The Evidence Towards MDG 5:
A Working Paper

Authors:

Louise Hulton

Susan Murray

Deborah Thomas

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Abbreviations

ACCESS	Access to Clinical and Community Maternal, Neonatal and Women's Health Services Programme (funded by USAID)
AFR	Adolescent Fertility Rate
AIDS	Acquired Immune Deficiency Syndrome
AMDD	Averting Maternal Death and Disability Programme (of Columbia University's Mailman School of Public Health)
ANC	Antenatal Care
APPG	(United Kingdom) All Party Parliamentary Group (on Population, Development and Reproductive Health)
ARV	Anti-Retroviral Drug
BCC	Behaviour Change Communication
BEOC	Basic Essential Obstetric Care
BPL	Below Poverty Line
BRAC	Bangladesh Rural Advancement Committee
CEOC	Comprehensive Emergency Obstetric Care
CI	Confidence Interval
CPR	Contraceptive Prevalence Rate
CRCT	Community Randomised Controlled Trial
CS	Caesarean Section
CSO	Civil Society Organisation
CYP	Couple year(s) of Protection
DAC	Development Assistance Committee (OECD)
DAH	Development Assistance for Health
D&C	Dilatation and Curettage
DALY	Disability Adjusted Life Year
DFID	(United Kingdom) Department for International Development
DHS	Demographic and Health Survey
DP	Development Partner
DRC	Democratic Republic of Congo
EC	European Commission
EOC	Essential Obstetric care
EU	European Union
FIGO	International Federation of Gynaecology and Obstetrics
FP	Family Planning
GAVI	Global Alliance for Vaccines and Immunisation
GDP	Gross Domestic Product
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GHI	Global Health Initiative
GNI	Gross National Income
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HNPSP	(Bangladesh) Health, Nutrition Population Sector Programme
HSDI	(West Bengal) Health Systems Development Initiative
ICER	Incremental Cost Effectiveness Ratio
ICM	International Confederation of Midwives
ICPD	International Conference on Population and Development
IDA	International Development Association
IDC	(UK Parliamentary) International Development Committee
IMMPACT	Initiative for Maternal Mortality Programme Assessment

IPPF	International Planned Parenthood Federation
IUD	Intra-Uterine Device
LatAmC	Latin America and the Caribbean
LMIC	Low and Middle Income Countries
MA	Medical Abortion
M&E	Monitoring and Evaluation
MAP	(World Bank) Multi-Country AIDS Programme
MDG	Millennium Development Goal
MH	Maternal Health
MMR	Maternal Mortality Ratio
MNH	Maternal and Newborn Health
MTCT+	Mother-to-Child-Transmission-Plus (Programme funded by Columbia University at Makerere University, Uganda)
MVA	Manual Vacuum Aspiration
NGO	Non-Government Organisation
NORAD	Norwegian Agency for Development Cooperation
NSMP	Nepal Safer Motherhood Project
ODA	Overseas Development Assistance
OECD	Organisation for Economic Cooperation and Development
PAHO	Pan-American Health Organisation
PEPFAR	(United States) President's Emergency Plan for AIDS Relief
PMNH	Partnership for Maternal, Newborn and Child Health
PMTCT	Prevention of Mother-to-Child Transmission of HIV
PPH	Postpartum Haemorrhage
PPP	Public-Private Partnership
PRSP	Poverty Reduction Strategy Paper
QALY	Quality Adjusted Life Year
QFB	Quality Facility Birth
RCT	Randomised Control Trial
RH	Reproductive Health
RHCS	Reproductive Health Commodity Security
SBA	Skilled Birth Attendant(ce)
SCI	Skilled Care Initiative
SRH	Sexual and Reproductive Health
SSMP	(Nepal) Support to the Safe Motherhood Programme
STI	Sexually Transmitted Infection
SWAp	Sector-wide approach
TA	Technical Assistance
TB	Tuberculosis
TBA	Traditional Birth Attendant
UN	United Nations
UNAIDS	(The Joint) United Nations Programme on HIV/AIDS
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VCT	Voluntary Counselling and Testing
WHO-CHOICE	Choosing Interventions that are Cost Effective (World Health Organisation)
WHO	World Health Organisation

The Evidence Towards MDG 5: A Working Paper

Millennium Development Goal 5 (MDG 5) Target 5a, to reduce the 1990 Maternal Mortality Ratio (MMR) by three quarters by 2015, has seen the least progress of all the MDG targets[1]. Universal access to reproductive health, the second MDG 5 Target (5b), which is essential for the reduction of maternal mortality is seriously undermined by the large unmet need for family planning, especially in Sub-Saharan Africa, where one in four married women and countless adolescents do not have access to contraceptives[2]. The economic and social cost of maternal and newborn mortality is enormous, and includes around US$15 billion a year in lost productivity[3]. In contrast the total cost of scaling up quality facility births and underlying health systems strengthening for 49 of the world's poorest and aid dependent countries is estimated to be an additional US$2.5 billion in 2009, rising to US$5.5bn in 2015[4].

Underlying this slow progress in the maternal health arena are great inequities within societies. The multiple burdens of gender discrimination, poverty and other social disadvantages carried by many women in developing countries[5] impede them from exercising their rights to health and well-being, rights taken for granted in countries where maternal death is now a rare event.

Through its social and economic impact on families, communities and societies, improving maternal health is also a means to achieving many of the other seven MDGs related to poverty reduction and economic growth[6,7] (see Annex A)[8], including women's empowerment and social justice.

The Global Consensus on Maternal, Newborn and Child Health

There is global consensus that concerted and coordinated action on reproductive, Maternal, Newborn and Child Health (MNH) is urgent. This was most recently endorsed by the *G8 Leaders' Declaration: Responsible leadership for a sustainable future*, "as a way to accelerate progress on the MDGs for both maternal and child health". This *Consensus for Maternal, Newborn and Child Health* has the explicit aim: "Every pregnancy wanted, every birth safe, every child healthy" by 2015, and provides a framework for action at global, national and sub-national levels. It recognises that to accelerate progress on the ground, the current momentum in politics, advocacy and financing must be aligned behind a commonly agreed set of policies and priority interventions. In accord with the *Consensus*, while all three elements of the MNH continuum require action, progress in maternal and newborn health is lagging behind, and requires focused, coordinated and bold attention.

Sources: *Responsible Leadership for a Sustainable Future (paragraph 122). Available at: http://www.g8italia2009.it/static/G8_Allegato/G8_Declaration_08_07_09_final,0.pdf; The Global Campaign for the health MDGS, 2009. Leading by example – Protecting the most vulnerable during the economic crisis. Ch. 5; Consensus for Maternal, Newborn and Child Health. Available at: http://www.who.int/pMNH/events/2009/20090922_consensus.pdf.*

DFID and NORAD have jointly commissioned Options Consultancy to undertake a review of global evidence upon which to draw when advising their respective governments on the best strategies to support the delivery of the Consensus outcomes, to which both Governments have committed in order to help secure the achievement of MDG 5. This paper includes evidence of what makes a

difference, where this is known, what is good practice, what needs to improve and where we need further information to make a judgement.

This exercise has distilled a large body of complex information, representing the core of what our current evidence base suggests will make a difference if those committed to improving the maternal health outcomes of women and girls focus their efforts, build on what is known, refrain from using insufficient evidence as an excuse for inaction, and invest in filling the knowledge gaps

The review is presented in five parts:

Part One restates the challenge and reviews progress against MDG 5 indicators, maternal mortality as an indicator of disparity and inequality, links to the other MDGs, aspects of maternal health not directly captured in an MDG target indicator, and examines the funding challenge.

Part Two examines evidence for improving maternal health care and services for MDG 5 using evidence based packages of care, including family planning, antenatal, safe abortion, intrapartum and postpartum care and care of the neonate. In addition, evidence is reviewed on strategies for intervention including the centrality of a continuum of integrated care, the role of new technologies for increasing access, the importance of context, and district level implementation.

Part Three focuses on the evidence supporting the need for and approaches to strengthening the health system from a supply perspective (with a focus on maternal health care) including: governance and political commitment, human resources for health, referral systems, infrastructure and essential equipment, drugs and supplies. This Part also reviews evidence concerning a range of financing mechanisms for health and examines the role of the private sector.

Part Four places maternal health care within the broader health framework. It reviews health systems from a demand perspective including strategies for increasing demand, demand-side governance, citizen participation, and voice and accountability. It also examines evidence to inform the role and place of political will and advocacy in facilitating and driving the achievement of MDG 5 and the significance of social inclusion.

Part Five explores the ways in which key indicators and methodologies are used to track progress in maternal and reproductive health at national and international levels, considering their strengths and weaknesses. It also examines evidence on aid mechanisms by looking at the complex global aid architecture for health, the Global Health Initiatives (GHI) that have emerged since the Millennium Declaration of 2000.

Search strategy

Methodology and coding of evidence

This paper is based on a review of documentation focused on maternal healthcare and health systems. These include: studies in peer reviewed journals; reviews analysing sets of relevant studies; MNH/FP/RH programme evaluations; and monographs, principally from globally focused health and development organisations, such as WHO (including PMNH, RHR, Human Resources for Health, MPS, Alliance for Health Policy and Systems Research), World Bank, OECD, DFID, USAID, Family Health International, PRB, UNFPA, The Alan Guttmacher Institute, the UN Millennium Project, UNICEF, White Ribbon Alliance, AMDD, International Initiative on Maternal Mortality and Human Rights, Ipas and other country level or regional non-government agency reports.

Publications used in preparation of this manuscript were identified through database searches, including ELDIS, R4D, SciElo, IBSS, PubMed, dgCommunities, PAHO, ScienceDirect, HarpNet, USAID DEC and Google. Core search terms used include maternal, maternity, reproductive, motherhood, family planning, sexual, abortion and obstetric. The core search terms were then used in conjunction with search terms specific to the subjects in each theme. Websites of the lead international health organisations already listed above were searched; lead experts and over 130 key informants in the reproductive health field were asked to nominate key publications and papers in preparation for the review. References cited in recent peer reviewed publications and in non-peer reviewed reports (such as monographs from international health and development organisations focused on country, regional, and global trends, monitoring against indicators and policy efforts) were also followed up. In the selection of material, emphasis was placed on material published since 2000 and existing reviews of evidence covering various studies of a specific area.

Classification of documents cited

The document review deals with an array of health systems and policy research questions concerning the ways in which health services are financed, delivered, organised, experienced, and measured, and how they interface with other aspects of social life and social institutions. Such a range of questions concerning complex interventions requires a range of evidence drawn from different disciplinary traditions, and from academic and non-academic sources. The wide scope and short timescale also effectively excluded approaches that would have required systematised tabulation of all published data on each sub-topic area. Fortunately many topic key reviews from the Lancet or other peer reviewed journals already exist and can be drawn on.

The approach taken has been to search key databases for the topic areas in the structured manner outlined above and pull together the most salient academic review articles, landmark studies, key reports and new data in a short and informative synthesis, reflective of the state current knowledge.

The standards commonly used to assess rigour in medical research are recognised as not appropriate for health systems research[9], but as the reader may like some guidance as to the strength and robustness of the sources used, a simple typology for classification of sources of evidence has been devised. Evidence is published in different ways according to the intended audience; it may even have different value according to its intended use. For example, one of the messages in the findings of our review is that context matters, because context affects mechanisms and outcomes. A thorough understanding of "what works, for whom, in what circumstances"[10] is a key element in the design of an intervention to fit a specific context. So, on the one hand, reviews and syntheses are valuable for lessons that can be generalised and for comparing and contrasting

experiences, on the other, well conducted single case studies come into their own when the purpose for their use is lesson learning for detailed local policy or service design.

Coding key

With the above as context, we coded source references as either strong, good or moderate. Where evidence is weak or insufficient this is indicated in the text and refers not to the strength of a source but to the fact that the existing body of evidence is weak or insufficient. Where a source reference is based on findings which are context specific, this is also indicated, therefore a reference may be strong but the findings only context specific.

Strong includes systematic review articles in top tier, peer reviewed journals, WHO guidelines and other research articles and reviews in peer reviewed journals/books where the authors are leading experts in the field and the work has been cited before as evidence in top tier, peer reviewed journals and WHO guidelines and technical papers.

Good includes published UN agency data analysis reports, DHS Monographs, Monographs by recognised agencies or NGOs whose work is regularly used as evidence in the development of policy and guidelines. This also includes articles in top tier, peer reviewed journals where the content of the article does not warrant a strong coding.

Moderate includes bilateral or multilateral evaluations or papers, policy and strategy papers from bilateral and UN agencies and NGOs, methodological papers and tool kits or frameworks

Personal Communication is coded as good or moderate depending on the content of the communication and the source. For example, if it is based on the findings of a major study led by a recognised expert in the field, but which is yet to be peer reviewed and is not yet in the public domain, this is considered good evidence.

Part One: Maternal and Reproductive Health Matters: Restating the Challenge

Millennium Development Goal 5

Target 5a: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio

Indicators:
5.1 Maternal mortality ratio
5.2 Proportion of births attended by skilled health personnel

Target 5b: Achieve, by 2015, universal access to reproductive health

Indicators:
5.3 Contraceptive prevalence rate
5.4 Adolescent birth rate
5.5 Antenatal care coverage (at least one visit and at least four visits)
5.6 Unmet need for family planning

Maternal mortality remains unacceptably high across much of the developing world. Globally it decreased by less than 1% per year between 1990 and 2005 – far below the 5.5% annual improvement needed to reach the MDG targets[11]. In numerical terms this means 536,000 women die annually during pregnancy, childbirth or in the six weeks after delivery, over 99%[12] of these women are from the developing world. Sub-Saharan Africa is the region with the highest death toll (265,000 maternal deaths annually). This represents 50% of the world's total estimated maternal deaths in 2005 (see Figure 2). Thirty percent, or 162,000, of these deaths took place in the West/Central region of the continent. Thirty five percent (187,000 women) of all global maternal deaths in 2005 were estimated to have taken place in South Asia[13]. The Latin America and Caribbean (LatAmC) region accounted for only 3% (15,000) of maternal deaths globally in 2005. Eleven countries alone represent 65% of all global maternal deaths[14] and of these, five are in Asia, including India, Afghanistan, Bangladesh, Indonesia, and Pakistan. The six remaining countries, contributing 65% of global maternal deaths, are Sub-Saharan African countries; Nigeria, Democratic Republic of Congo (DRC), Ethiopia, Niger, Tanzania, and Angola.

Part One of this report is divided into 3 sections. Section 1 restates the global challenge with a regional and summary sub-regional review of current progress on the two MDG 5a indicators (maternal mortality ratio and skilled attendance at birth) and the four MDG 5b indicators of universal reproductive health (unmet need for family planning, contraceptive prevalence, adolescent birth rate and antenatal care). Additional regional detail is given in Annex B. In addition to the official MDG 5 indicators, we review related indicators, including data on cause of maternal death, place of delivery and percentage of delivery by caesarean section.

Section 2 reviews other important dimensions of maternal and health well-being. The target indicators for MDG 5 are valuable markers for progress, but they are not intended to capture maternal health in its entirety. It is important to ensure that an overly narrow focus on attainment against the specified indicators does not result in the neglect of other important dimensions of maternal health and well-being. In addition to the above MDG indicators we restate the challenge with respect to physical and psychological morbidities, death and morbidity from unsafe abortion, nutritional status, and injury due to domestic abuse.

Section 3 looks at the funding challenge. In 2008, the MDGs 4 and 5 costing and impact estimate group approximated the total cost of scaling up family planning, antenatal, postnatal and child healthcare, with care at birth, for 51 of the world's poorest and aid dependent countries for The Global Campaign for the Health MDGs Report 2008[15]. The group estimated that 40% of this investment is needed in the 37 African countries alone. The final section of Part 1 examines the funding flows to Reproductive Health (RH) since 2002 and examines the funding gap in more detail.

Restating the challenge

Main findings

- Between 1990 and 2005 maternal mortality ratios have made no progress in West and Central Africa, where they remain the highest of all world regions, and little progress in Eastern and Southern Africa. They have made insufficient progress in other regions to meet the MDG target.

- Neo-natal mortality rates are highest in West and Central Africa and South Asia.

- 11 countries account for 65% of all global maternal deaths: India, Nigeria, DRC, Afghanistan, Bangladesh, Indonesia, Pakistan, Ethiopia, Niger, Tanzania and Angola.

- Countries with the highest MMR are Sierra Leone, Chad, Somalia, Rwanda, Liberia, Burundi, Guinea-Bissau, Malawi, Cameroon.

- The 15 least developed countries that have been affected by conflict during the years 2000 to 2006 have overall worse RH indicators (excepting HIV/AIDS) than non-conflict affected LDCs.

- Haemorrhage accounts for the greatest proportion of maternal deaths (30.9% in Africa and 40.8% in Asia).

- 13% of maternal deaths globally are due to unsafe abortion, but more data is needed on mortality and morbidity due to unsafe abortion.

- One quarter of women in developing countries suffer from pregnancy related morbidity. Ten to 20 million women a year suffer from physical or mental disabilities due to birth complications. More data is needed.

- Unmet need for family planning has slowly decreased in most regions except for Sub-Saharan Africa, where it has stagnated since 1995. Worldwide, 41% of all pregnancies are unwanted, with 22% ending in induced abortion, resulting in 68,000 deaths each year. Delaying marriage and first birth, preventing unwanted pregnancy and eliminating unsafe abortion could avert at least one third of maternal deaths.

- Inequities in the use and coverage of skilled maternity care persist within poor countries alongside maternal outcomes. Overall, women from the wealthiest income or most educated groups are much more likely to use skilled care during pregnancy, delivery and the postpartum period, than the poorest or least educated women, respectively.

- Girls aged 15-20 are twice as likely to die in childbirth as those in their twenties, while girls under the age of 15 are five times more likely to die in childbirth.

Source: ***Campbell O., Graham W., 2006. *Strategies for reducing maternal mortality: Getting on with what works. Lancet Maternal Survival Series.*

- Almost half the 33.4 million people living with HIV are women in their reproductive years. More than 2 million HIV infected women across the world are pregnant each year, over 90% of them in developing countries. Maternal mortality is higher among untreated HIV infected women than in HIV negative women.

- Intimate partner violence in many settings increases during pregnancy. Women who are physically abused in pregnancy are more likely to suffer miscarriage or seek induced abortion and the violent partner is more likely to have multiple sexual relationships, so increasing the risk of HIV and STI infection.

The Funding Challenge

Main findings

- The Consensus for Maternal, Newborn and Child Health estimates that if the funding gap of US$2.5 billion in 2009 – US$5.5billion in 2015 were to be filled, 234 million more births could take place in quality assured facilities and 2.5 million professional healthcare workers could be trained and recruited. This investment would save 5.5 million lives (1 million women and 4.5 million newborns).

- Dramatic declines in ODA funding have occurred in recent years in the areas of family planning (50% decrease in many countries since 1990), safe abortion services ($100 million cut in the last 2 years) and non-HIV reproductive health in conflict affected countries (35% decrease between 2003 and 2006).

- Year-by-year volatility in aid flows to MNH hampers country government planning and budgeting, especially in the most aid dependent countries.

- Many of the countries with the worst maternal health indicators are also those which have a low domestic commitment to health, with less than 5% of the country budget going to health.

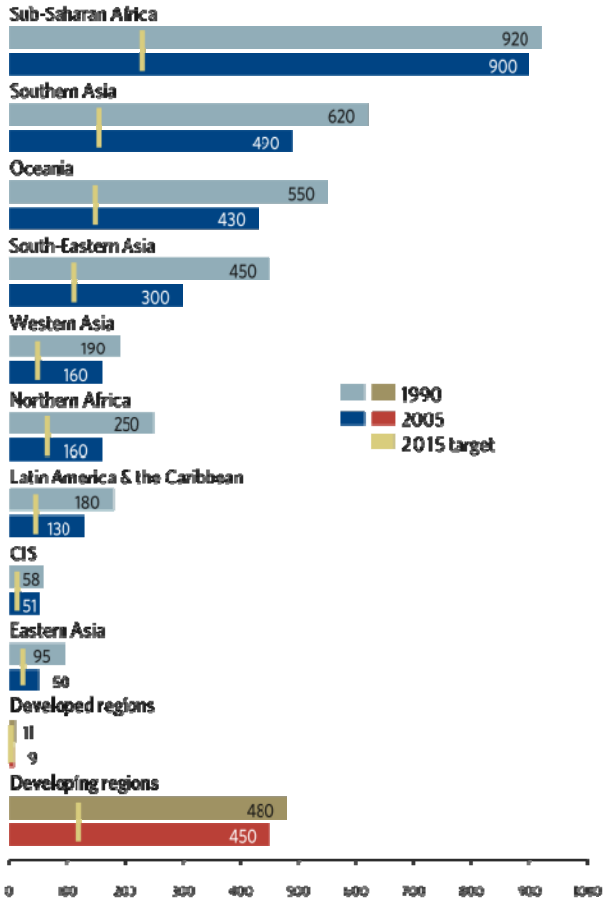
Section 1: Progress in meeting MDG 5

Current progress on tracking indicators for MDG 5a: Maternal mortality ratio and skilled birth attendants

Maternal mortality ratio

In 2005, Sub-Saharan Africa had the highest MMR globally, estimated at 920 maternal deaths per 100,000 live births, compared with adjusted ratios of 500 in South Asia and 130 in Latin America and the Caribbean (LatAmC) region[16]. Accordingly, the lifetime risk of maternal death in Sub-Saharan Africa was one in 22; while in Asia and LatAmC the lifetime risk was one in 59 and one in 280, respectively. Within Sub-Saharan Africa, there are stark disparities in MMR across the region, from 1,100 in West and Central Africa and 760 in Eastern and Southern Africa, which translates into a lifetime risk of one in 17 and one in 29, respectively[17]. West/Central Africa's MMR remained unchanged between 1990 and 2005 at 1,100 maternal deaths per 100,000 live births; the highest MMR of all world regions, and in Eastern/Southern Africa, the MMR declined by an insignificant amount between 1990 and 2005; from 790 to 760 maternal deaths per 100,000 live births[18]. Northern Africa, LatAmC, Eastern Asia and South-Eastern Asia reduced their MMRs by about one third or more during the period 1990-2000, although progress in these regions was insufficient to meet the target, and there are local inequities[19]. Progress in Sub-Saharan Africa as a whole was negligible.

