavioural changes**" (p.58).

Finally, an article by Renju et al. (2011) describes the effect of **scaling up a school-based intervention** called MEMA kwa Vijana from 62 to 649 schools on coverage and quality in the Northwest of Tanzania. This rigorous study demonstrated that despite various modifications, the 10-fold scale-up achieved high coverage, teachers were enthusiastic and engaged well with students, and students enjoyed the sessions. However, delays in training, teacher turnover and lack of incentive for teaching additional activities were barriers to implementation. The authors argue that high coverage of **participatory school-based RH interventions** can be maintained during scale-up, though this might require significant changes in programme content and delivery. The authors also note the importance of advanced teacher training, increased supervision, and underpinning of objectives by directives from the national level.

Peer programmes & mentoring/role model programmes

Peer-focused programmes: Peers play an important role in adolescent development and socialisation. Peers can influence one another either positively or negatively. A review of studies between 1990 and 2010 on risk and protective factors for adolescent SRH found that having peers or friends who had had sex was a risk factor across health outcomes (Mmari & Sabherwal, 2013). Five reviews that assessed the effectiveness of peer education found that some interventions increased SRH knowledge and condom use; delayed first intercourse; promoted gender-equitable attitudes; and prevented STIs. However, **the reviews found that the effects of peer-led programmes tend to vary**,

with the **young people who receive the peer training often benefitting the most** (Villa-Torres & Svanemyr, 2015).

Mentoring and positive role modelling: Programmes in several settings have noted the importance of providing **mentors and positive role models** to young people as a key to improving SRH outcomes as well as aspirations for fertility, education, and work (Beaman et al., 2009). Research conducted in urban slums in Ethiopia, Kenya, and Nairobi suggests that girls typically have less opportunity than boys in interacting with peers and mentors (Population Council & UN Adolescent Girls Task Force, 2012). Yet, mentors can be a critical social capital to lessen girls' health and economic risks. Being supported by a female adult role model who demonstrates leadership qualities or having girls themselves take on a visible role within the community and a sense of responsibility can be positive forces for change in the lives of young girls (Salem et al., 2003). Hence, some adolescent health interventions are including components that involve a strong emphasis on building leadership skills, particularly of older adolescents, and training them to run mentoring programmes for younger adolescents. These are **yet to be evaluated** to know whether they are effective or not.

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6. Additional information

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This query response was prepared by Catherine Grant, Institute of Development Studies
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