Figure 1. Maternal deaths per 100,000 live births, 1990 and 2005



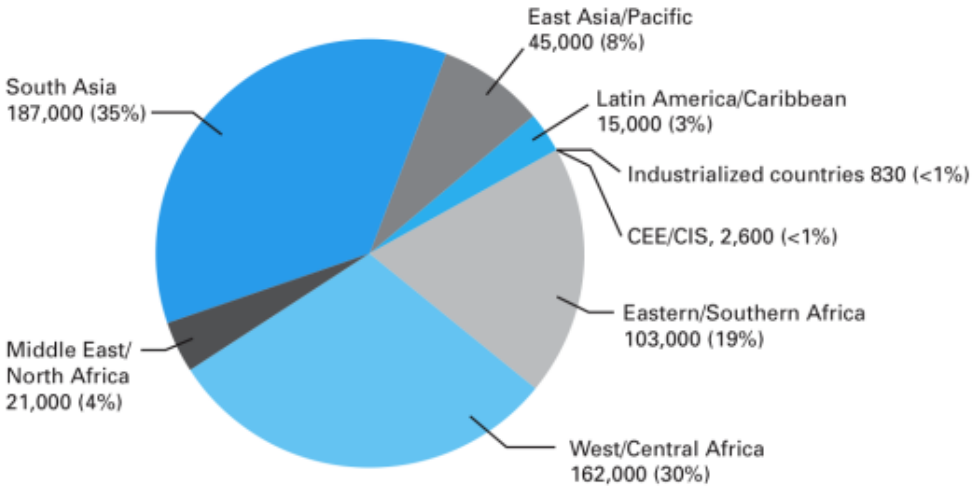
Source: *United Nations, 2009. Millennium Development Goals Report 2009.*

MDGs and conflict affected countries

Many of the countries that have particularly high MMRs and other poor reproductive health outcomes are currently, or have been recently, affected by conflict. The 15 least developed countries (LDCs; as classified by OECD/DAC) that have been affected by conflict during the years 2000 to 2006 have overall worse RH indicators (excepting HIV/AIDS) than non-conflict affected LDCs. Further, 11 out of a total of 18 countries affected by conflict between 2000 and 2006 were African countries and are all LDCs. These countries have some of the highest MMRs in the world and are all priority *Countdown to 2015* countries. They include Angola (adjusted MMR for 2005 = 1,400), Burundi (1,100), the Central African Republic (980), Chad (1,500), Democratic Republic of Congo (1,100), Eritrea (450), Liberia (1,200), Sierra Leone (2,100), Somalia (1,400), Sudan (450) and Uganda (550).

Source: *Patel et.al., 2009. Tracking Official Development Assistance for reproductive health in conflict-affected countries. PLoS, 6(6), e1000090; UNICEF, 2009. State of the world's children 2009; WHO, UNICEF, UNFPA, the World Bank, 2007. Maternal mortality in 2005: estimates developed by WHO, UNICEF, UNFPA, and the World Bank.*

Figure 2. Regional distribution of maternal deaths*, 2005



* Percentages may not total 100% because of rounding.

Source: *WHO, UNICEF, UNFPA, the World Bank, 2007. Maternal Mortality in 2005: Estimates developed by WHO, UNICEF, UNFPA and the World Bank. WHO: Geneva, p.35.*

Causes of maternal death

Direct causes, or obstetric complications, including postpartum haemorrhage, infections/sepsis, eclampsia, prolonged or obstructed labour, and complications of unsafe abortion, account for the majority of maternal deaths globally[20]. Anaemia exacerbated by malaria, HIV and other conditions, heightens the risk of maternal death from haemorrhage[21,22].

Cause of death varies by region. Haemorrhage accounts for the greatest proportion of maternal deaths in both Africa (33.9%) and Asia (30.8%) (see Figure 3). Whereas in LatAmC, haemorrhage (20.8%) and hypertensive disorders (25.7%) account for almost half of maternal deaths, and obstructed labour is responsible for 13.4% of mortalities[23].

Table 1. Estimates of direct and indirect causes of maternal death by region.

Region	Maternal deaths (%)		
	Due to indirect causes	Due to direct causes	Unclassified
Developed Countries	14.4	80.8	4.8
Africa	26.6	68.0	5.4
Asia	25.3	68.6	6.1
Latin America and the Caribbean	3.9	84.4	11.7

Source: *Khan et al., 2006. WHO analysis of causes of maternal death: A systematic review. Lancet, 367(9516), pp.1066-74.*

Figure 3. Geographical variation in distribution of causes of maternal death

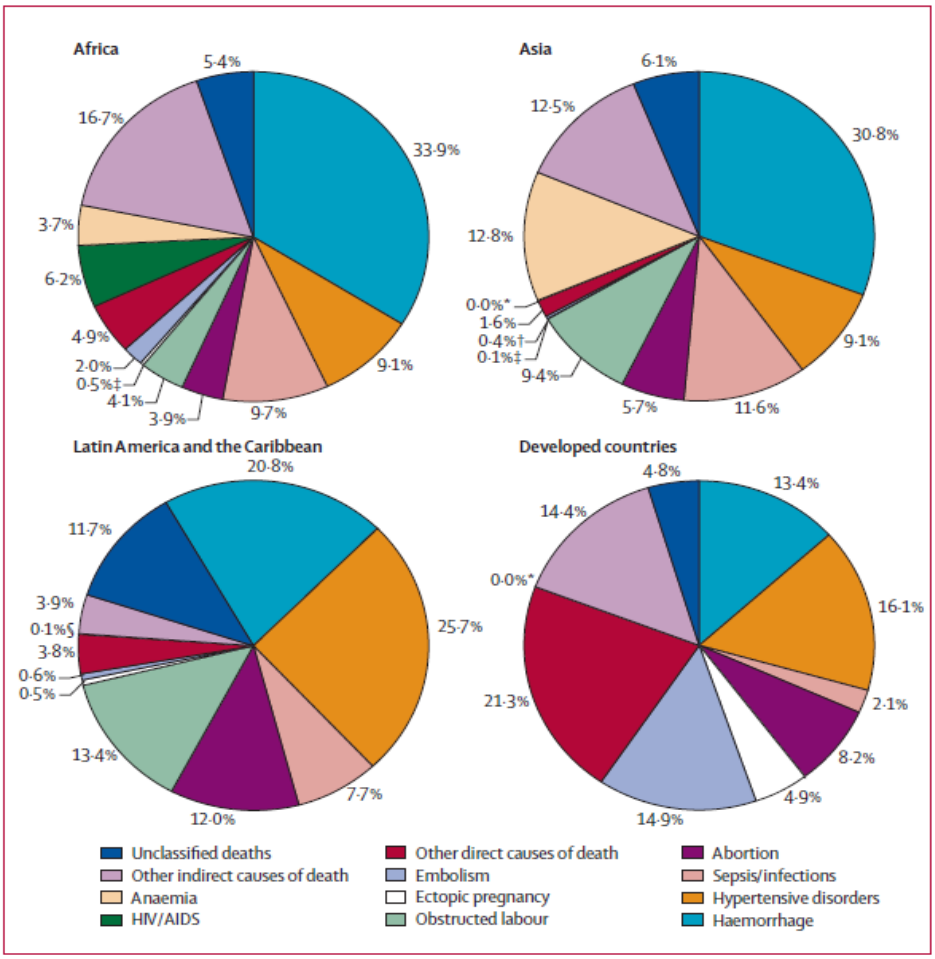


Figure 3: **Geographical variation in distribution of causes of maternal deaths**
*Represents HIV/AIDS. †Represents embolism. ‡Represents ectopic pregnancy. §Represents anaemia.

Source: *Khan et al., 2006. WHO analysis of causes of maternal death: A systematic review. Lancet, 367(9516), pp.1066-74.*

Maternal mortality and unsafe abortion

In 2003, 48% of all abortions worldwide were unsafe, and more than 97% of all unsafe abortions were in developing countries, where an estimated 19 million unsafe abortions take place yearly[24]. This results in some 68,000 maternal deaths[25]. Khan *et al.*'s systematic review[26] on causes of maternal death estimates abortion to be responsible for 12% of maternal deaths in Latin America and the Caribbean, 5.7% in Asia, and 3.9% in Africa. Similarly, the World Health Report 2005 estimated unsafe abortion to cause 13% of maternal deaths globally[27].

There are regional differences in the proportion of pregnancies that end in abortion. Sedgh *et al.*[28] have estimated this proportion to be 12% in Africa, 22% in Asia and Latin America and the Caribbean. Africa and Asia shared the same abortion rate in 2003, estimated to be 29 abortions per 1,000 women aged 15-44.

Table 2. Estimated number of safe and unsafe induced abortions and abortion rates and percentages of pregnancies that ended in abortion, by region, 2003.

	Number of abortion (millions)			Abortion rate (per 1,000 women aged 15-44)			Percentage of pregnancies ending in abortion		
	Total	Safe	Unsafe	Total	Safe	Unsafe	Total	Safe	Unsafe
Africa	5.6	0.1	5.5	29	<0.5	29	12	<0.5	12
Asia	25.9	16.2	9.8	29	18	11	22	13	8
Latin America and the Caribbean	4.1	0.2	3.9	31	1	29	22	1	21
Total	41.6	21.9	19.7	29	15	14	20	11	10

Source: *Adapted from Sedgh, G., et al. 2007. Lancet, 370, pp.1338-45.*

Estimates from 2003 indicate the majority of the world's 41.6 million induced abortions took place in Asia (25.9 million) and of the 19.7 million unsafe induced abortions globally, 9.8 million were carried out in the same region[29]. All abortions in Africa are thought to be unsafe, apart from in Southern Africa where out of a total abortion rate of 24 (per 1,000 women aged 15-44), five abortions per 1,000 were estimated to be safe. East Africa is identified as the African sub-region with the highest estimated unsafe abortion rate (39 per 1,000 women aged 15-44). South East Asia has the highest sub-regional abortion rate (39 per 1,000 women aged 15-44) and the highest for unsafe abortion in Asia (23 per 1,000 women aged 15-44). In LatAmC, the estimated abortion rate was 31 per 1,000 women of reproductive age, with unsafe abortion constituting the lion's share of induced abortion[30].

Adolescents, unmarried girls and women who live in poverty, sparsely populated areas or vulnerable circumstances (such as refugees or internally displaced people) are at higher risk of unsafe abortion[31,32,33,34]. These at-risk groups have less access to reproductive health information and services, and are often vulnerable to sexual coercion and violence. They may delay seeking abortion, and they are thus more likely to have to rely on unsafe abortion methods and unskilled providers or to experience complications.

The legal status of abortion varies by country from completely prohibited (El Salvador, Nicaragua) to allowed on demand up to a certain gestation (normally 12 weeks), (South Africa)[35]. Every country in Africa allows abortion for some indication, usually if the woman's life is in danger[36]. Only South Africa, Tunisia and Cape Verde allow abortion without restriction (by reason) and in Zambia it is

allowed on socio-economic grounds. In the remaining countries it is allowed only to save a woman's life, to preserve physical or mental health, depending on the country[37].

Table 3. African abortion laws

AFRICAN ABORTION LAWS				
I. To save the woman's life or prohibited altogether	II. To preserve physical health	III. To preserve mental health	IV. Socioeconomic grounds	V. Without restriction as to reason
Angola	Benin – R/I/F	Algeria	Zambia – F	South Africa
Central African Republic	Burkina Faso – R/I/F	Botswana – R/I/F		Tunisia
Congo (Brazzaville)	Burundi	Gambia		Cape Verde
Cote d'Ivoire*	Cameroon – R	Ghana – R/I/F		
Dem. Rep. of Congo	Chad – F	Liberia – R/I/F		
Egypt	Djibouti	Namibia – R/I/F		
Gabon	Eq. Guinea – SA/PA	Seychelles – R/I/F		
Guinea-Bissau	Eritrea – R/I	Sierra Leone		
Kenya	Ethiopia – R/I/F+	Swaziland – R/I/F		
Lesotho	Guinea – R/I/F			
Madagascar	Morocco – SA			
Malawi	Mozambique			
Mali	Niger – F			
Mauritius	Rwanda			
Nigeria	Togo – R/I/F			
São Tomé & Príncipe	Zimbabwe – R/I/F			
Senegal				
Somalia				
Sudan – R				
Tanzania				
Uganda				

Notes
° Countries indicated in bold allow abortion to save the woman's life
R - Abortion permitted in cases of rape
I - Abortion permitted in cases of incest
F - Abortion permitted in cases of fetal impairment
SA - Spousal authorization required
PA - Parental authorization required
+ Abortion permitted on additional enumerated grounds (age or capacity to care for a child)

Source: *Centre for Reproductive Rights, 2008. The World's Abortion Laws, Fact Sheet, New York: CRR; and Boland, R., Katzive, L., 2008. Developments in laws on induced abortion: 1998–2007. International Family Planning Perspectives, 34(3), pp.110–20. Cited in: Singh, S., Wulf, D., Hussain, R., Bankole, A., Sedgh, G., 2009. Abortion worldwide: A decade of uneven progress. New York: Guttmacher Institute.*

Skilled birth attendants

There is strong evidence that the presence of a skilled attendant at delivery is associated with better delivery outcomes[38,39,40,41], including reduced maternal deaths (observational studies[42]). The UN estimate for all developing countries is that in and around 2006, 61% of births in developing regions were attended by skilled health personnel (doctor, nurse or midwife), up from less than half (47%) in

1990[43]. This masks wide regional and national disparities. Coverage remains low in Southern Asia, where recent figures put it at 41% (still a notable increase from 1990, when it was 27%[44]). In Sub-Saharan Africa, 45% of deliveries are attended by skilled health professionals, but there has been little change since 1990, when coverage was 42%[45,46]. South East Asia has seen a steep increase in skilled delivery at birth, from 48% in 1990 to 73% in 2006. This is also true for Northern Africa, where coverage went from 45% to 79% in the same period. (See Annex B for further detail by country).

Note on data

Data relating to the 68 priority *Countdown to 2015* countries and the 49 aid dependent countries prioritised by the High Level Task Force on Innovative International Financing for Health form the bulk of the following analysis.

Which are the *Countdown* priority countries?

The *Countdown* initiative tracks progress in maternal, newborn and child survival in 68 priority countries through nationally representative indicators (see Annex B). *Countdown* priority countries include countries with the highest numbers of maternal deaths and/or highest MMRs in the year 2005; countries with an MMR greater than 550, or, with both a MMR greater than 200 and at least 750 maternal deaths. The list now includes countries representing 97% of maternal and child deaths worldwide.

Which are the High-Level Taskforce priority countries?

The High Level Task Force on Innovative International Financing for Health Systems (HLTF on IIFHS) aims to "contribute to filling national financing gaps to reach the health MDGs" (and therefore MDG 5) and prioritises 49 low income countries that are aid dependent (members of the International Development Association or Heavily Indebted Poor Countries).

To a great extent, *Countdown to 2015* and HLTF priority countries overlap (see Table 1 in Annex B), although some countries only feature on the priority list of one of these initiatives. For example, only the *Countdown* initiative includes Angola and India as priority countries, which, though not dependent on aid, are two of the eleven countries with the greatest number of estimated maternal deaths in 2005; with 11,000 and 117,000 maternal deaths in 2005, respectively (24% of global maternal deaths). The *Countdown* specifically tracks coverage of continuum of care indicators, is well established and its priority countries represent 97% of maternal and child deaths worldwide and in developing countries. Its priority countries will therefore form the primary focus of this analysis.

Across the 68 priority countries with data on skilled birth attendance coverage available for the 2008 Countdown cycle, the median was 53%, ranging from 6% (Ethiopia) to 100% (Azerbaijan, Turkmenistan)[1,47]. These results suggest that while the majority of these priority countries are improving delivery care coverage, some need further improvement and others require efforts to sustain high coverage rates.

[1] Of the 68 *Countdown* priority countries, 45 had data for the presence of a skilled attendant at delivery from two coverage surveys conducted at least three years apart.

Most priority *Countdown* countries in Africa have the lowest rates of skilled attendance at delivery, with the WHO African regional average standing at 46% and Ethiopia and Chad having the lowest coverage rates of 6% and 14%, respectively[48]. This contrasts with LatAmC *Countdown* priority countries where skilled delivery rates are generally greater than 60%, excepting Haiti, where it is 26%, and Guatemala, where it is 41%. Coverage of skilled attendance at delivery in Asia varies widely and the WHO South East Asia average skilled birth attendance rate is 48%, not too different from the African region. Asian *Countdown* countries with low coverage are also among the countries with lowest coverage globally, such as Nepal (19%), Bangladesh (18%) and Lao PDR (20%)[49]. Nepal and Bangladesh have achieved significant declines in their maternal mortality ratios over the past 10 years, with low coverage suggesting that there are alternative pathways and strategies for effectively reducing maternal mortality.

The global distribution of nurses and midwives is extremely uneven and the situation is particularly critical in Africa, where many countries have fewer than 10 nurses or midwives per 10,000 population[50]. Overall, the Africa region has 11 nurses and midwives per 10,000 population and the South East Asia region has 12. This contrasts with the European region, with 70 per 10,000[51]. The situation is particularly critical in Somalia, Niger, Ethiopia, Burundi, Senegal, Mozambique, Madagascar, Liberia and Chad, where there are three midwives/nurses per 10,000 people or less[52].

The situation is not much better in Asia, with Bhutan, Bangladesh, Papua New Guinea, Pakistan, Nepal, Afghanistan and Yemen having seven nurses per 10,000 population or fewer. In Latin America and the Caribbean, Haiti has the lowest coverage (1 per 10,000), although Peru (7), El Salvador (8), and Mexico (9) do not fare much better. These rates stand in sharp contrast with equivalents found in developed countries. For example, Ireland, Norway, the Netherlands and Belgium all have over 140 per 10,000[53].

Current progress on indicators for MDG 5b: Unmet need for family planning, contraceptive prevalence, adolescent birth rate and antenatal care

Unmet need for family planning

Unmet need for Family Planning (FP) measures the gap between the proportion of women who desire contraception to limit or space their births and those who are currently using it, based on a target coverage rate of 100% of women who have a demand/need for contraception. Monitoring this indicator is crucial for tracking achievement of MDG 5, given the strong evidence of the large health and poverty reduction benefits that can be reaped from addressing unmet need for FP. For example, about 90% of global abortion related and 20% of obstetric related mortality *and* morbidity could have been averted in 2000 with the use of effective contraception by women wishing to space or limit childbearing[54,2]. This translates into 150,000 maternal deaths, or one third of the total maternal deaths, which could have been averted cost effectively, many of these in Africa and Asia, where unmet need is greatest[55].

According to the *Countdown 2008* analysis, the median rate of unmet need for FP is 23%, ranging from 41% in Uganda to 9% in Indonesia and Peru[56]. However, data on unmet need are available for

[2] Though met need for family planning could reduce abortion, this relationship is variable in times of fertility transitions. "When fertility levels in a population are changing, the relationship between contraceptive use and abortion may take a variety of forms, frequently involving a simultaneous increase in both. When other factors such as fertility are held constant, however, a rise in contraceptive use or effectiveness invariably leads to a decline in induced abortion and vice versa" (Source: Marston, C., Cleland, J., 2003. Relationships Between Contraception and Abortion: A Review of the Evidence. International Family Planning Perspectives, 29 (1).)

only 40 of the 68 *Countdown* priority countries. The gap has declined in most countries that have discernible trends. However, in Sub-Saharan Africa 24.2% of married women aged 15-49 years had an unmet need for FP in 2005, which has remained almost unchanged since 1995, when it was 25.2%[57]. Unmet need for FP contributes to the continuing high fertility rate in that region, which also undermines attempts to meet the other MDGs such as reducing child mortality, hunger and malnutrition; and increasing primary education enrolment[58].

Within countries of Asia and Latin America, unmet need for FP is highest among the poorest households[59]. This is most pronounced in LatAmC where 27% of the poorest households have an unmet need for family planning, compared with 12% of the wealthiest households[60]. In Sub-Saharan Africa overall unmet need is high (over 20%), even among the wealthiest households, many of whom want to delay their pregnancies. Close spacing of births raises the risks to the woman's life and health[61,62,63]. Unmet need for family planning is especially high among sexually active unmarried people[64].

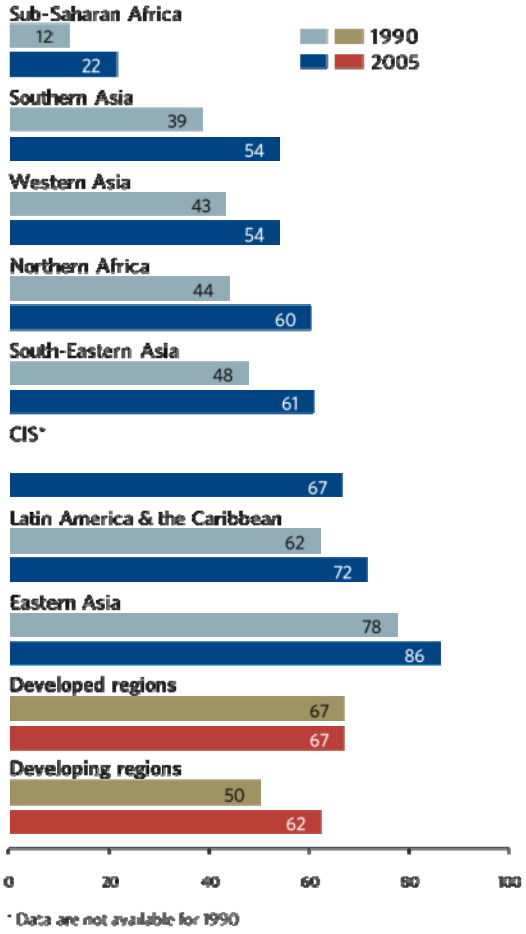
These rates of unmet need translate into an estimated 215 million women in developing countries who would like to delay or avoid childbearing but are without access to safe and effective contraceptives[65]. More than half of women in developing countries with unmet need - 102 million - want to delay or space births for at least two more years[66]. Use of modern contraception prevented 188 million unintended pregnancies, 1.2 million newborn deaths and 230,000 maternal deaths in addition to related negative health outcomes in 2008 alone. It has been estimated that addressing the remaining unmet need for FP in developing countries can avert a further 53 million unintended pregnancies yearly, thereby saving the lives of an additional 150,000 mothers annually. The recent joint Guttmacher/UNFPA report, Adding it Up, reaffirms that preventing unintended pregnancies by investing in family planning services is a cost-effective intervention as it reduces the need for other health services including treatment for unsafe abortion, complications of pregnancy and childbirth, and newborn care as well as contributing to wide-ranging benefits for women and families. [67]

The above evidence strongly indicates that the health related MDGs cannot be met globally without faster progress in Sub-Saharan Africa and South Asia. From this perspective, there is an argument for targeting ODA efforts at countries in these regions that have large populations and poor performance on maternal and reproductive health indicators, such as Nigeria, D.R. of Congo, Ethiopia, and Tanzania, which together account for 50% of all maternal deaths in Sub-Saharan Africa[68]. Reducing unmet need for family planning will be a critical component of any such response.

Contraceptive prevalence rate

Contraceptive use has increased in all regions since 1990 (see Figure 4), generally accompanied by reductions in fertility. The main exception is Sub-Saharan Africa, where contraceptive prevalence, although nearly doubled since 1990, was still only 22% in 2005[69]. If unmet need in Africa were satisfied the Contraceptive Prevalence Rate (CPR) would increase to 40%[70]. Within this region, the CPR is higher in the East and South (30%) than in West and Central Africa (17%). South Asia's CPR (54%) is higher than that of Sub-Saharan Africa, but lower than in other regions and sub-regions. Contraceptive prevalence in the LatAmC region stands at 72%, higher than the world average (62%)[71]. Despite increases in contraceptive use in all regions, the unmet need for family planning remains moderate to high in most regions[72].

Figure 4. Proportion of women, married or in union (15-49) using contraception, 1990/2005 (%)



Source: *UN, 2009. Millennium Development Goals Report 2009.*

Socio-cultural factors and poverty play an important part in determining use of family planning. In Sub-Saharan Africa, where preferred family size remains high, low demand for contraception is also linked to women's low social status, and social and religious norms[73]. Other reasons for low contraceptive use found in Sub-Saharan Africa and South East Asia include limited access and weak supply systems, especially in rural areas; fears about side effects and high discontinuation rates ; and disapproval of use of contraception by the woman, her husband or family. Financial and other access barriers to the poor are significant, with major differences in contraceptive use between the highest and lowest quintiles[74].

Adolescent pregnancy

This indicator is a pointer to a wide range of issues, such as accessibility of information and services, relevant health risks, and the living situation of young people, including early marriage[75]. Girls aged 15-20 are twice as likely to die in childbirth as those in their twenties, while girls under the age of 15 are five times more likely to die in childbirth[76]. Reduction of adolescent fertility is a route to decreasing young mothers' exposure to the risk of maternal mortality and of devastating morbidities such as obstetric fistula, both directly and indirectly[77]. Young mothers frequently miss out on education and socio-economic opportunities. There is good evidence that a child born to an adolescent mother is at a 60% greater risk of dying in the first year of life than a child born to a mother aged 18 or older[78]. Young women are also at greater risk from unsafe abortion. For example in Africa a quarter of all those who have an unsafe abortion are adolescent girls[79] and about half of

the 20,000 Nigerian women who die from unsafe abortions each year are adolescents. Abortion complications are responsible for 72% of all deaths among teenagers below age 19 in Nigeria[80]. Globally, almost half of all abortion deaths are in this age group[81].

Adolescent fertility has fallen since 1990 in all developing regions[82]. However, the decline has been very slow, especially in Sub-Saharan Africa, where fertility remains high among all women of childbearing age[83]. Total fertility has declined substantially over the past two decades in many countries in LatAmC and South Eastern Asia, yet adolescent fertility has fallen little and remains over 60 births per 1,000 women in LatAmC[84].

Adolescent fertility rates by country

The overwhelming majority of African priority *Countdown* countries have high Adolescent Fertility Rates (AFR; number of births per 1,000 women aged 15-19). Ten African priority countries have the world's highest AFRs: Niger (199), Chad (193), Mali (190), Mozambique (185), Malawi (178), Guinea-Bissau (170), Angola (165), Uganda (159), Madagascar (154) and Guinea (153).

The priority countries in the African region with lowest AFRs are Morocco (18), Djibouti (27), Egypt (27), Burundi (30), Rwanda (40) and Botswana (51), providing a marked contrast to the highest AFR countries of the region.

Although most Asia *Countdown* countries have lower AFRs than those in Africa, there are some with relatively high rates, most notably Afghanistan (151), Bangladesh (127), Lao PDR (110) and Nepal (106), all greater than 100. There is a wide range, with Turkmenistan (20), Tajikistan (27) and Kyrgyzstan (28) having the lowest AFRs.

Source: *WHO, 2009. World Health Statistics 2009. Geneva: WHO.*

Antenatal care coverage

At least one visit

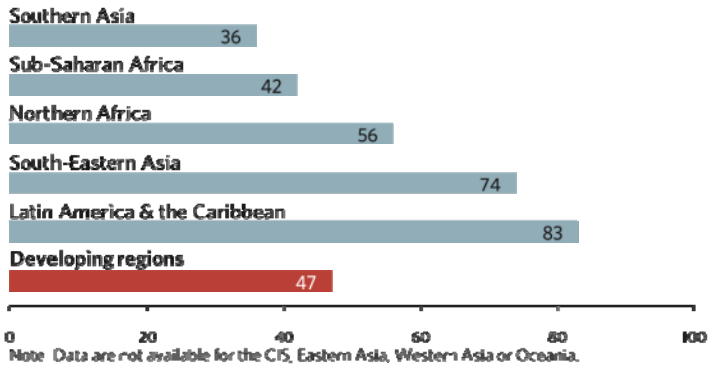
Antenatal Care (ANC) provides opportunities for monitoring the well-being of both the prospective mother and her fetus, detecting complications early in their trajectory, and discussing birth preparedness[85]. It can provide a platform for delivering several effective interventions for improving newborn health[86], as well as some maternal health benefit[87] (see Part Two: Antenatal Care). The proportion of pregnant women in developing countries who had at least one ANC check-up increased from 64% at the beginning of the 1990s to over three quarters (79%) almost two decades later[88].

At least four visits

Only 42% of women in Sub-Saharan Africa and 56% in Northern Africa met the World Health Organisation and UNICEF recommendation of a minimum of four ANC check-ups, with wide variation within the region[89]. Many Asian countries have low ANC coverage (four or more visits), as indicated by the low rate (36%) in Southern Asia. Countries in LatAmC generally have better ANC coverage (four or more visits) (83%) compared with Asian and African regions. In the 39 *Countdown* priority

countries for which data were available in 2008, a median of 49% of mothers attended four or more ANC sessions, ranging from 12% coverage in Ethiopia to 87% coverage in Peru[90].

Figure 5. Proportion of women attended four or more times during pregnancy by skilled health personnel, 2003/2008 (%)



Source: *UN, 2009. The Millennium Development Goals Report 2009.*

Of the 48 *Countdown* countries in Africa for which data on at least four ANC visits data are available, Somalia (6%), Djibouti (7%), Ethiopia (12%), Rwanda (13%) and Niger (15%) have the lowest coverage. In Asia, Yemen (11%), Bangladesh (21%), Cambodia (27%), Pakistan (28%), Nepal (29%) and India (37%) have the lowest coverage and in LatAmC Haiti (54%) and Bolivia (58%) have the lowest coverage[91].

Current progress against indicators related to maternal and reproductive health

Place of delivery

Here we compare skilled birth attendance with institutional delivery. In Africa, the coverage of skilled attendance at delivery is 45%, higher in West and Central Africa (49%) than in Eastern and Southern Africa (40%). Similar proportions are also noted for institutional delivery coverage, with 46% in West and Central Africa and only 33% in Eastern and Southern Africa. Despite this, MMR remains higher in West and Central Africa suggesting that these indicators in isolation are not good indicators of health outcomes. Delivery care coverage in Asia is lower than or comparable with Sub-Saharan Africa, with 41% of births are attended by skilled health personnel and 35% taking place in a health facility. The LatAmC region has reasonable care coverage levels, with 85% of births attended by skilled health personnel and 86% of women aged 15-49 delivering in a health facility.

Caesarean section

The proportion of deliveries by caesarean section in African priority countries is frequently below 5%, the generally suggested minimum rate, but seldom above 15%, the accepted maximum rate. There is also a wide urban-rural disparity, with urban areas having higher rates than rural ones. Out of the 27 African *Countdown* priority countries with caesarean section rate data, only six have rates equal to or greater than 5%[92]. In Chad, no caesarean sections are performed in rural areas and the rate is only 1% in urban areas. Egypt has a very high caesarean section rate overall (20%) and it is extremely high in urban areas (29%) and reaches the maximum accepted rate in rural areas (15%). Very low rates of caesarean section reflect weak availability and/or poor access to comprehensive emergency obstetric care[93,94].

Table 4. Percentage of live births delivered by caesarean section in *Countdown* priority countries with coverage estimates since 2000, by maternal residence (urban or rural).

Country	Urban (%)	Rural (%)	Total (%)
Azerbaijan	4	1	3
Bangladesh	11	2	4
Benin	6	2	3
Bolivia	21	6	15
Burkina Faso	3	0	1
Cambodia	6	1	2
Cameroon	4	1	2
Chad	1	0	0
Cote d'Ivoire	8	6	6
Egypt	29	15	20
Eritrea	7	1	3
Ethiopia	9	0	1
Gabon	6	4	6
Ghana	8	2	4
Guatemala	19	8	11
Guinea	5	1	2
Haiti	6	1	3
India	17	6	9
Indonesia	7	2	4
Kenya	9	3	4
Lesotho	8	5	5
Madagascar	2	1	1
Malawi	4	3	3
Mali	3	0	1
Mauritania	6	1	3
Morocco	9	2	5
Mozambique	5	1	2
Nepal	8	2	3
Niger	5	0	1
Nigeria	4	1	2
Peru	23	6	16
Philippines	10	5	7
Rwanda	8	2	3
Senegal	7	1	3
Tanzania	8	2	3
Turkmenistan	4	2	3
Uganda	9	2	3
Zambia	4	1	2
Zimbabwe	9	3	5

Source: *Countdown to 2015. (Author's analysis of household survey data '00-'06)*

Section 2: Other dimensions of maternal health and well-being

Maternal morbidity

Pregnancy related morbidity is a serious problem in developing countries, but research is scarce compared with the volume of analysis of maternal mortality. It is estimated that of the 120 million women giving birth each year, half of them will encounter complications and one in six will develop a disability[95]. According to recent UNFPA estimates, between 0.8% and 8.2% of women have severe acute maternal morbidity, severe obstetric complications or "near misses"[96,97]. Acute morbidities include uterine rupture, eclampsia and severe pre-eclampsia, coagulopathy (disease or conditions preventing blood from clotting), shock, severe anaemia and puerperal infection[98]. Estimates are poor but suggest that 10 to 20 million women suffer physical or mental disabilities every year because of complications of birth or its management[99] (see cost effectiveness section on page 47 for DALYs for morbidity). Chronic conditions include uterine prolapse, chronic infertility, uterine problems, and urinary or faecal incontinence. An estimated two million women suffer from unrepaired obstetric fistula[100], which is associated with great stigma, shame and distress, and there are an estimated 30,000 new cases each year[101]. Because women may live for decades with this condition, the burden of suffering they bear, measured in Quality Adjusted Life Years (QALY), is enormous[102].

The Lancet Series on Global Mental Health (2007) has highlighted the extent of knowledge gaps on maternal mental health[103]. Research evidence that does exist strongly suggests that the gendered disadvantage experienced by women in many parts of the world has consequences for their mental health. For example, a large cross sectional survey in Goa (India) identified strong associations between common mental disorders and indicators of disadvantage, including early age at marriage, intimate partner violence and absence of decision making autonomy[104]. A meta-analysis has linked maternal psychosis with a two-fold increased risk of stillbirth or infant mortality[105]. Studies from South Africa and India suggest that the prevalence of perinatal depression may be, if anything, somewhat higher than in the industrialised countries[106,107]. Prince *et al.*'s extensive review suggests that postpartum depression affects 10% to 15% of women in developed countries, with adverse consequences for the early mother–infant relationship and for children's psychological, nutritional and physical development being reported as a consequence in developed and developing countries[108].

Female genital mutilation

Sexual and reproductive health and morbidity prior to pregnancy can also impact upon physiological outcomes in important ways. For example, in communities in Sub-Saharan Africa and South East Asia where Female Genital Mutilation (FGM) or cutting is still practised, long term consequences include increased risk of caesarean section, postpartum haemorrhage and a longer stay in the hospital after delivery[109]. It is estimated that approximately 100-140 million African women have undergone FGM worldwide, and each year a further 3 million girls are estimated to be at risk of the practice in Africa alone. Most live in African countries, a few in the Middle East and Asian countries, and increasingly in Europe, Australia, New Zealand, the United States of America and Canada[110]. The majority of FGM procedures are carried out in 28 African countries. In some countries, such as Egypt, Ethiopia, Somalia and Sudan, prevalence rates can be as high as 98%. In others, such as Nigeria, Kenya, Togo and Senegal, the prevalence rates vary between 20% and 50%. It is more accurate however, to view FGM as being practised by specific ethnic groups, rather than by whole countries, as communities practising FGM straddle national boundaries[111].

Sexually Transmitted Infections

A billion Sexually Transmitted Infections (STI) (one for every three adults) occur each year[112]. STIs such as syphilis and HIV can bring additional vulnerabilities to pregnancy and symptomatic and asymptomatic STIs can be passed to infants[113]. It is estimated that annually about two million women with syphilis become pregnant in Sub-Saharan Africa[114]. Approximately 15% of the babies born to women in a study in Bolivia had congenital syphilis[115]. Syphilis can cause insanity and death in the adult and congenital syphilis in the newborn, with blindness, deafness and brain damage[116].

HIV/AIDS and maternal health

Almost half the 33.4 million people living with HIV are women in their reproductive years[117,118]. More than 2 million HIV infected women across the world are pregnant each year, over 90% of them in developing countries[119].

In May 2002, UNAIDS estimated that programmes designed to prevent perinatal HIV transmission were reaching fewer than 5% of women in Sub-Saharan Africa[120], the region with the highest number of HIV positive individuals and highest percentage of HIV positive adults who are women (58%)[121]. HIV prevalence among pregnant women was estimated in 2000 at 29.6% in Namibia, 32.3% in Swaziland and 35% in Zimbabwe[122]. An annual survey conducted by the South African Health Ministry found that 24.8% of women attending antenatal clinics were living with HIV[123].

The extent of the contribution of HIV/AIDS to maternal mortality is difficult to quantify, as the HIV status of pregnant women is not always known. HIV infection and AIDS related deaths have become major causes of maternal mortality in many resource poor settings[124]. There is evidence that maternal mortality is higher among untreated HIV infected women than in HIV negative women: a recent review of maternal mortality data in South Africa found that MMR was 6.2-fold higher in HIV positive than in HIV negative women[125].

HIV impacts on direct causes of maternal mortality through an associated increase in pregnancy complications such as anaemia, postpartum haemorrhage and puerperal sepsis[126]. HIV is also a major indirect cause of maternal mortality due to increased susceptibility to opportunistic infections such as pneumocystis carinii pneumonia, tuberculosis and malaria. HIV positive women also have unwanted pregnancies and complications related to unsafe abortion, and as well as the usual reasons for needing a safe abortion, HIV positive women also suffer from fear of transmission to the child and financial and health issues related to treatment.[127] Appropriate antiretroviral therapy started in pregnancy could reverse the toll of HIV related maternal mortality[128,129].

Morbidity from unsafe abortion

Failing to prevent unwanted pregnancy leads some women and girls to induce abortion. Measurement of the worldwide prevalence of abortion related morbidity is difficult and robust data are insufficient. Abortion related morbidity often occurs after an illegal procedure, and powerful disincentives discourage reporting[130]. A study of four abortion care strategies shows that costs of providing treatment for unsafe or incomplete abortion can run in the order of ten times as high as providing women with early elective abortion services at primary care level in their community[131]. Reproductive tract infections occur following about 20–30% of unsafe abortions, and if left untreated, these are associated with pelvic inflammatory disease and infertility[132]. As approximately 48% of all abortions worldwide are unsafe, a high proportion of women each year are at risk of abortion related morbidities[133].

Maternal under nutrition

There is strong evidence that nutrition during the period from pre-pregnancy through to 24 months after the birth is important for adult health and productivity[134]. Maternal under nutrition, including chronic energy and micronutrient deficiencies, is prevalent in many regions. Maternal short stature and iron deficiency anaemia increase the risk of death of the mother at delivery, and together account for an estimated 20% of maternal mortality[135]. Maternal short stature is a risk factor for needing caesarean delivery, largely related to cephalopelvic disproportion. A meta-analysis of epidemiological studies found a 60% (95% CI 50—70) increased need for assisted delivery among women in the lowest quartile of stature (146 cm to 157 cm, depending on the region) compared with women in the highest quartile[136]. If operative delivery to ensure a healthy birth is not available to women who need it, both mother and baby are at risk[137].

Violence against women

Gill *et al.'s* paper considers the evidence related to intimate partner violence from around the world[138]. Pregnancy may give a measure of protection from domestic violence in some settings but violence during pregnancy is common. Surveys from several countries show that intimate partner violence during pregnancy in developing countries ranges from 1·3% of pregnant women (Cambodia) to 27·6% (province in Peru)[139]. A Ugandan study indicates that women suffering domestic abuse in pregnancy had a 37% increased risk of obstetric complications requiring admission to hospital before delivery[140]. Abused women may also have their reproductive health compromised in other ways that will impact upon their well-being in pregnancy, for example, they are more likely to become infected with HIV/AIDS or an STI[141,142.] Women who are physically abused in pregnancy are more likely to suffer miscarriage or seek induced abortion[143]. Also the violent partner is more likely to have multiple sexual relationships, therefore increasing the risk of HIV and STI infection[144]. The evidence implies that interventions are needed at societal level, and links between MDG 3 and 5 are very clear.

Sexual, physical and psychological violence against women may contribute, both indirectly and directly, to unwanted pregnancies and abortion related morbidity and mortality. This is a neglected area of research and needs more work. Women who have suffered sexual abuse during their youth are more likely to have unplanned and/or unwanted pregnancies. The reasons are multiple: abuse has been associated with loss of control, anxiety, fear and substance abuse, all of which can contribute to risky sexual behaviour (unprotected sex), impair a women's ability to use contraceptives consistently or make it difficult for her to negotiate contraceptive use with a partner[145].

Rape and forced pregnancy as a tool of war and retaliation have been documented in a number of countries and regions, including Sierra Leone, Somalia and Darfur[146]. It is estimated that between 2,000 to 5,000 children were born in Rwanda as a result of rape during the genocide. Many thousands of women were also infected with HIV as a result of rape[147]. Worldwide, one in five women becomes the victim of rape or attempted rape at some point in their lifetime[148]. Almost 50% of sexual assaults worldwide are against girls of 15 years or below[149].

Newborn health indicators

Newborn health will not be addressed in full by this review, but the importance of the link between maternal and newborn health must not be overlooked, given the synergies that arise from taking a continuum of care approach to this aspect of health in the life cycle. The link is important because to a great extent the health of a newborn depends on the health of its mother[150]. Birth spacing

provides an example of this, as both overly short and long inter-birth intervals are found to increase the risk of adverse maternal and perinatal outcomes[151,152,153], and complications of childbirth, including premature, prolonged or obstructed labour, increase the risk of perinatal mortality[154].

The majority of the *Countdown to 2015* priority countries with the highest Neonatal Mortality Rates (NMR) per 1,000 live births are African and many of them also have high MMRs. These include Liberia and Sierra Leone, where the MMR is 1,200 and 2,100 respectively and the NMR is 66 and 56 respectively[155]. However, there is no clear cut correlation between these population level indicators; for instance, the second highest NMR of any *Countdown* country is found in Côte d'Ivoire (64), and although still very high at 810 per 100,000 live births, its adjusted MMR is not among the 14 countries with adjusted MMRs greater than, or equal to, 1,000[156]. Many conflict affected countries have very high NMRs, including Liberia (66), Iraq (63), Afghanistan (60), Sierra Leone (56), Angola (54) and the D.R. of Congo (47)[157]. Outside Africa and excluding the aforementioned non-African conflict affected countries, Pakistan (53), Myanmar (49), Cambodia (48) and Yemen (41) have some of the highest NMRs in global terms[158]. The *Countdown to 2015* priority countries where the NMR is lowest are generally those in Asia, Latin America and the Caribbean. For example, the Philippines, Mexico, Peru, Viet Nam and Brazil have NMRs of 15 or below[159]. At regional level, West and Central Africa and South Asia have the highest NMRs, of 45 and 41 respectively. The NMR in Eastern and Southern Africa is 36. All these figures contrast with that for industrialised countries, which is many times smaller; 3 per 1,000 live births[160].

Section 3: The funding challenge: Expenditure

Ravishankar and colleagues'[161] analysis of global health funding flows from public and private sources over 18 years suggests that development assistance for improving health quadrupled from $5·6 billion in 1990 to $21·8 billion in 2007.[3,162] However, the overview does not give an insight into the spend on reproductive or maternal health, or family planning. This review therefore draws from work done for this purpose by the *Countdown to 2015* Financial Flows Working Group (FFWG), the High Level Taskforce (HLTF) on International Innovative Financing for Health Systems Working Group 1, the Netherlands Interdisciplinary Demographic Institute (NIDI) in collaboration with the UNFPA and the MDGs 4 and 5 costing and impact estimate group for the first year report of the Global Campaign for the Health MDGs in 2008.

Donor assistance to maternal and newborn health activities

The *Countdown to 2015* FFWG is currently producing the most recent figures of official development assistance to maternal and newborn health per live birth across the 68 *Countdown* priority countries. The 2007 figures will be analysed by December of 2009, and the 2008 figures should be analysed by April of 2010, in preparation for the production and release of the third *Countdown to 2015* report which is to be released sometime in 2010[163].

The FFWG's most recent published estimates of ODA to MNH per live birth across the 68 *Countdown* priority countries are for 2005 and 2006[164]. According to these, total worldwide ODA to MNH increased by 64%, from US$2.1 billion in 2003 to US$3.5 billion in 2006, which is still not enough to meet the relevant MDG targets. The proportion of total worldwide ODA for MNH that went specifically to MNH fell from 33% in 2003 to 27% in 2004 and recovered back to 34% in 2006[165]. Nonetheless, the volume of ODA to MNH rose by 66% over the same period. Most of this assistance comes from bilateral sources (54% in 2006) though the proportion coming from GHIs is rising (15% in 2006). Ninety-five percent of ODA to MNH was allocated to specific projects, with only a small proportion (5%) being allocated to general budget and health sector support. The proportion of ODA allocated to MNH specific projects as a proportion of ODA to MNH projects in general (that also include general health care and disease specific projects), fell from 59% in 2003 to 51% in 2006. Within this allocation, the proportion allocated to maternal health/safe motherhood fell from 35% in 2003 to 21% in 2006, or from constant 2005 US$417 million to constant 2005 US$346 million over the same period[166]. In 2006, the biggest donations made (in descending order) to MNH were from the World Bank, the USA, the EU and the UK.

Fifty of the 68 *Countdown* priority countries saw ODA to MNH per live birth rise by an average of 400% from 2003 to 2006, and in Nigeria it rose by 1626%. *Countdown* priority countries that have seen the largest falls in ODA for MNH from 2003 to 2006 are Botswana (-96%), Brazil (-65%), Burundi (-86%) and Djibouti (-58%)[167]. Between 2003 and 2006 disbursement of aid for MNH activities increased from US$7 to US$12 per live birth, but alarmingly, the FFWG found that ODA to MNH was not associated with a country's degree of need[168].

The FFWG exercise revealed a considerable degree of year-by-year volatility in aid flows to MNH, which hampers country government planning and budgeting, especially in the most aid dependent countries[169]. The Working Group also raises the important point that donors do not publicise the

[3] The proportion of DAH channelled via UN agencies and development banks decreased from 1990 to 2007, whereas the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFTAM), the Global Alliance for Vaccines and Immunization (GAVI), and non-governmental organisations (NGOs) became the conduit for an increasing share of DAH. Of the $14·5 billion DAH in 2007 for which project-level information was available, $5·1 billion was for HIV/AIDS, compared with $0·7 billion for tuberculosis, $0·8 billion for malaria, and $0·9 billion for health-sector support

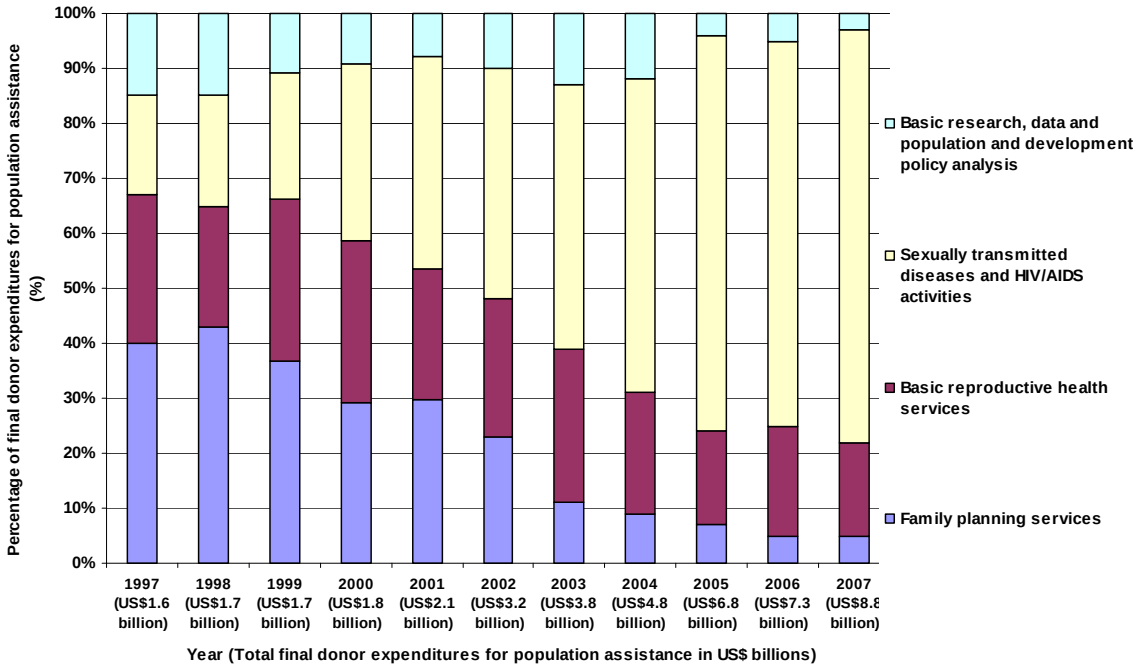
reasons behind the intensity and direction of their ODA and there is no evidence that more transparent governments receive more ODA than others.

Population funding: Tracking ICPD commitments (International Conference on Population and Development 1994)

ICPD covers four costed population activity packages: family planning services, basic reproductive health services (with the aim of decreasing maternal mortality and morbidity within primary health care), STI/HIV/AIDS activities and basic research, data and population and development policy analysis[170]. By the United Nations Fund for Population Affairs (UNFPA) and the Netherlands Interdisciplinary Demographic Institute (NIDI) calculations, final donor expenditures for population assistance amounted to $7.3 billion in 2006[171] and $8.8 billion in 2007[172] and are estimated to reach $11 billion in 2008. It is predicted that the level will remain steady in 2009 at $11 billion and may even decline. In 2006 the top donors to population activities were (in descending order) the US, the UK, the Netherlands, Japan, Sweden, Canada, Norway, the EC, France and Germany. Between 2002 and 2006, bilateral donors provided the largest proportion of average annual ODA for RH (67.4%), with the United States Government providing 41.9%, followed by the United Kingdom at 7.6%[173]. Most of the US funding/ODA was for HIV and AIDS through the US President's Emergency Plan for AIDS Relief. The multilateral agencies provided 32.6% of the average annual RH ODA with the GFATM providing 12% and the UN agencies 10.6%[174].

Funding for HIV/AIDS as a proportion of total population assistance has increased from 16% in 1997 to 70% in 2006 and was expected to rise again to 75% in 2007. Funding for the three other ICPD components is below the ICPD targets. Family planning funding as a proportion of total ICPD funding has decreased from 40% in 1997 to 5% in 2006 and 2007 and basic reproductive health services has decreased from 33% to 17% during the same period[175].

Figure 6. Final donor expenditures for population assistance, by category of costed population activity with yearly totals, 1997-2007[a]



[a] The development banks are not included in the final expenditures shown, as the banks' loan agreements are often disbursed over several years. **Source:** *UNFPA, NIDI, 2009. Financial resource flows for population activities in 2006, p.27.*

The effect of HIV and AIDS funding

The increase in funding to HIV and AIDS, combined with a lagging behind of funding to family planning and reproductive health has, in some cases, had a negative impact on the delivery of SRH services[176,177,178]. Funding for HIV and AIDS has often had a narrow focus and this has affected the rest of the health sector[179]. In countries where doctors are sparse in number, the narrow focus on HIV and AIDS has lead to a decrease in human resources for other sectors[180]. Similarly, negative effects have also been observed on delivery of other health services, such as vaccination and caesarean section delivery[181]. This does not mean that HIV and AIDS funding increase has been negative overall, but it highlights the fact that these increases have overtaken other areas of sexual and reproductive health funding; and that donor funding has not encouraged integration. Increases in funding to sexual and reproductive health have been insufficient and so countries have been unable to focus on full integration of services[182].

US funding for family planning

While the United States contributes more funds than any other country toward voluntary family planning services worldwide, European nations far outspend the United States in terms of the proportion of the gross domestic product allocated to foreign assistance[183]. In addition, US policy on population over the past decade has negatively affected funding of reproductive health related activities because of the Global Gag Rule and withdrawal of funding to UNFPA. The Global Gag Rule (or Mexico City Policy) barred overseas organisations that provided abortion information or services from receiving US financial and technical assistance.

Following the inauguration of President Obama in 2009, the US resumed support for UNFPA[184,185] and in April 2009 the US administration repealed the Global Gag Rule[186,187]. Although they can now resume funding to a wide range of SRH NGOs that support abortion, the US still cannot directly fund abortion services because of the Helms Amendment[188]. It will be important to measure the impact that this significant shift in policy and funding has over the coming years on maternal and reproductive health spending globally.

EU funding for MNH

Although many NGOs, programmes and governments look to the US for financing of their family planning, maternal and reproductive health activities and have been negatively impacted by the Global Gag Rule in operational, programmatic and financial terms, the EU-15 surpassed the US as the top donor to population assistance in 2006, with a total contribution of US$2.7 billion compared with US$2.5 billion from the US[189]. Collectively, the EU-15 and US accounted for 70% of global contributions to population assistance in 2006, with the UK and the Netherlands as the leading European donors. Although there appear to be encouraging trends on the surface, funding for family planning has halved in absolute terms from a decade ago[190]. Again, the reason for this is that most new funding for population activities has been earmarked for HIV/AIDS. Funding for basic RH however, has recently increased slightly, for the first time since 2003. European support for SRH related organisations in 2007 increased by $486 million to a total of $2.29 billion, with the Global Fund and the UNFPA receiving the largest amounts.[191]

Family planning

Funding gaps for contraception/family planning are conspicuous. Since the mid-1990s most developing countries have experienced a major reduction of donor funding for family planning on a per woman basis, despite, and exacerbated by, rapid population growth[192].

The Foundations

The rise in the amount of Development Assistance for Health (DAH) coming from the private sector (NGOs and foundations) introduces a new angle to funding relationships between donors and developing country recipients in the support of efforts to meet MDG 5. Primary funds for population assistance coming from these donors have increased from US$106 million in 1997 to US$554 million in 2007[193]. However, this small segment of private donors has not actually increased in terms of the proportion of population assistance. Foundations and NGOs contributed 6.3% of donor funds for population assistance (excluding bank loans) in 1997, rising to 18.4% in 2002, but then declining to 6.8% in 2007[194]. There is insufficient evidence about the impact of non-government financing on sexual and reproductive health services. Careful international monitoring[195] will be important as parts of the private sector are not accountable in the same way that international agencies and bilateral donors are; have not signed international treaties related to commitments in this field made by other donors; and are more prone to conflicts of interest from either commercial interests or values that do not match those consistent with the ICPD Plan of Action and later treaties[196]. However this does not detract from the fact that some foundations – like the Macarthur Foundation, the Packard Foundation and a certain active anonymous foundation – are more likely to fund difficult to reach and underfunded areas like safe abortion services.

Funding gap

In 2008, the MDGs 4 and 5 costing and impact estimate group estimated the total cost of scaling up family planning, antenatal, quality facility birth, postnatal and child health care with underlying health systems strengthening for 51 of the world's poorest and aid dependent countries up to 2015[197]. According to these estimates, the *additional* cost of scaling up the care needed to reach 95% coverage is US$7.2 billion in 2009 and US$18.4 billion in 2015. This means that US$3-5 per capita by 2010 rising to US$10 per capita in 2015 would need to be allocated to these services *in addition to current expenditure*[198].

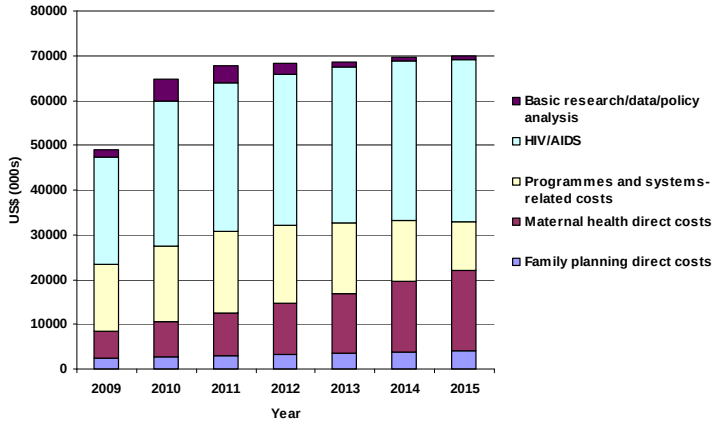
Most of these costs are needed for health system strengthening (40%), with 9% needed for FP, 7% for ANC, 18% for quality facility births, and 3% for postnatal care (PNC). The group further estimated that covering the provision of quality facility births, including addressing the health systems gaps needed to do this, would cost US$2.5 billion in 2009, rising to US$5.5 billion in 2015. The group estimates that 40% of this investment is needed in the 37 African countries alone. Filling this funding gap of US$2.5 – 5.5 billion would allow 234 million more births to take place in quality assured facilities, provide for the training and recruitment of 2.5 million professional health care workers and save close to 1 million mothers and over 4.5 million newborns[199].

ICPD

The UNFPA has recently updated ICPD costing estimates for meeting the targets set out by the Programme of Action and current needs, and to harmonise these financial targets with MDG costing. The costs calculated are "considered minimum estimates required" to implement the goals in the areas of family planning, reproductive health, STI/HIV/AIDS and basic research, data and population and development policy analysis, and are much higher than previous outdated estimates[200]. To give an idea of the cost estimates of requirements until 2015; to cover maternal health direct costs in 2009, a sum of US$6.1 billion is required, rising to US$18 billion by 2015 (see Figure 7 and Table 5 below). For family planning direct costs, US$2.3 billion would be needed, rising to US$4.1 billion in 2015[201]. Sub-Saharan Africa and the Asia and Pacific region will require the largest investments, for example, Asia and the Pacific will require US$8.1 billion for maternal health direct costs, or 45% of the total amount needed for this goal, in 2015[202]. In sum, it is estimated that only about 11% of the costs of family planning/reproductive health will be covered by population assistance in 2009 and

with the uncertainty surrounding the amount of domestic resource allocation to these areas, there is a very severe funding shortage.

Figure 7. Revised ICPD global cost estimates, 2009-2015



Source: *United Nations Economic and Social Council, Commission on Population and Development 42nd Session 2009. Flow of financial resources for assisting in the implementation of the Programmes of Action of the International Conference on Population and Development, Report of the Secretary General. E/CN.9/2009/6.*

Table 5. Revised ICPD global cost estimates, 2009-2015

	Year						
	2009	2010	2011	2012	2013	2014	2015
Global costs	48,980	64,724	67,762	68,196	68,629	69,593	69,810
Sexual/reproductive health/family planning:	23,454	27,437	30,712	32,006	32,714	33,284	33,030
Family planning direct costs	2,342	2,615	2,906	3,209	3,529	3,866	4,097
Maternal health direct costs	6,114	7,868	9,488	11,376	13,462	15,746	18,002
Programmes and systems-related costs	14,999	16,954	18,319	17,422	15,723	13,672	10,931
HIV/AIDS	23,975	32,450	33,107	33,951	34,734	35,444	36,189
Basic research/data/policy analysis	1,551	4,837	3,943	2,239	1,181	864	591

Source: *United Nations Economic and Social Council, Commission on Population and Development 42nd Session 2009. Flow of financial resources for assisting in the implementation of the Programmes of Action of the International Conference on Population and Development, Report of the Secretary General. E/CN.9/2009/6.*

High Level Task Force on International Innovative Financing Working Group 1 (WG1)

WG1 has estimated that 1.7 million additional nurses or midwives are needed by 2015 (using a WHO methodology for facility based service expansion) or, if a community based scale-up is used, 363,000 additional nurses or midwives would be needed by 2015. It is estimated that the facility based methodology would avert 322,000 maternal deaths and the community based methodology would avert 218,000 deaths.[203]

The same working group also estimated there will be no funding gap if donors fulfil commitments already made. In Monterrey, Mexico in 2002, a number of major donor countries pledged 0.7% of their gross domestic product towards ODA[204], however very few have met this target. Furthermore, only a tiny proportion of the ODA that is provided is then allocated directly to maternal health programmes.[205] If countries do not fulfil these commitments and continue as now there will be a gap of US$28 – US$37 billion for the health related MDGs.[206]

The WG1 cautions that ensuring stronger health systems and improving health outcomes, including maternal health outcomes, requires funding a country led strategy that is both financially and technically sound.

Funding for safe abortion

It is particularly difficult for countries to fund safe abortion work. Cultural sensitivities often mean that governments are unwilling to fund safe abortion through national programmes and it has to be provided through CSOs and the private sector[207]. It can also be difficult for government donors to fund in sensitive circumstances. Donors are often not aware of the abortion law in countries in which they work, for example, that abortion is legal for saving the woman's life (at least) in all countries in Africa. Many government donors (such as USA) simply will not fund safe abortion services because of their own policies (although the USA does fund post abortion care), and this has a large impact on the level of funding available for safe abortion work. Historically there are two main sources of funds for work in abortion: 1) a small number of European donors (UK, Finland, Norway, Netherlands and Sweden) and 2) some of the US foundations[208]. This funding is usually short term and not secure. For example, the donor funding for the Safe Abortion Action Fund[209] (an international fund managed by IPPF, awarding grants to NGOs for work on safe abortion) has only been operating for two years, barely enough time for projects to get started, and further funding is uncertain. In addition, the US foundations have been severely hit by the current financial crisis and cuts in their programmes are in the order of 10 to 50%. Because of the economic crisis, foundation budget cuts will result in at least US$100 million less to be spent on abortion activities in 2009 than was spent two years ago.

Funding for RH in conflict affected countries

Many of the countries that fare badly on coverage indicators for essential maternal or reproductive health packages, such as contraceptive prevalence, skilled attendance at birth, or antenatal care are currently, or have recently been, affected by conflict. Patel *et al.'s*[210] analysis of ODA for reproductive health activities in 18 conflict affected countries between 2003 and 2006 did find a substantial increase (77.9%) in funding for reproductive health activities in these countries during this period, but highlights the fact that this growth was largely due to a 119.4% increase in funding for HIV/AIDS activities. The ODA disbursed for other direct reproductive health activities, including maternal healthcare, declined by 35.9% over the same period.

The 15 LDCs (as classified by OECD/DAC) that have been affected by conflict (i.e. at war at some point) during the period 2000 to 2006 have been found to receive less ODA for RH than the 36 non-conflict affected LDCs, both in terms of annual average RH ODA per capita (US$1.5 vs. US$2.3, respectively) and as a percentage of total ODA (4.4% vs. 8.9%, respectively)[211] despite conflict affected countries having overall worse RH indicators (excepting HIV/AIDS) than non-conflict affected LDCs[212].

There is also inequity between the 11 conflict affected countries in Africa in annual average per capita ODA for RH when compared to health outcomes and per capita GDP. Again, the situation is dominated by channelling of funds to HIV/AIDS activities, given that of all RH ODA distributed to

conflict affected countries between 2003 and 2006, 46.27% was allocated to HIV/AIDS, and only 1.72% was allocated to FP activities despite HIV/AIDS prevalence being the RH indicator for which these countries do not differ substantially from non-conflict affected LDCs[213]. Initiatives are therefore required to make aid financing more responsive to need in the context of armed conflict and conflict affected areas.

Domestic response to funding health

The funding gap will not be filled by ODA alone as a mixture of domestic and overseas investment is required. Although donor support has been shown to be insufficient, it is also important to note the lack of investment in health and specifically maternal health on the part of national governments. Despite accruing funds through general taxes, insurance schemes, and user fees, underinvestment is seen. This may be the result of a government's limited revenue, or it may be due to lack of political will. General expenditure on health as a percentage of total expenditure is reflective of a government's commitment to health. Although official thresholds were never set, at the Abuja Summit in 2001, African heads of state agreed that 15% of overall country budgets should be allocated towards health, at a minimum[214].

According to the ICPD framework, domestic expenditure on population activities (including basic reproductive health and family planning services) in developing countries is projected to have increased from US$18.5 billion in 2007 to US$20.5 billion in 2009. The largest amounts of domestic funds for population activities have been mobilised in Asia (US$11.2 billion in 2007, projected), followed by Sub-Saharan Africa (US$3.0 billion in 2007, projected). Consumer spending or out-of-pocket expenditure forms the greatest part of this and it varies substantially from country to country, with countries in Sub-Saharan Africa and LDCs relying more heavily on donor assistance than on their own resources[215]. In 2007, 45% of domestic expenditures on population were spent on STD/HIV/AIDS activities, continuing the trend of proportionally higher expenditure on HIV/AIDS, although this is not as unbalanced overall as it is for donor expenditures[216]. Sub-Saharan Africa had the greatest proportional domestic expenditure on STD/HIV/AIDS in 2007 projected at 92% of total spend on population activities.

Of the 68 *Countdown* priority countries, only seven have reached the 15% Abuja target[217]. According to WHO statistics, Pakistan and Myanmar invest the least, with less than 2% of total government expenditure going to health.[218] Afghanistan, Azerbaijan, Congo, Cote d'Ivoire, Eritrea, Guinea, Guinea-Bissau, Iraq, India, and Nigeria are the next poorest investors, with less than 5% of country budgets allocated for health and health systems. India and Nigeria rank 5th and 35th highest in the world for GDP (adjusted for purchasing power parity), valued at US$3.267 trillion in India and US$338.1 billion in Nigeria [219]. With the exception of Azerbaijan, all of these countries have MMRs in excess of 300 (320-1100)[220]. It is difficult to determine levels of investment in maternal and reproductive health specifically as many aspects of services will fall within the general health system and in most cases national health accounts do analyse for the sub-sector separately. WHO work is currently underway to support countries to produce sub-accounts for reproductive and child health, among other health areas (see page 127 for case study of reproductive health accounts in Rwanda).

The High Level Taskforce on Innovative Finance for Health Systems estimates $54 per person per year as the necessary minimum to provide universal essential health services, which includes elements of safe motherhood[221]. The latest estimates reveal that 21 of the 68 *Countdown* priority countries spent less than is required to ensure access to basic healthcare[222], with Burundi, DRC, Ethiopia, Madagascar, Sierra Leone, Somalia, Korea and Myanmar reportedly spending less than $10 per person per year[223]. As donors and national governments continue to pledge commitment and financial resources to one another and to their citizens, innovative health financing and tracking of

funds will become necessary to ensure accountability and sufficient investment for maternal health and health systems as a whole[224].

Table 6. Comparing private and governmental expenditures on health: The bottom 50 versus the top 20 spenders. Sorted in ascending order by per capita government expenditure on health in 2006.

	Per capita government expenditure on health (PPP int. $)		Per capita total expenditure on health (PPP int. $)		Private expenditure on health as percentage of total expenditure on health (%)	
Location	**1996**	**2006**	**1996**	**2006**	**1996**	**2006**
The bottom 50 spenders						
Burundi	4	4	15	15	69.4	75.4
D.R. Congo*	0	7	10	18	96.4	62.9
Myanmar	3	7	20	43	84.3	83.2
Afghanistan*		8		29		72.5
Pakistan*	12	8	43	51	73.2	83.6
Eritrea	11	10	27	28	60	62.7
Guinea-Bissau	16	10	54	40	70	75.3
Congo	19	13	31	31	39.5	59.2
Ethiopia*	8	13	15	22	48.8	39.6
Chad	12	14	31	40	62.8	64.4
Guinea	9	14	75	116	87.4	87.7
Niger*	8	14	20	27	58.2	47.3
Cote d'Ivoire	21	15	92	66	77.5	77
Nigeria*	8	15	35	50	78.2	69.9
Tajikistan	9	16	20	71	57.9	77.4
Somalia	8		18		55.6	
Lao P.D.R.	15	18	39	85	60.9	79.2
Comoros	25	19	35	35	30.4	44.5
Bangladesh*	14	26	41	69	67.2	63.2
The top 20 spenders						
Japan	1374	2067	1659	2514	17.2	17.8
Australia	1116	2097	1710	3122	34.8	32.8
Belgium	1529	2264	1939	3183	21.2	28.9
Ireland	913	2413	1281	3082	28.7	21.7
United Kingdom	1190	2434	1435	2784	17.1	12.6
Sweden	1618	2533	1861	3119	13.1	18.8
Germany	1971	2548	2399	3328	17.8	23.4
Canada	1459	2585	2058	3672	29.1	29.6
Switzerland	1513	2598	2767	4312	45.3	39.7
Austria	1677	2729	2381	3545	29.6	23

* These 11 countries had 65% of maternal deaths and the greatest absolute numbers of maternal deaths worldwide in 2005.
The countries highlighted are those with MMRs of at least 1,000, excepting for Rwanda which is not featured in the table.

Source: *WHO Statistical Information System. Available at: http://apps.who.int/whosis/data/Search.jsp. Accessed on 15th October, 2009.*

Burden of disease and funding priorities

MacKellar[225] found that health and population (minus HIV/AIDS) lost share of total development assistance from 1993 to 2003, though as a whole it more than doubled, and that if we were to take into account "the fact that many RH and FP projects contain HIV/AIDS components, the decline in share would be more pronounced". This downward trend in development assistance for health and population, not including HIV/AIDS, was also reflected in the imbalance of donor spending relative to disease burden, because HIV/AIDS was allocated a much higher share of ODA in 2003 (25.9%) relative to its share of the disease burden in the early 2000s (5.8%)[226]. However, this also happened for maternal and perinatal health, which accounted for 8.3% of the disease burden in the early 2000s, but got 16% of directly attributable assistance for health, population and AIDS in 2003[227]. HIV/AIDS also received far more development assistance dollars per DALY (2002 US$21.88 per DALY) than any other cause, followed by maternal and perinatal health (2002 US$9.29 DALY). Patterns of development assistance therefore do not necessarily reflect patterns of the global burden of disease. However, most analyses similar to this one incorporate maternal and perinatal/newborn health expenditure into one category. It would be interesting to assess how these sums for MNH are actually distributed between health interventions/expenditures that are specifically for mothers and those that are specifically for their infants. There is also little correlation between the disease and health priorities of aid recipient countries, as stated in their Poverty Reduction Strategy Papers, and the amount of development assistance they receive for health, population and HIV/AIDS and their sub-sectors. This suggests that either donors do not take national disease priorities into account when allocating development assistance, or that countries devise their PRSPs with an eye to conforming to international standards and not necessarily to prioritising strategies for the poor and linking them to interventions that tackle the relevant MDGs.

MacKellar[228] explains the attractiveness of maternal and reproductive health interventions as due in part to their being typically cost effective, also to wide concern for this group of people perceived as vulnerable and to the existence of an effective global advocacy community. Although it may be true that maternal and perinatal health receives a disproportionate amount of development assistance relative to its share of the global disease burden, in view of the substantial improvements still needed in maternal and reproductive health care globally, there remains a real need to fund it further, to a much higher level, as estimated by the UNFPA[229], and with greater efficiency and efficacy. Further, basing funding and resource allocations solely on prioritisation by a ranking of global burden of disease is not sufficient because there are multiple decision criteria that must be accounted for and employed in decision making, such as equity of coverage, cost effectiveness and use of evidence based medicine, plus the inclusion of stakeholders such as community representatives and health personnel to influence priority setting and decision making[230].

Implications: Restating the challenge of maternal and reproductive health

- Drastic new action is needed to act on the maternal neo-natal health situation in Sub-Saharan Africa. Progress in maternal health requires a greater and longer term financial commitment from donors and from country governments. Much more (and sustained) funding for reproductive health is needed in conflict affected countries.

- Health outcomes and the main causes of maternal deaths vary by and within country and income group. Careful analysis of the situation, disaggregated using context appropriate socio-economic and demographic groupings, is needed to inform prioritisation.

- More information and data is needed on unwanted pregnancy and neglected causes of maternal morbidity (including poor mental health) to fully understand the scale and impact. This information would support advocacy efforts and inform strategic and programmatic responses.

- Reducing unmet need for family planning requires immediate attention and needs to be central to any strategy designed to reduce maternal mortality and morbidity.

- Effectively treating HIV positive pregnant women will reduce the risk of poor maternal health outcomes and therefore efforts to test and subsequently treat pregnant women who are HIV need to comprise a core component of any national and sub-national response to reducing maternal mortality.

- The increased risks to women and their babies from violence in pregnancy strongly suggest the need for interventions at a societal level. The links between MDG 3 and 5 are very clear.

- There is a need for continued improvements in the focus, responsiveness and coordination of the international effort and longer term commitments to meet the funding gap are necessary.

- International monitoring of maternal health progress and investment needs to be streamlined. There are several groups producing a range of different figures.

- Better accounting for maternal health investments in domestic health accounts is necessary.

Part Two: Making a Difference: Effective Packages of Care

"Many single interventions are available, but none alone can reduce the rate of maternal mortality in a population".

Campbell and Graham, 2006.

It is widely acknowledged that there are many appropriate and effective biomedical interventions for improving maternal health. These interventions have been extensively documented and reviewed by the *Lancet* series and special issues on *Maternal Survival* (2006), *Sexual and Reproductive Health* (2006), *Delivering for Women* (2007), and the *Countdown to Millennium Development Goals 4 and 5* (2008). Currently not all potentially effective interventions are implemented, and not all interventions are being effectively implemented.

Strategies and interventions to reduce maternal mortality

In view of the diversity of country contexts and the multi-faceted nature of maternal health and its determinants[231], it is difficult to simplify a set of global recommendations. However, Campbell *et al.* demonstrate that only a few key strategic choices need to be made in order to address maternal mortality[232]. Their key messages are:

- Maternal health has many valued outcomes, but maintaining focus on maternal death is crucial in areas where the mortality burden is high;
- For strategies to be effective, the means used for distribution of component packages must achieve high coverage of the intended target group (but without sacrificing quality);
- No single intervention alone can reduce the rate of maternal mortality in a population;
- The focus of examining the epidemiology of maternal mortality must prioritise the intrapartum period;
- Any effort to reduce high rates of maternal mortality will need to focus on health centre intrapartum care strategies (as agreed in the *Millennium Declaration*) as most maternal deaths occur during labour, delivery or the first 24 hours postpartum, and most complications cannot be predicted;
- Other opportunities to alter the risks of maternal death outside the intrapartum period include: antenatal care, postpartum care, family planning, and safe abortion.

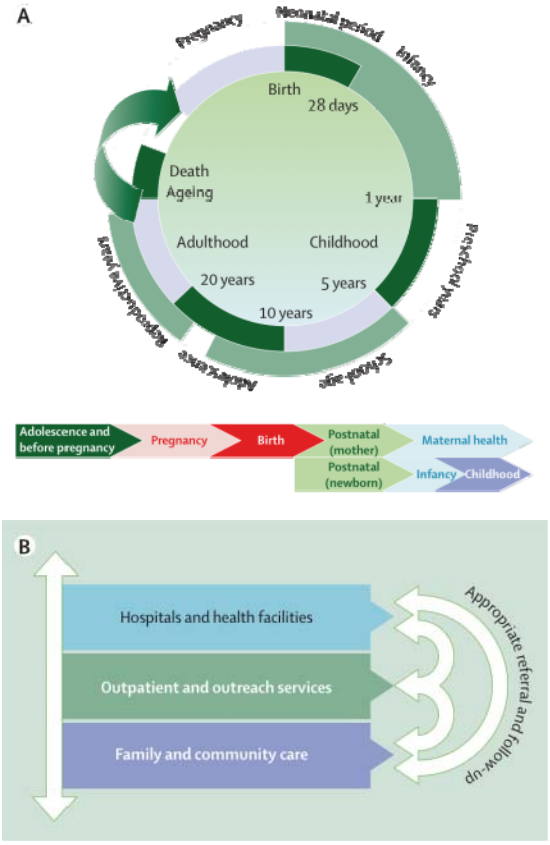
In addition to these issues, an emphasis must be placed on quality of services provided. As noted in the first report of the *Millennium Development Goals 2005*[233], quality of services, not just quantity, is important. This includes Quality Facility Birth (QFB), which is delivery care in a facility that meets six essential elements of quality: i) effective, ii) safe, iii) timely, iv) efficient, v) equitable, and vi) responsive to the preferences, needs and values of mothers and families[234].

Whilst Campbell and Graham[235] and Bhutta *et al.*[236] affirm that intrapartum care strategies with access to caesarean section are the priority focus for reducing MMR, they outline four complementary strategies with different target groups that are also important to consider. Based upon evidence on the proportion of deaths averted, after intrapartum care, the order of prioritisation of these services is: family planning/contraceptive services, safe abortion, antenatal care and postpartum care. However, Campbell and Graham also caution that because they focus on strategies, the evidence they use is "of a lower grade of certainty (since experimental designs are impractical), limited in volume, context specific and present challenges for generalisation"[237].

There is little evidence that can be generalised, or tools to support decisions about how and what to prioritise and assess the likely impact of such a process on health outcomes in resource poor settings. It is clear that prioritising an intervention package covering only one stage of the continuum risks neglecting other continuum stages, and prioritisation will very much depend on the state of the health system in the locality and the balance of contributory factors to maternal death.

This second part of the report focuses on the evidence surrounding key reproductive, maternal and neonatal health packages. This is presented according to the continuum of care and looks at care before pregnancy, during pregnancy, at the time of birth, and postpartum (mother and newborn). Where robust evidence exists, information about the efficacy and cost effectiveness of packages of care is presented. The second section of Part Two addresses the issue of new technologies and the potential they hold for scaling up access to affordable services. Finally, we turn to effective implementation strategies for putting packages of care into practice, which provides a lead into Part Three of the report, addressing the health system.

Figure 8. The continuum of care required along the life-cycle, connected to places of healthcare delivery. Connecting care during the lifecycle (A) and at places of care-giving (B).



Source: *Kerber et.al., 2007. Lancet, 370, pp.1358-69. Adapted from the Partnership for Maternal, Newborn and Child Health.*

Effective packages of care

Main findings

- Evidence is mostly context specific and cannot necessarily be generalised globally. No single intervention alone can reduce the rate of maternal mortality in the population. A continuum of care approach works.

- Integrated packages of care are more cost effective and user friendly than single interventions because of synergies. For example integration of MH with NH, SRH, HIV and AIDS.

- There is strong evidence that preventing pregnancy among women who do not want children (currently or ever) is an effective and cost effective primary means of prevention of maternal mortality.

- The indirect costs of unsafe abortion include the loss of productivity from abortion related morbidity and mortality the diversion of scarce medical resources for treatment of abortion complications, and the effect on the estimated health, education and survival of the 220,000 children worldwide whose mothers die from unsafe abortions each year.

- There is strong evidence that investment in quality emergency obstetric care supporting a network of skilled midwives (in the facility and working within the community) will contribute to a reduction in maternal mortality.

- The evidence strongly supports long term strategies which increase access to skilled birth attendants based in functioning EOC centres, or in the community with strong referral networks to quality EOC facilities. The evidence does not discount a staged approach to scaling up access to skilled attendance, starting with short term investment in training and supporting community health workers and TBAs.

- Evidence strongly indicates that EOC facilities must be able to provide 24-hour services. This is lacking in many settings.

- The major barrier to achieving high quality intrapartum care is the global lack of skilled attendants and other key health workers.

- There is a lack of a specific evidence based postnatal care package. In addition fragmentation into postpartum care for the mother and newborn care for the baby is an important challenge to enabling a continuum of maternal, newborn and child care.

- Neonatal and perinatal mortality can be reduced by community level interventions.
- More evidence is needed to support strategies to reduce maternal mortality in high HIV settings.
- Further investment is needed to take to scale innovations (clinical and technological) that have demonstrated successful implementation.
- There are few simple generalisable findings about the cost effectiveness of components of packages and packages of care in this field.

Section 1: Effective packages of care

The packages of care for maternal and newborn health are discussed in the following order:

- Family planning (FP)
- Antenatal care (ANC)
- Safe abortion
- Intrapartum care
- Postpartum care

Before pregnancy

Family planning

There is strong evidence that preventing pregnancy among women who do not want children (currently or ever) is an effective and cost effective primary means of prevention of maternal mortality[238,239,240.] Forty-one percent of pregnancies globally are unwanted, with 22% resulting in induced abortion[241]. An estimated 150,000 maternal deaths (32% of maternal deaths) could be prevented by use of effective contraception by women wishing to postpone or cease further childbearing[242]. The other clear benefits of FP are:

- Reduced fertility: In Matlab, Bangladesh recent evidence demonstrates the impact fertility decline has had on MMR, substantially contributing to its decline[243]
- Birth spacing: Closely spaced births result in higher infant mortality: International survey data show that babies born less than two years after their next oldest sibling are twice as likely to die in the first year as those born after an interval of three years[244,245.]
- Reduced adolescent fertility: Young women face higher risks of dying from pregnancy or childbirth; women aged 15 to 19 are twice as likely to die from maternal causes as older women and many adolescents are physically immature, which increases their risks of suffering from obstetric complications[246,247]. Recent evidence from Matlab indicates that as fertility has declined maternal mortality among those under 19 has decreased substantially because fewer are becoming pregnant[248].
- Prevention of abortions: An estimated 20 million unsafely performed abortions take place each year, resulting in 67,000 deaths, mostly in developing countries. Family planning can prevent many of these tragic deaths by reducing the number of unintended pregnancies that may end in abortion.[249]
- Family well-being: Couples exercising their rights and choosing when to have children results in health benefits to the whole family, associated with appropriate child spacing[250].
- Better health for women: With potential to avoid 2.1 million unintended pregnancies.

It is estimated that $US1 million in commodity support can:

- Save the lives of 800 women and 11,000 infants;
- Prevent some 14,000 additional deaths of children under 5 years;
- Avert 30,000 unwanted pregnancies;
- Prevent 150,000 additional induced abortions[251].

The evidence of the effect on maternal mortality and pregnancy outcomes of limiting childbearing to lower risk age groups, or of increasing birth spacing, is relatively strong, but less ample than evidence for the effect of birth spacing and limiting on perinatal outcomes[252,253,254,255]. Most pregnancies occur among the lower risk age groups because they constitute the largest share of the population of women of reproductive age, whereas the higher risk groups are at the extremes

(young or old) and therefore smaller in number. Therefore, most complications and maternal deaths will take place within the low risk group simply because of the absolute number of people involved, despite rates being lower. One report estimated that changing fertility patterns (limiting childbearing to prime reproductive ages or eliminating high order births) could reduce MMR by between 4% and 11%, and infant and child mortality by an estimated 5% to 8%[256]. Some studies have suggested the effect of family planning to be smaller, requiring a combination of strategies of general fertility reduction, abortion services, and family planning for high risk groups to reduce maternal mortality[257], or provide evidence that shorter birth intervals do not increase MMR[258]. Conde-Agudelo *et al.*'s systematic review found some positive associations between long or short inter-pregnancy intervals and some adverse maternal outcomes, for instance, an inter-birth interval greater than five years was associated with increased risk of pre-eclampsia[259].

An earlier analysis of over 400,000 parous women delivering singleton infants in the LatAmC region found that interpregnancy intervals shorter than six months carried a higher risk of maternal death (150% increased) and other adverse maternal outcomes, and inter-pregnancy intervals grater than 59 months carried an increased risk of eclampsia and pre-eclampsia, after controlling for confounding and compared with intervals of 18 to 23 months[260]. Findings from Matlab, Bangladesh, are also consistent with these findings, with pre-eclampsia and high blood pressure being significantly more likely for women with preceding inter-pregnancy intervals shorter than six months, or 75 months or more, compared to those with intervals of 27 to 50 months[261]. Further research is needed in this area[262].

A dozen or so contraceptive technologies are available through a multitude of delivery mechanisms, and whilst there is a very small health risk associated with some contraceptives, all methods of contraception are safer than pregnancy and delivery. There is a high percentage of unwanted pregnancy and unmet contraceptive need, the highest being in Sub-Saharan Africa at 23%[263], and also a subsequent high number of induced abortions (see Part 1: Section 1: Maternal mortality and unsafe abortion).

Safe technologies are available, and new research is producing advances, which aim to improve acceptability, widen choice, and reduce financial costs (see Scientific Innovation: Delivery of Depo-Provera below)[264,265,266,267]. Examples include combined contraceptive vaginal rings releasing Nestorone and ethinylestradiol[268], which have had good user acceptability in studies in developed countries[269], and subdermal implants that are technologically improved, easier to insert and remove[270] and more affordable, such as Sino-Implant (II)[271,272,273].

Scientific Innovation: Delivery of Depo-Provera

"Depo-Provera is a popular and safe injectable contraceptive. One injection protects against pregnancy for three months. Where it has been made widely available, it is typically a very popular choice of method, and often leads to a dramatic increase in overall use of contraceptives. Despite its popularity, local health authorities in developing countries often hesitate to allow non-professional health workers to administer Depo-Provera because it requires a syringe, which poses a risk of disease transmission if not properly sterilised. There are also problems relating to reliable supply and distribution. USAID staff knew the full potential of Depo-Provera was not being realised and a great many women lacked easy access to it. In the early 2000s, USAID successfully tested the feasibility of providing Depo-Provera through CBD workers, and some countries, like Madagascar and Uganda, have greatly expanded this approach. However, the requirement for intramuscular injection still limits its use in most places to clinics and professional health staff. USAID helped establish a public-private sector partnership with PATH, Pfizer, and Becton Dickinson that led to the development of Uniject, a self-contained, syringe-less one-shot system for vaccinations that is highly portable, can be administered at home, and is easily disposable. New research by Pfizer makes possible the delivery of Depo-Provera with Uniject. Initial test results look promising. A 2010 launch is anticipated which will make this popular and effective contraceptive available to millions more women."

Source: *Speidel, J.J., Sinding, S., Gillespie, D., Maguire, E., Neuse, M., 2009. Making the case for US international family planning assistance.*

Policies such as broadening contraceptive method choice, improving responsiveness of providers, decreasing distance to services, increasing community based distribution of contraceptives, increasing involvement of the private sector and NGOs, and reshaping abortion policies all contribute to fertility declines, combined with social and economic development [274].

Family planning programmes are highly cost effective.

There is strong evidence that family planning programmes can be highly cost effective, especially when the full range of benefits is incorporated into the analysis. For example the drop in fertility rate will have an impact on the number of people accessing services in the future. Investment in FP multiplies the impact of foreign assistance and a country's own development spending. In Zambia, for example, one dollar invested in family planning saved four dollars in other development areas[275]. Similar returns on investment were found in other countries[276].

Many different implementation strategies have been shown to be cost effective in specific contexts at specific times. Social marketing approaches have also emerged as cost effective options[277]. Even apparently more expensive approaches on a per couple year of protection basis, such as clinic and community based distribution[278] may be more cost effective when effect on fertility is considered[279].

The dilemma of doorstep versus more centralised distribution points for contraceptives in Bangladesh is a special case demonstrating the problem of choosing between more mobile and fixed delivery strategies for a service. Fox-Rushby & Foord[280] estimated relatively unfavourable cost effectiveness ratios for a mobile service in the Gambia but recognised the *context specificity* of this result, such as methodological differences between cost effectiveness studies, and the potential that a mobile clinic strategy would be more cost effective in a more densely populated district.

Community services in Ghana

A project in Navrongo, Ghana, developed an outreach programme with community based services and special activities to encourage male involvement in family planning. The result: the average number of births per woman dropped from five to four in just four years. Major improvements occurred in maternal and infant and child mortality rates. The Ghanaian government has officially adopted this outreach approach, but lacks resources to implement it nationwide. An infusion of funds would enable the government to accelerate its plans for national coverage.

Source: *Debpuur, C., Phillips, J.F., Jackson, E.F., Nazzar, A., Ngom, P., Binka, F.N., 2002. The impact of the Navrongo Project on contraceptive knowledge and use, reproductive preferences, and fertility. Studies in Family Planning, 33(2): pp.141-64.*

In programming for maternal health, contraceptive services are a vital complement to maternity care for women, but cannot be a substitute or short cut for the more complex provision of pregnancy, childbirth and postpartum care interventions for wanted pregnancies. However lower fertility will eventually have an obvious impact on the level of service required for maternal health, with lower numbers of women and neonates needing attention.

Rwanda shows the way

Rwanda, one of the poorest, most densely populated countries in the world, demonstrates the potential for family planning success in Africa. Its recent history includes great poverty and one of the most tragic, genocidal civil wars of modern times. But the Rwandan government, led by President Paul Kagame, understood that high fertility and rapid population growth were stifling the country's development. After studies determined existing demand for family planning and how best to allocate resources, Rwanda encouraged the NGO community to expand services, experimented with new ways to deliver services, and worked closely with donors to coordinate resource infusions. By early 2004, Rwanda was poised for a major jump forward. Only two years later, Rwanda documented one of the most rapid increases in contraceptive use ever recorded, from 10% to 27% of women of reproductive age.

"Family planning is priority number one—not just talking about it, but implementing it."

President Paul Kagame, November 2007

Source: *Solo, J., 2008. Family planning in Rwanda: How a taboo became priority number one. North Carolina: IntraHealth. Referenced in: Speidel, J.J., Sinding, S., Gillespie, D., Maguire, E., Neuse, M., 2009. Making the case for U.S. international family planning assistance.*

Pregnancy

Table 7. The WHO recommended interventions for improving maternal health in the pregnancy period are:

	Routine Care (offered to all women and babies)	Additional Care (for women and babies with moderately severe diseases and complications)	Specialised – obstetrical and neonatal care (for women and babies with severe diseases and complications)
Pregnancy care (4 visits) *Essential*	• Confirmation of pregnancy • Monitoring of progress of pregnancy and assessment of maternal and fetal well-being • Detection of problems complicating pregnancy (e.g. anaemia, hypertensive disorders, bleeding, malpresentations, multiple pregnancy) • Respond to other reported complaints • Tetanus immunisation, anaemia prevention and control (iron and folic acid supplementation) • Information and counselling on self care at home, nutrition, safer sex, breastfeeding, family planning, healthy lifestyle • Birth planning, advice on danger signs and emergency preparedness • Recording and reporting • Syphilis testing	• Treatment of mild to moderate pregnancy complications: ➢ Mild to moderate anaemia ➢ Urinary tract infection ➢ Vaginal infection • Post abortion care and family planning • Pre-referral treatment of severe complications ➢ Pre-eclampsia ➢ Eclampsia ➢ Bleeding ➢ Infection ➢ Complicated abortion • Support for women with special needs, e.g. adolescents, women living with violence • Treatment of syphilis (woman and her partner)	• Treatment of severe pregnancy complications: ➢ Anaemia ➢ Severe pre-eclampsia ➢ Eclampsia ➢ Bleeding infection ➢ Other medical complications • Treatment of abortion complications

Situational	• HIV testing and counselling • Antimalarial Intermittent Preventive Treatment and promotion of insecticide treated nets • Deworming • Assessment of female genital mutilation	• Prevention of mother-to-child transmission of HIV by anti-retroviral therapy, infant feeding counselling, mode of delivery advice • Treatment of mild to moderate opportunistic infections • Treatment of uncomplicated malaria	• Treatment of severe HIV infection • Treatment of complicated malaria

Source: WHO, 2009. *WHO recommended interventions for improving maternal and newborn health*. 2nd edition. WHO Department of Making Pregnancy Safer. WHO/MPS/07.05. Available from: http://whqlibdoc.who.int/hq/2007/WHO_MPS_07.05_eng.pdf .

Antenatal care

Antenatal care provides opportunities for monitoring the well-being of both the prospective mother and her fetus, early detection of complications and discussion of birth preparedness[281]. It is also an important opportunity for introducing HIV prevention[282,283] and sexual education. It can provide a platform for delivering several effective interventions from improving newborn health[284], as well as some maternal health benefit[285] from tetanus toxoid immunisation, nutritional supplementation[286], intermittent preventive treatment for malaria[287,288,4], and detection and treatment of HIV[289], for example through MTCT+ and STIs; all of which also impact on neonatal health. The direct role of ANC in reducing MMR is limited[290], although there is strong evidence that even a reduced number of ANC visits per pregnancy can be efficacious for single interventions, such as detection and prevention of anaemia, where iron supplementation is given[291]. However, the benefits of ANC in terms of fetal growth, risk of infection and survival are positive[292]. ANC has additional benefits in emphasising the promotion of health seeking behaviour and offers a vehicle for the delivery of other beneficial packages of care such as anti-malarial drugs[293].

According to Adam *et al.*[294] in their study of countries in Sub-Saharan Africa with very high adult and high child mortality, and countries in South East Asia with high adult and high child mortality, the most cost effective mix of interventions for neonatal care were:

- Community based newborn care package, followed by;
- Antenatal care package (tetanus toxoid injections; screening for pre-eclampsia; screening and treatment of asymptomatic bacteriuria and syphilis).

[4] In most countries with intermittent preventive treatment for pregnant women, it has only been adopted recently. Priority countries that adopted this intervention earlier had achieved fairly high coverage levels by 2006, such as 61 percent (Zambia) or 45 percent (Malawi). Intermittent preventive treatment for pregnant women is not recommended for malaria endemic countries where large proportions of the population live in low intensity malaria transmission areas. For this reason Botswana, Burundi, Eritrea and Ethiopia have not made it a part of their national malaria control strategies. They are not included in the coverage estimates for this indicator in the Countdown to 2015 Report for the year 2008.

Safe abortion

First trimester abortion

The WHO recommends Manual Vacuum Aspiration (MVA) as the preferred method for uterine evacuation before 12 weeks of pregnancy, and if providers have specialised training and adequate experience, this method can be used for up to 15 weeks of completed gestation[295]. The efficacy of MVA is comparable to that of electrical vacuum aspiration, with completion rates of 98% or greater[296]. MVA use is associated with an overall complication rate of about 2%. This method is faster, safer, more comfortable, and associated with shorter hospital stay for induced abortion than sharp curettage[297,298]. Furthermore, there is strong evidence that this method can be used safely and effectively by mid-level health service providers, such as midwives[299]. Aspiration is sometimes necessary for the management of a continuing pregnancy, a persistent gestational sac, or heavy or prolonged bleeding during medical abortion method. MVA offers an alternative to electrical vacuum aspiration to manage this situation[300].

Medical Abortion (MA) methods for up to nine completed weeks since the last menstrual period are proven to be safe and effective[301]. Combined regimens are more effective than single agents[302], and usually rely on administration of mifepristone (200mg), an antiprogestogen, followed by administration of prostaglandin such as gemeprost (1mg) or misoprostol (0.8mg), which is more effective if given vaginally, 36-48 hours later[303,304]. A Cochrane review of trials found that prostaglandins used alone appeared less effective and more painful compared to surgical first trimester abortion. However, there was inadequate evidence to comment on the acceptability and side effects of medical compared to surgical first trimester abortions.

Second trimester abortion

Although abortions performed between the sixth and tenth week of pregnancy are the safest[305], second trimester abortions are sometimes necessary, and they account for 10% to 15% of the abortions performed worldwide[306]. Debate still exists as to whether surgical or medical methods are optimal for second trimester pregnancy termination[307].

The WHO and IPPF state that the preferred medical method for abortions after 12 completed weeks gestation is a combined method (as described above) and the preferred surgical method is Dilatation and Evacuation (D&E), using vacuum aspiration and forceps[308,309]. A review of trials found MA to be as effective and acceptable as D&E, but caused more pain and adverse effects[310]. The current evidence favours D&E over mifepristone and misoprostol[311], but larger randomised trials are needed. Medical abortion has been found acceptable in several low resource settings[312], although it requires more clinic visits than surgical abortion[313]. In the case of a failed or incomplete medical abortion, surgical abortion is required, so a facility that offers medical abortion must also offer, or provide referral and access to, vacuum aspiration[314]. A continuing challenge to provision of D&E is the availability of a large enough pool of skilled providers[315].

New approaches, such as the out-of-centre mifepristone-misoprostol regimen, are currently being investigated to expand the availability of safe medical abortion within the community[316] and have the potential to increase coverage and contribute towards averting maternal deaths, where MA is legal and acceptable. There is strong evidence that mortality associated with medical termination of pregnancy in a safe environment is lower than that associated with delivery at term[317].

In Matlab, Bangladesh, 30-year cohort data provides strong evidence that part of the reduction in maternal mortality was due to a fall in abortion related deaths through the provision of safe pregnancy termination by MVA[318]. It is worth noting that abortion in Bangladesh is called menstrual

regulation and is performed when a period is missed, without carrying out a pregnancy test. The legalisation of menstrual regulation came about after conflict related sexual violence during the 1970s and the resulting unwanted pregnancies; and the government's policies to reduce population growth. The menstrual regulation programme started within the public health sector, but was devolved to NGOs during the 1980s mostly because of changing donor policies and priorities[319].

Post Abortion Care (PAC)

Post-abortion care for complications of induced or spontaneous abortion should be included in emergency obstetric care packages, regardless of the legal status of induced abortion[320]. When abortion is legally very restricted the number of unsafe abortions is high, so post abortion care is essential to prevent deaths and disabilities. MVA is the recommended method[321]. In francophone Africa it was found that the introduction of PAC was sometimes as sensitive as abortion and key champions were necessary for the success of the programme. PAC was introduced as part of essential obstetric care (EOC) national strategies in order to avoid vertical programming[322]. Family planning counselling is also a requirement of both safe abortion and PAC services[323].

Law change

Abortion legality and safety are strongly correlated and therefore liberalisation of restrictive abortion legislation has been an important step to improving maternal health and minimising the potential risks of unsafe abortion in a number of contexts[1]. However, if changes in legislation are not accompanied by corresponding changes in levels of contraception or fertility, it is likely that legal abortion will simply replace illegal abortion, rather than overall abortion levels changing[2]. In Romania, after the repeal of restrictive abortion laws in 1988, the MMR fell by half, a decline which was almost completely due to fewer deaths from clandestine abortions[3,4]. Abortion related mortality in Sweden in the 1970s was 99.9% lower than in the 1930s. This change was linked to the legalisation of abortion[5]. In South Africa, the incidence of infection resulting from abortion decreased by 52% after the abortion law was liberalised in 1996[6].

Legal change can come about as a result of persistent advocacy and pressure from CSOs and professional groups as well as regional policy work. The law reform in Ethiopia in 2004 was made possible by a broad based coalition of civil society and other actors through the Abortion Advocacy Working Group, which included representatives of the medical and legal professions and NGOs involved in promoting sexual and reproductive health and rights, gender equity, as well as the National Office of Population. Their three core strategies were to build public opinion, shift policy makers' perspectives and to create an enabling environment for service providers[7].

Source*: 1. Marston C., Cleland, J., 2004. The effects of contraception on obstetric outcomes. WHO Department of Reproductive Health and Research: Geneva; 2. ibid; 3. Hord, C., David, H.P., Donnay, F., Wolf, M., 1991. Reproductive health in Romania: Reversing the Ceausescu legacy. Studies in Family Planning, 22(4), pp.231-40; 4. Remez, L., 1995. Romanian maternal death rate fell by two-thirds after the 1989 revolution. Family Planning Perspectives, 27(6), pp.263-5; 5. Högberg, U., Wall, S. 1990. Reproductive mortality and its relation to different methods of birth control. Journal of Biosocial Science, 22, pp.323-331; 6. Jewkes, R., Ress, H., Dickson, K., Brown, H., Levin, J., 2004. The impact of age on the epidemiology of incomplete abortion in South Africa after legislative change, BJOG, 112(3), pp.355-9; 7. Wolfe, M., 2008. Tools for progressive policy change: Lessons learned from Ethiopia's abortion law reform. Chapel Hill, NC: Ipas.*

Lessons for abortion rights activists

Although many factors that facilitated positive change in Ethiopia were unique to its context and history, experience there suggests several lessons for reform advocates in other countries. Steps that individuals and groups working to promote women's health and rights can take to create a strong foundation for reform include:

- building the **capacity of civil society organisations**, including developing their management, research, advocacy and media skills;
- accumulating and then effectively presenting **a strong body of evidence** documenting the scope and impact of unsafe abortion and related problems;
- establishing a **well-functioning, mutually respectful network of advocates** representing multiple viewpoints, sectors and constituencies;
- developing **well defined arguments addressing multiple interests and perspectives**, backed by localised evidence and personal stories;
- identifying, enlisting the support of and supporting effective **champions for reform**;
- cultivating **personal and professional relationships** with a range of stakeholders both within and outside of government, including media professionals;
- promoting **open dialogue** among the full range of stakeholders;
- **raising societal awareness** and understanding of the issue through multiple channels, including mass media and community-based organizations;
- looking beyond the moment of political success to **define and plan for steps needed to actualise and protect reforms**, including informing women and health-care providers about changes in the law and training and equipping health-care professionals to offer safe abortion.

Source: *Wolfe, M., 2008. Tools for progressive policy change: Lessons learned from Ethiopia's abortion law reform. Chapel Hill, NC: Ipas.*

Cost effectiveness

Knowledge about how to reduce health system costs of providing abortion and post-abortion care, while simultaneously improving quality of care, is well documented, but this is still to be applied in many settings[324]. Strategies include using vacuum aspiration rather than dilatation and curettage, providing light sedation rather than anaesthetic, using outpatient facilities rather than operating theatres, and employing mid-level providers instead of gynaecology specialists[325].

The indirect costs of unsafe abortion are not easy to quantify, but are cause for concern and further documentation and research is required in this area. They include the loss of productivity from abortion related morbidity and mortality[326], the diversion of scarce medical resources for treatment of abortion complications, and the effect on the estimated health, education and survival of the 220,000 children worldwide whose mothers die from unsafe abortions each year[327]. Some 20-50% of women who have unsafe abortions are hospitalised for complications[328] and in low and middle income countries up to 50% of hospital budgets for obstetrics and gynaecology are spent treating the complications of unsafe abortion[329]. Studies in South Africa and Nigeria have estimated the national costs to be US$11.7m (in 1997)[330] and US$19m (in 2002)[331] respectively. The cost per woman to health systems for treatment of abortion complications in Tanzania is more than seven times the overall Ministry of Health budget per head of population[332].

There is good evidence that by providing safe abortion services, public health systems would save the high costs of treating complications of unsafe abortion. Recent research on the economic costs

of abortion from the Realising Rights Research Programme Consortium '*Economic impact of unsafe abortion-related morbidity and mortality: Evidence and estimation challenges'* suggests the cost of unsafe abortion related morbidity and mortality to health systems is around $500 million[333]. This is without factoring in those women who never access health services to treat abortion complications and the losses to the economies of developing countries brought about by their lower productivity.

Birth

Intrapartum Care

Table 8. WHO recommended interventions for improving maternal health in childbirth (labour, delivery and immediate postpartum) period

	Routine Care (offered to all women and babies)	Additional Care (for women and babies with moderately severe diseases and complications)	Specialised – obstetrical and neonatal care (for women and babies with severe diseases and complications)
Childbirth care (labour, delivery, and immediate postpartum) *Essential*	• Caring during labour and delivery ➢ Diagnosis of labour ➢ Monitoring progress of labour, maternal and fetal well-being with partograph ➢ Providing supportive care and pain relief ➢ Detection of problems and complications (e.g. malpresentations, prolonged and/or obstructed labour, hypertension, bleeding and infection) ➢ Delivery and immediate care of the newborn baby, initiation of breastfeeding ➢ Newborn resuscitation ➢ Active management of third stage of labour • Immediate postnatal care of mother ➢ Monitoring and assessment of maternal wellbeing, prevention and detection of complications (e.g. hypertension,	• Treatment of abnormalities and complications (e.g. prolonged labour, vacuum extraction, breech presentation, episiotomy, repair of genital tears, manual removal of placenta) • Pre-referral management of serious complications (e.g. obstructed labour, fetal distress, preterm labour, severe peri- and post-partum haemorrhage) • Emergency management of complications if birth imminent • Support for the family if maternal death	• Treatment of severe complications in childbirth and in the immediate postpartum period, including caesarean section, blood transfusion and hysterectomy): ➢ Obstructed labour ➢ Malpresentations ➢ Eclampsia ➢ Severe infection ➢ Bleeding • Induction and augmentation of labour

	infections, bleeding, anaemia) ➢ Treatment of moderate post-haemorrhagic anaemia ➢ Information and counselling on home self care, nutrition, safe sex, breast care and family planning ➢ Postnatal care planning, advice on danger signs and emergency preparedness • Recording and reporting		
Situational	• Vitamin A administration	• Prevention of mother-to-child transmission of HIV by mode of delivery, guidance and support for choose infant feeding option	• Management of complications related to FGM

Source: *WHO, 2009. WHO recommended interventions for improving maternal and newborn health. 2nd edition. WHO Department of Making Pregnancy Safer. WHO/MPS/07.05. Available from: http://whqlibdoc.who.int/hq/2007/WHO_MPS_07.05_eng.pdf.*

Skilled attendance at birth

Evidence from even some of the poorest countries suggests that when geographical access is possible, most women opt for health centre based intrapartum care[334]. However, whilst Campbell and Graham advocate that facility deliveries are the most cost effective and appropriate strategy, they also recognise that some women choose other alternatives such as home birth with a skilled attendant, community health worker, relative, or traditional birth attendant[335]. This is particularly so when other barriers exist, such as cost and cultural preferences. These approaches to delivery are discussed below.

Definition of a skilled birth attendant

The WHO, in collaboration with the International Confederation of Midwives (ICM) and the International Federation of Gynaecology and Obstetrics (FIGO) have defined a skilled birth attendant as "an accredited health professional – such as a midwife, doctor or nurse – who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns". This was endorsed in 2004 by the UNFPA, the World Bank and the International Council of Nurses.

Source: *WHO, 2004. Making pregnancy safer: The critical role of the skilled attendant. A joint statement by WHO, ICM and FIGO.*

WHO guidance

The WHO recommends that every birth be attended by a skilled health professional (see above). In a statement in the *Global Campaign for the Health MDGs First Year Report 2008*, the WHO Director General highlights the close correlation between skilled birth attendance and institutional deliveries and improved health outcomes.

"The advantages of facility based deliveries – both from a technical perspective and from systematic analysis of mothers' experiences – are many. They enable teamwork, so that midwives can attend far more births than it would be possible in home deliveries. They also enable non-professionals, such as assistants and auxiliaries, to help, making care more cost effective. This allows a single midwife to attend up to 220 deliveries per year, compared with less than 100 for a single handed midwife visiting mothers at home. In addition, the mixture of professionals in a facility means that life saving emergency care can be given quickly. Skilled care at facilities also ensures safety, cleanliness and the availability of supplies. Other work can be performed, and referrals are easier, as is emergency transport. Wherever the baby is delivered, it is essential that the person who helps has the core competencies for safe delivery, has the necessary equipment and supplies, and has the option to refer to a functioning facility offering emergency obstetric and newborn care".

Source*: The Global Campaign for the Health MDGs. First year report 2008. Oslo: Office of the Prime Minister of Norway.*

Community or facility based skilled birth attendance

Whether countries should pursue community or facility based strategies for scaling up coverage of skilled attendance has been a point of contention, fuelled in part by lack of robust comparative studies. To address this question, Koblinsky and colleagues[336] modelled six scenarios for scaling up skilled attendance at delivery in Bangladesh, using a mix of community workers and midwives in different delivery scenarios. They conclude that the most efficient option for increasing coverage over a 10-year period is through facility based deliveries by mixed teams of midwives and midwife assistants.[337]

However, the acceptability of facility based delivery varies from setting to setting. Home based delivery care strategies have been successful in Malaysia and contributed to low maternal mortality ratios[338]. Given physical, social and cultural barriers to accessing facility services, evidence implies there is an argument for locating skilled birth attendants in communities for domiciliary services for specific populations. The success of experiences from the family planning field in community and doorstep delivery also indicates that flexibility in service delivery may be important for access to maternal health[339]. The debate of facility versus community based skilled attendance at birth is ongoing.

Intrapartum care in health facilities

Health centre intrapartum care strategy is the term coined by Campbell and Graham[340] to describe what they identified as the best evidence based intrapartum care strategy. It is also called primary, routine or basic essential or emergency obstetric care (BEOC).

The strategy targets all women and describes a situation where women routinely choose to deliver in a health facility where midwives are the main providers, supported by a team of other attendants.

This package of care includes purely preventive best practices and the avoidance of iatrogenic procedures, with first line management of complications[341]. The treatment components include all basic essential obstetric functions except blood transfusion and surgery, which should be available at referral level as Comprehensive Emergency Obstetric Care (CEOC), see Table 9 for list of signal functions that differentiate basic and comprehensive EOC. Both levels of service, when situated to provide close-to-client care and speed of referral, have been found to be cost effective[342].

Table 9. Functions of basic versus comprehensive EOC services

Basic Services	Comprehensive Services
1) Administer parenteral antibiotics (injection or intravenous infusion)	Perform signal functions 1–7, plus
2) Administer uterotonic drugs (i.e. parenteral oxytocin[a])	**8)** Perform surgery (e.g., caesarean section)
3) Administer parenteral anticonvulsants for preeclampsia and eclampsia (i.e. magnesium sulphate).	**9)** Perform blood transfusion
4) Manually remove the placenta	
5) Remove retained products (e.g. manual vacuum extraction, dilation and curettage)	
6) Perform assisted vaginal delivery (e.g. vacuum extraction, forceps delivery)	
7) Perform basic neonatal resuscitation (e.g., with bag and mask)	

A basic emergency obstetric care facility is one in which all functions 1–7 are performed.
A comprehensive emergency obstetric care facility is one in which all functions 1–9 are performed.
[a] A recent WHO technical consultation (November 2008) to develop guidelines for interventions for postpartum haemorrhage, reviewed all available evidence, and identified parenteral oxytocin as the recommended choice of drug for prevention of post-partum haemorrhage. Ergometrin (second line) and misoprostol (third line) as options that could only be used where oxytocin is not available. Oxytocin should therefore be available in facilities to be defined as providing EOC.

Source: *WHO, 2009. Monitoring emergency obstetric care: A handbook. Geneva: World Health Organisation.*

Additionally, evidence strongly indicates that CEOC facilities must be able to provide 24-hour services, and this has recently been shown to be lacking in many settings[343,344]. Some adjustments may be required in relation to the cadre of health staff that serve each facility, although the evidence is strongly in favour of midwives over doctors (because doctors tend to over-medicalise delivery[345]) with support of midwifery assistants for the provision of uncomplicated deliveries[346]. The optimum number of midwives required to provide 24-hour, 7-days a week coverage at a facility is calculated at three to four, with twice as many midwife assistants[347]. A mixed team at a facility can enable attendance at increased numbers of births per provider, as mixed teams can achieve greater coverage than a solo worker attending home deliveries and can be more efficient, depending on the caseload. Work in Bangladesh found that the minimum required number of deliveries per facility was 136[348]. Investments in EOC and midwives have been shown to contribute to reductions in maternal mortality in Bangladesh[349]. Additionally, the cost to the family for a birth with a midwife at home or facility was about the same. Normal deliveries at a hospital, however, cost the family two to three months of the husband's yearly income[350].

Koblinsky *et al.*[351] suggest that in order to scale up access to professional care, the following components are required in sequence:

1. Improvement in standards, including provision of respectful care. This involves tackling medical education, covering training of essential competences, skills and attitudes.
2. Continuing education and in-service training through non-didactic approaches to maintain competencies and accountability.
3. Proper remuneration and management of health personnel who attend women, to reduce attrition. Release of facility performance data has been associated with improvements in health outcomes in developed countries and could be transferable to developing country settings.

Exclusion issues can be addressed:

1. Expansion of pre-existing infrastructure is required, recognising that skilled providers need infrastructure to practise their skills;
2. Barriers to care need to be eliminated (including through community interventions such as women's groups that have been shown to reduce MMR and are cost effective[352,353]).
3. Underserved groups need to be targeted.
4. Financial protection needs to be ensured.

Intrapartum care in the community

Home based skilled birth attendants

Where the strategy to provide skilled birth attendants at home has been implemented well, such as in the Netherlands and Malaysia, success in reducing MMR has been achieved[354]. Skilled attendants can ensure safe normal deliveries, conduct preventive interventions of basic care and administer first aid. However, some homes have very limited facilities that do not enable clean and safe delivery and if quick referral to an EOC facility is not possible, the effectiveness of this strategy will be limited. Research from Bangladesh found midwives tended not to conduct outreach activities, instead preferring to serve those women living closer to them, raising questions about the extent to which home based skilled birth attendants increase access[355].

Home based community health workers

The role of Community Health Workers (CHW) in reducing neonatal morbidity and mortality is recognised[356]. However, Campbell and Graham[357] argue that CHWs are unlikely to attend deliveries if they are not trained, and if they were to be trained, the costs, logistics and supervision requirements would be on par with those required to fund skilled attendants at home and would face similar sustainability issues. If countries do, however, have CHWs attending deliveries, then they should be included, particularly in facilitating speedy transport to a referral centre for EOC, for example. This is a neglected field of research.

Home based traditional birth attendants and lay health workers

Here expert views are divided. The evidence that exists on the effectiveness of lay home based care, such as Traditional Birth Attendants (TBA) or relatives, is limited and conflicting. This approach is typically used in the poorest countries among the poorest rural populations where MMR is high, such as the *matronas* in Guinea Bissau. Programmes in China and Brazil have demonstrated success in reducing maternal mortality linked with the training of TBAs to identify early signs of complications during labour and delivery, and their successful referral of women for

treatment[358,359,360]. Jokhio *et al.*[361], in a cluster randomised controlled trial in Pakistan, showed that training of TBAs, where Lady Health Workers linked trained TBAs to existing hospital care, reduced maternal mortality but not to a statistically significant extent; however, they significantly reduced perinatal mortality[362]. The lack of statistical significance for maternal mortality is in part related to the fact that the sample was not sufficiently powered to detect meaningful differences. However, the trial found that the intervention cluster had significantly lower rates of puerperal sepsis and haemorrhage; diagnosis of obstructed labour was significantly greater than in the control cluster; and women in the intervention group were more likely to be referred for EOC. Experience from Malaysia found that MMR was reduced further through the introduction of skilled home birth attendants trained in place of TBAs[363]. Systematic reviews suggest that without the support of skilled referral services, investment in training lay attendants is not warranted as a major stand-alone national strategy as it does not reduce MMR[364,365,366]. The vital point is connectivity to a functioning health system/service, obstetric back-up support, and taking a staged approach to investment in different levels of health providers appropriate to the context.

A staged approach

Packages of intrapartum care are effective only if they are delivered by sufficient numbers of skilled attendants who are properly equipped, and regulated. The major barrier to achieving high quality intrapartum care is the global lack of skilled attendants and other key health workers. The long term strategy to increase access to skilled birth attendants based in functioning EOC centres, or in the community with strong referral networks to quality EOC facilities, must be universal. The evidence indicates this does not discount a staged approach to scaling up access to skilled attendance, starting with short term investment in training and supporting community health workers and TBAs. Part Three examines evidence of additional strategies to address the global deficit of human resources in the short, medium and longer term.

Cost-effectiveness

When measuring cost effectiveness of maternal health interventions, evidence indicates that context is very important and findings from a cost effectiveness study in one country cannot be transferred to another setting. This helps explain why there are few simple generalisable findings about the cost effectiveness of components of packages and packages of care in this field. Those that exist include the following.

Findings from a number of cost and cost effectiveness studies indicate that close-to-client care with a health centre intrapartum care strategy is among the most cost effective options. Ensuring services are close enough for women to use for delivery would also ensure women were likely to be close enough if the need for emergency care arose in the antenatal or postpartum period. Moreover, because health centres are part of the health system, the affordability and sustainability of a health centre intrapartum care strategy are likely to surpass those of strategies which deliver services outside the health system, such as TBAs or volunteer community workers. Adam *et.al* (2006) used the standardised methods of the WHO Choosing Interventions that are Cost Effective (CHOICE) project to analyse 21 maternal and neonatal interventions and 300 possible combinations of interventions along an "expansion path", categorised according to the level of care required to deliver them. The analysis was conducted for two WHO epidemiological groupings: Afr-E, those countries in Sub-Saharan Africa with very high adult and high child mortality, and Sear-D, comprising countries in South East Asia with high adult and high child mortality. The study concludes that interventions at community and primary care levels to reduce maternal and neonatal mortality are highly cost effective, but current coverage is insufficient. Most hospital based interventions are also highly cost effective and without universal access to these the MDGs 4 and 5 will not be met. It is estimated that scaling up all the included interventions to 95% coverage would halve neonatal and maternal deaths. One intervention identified as being cost effective included increased access to misoprostol to control postpartum haemorrhage, which requires minimal infrastructure (see Utilisation of New Technologies below).

Source: *Hutubessy, R., Chisholm, D., Tan-Torres Edejer, T., WHO-CHOICE, 2003. Generalized cost-effectiveness analysis for national-level priority-setting in the health sector. BMC Cost Effectiveness and Resource Allocation, 1(8), doi:10.1186/1478-7547-1-8; Campbell et.al, 2006. Strategies for reducing maternal mortality: Getting on with what works. Lancet, 368: pp.1284–99; Adam et.al, 2005. Cost-effectiveness analysis of strategies for maternal and neonatal health in developing countries. BMJ, 331, p.1107; CMH, 2002. Improving the health outcomes of the poor. Report of Working Group 5 of the Commission on Macroeconomics and Health. Geneva: WHO.*

Postnatal care: Care for mother and neonate

Postpartum care for mother

Fewer than a third of women in developing countries are estimated to receive any postpartum care at all and yet to ensure good health following birth, health behaviours need to be initiated around this time[367].

Table 10. The WHO recommended interventions for improving maternal health in the postnatal period are:

	Routine Care (offered to all women and babies)	Additional Care (for women and babies with moderately severe diseases and complications)	Specialised – obstetrical and neonatal care (for women and babies with severe diseases and complications)
Postnatal maternal care (up to 6 weeks) *Essential*	• Assessment of maternal wellbeing • Prevention and detection of complications (e.g. infections, bleeding, anaemia) • Anaemia prevention and control of (iron and folic acid supplementation) • Information and counselling on nutrition, safe sex, family planning and provision of some contraceptive methods) • Postnatal care planning, advice on danger signs and emergency preparedness • Provision of contraceptive methods	• Treatment of some problems (e.g. mild to moderate anaemia, mild puerperal depression) • Pre-referral treatment of some problems (e.g. severe postpartum bleeding, puerperal sepsis)	• Treatment of all complications - Severe anaemia - Severe postpartum bleeding - Severe postpartum infections - Severe postpartum depression • Female sterilisation
Situational	• Promotion of Insecticide Treated Nets use	• Treatment of uncomplicated malaria	• Treatment of complicated malaria

Source: WHO, 2009. *WHO recommended interventions for improving maternal and newborn health*. 2nd edition. WHO Department of Making Pregnancy Safer. WHO/MPS/07.05. Available from: http://whqlibdoc.who.int/hq/2007/WHO_MPS_07.05_eng.pdf.

Despite these recommendations, and the fact that the risk of maternal death is highest in the immediate postpartum period and the first week postpartum[368,369], the lack of a specific evidence based postnatal care package and fragmentation into postpartum care for the mother and newborn care for the baby, stand out as a gap along the continuum of maternal, newborn and child care[370,371].

During the postpartum period, physical, social, and mental problems can emerge, indicating a need for strategies that encompass both preventive and curative intervention packages[372]. For life threatening disorders after childbirth, strategies that encompass emergency obstetric care packages are the most effective and efficient approaches[373]. The risk of death decreases steadily by two days postpartum, so intrapartum care strategies need to cover the very high risk period up to 24 hours postpartum, but the optimal means and timing of the distribution of PNC in the remaining six-week period is unclear[374]. It is evident that other physical, social and psychological problems can emerge during this stage, as shown by a study of Maternal Mortality and Morbidity in Nepal in 1998 indicating that two thirds of deaths in the selected districts were postpartum[375]. There is little evidence available for a package of interventions for routine PNC that reduce mortality for the mother or baby[376]. However, evidence does exist to support single interventions that are known to reduce maternal mortality in the postnatal period. These are shown in Annex D. The interventions relate mostly to the causes known to be the most common causes of maternal mortality, including haemorrhage and sepsis.

Postpartum family planning, as a form of primary prevention, is often under-emphasised[377]. Adverse outcomes of pregnancy are conditional on pregnancy itself, so prevention of unwanted pregnancies, is important. Dual contraceptive protection with skilled counselling should be promoted where appropriate in the post partum period to offer prevention not only of pregnancy, but also of HIV and STI transmission and prevention[378]. Promoting exclusive breastfeeding is also a good postpartum strategy as it not only confers benefits for the infant (through passive immunity[379], and reduced risk of HIV transmission compared to mixed feeding), but also reduces fertility [380].

An estimated 10-41% of women experience mental health problems (including depression, anxiety disorders and psychotic illness) with the onset occurring in the puerperal period in low income countries[381]. There have been no specific studies about the treatment coverage of these conditions in low and middle income countries (LMICs), but from what is known about the identification and treatment of mental disorders in general in these countries, it can be reasonably expected that perinatal mental health problems are both under-identified and under-treated[382]. The impact on infants goes beyond delayed psycho-social development and also includes low birth weight, reduced breastfeeding, impaired growth, severe malnutrition, increased episodes of diarrhoea and lower compliance with immunisation schedules[383]. Simple screening tools exist to assess for depression consisting of two simple questions that could easily be asked by health care providers[384,5], thus enabling appropriate referral[385]. This is a neglected area of health and there is insufficient evidence about the efficacy of these tools and associated interventions in different settings.

Campbell and Graham call for research to inform the efficacy of strategies for distribution of packages of care for neonates and mothers, particularly where the burden of indirect maternal complications, such as HIV, are high[386]. There is, however, strong evidence to support the efficacy, including cost effectiveness, of postpartum care packages in reducing morbidity and mortality among neonates, for example the promotion of breastfeeding[387], care and management of pneumonia and emergency care for neonates for the management of serious illness (e.g. infections, asphyxia, prematurity, jaundice)[388], and this is discussed in the following section.

[5] For the recognition of depression, the introductory questions found in most instruments are the following, or variations of them:
a) (During the past month) Have you felt sad, depressed or hopeless?
b) (During the past month) Have you lost interest in/pleasure in/lacked energy to do things you usually enjoy?
If the answer is "yes" to either of them, then further exploration is required, either with the help of a standardised instrument or of other simple clinically relevant questions. Also, the woman should be observed for signs of tearfulness, slowing down or restlessness.

Postpartum care for neonate

Good intrapartum care can reduce the risk of chronic morbidities, such as fistula or uterine prolapse, and have a substantial effect on perinatal mortality, averting an estimated 30–45% of newborn deaths and 25–62% of intrapartum stillbirths. Darmstadt *et.al* (2005) provide a concise summary of evidence on the efficacy and effectiveness of a range of interventions to reduce perinatal and neonatal mortality. They focus on only interventions that have the biggest impact on perinatal and neonatal mortality,[6] and their findings are based on assumptions of implementation under ideal conditions and conditions that pertain to health systems in low and middle income countries[389]. The interventions and level of evidence for their efficacy are shown in Table 11. The review does not include all interventions. Universal implementation of these interventions delivered in bundled, cost effective packages of care described in Table 12 has the potential to avert up to 72% of neonatal deaths in 75 low and middle income countries[390].

Darmstadt and others[391] report several different delivery mechanisms for the packages of care[7]. However, the analysis found limits to the effect that can be achieved with outreach and family-community based approaches alone. In order to achieve reductions in neonatal mortality that exceed 50%, the development of expanded coverage with quality clinical care is required through skilled maternal and immediate neonatal care, and emergency obstetric and newborn care. The results of the cost effectiveness analysis highlight the benefit of combining the interventions into packages with a common service delivery mode, as opposed to providing interventions through vertical mechanisms. Thus, the additional interventions listed in Table 12 become cost effective only when added to universal packages delivered at high coverage in more developed health systems.

As evidence continues to grow regarding effective packages of care, so too does the evidence for incorporation or at least consideration of promising new technologies into these packages.

[6] Interventions initiated in the antenatal or neonatal period were excluded but acknowledged for their benefits later in childhood and for mothers, e.g. insecticide-treated bed nets, maternal anti-helminthic therapy, prevention of mother-to-child transmission of HIV and micronutrient supplementation for neonates and mothers.

[7] The three different service delivery modes described by Darmstadt et.al (2005) are facility-based clinic, outreach and family-community care (e.g. behaviour change communications, community mobilisation and engagement, community health workers).

Table 11. Evidence of efficacy for single clinical interventions to reduce neonatal mortality at different time periods

Intervention and time period in the continuum of care	Amount of evidence*	Reduction (%) in all-cause neonatal mortality or morbidity/major risk factor if specified (effect range)
Preconception		
Folic acid supplementation	IV	Incidence of neural tube defects: 72% (42–87%)
Antenatal		
Tetanus toxoid immunisation	V	33–58%. Incidence of neonatal tetanus: 88–100%
Syphilis screening and treatment	IV	Prevalence-dependent
Pre-eclampsia and eclampsia: prevention (calcium supplementation)	IV	Incidence of prematurity: 34% (–1 to 57%)
Intermittent presumptive treatment for malaria	IV	32% (–1 to 54%)
Detection and treatment of asymptomatic bacteriuria	IV	Incidence of prematurity/low birthweight: 40% (20–55%)
Intrapartum		
Antibiotics for preterm premature rupture of membranes	IV	Incidence of infections: 32% (13–47%)
Corticosteroids for preterm labour	IV	40% (25–52%)
Detection and management of breech (caesarean section)	IV	Perinatal/neonatal death: 71% (14–90%)
Labour surveillance (including partograph) for early diagnosis of complications	IV	Early neonatal deaths: 40%
Clean delivery practices	IV	58–78%. Incidence of neonatal tetanus: 55–99%
Postnatal		
Resuscitation of newborn baby	IV	6–42%
Breastfeeding	V	55–87%
Prevention and management of hypothermia	IV	18–42%
Kangaroo mother care (low birthweight infants in health facilities)	IV	Incidence of infections: 51% (7–75%)
Community-based pneumonia case management	V	27% (18–35%)

* IV. Evidence of efficacy. Interventions effective in reducing perinatal or neonatal mortality, or primary determinants thereof, but there is a lack of data on effectiveness in large-scale programme conditions.
* V. Evidence of efficacy and effectiveness. Interventions of incontrovertible efficacy and which seem feasible for large-scale implementation based on effectiveness trials.
PMR: perinatal mortality rate.

Source: *Darmstadt et al., 2005. Evidence-based, cost-effective interventions: How many newborn babies can we save? Lancet, 365, pp.977–88.*

Table 12. Evidence-based packages of clinical interventions to reduce neonatal mortality at different time periods.

INTERVENTIONS		
Universal	**Situational**	**Additional**
Periconceptual		
- - -		Folic acid supplementation
Antenatal / intranatal / postnatal		
Family care package (family-community care) • Community mobilisation and engagement, and antenatal and postnatal domiciliary behaviour change communications to promote: evidence-based neonatal care practices (breastfeeding, thermal care, clean cord care), care seeking, and demand for quality clinical care. • Promotion and practice of clean delivery and referral of complications (for home births).		
Antenatal		
Antenatal care package • Outreach visits, including history and physical examination, with assessment of blood pressure, weight gain, and fundal height; urine screen for protein; screen for anaemia; two doses of tetanus toxoid immunisation; syphilis screening and treatment; counselling on plan for birth, emergencies, breastfeeding; referral in case of complication	Intermittent presumptive treatment malaria	Detection and treatment of asymptomatic bacteriuria
Intrapartum		
Skilled maternal and immediate neonatal care package • Skilled attendant at birth; labour surveillance; encouragement of supportive companion; assistance to birth (including vacuum extraction); early detection, clinical management and referral of maternal or fetal complications (emergency obstetric care at first level); premature resuscitation of the newborn baby. Emergency obstetric care package • Detection and clinical management of obstetric complications, including the provision of instrumental delivery, caesarean section, blood transfusion.		Antibiotics for preterm rupture of membranes. Corticosteroids for preterm labour.
Postnatal		
Extra community-based care of low birthweight infants (family-community care) • Extra home visits; support for breastfeeding, thermal care, and hygienic cord care; early recognition and care seeking for illness. Community-based case management of pneumonia (family-community care) • Algorithm-based diagnosis and management of pneumonia, including treatment with oral antibiotics. Emergency neonatal care package: • Facility-based clinical care of ill newborn babies, particularly those with infections, prematurity (e.g. very low birthweight infants), birth asphyxia.		

Source: *Darmstadt et al., 2005. Evidence-based, cost-effective interventions: How many newborn babies can we save? Lancet, 365, pp.977–88.*

Community-level interventions

Randomised-controlled trials in Nepal (facilitator led women's groups)[392,393] and Pakistan (linkage and training of TBAs)[394], show that neonatal and perinatal mortality can be reduced by community level interventions to improve perinatal care practices by increasing hygienic practices and integrating modestly improved primary health care services**,** and such interventions, directed at improving maternity services, are also likely to influence both maternal and perinatal outcomes[395].

Section 2: Utilisation of new technologies

Essential technologies for improvement of MNH outcomes are still under development and these merit due attention to ensure they are fully utilised by health workers, communities and individuals in this field. These technologies range from mobile phones and other digital innovations, to new ideas for emergency transport, such as motorcycle ambulances in Malawi[396], to health information systems, to clinical technologies.

Tsu and Coffey's review of progress between 2003 and 2008 on clinical technologies to prevent or manage obstetric complications found a mixed record of progress[397]. Investment is required in implementation research on clinically effective technologies, such as calcium supplementation to prevent pre-eclampsia. Magnesium sulphate, symphysiotomy, and the partograph, were all ready for scale up in 2003, but five years on were still far from universally implemented. Several technologies amassed a stronger evidence base during that period and now deserve wider adoption, for example simplified caesarean section techniques, misoprostol for PPH prevention where oxytocin is not available, and misoprostol-only regimens for second trimester abortion. Prata *et al.*'s[398] review of safe options for first trimester abortion and PAC also recommends misoprostol-alone as well suited to low resource settings, arguing that it has the potential to help significantly reduce the number of deaths related to unsafe abortion[399].

With the understanding of a range of effective packages of care, and potential new technologies, taking to scale innovations that have demonstrated successful implementation and funding context specific implementation research to establish effective new technologies become the next steps. In this section we briefly review three innovations; magnesium sulphate, new treatments for postpartum haemorrhage and developments in medical abortion.

Magnesium sulphate: A case study

Whilst magnesium sulphate is the anticonvulsant of choice for both prevention and treatment of eclampsia, its use in low resource settings is limited and still awaits concerted introduction efforts, this despite its lower cost in low income countries and earlier findings of a randomised placebo controlled trial in 33 countries, which showed that it halves the risk of eclampsia and probably reduces the risk of maternal death[400,401]. Further, the reduction in eclampsia risk after prophylaxis was not associated with excess of death or disability for the women after two years[402]. An economic evaluation[403] of the same multi-country trial found that use of magnesium sulphate for pre-eclampsia cost hospitals less and prevented more eclampsia in low Gross National Income (GNI) countries relative to high GNI countries, mainly because it was not the cost of the drug itself, but the cost of administration in the hospital setting that rose with a country's GNI. Cost effectiveness was substantially improved if it was only used for severe pre-eclampsia and the purchase price was reduced in low income countries[404]. In sum, the best case scenario would be free magnesium sulphate to be "given only to women with severe pre-eclampsia in low GNI countries, for which the health care cost per case of eclampsia prevented is $121" [405].

Despite broad agreement that a pre-packaged kit could be a useful way to ensure that hospitals have all the components needed for successful treatment of eclampsia and pre-eclampsia with magnesium sulphate, there is no consensus on the exact regimen to be used, although there is a current accepted regimen[406]. Tsu and Coffey recommend the next steps towards introduction of magnesium sulphate in low resource settings should be clinical operational research on dose and efficacy of intramuscular administration; increasing the availability of the technology; and translating the standard magnesium sulphate regimen into general practice[407].

New technologies for treating postpartum haemorrhage

Postpartum Haemorrhage (PPH) remains the leading direct cause of maternal mortality in Africa and Asia, contributing to approximately 30%[408] or 140,000 deaths per annum. A further 2 million women suffer severe morbidity due to the effects of anaemia[409]. In efforts to meet MDG 5, addressing PPH has become a significant focus. Technologies, including products, techniques, and procedures, have played a central role in tackling PPH. In 2003, the Bellagio conference prioritised five technologies for prevention and treatment of PPH, including: active management of the third stage of labour, administration of misoprostol and oxytocin doses in the Uniject® device for prevention, and antishock garments and balloon tamponades for treatment[410]. Since then, significant progress has been made in the development and rollout of a number of these technologies.

Active management of the third stage of labour is recommended by the WHO as a crucial component of all safe motherhood or PPH focused programmes and is now widely established in many parts of the world. The techniques, which include controlled cord traction, administration of oxytocin or other uterotonic drugs directly after birth, and uterine massage as deemed appropriate, should be undertaken by skilled birth attendants[411]. WHO is conducting randomised trials to establish best practice for these specific components of active management[412,413].

The use of prophylactic oxytocin is a highly effective means of preventing PPH, however misuse and incorrect dosage by unskilled attendants gives cause for concern. The Uniject®[414] device, an inexpensive, plastic, and prefilled syringe of oxytocin, was developed and has proved acceptable amongst healthcare staff for its effectiveness and ease of use. Pharmaceutical companies in Argentina and India are currently working with the WHO to develop and roll out generic versions of the device to be available in the near future[415]. It needs cold storage, so the potential use of the immunisation cold chain could be looked into.

Prophylactic use of misoprostol has received increased attention in recent years as a possible alternative to oxytocin, as oxytocin may not be readily available. Misoprostol is more expensive than oxytocin and has more side effects; however it is more stable and therefore potentially more suited to poorly resourced settings or those with inadequate cold chains[416]. Several randomised controlled trials revealed positive results in both primary care and community settings with decreased prevalence of PPH and the need for emergency obstetric care including blood transfusions and surgery[417]. WHO has approved misoprostol as a safe alternative in the absence of oxytocin if administered by health workers trained in its correct use.

WHO does not recommend distribution of misoprostol to community level health workers or women and their families for routine or emergency use and suggests more research is needed into community distribution. However WHO is recommending large surveys on the use and efficiency of misoprostol in remote communities. Some countries, such as Ethiopia, have included misoprostol for PPH on their essential drugs lists and community distribution is underway following successful local trials. Community based distribution is also established in a number of other countries, including Indonesia and Bangladesh. Both ICM and FIGO support misoprostol as a promising intervention in low resource settings.[418] In Nepal, the Government has developed a draft remote area strategy including the use of misoprostol for PPH by community health workers as a core component, based on strong evidence of impact from local trials.

Less progress has been made in developing and rolling out technologies for the treatment of PPH. Nonpneumatic antishock garments have been successful in hospital based trials in both Egypt and Nigeria, but no randomised controlled trials or community based studies have been completed. The use of balloon tamponades in treatment of PPH is a practical first line technique in low resource

settings as they are less invasive and faster acting than other methods (such as blood transfusions and surgical procedures). A recent review of PPH treatment technology highlights this method as an underexplored/used tool.[419]

Innovation in medical abortion

Concept Foundation has developed a combined mifepristone/misoprostol abortion pill called Medabon. The mifepristone is taken orally and then the misoprostol is taken vaginally approximately 48 hours later. It is the only combined package on the market at present and is the safest and most effective medical abortion pill. Concept is gradually obtaining registration for Medabon in a small number of countries in Africa and South Asia. Ethiopia, Ghana, Mozambique and Zambia are the most advanced. Introduction into the market is designed to ensure the product is available to all who require it at an affordable price. This is underpinned by development of national introductory strategies within supportive health systems.

Concept is currently focusing on eight African countries: Benin, Burkina Faso, Ghana, Ethiopia, Mozambique, Zambia, South Africa and Tunisia. For the remaining 12 DFID countries, (Tanzania, Angola, Nigeria, Rwanda, Burundi, Malawi, Sierra Leone, Liberia, Zimbabwe, DRC, Kenya, Uganda), it would be important to undertake a situation analysis of the feasibility of registering and introducing Medabon or misoprostol alone[420].

Section 3: Implementing effective packages of care

Continuum of integrated care for mother and neonate

The dis-benefit of setting maternal health interests against those of children and newborns is well recognised in the evidence. The continuum for maternal, newborn and child care is now the recommended model using a health systems approach as advocated by the PMNH[421,422]. This conceptualises the healthcare system as a range of activities from families and communities, outpatient and outreach services to institutional clinical services, with attention to the life cycle. It advocates for high coverage and quality of integrated service delivery packages with functional linkages between the levels of care. Cost effectiveness analysis has demonstrated that packages of maternal and newborn interventions are more cost effective than individual interventions, largely due to synergies on costs[423,424]. These findings highlight the importance of considering effective integration of services and implementation of maternal and newborn interventions in parallel, particularly those interventions with common delivery modes[425]. Cost effectiveness of MNH interventions will be further enhanced if they are delivered in an integrated manner with interventions for the prevention of mother-to-child-transmission of HIV, the intermittent prevention and treatment of malaria, maternal and infant nutrient supplementation, and vaccine preventable diseases[426,427].

There is sound evidence to support the integration of, and linkages between, SRH and HIV and AIDS funding, policies and programmes to reap positive synergies and increase efficiency[428,429]. SRH and HIV linkages are bi-directional, require multiple models and should address policy, systems and service delivery. There are more and more examples of successful linkages and integration of SRH and HIV and AIDS service. UNFPA, WHO, IPPF and UNAIDS have developed a series of case studies and tools for countries and organisations to use when considering linkages. Better linkages have been shown to lead to: [430]

- improved access to and uptake of key HIV and SRH services
- better access of people living with HIV to SRH services tailored to their needs
- reduction in HIV –related stigma and discrimination
- improved coverage of underserved/ vulnerable/key populations
- greater support for dual protection
- improved quality of care
- decreased duplication of efforts and competition for scarce resources
- better understanding and protection of individuals' rights
- mutually reinforcing complementarities in legal and policy frameworks
- enhanced programme effectiveness and efficiency
- better utilisation of scarce human resources for health.

Ekman *et al.*[431] assess the experiences of countries that have successfully integrated interventions to improve maternal and child health. They point out the frequent lack of a coherent agenda for integration, citing historic factors and more recent global policy concerns. Low resources and poor management capacity characterise many settings at district level and present significant barriers to effective intervention. The review concludes that different districts will need to prioritise different sets of interventions, utilising local planning and follow up. Drawing on lessons from Sri Lanka and Malaysia they indicate the benefits of approaches which permit districts with more capacity to incrementally add new interventions, while supporting expansion in weaker neighbouring districts. The importance of coordinated district level health systems for reduction of maternal mortality is particularly apparent because of the critical role of EOC[432] and district referral systems[433] for timely response to life threatening complications. At central level a clear policy is necessary which

prioritises maternal, newborn and child health and sexual and reproductive health (including HIV/AIDS), their integration and the centrality of flexible district planning. The priority given in the policy must be matched by budget allocation[434].

Strategies for implementing effective interventions

Egypt, Honduras[435], Malaysia, Sri Lanka[436], Thailand, Nepal[437] and parts of Bangladesh[438,439] have all halved their maternal mortality ratios over the past few decades[440]. These successes underscore the importance of a combination of effective health policy inputs and social advances to improving maternal health. Freedman *et al.*'s analysis of lessons from four major global safe motherhood implementation and evaluation initiatives of the past decade, Averting Maternal Death and Disability (AMDD), Immpact, the Skilled Care Initiative (SCI), and ACCESS[441] and a series of case studies of implementation of maternal health programmes across five states of India, Pakistan, and Bangladesh[442] concludes there will not be a single universal approach to implementation, but neither is every situation so unique that it cannot be informed by what has been learnt elsewhere.

The evidence from this growing number of case studies[443,444,445] is consistent. Context is vitally important in determining what, and how mechanisms work in programme implementation and for what outcome[446]. In a later paper, Freedman *et al.* draw on further learning from these major global safe motherhood initiatives, concluding that there is a need to shift the focus from global debates about strategy and priorities to expanding the capacity of countries with high MMRs to implement and sustain such strategies at local level[447]. This new emphasis is echoed in other subsequent expert analysis[448]. Evidence from countries or regions where health outcomes for women and children have improved demonstrates the importance of strategies which are carefully designed and incrementally implemented[449]. Lessons include the importance of taking into account existing strengths and potentials at local levels, and exploiting potential synergies[450].

Evidence clearly indicates that each country or state needs to make locally as well as internationally informed decisions on how to implement its maternal health programme. There will be variation in how these programmes are structured to be successful, and evaluation mechanisms need to be in place to enable learning when consequences are unanticipated (see section on Results for Improved Outcomes below). In the following section, core components of the broader health system; barriers to access; and the role of improved results reporting are examined, following an examination of evidence on the importance of political commitment, leadership and advocacy in driving change in maternal health outcomes.

Addressing maternal health needs in conflict and crisis situations

Women in situations of extreme threat and insecurity continue to have maternal health requirements. There is a growing body of knowledge about sexual and reproductive health needs in crisis, conflict, transition, and post-conflict situations.

In general, achieving minimum essential services is the priority in acute conflict settings when "humanitarian space", where international aid agencies can safely and impartially work, is limited, but implementation of the Minimum Initial Service Package would help meet immediate reproductive health needs. In post-conflict settings, services can be expanded and become more comprehensive according to the specific situation. However, there are still insufficient data on the actual RH needs and the associated funding required in conflict and post-conflict countries. A comprehensive analysis using standardised methodology to allow for comparability needs to be undertaken to quantify these needs, their costs, and the resources required to fulfil the different needs according to the different phases of conflict and recovery.

Sources: *UNHCR, 2004. Inter-agency global evaluation of reproductive health services for refugees and internally displaced persons; Petchesky, R., 2008. Conflict and crisis settings: Promoting sexual and reproductive health rights. Reproductive Health Matters 16(31); Health and Fragile States Network, 2009. Health systems strengthening in fragile contexts: A report on good practices & new approaches; MISP for Reproductive Health in Crisis Situations, 2007. A Distance Learning Module Women's Commission for Refugee Women and Children: New York; Spiegel et.al, 2009. Funding for Reproductive Health in Conflict and Post-Conflict Countries: A Familiar Story of Inequity and Insufficient Data. PLoS Med 6(6): e1000093. doi:10.1371/journal.pmed.1000093.*

Implications: Making a difference with effective packages of care

- There is a need to shift the global debate about priority interventions to a more country and context centred debate.
- Regional and country capacity needs to be strengthened to support the analysis of research findings and to enable the development of effective context specific policy, strategy and implementation modes.
- Integrating maternal health with sexual and reproductive health and rights, newborn and child health programmes, and HIV/AIDS interventions makes good sense. This will require new ways of working with government and other development partners, and will need to address the global and/or local politics of working in parallel or together.
- The continuum of care needs to be placed at the heart of operational approaches.
- The evidence on the health and social benefits of investing in family planning are powerful. The recent disinvestment in family planning needs to be reversed urgently.
- The content and focus of ANC is dependent on context.
- Abortion legality and safety are strongly correlated and therefore liberalisation of restrictive abortion legislation has been an important step to improving maternal health and minimising the potential risks of unsafe abortion in a number of contexts.
- A range of physical, social, and mental problems can emerge during the post partum period indicating a need for strategies that encompass both preventive and curative intervention packages. More evaluative research is needed to inform good practice.
- There is a need for operational research on the identification and overcoming of contextual barriers to tackle exclusion and increase access to services.
- Greater attention and support is needed for scaling up proven new technologies that are ready for roll-out.
- More research is needed in the following areas:
  - How to improve MNH and SRH in conflict settings. Standardised methodologies need to be developed for assessing maternal and reproductive health needs in conflict and post-conflict affected situations and funding made more responsive.
  - How to get the best returns from TBAs and community health workers as part of a longer term human resource strategy where there are currently a large number of TBAs and a small number of SBAs.

- Impact of community based strategies on MNH.
- Design of an evidence based postpartum package of care.
- Micro level implementation studies, including comparative studies of alternative approaches in operation in order to test which implementation strategies are effective in which settings.

Part Three: Making a Difference: Strong Health Systems

A strengthened health system is essential for improvements in maternal health, and it is also true that work on maternal health can improve the health system and have collateral benefits for many other health issues.

Scaling up coverage of health interventions depends on strengthening the overall health system[451,452]. The field of maternal health has many examples of projects which ultimately have little effect on outcomes because of failure to address the necessary health systems development. Health systems provide the context within which strategies to improve maternal health are designed, delivered and accessed. They provide the opportunity for, and the barriers to, improved outcomes. If it is possible to fix weak health systems in a way which supports better maternal outcomes, the collateral benefits for other health disorders are numerous, as well implemented maternal health programmes strengthen the broader health system. The potential of MDG 5 as a strategic entry point for addressing health systems is explored by Freedman[453] and was recognised in evidence to the UK Parliamentary IDC[454] on maternal mortality.

Part Three examines evidence on how the building blocks of the health system make a difference to MNH. We look at the challenges of human resources for health, essential drugs and supplies, and referral networks, all key elements for the delivery of quality MNH services. Information management is addressed in Part Five. Strong government, political leadership, good governance and effective financing are essential, so we examine where political leadership has been effective and identify elements of good health sector governance. We also examine growing evidence of using financing to improve results in maternal health outcomes and how to get the most from the private sector. In Part Four we turn to the evidence on how health systems perform in terms of delivering equitable and accessible MNH services, evidence for overcoming financial, physical and social barriers to access, for raising political commitment to MNH through advocacy, and increasing accountability.

Strong health systems

Main findings

- Maternal and neonatal health suffers from poor governance in terms of organisational weakness and fragmentation, inadequate information and accountability systems, institutional turf, poor management capacity within decentralised institutions and poor human resource management.

- There is strong evidence that strategies to improve maternal and neonatal health outcomes reuire a health system with adequate human resources (especially skilled birth attendants), drugs, supplies, equipment, referral systems and infrastructure. Health staff numbers and competence are critical.

- Strong professional bodies (such as for obstetricians, midwives) are apparent in countries that have successfully improved maternal health but further research is needed to better understand this relationship.

- Procurement and logistics systems are often fragmented because of multiple donor vertical (disease specific) funding. Government ownership is weak, especially in the procurement and logistics of contraceptives.

- Health financing approaches are at the crux of securing financial protection and access as they impact on workforce incentives, quality of care, and accountability. Health financing solutions need to be tailored to the domestic political, economic, and health systems context and capacities. The evidence base in this field is weak.

- A public private mix can work within the health system, but regulation is essential. Partnership should be carefully considered and will depend on the type of work to be implemented. The evidence base in this field is weak.

Section 1: Health sector governance and political leadership

There is strong evidence that countries that have achieved long term, sustained improvements in maternal health have benefited from continued political commitment to maternal health over many years. In countries such as Cuba, Malaysia, and Sri Lanka commitment to maternal health was set within a broader development context which prioritised access to health and education services, promoted the status of women, and made improvements in standards of living; creating a long term enabling environment for maternal mortality reduction[455,456]. Sustained political will and momentum is a prerequisite to sustained improvements in maternal health. However, little is known about what can be done to catalyse political leaders into providing sustained support for maternal health over a time span long enough to make a difference[457]. This is examined in more detail below in the advocacy section.

Political will has to translate into implementation of changes. This requires good change management processes and improvements in health sector governance. Health governance refers to the rules that determine the roles and responsibilities of government, providers and clients, and the relationships, structures and procedures that connect them[458]. The evidence implies that good governance requires strong political leadership and commitment at all levels and is essential for the improvements in health systems required for maternal health.

Transparency, accountability, anti-corruption strategies, and citizen oversight are core agendas of governance. While there is widespread acknowledgement of the critical role of political leadership and commitment in tackling issues of poor health systems governance, there is a lack of evidence documenting examples of effective political leadership in this area[459]. This lack of evidence reflects the neglect of research into governance and accountability in health, which seems in part due to the political nature of the subject, and the conceptual complexity of researching governance, particularly in its broadest sense[460]. In a review of the evidence base, the Alliance for Health Policy and Health Systems Research found no systematic reviews of governance and accountability in health systems. The authors note the challenge of undertaking robust research into this field which does not fit with randomised controlled trials, and the need for more subtle qualitative and quantitative analyses.

Weak governance plays out in many forms to undermine the functioning of national health systems, reduce quality and access to health services, and inhibit demand. Experience from across a range of maternal health programmes raises a number of governance issues. These include:

- **Fragmented responsibility** for the financing and delivery of services between government agencies at federal, state and local levels, such as in Nigeria, hampers the development of an efficient and accountable health system capable of delivering quality maternal health services[461].
- **Institutional turf and competition for resources** and prestige has undermined joined up efforts across ministries concerned for maternal health. This has reduced coverage, is inefficient, and impacts on demand for services. For example in Bangladesh, the Departments of Health and Family Welfare operate independent facilities at primary and district level for maternal health and RH services, with little coordination between the two wings[462]. A similar situation exists in Pakistan with health and population governed in parallel[463].
- **Information and accountability systems** for finance, staffing, and performance which are weak negatively affect maternal health services and outcomes. Accountability mechanisms have been shown as a strong factor in the success of Malaysia's programme, with information used by both internal and external agents to investigate maternal deaths,

identify the social, economic and medical causes of death, and use this to advocate for better quality of care, and appropriate community and family action[464].

- In contexts where **decentralisation has not been accompanied by management systems** that include checks and balances on decision making authority, and managers lack the capacity and institutional authority to mediate local political interests, corruption and mismanagement may increase[465].
- **Weak procurement and accountability systems**, lack of transparency in decision making and distorted incentive structures lay the ground open for corruption and leakage.
- District based approaches to maternal mortality require **flexibility in planning and management**. The extent to which district managers have the authority and capability to plan and manage resources has implications for the responsiveness of services.
- Community and stakeholder participation in decision making strengthens **accountability** and increases the likelihood of services being responsive to local needs, but too often civil society and non-governmental voices are not involved in policy making processes, and service monitoring.
- There are many governance concerns related to **human resource management**, such as absenteeism, "ghost workers", and corruption. The "brain drain" of qualified health professionals to developed countries has left several country health systems on the verge of collapse; international efforts and agreements to address this problem are necessary.

There is strong evidence that the context specific nature of health systems and governance limits the potential of generic approaches to strengthen governance in health[466]. Consultations with health professionals suggest that health systems initiatives provide good entry points for governance enhancing work, as does targeting mid-level health managers who seem to be strong advocates for improvement[467]. Finding the right entry points requires context specific mapping of the politics and power relationships that underpin governance, and the political, institutional, social and cultural space for change. Identifying key actors and champions is a must. Such analysis of the space, agents and opportunities for reform is critical to prioritising and sequencing sector support for strengthening accountability and governance[468].

Maternal health progress in Nepal

Nepal, which has recently halved its MMR from 560 per 100,000 live births in 2001, to 280 per 100,000 in 2008*, has benefitted from sustained donor investment in maternal health programmes, coupled with sustained political commitment to reduction of maternal mortality and high quality, national level research into the magnitude and causes of contributory factors to maternal deaths. The Nepalese Government currently allocates 6.5% of national GDP to health;, which has grown steadily over the past 10 years. The improvement of maternal health is a clear National Priority, with the government recently investing £777,000 to support free delivery care (2008/09) in addition to year-on-year investment in strengthening infrastructure, expanding coverage of EOC centres and development of a cadre of skilled birth attendants, in addition to implementing a significant programme of demand side interventions.

Major policy changes over the past decade that illustrate the level of leadership and political commitment include the legalisation of abortion; a skilled birth attendant policy; a blood supply policy; the introduction of a scheme to reimburse women and their families for the out-of-pocket costs associated with facility delivery; and more recently, the introduction of free delivery care. The 1998 *Nepal Maternal Mortality and Morbidity Study* identified postpartum haemorrhage as the major cause of maternal death, contributing to nearly 46% of deaths. This evidence informed Nepal's 10 year Long Term Health Plan and efforts to reduce PPH related mortality and morbidity became a priority for the National Safe Motherhood Programme. Ten years later, summary findings from the 2009 Maternal Mortality and Morbidity Study indicate a major decline in PPH as a cause of death, and staff competency assessments as part of this study indicate high levels of skill in PPH management among health workers. Political will, targeted investment, and evidence-based practice combined to achieve this outcome.

Sources: **Macro International Inc., 2007. Trends in demographic and reproductive health indicators in Nepal.Calverton, Maryland, USA: Macro International Inc.; Pant et.al., 2008. Support to Safe Motherhood Programme, Nepal - Investigating recent improvements in maternal health in Nepal: Further analysis of the 2006 Nepal Demographic and Health Survey. Calverton, Maryland, USA: Macro International Inc.; Subedi et.al., 2009. Nepal Maternal Mortality and Morbidity Study 1998; Family Health Division, Government of Nepal; Nepal Maternal Mortality and Morbidity Study 2009. Summary Findings Family Health Division, Government of Nepal).*

Section 2: Challenge: Human resources for health

The lack of sufficient well trained professional health workers (especially female health workers) and their inequitable distribution are significant factors limiting the provision of MNH and SRH services. Serious deficits are apparent in terms of volume, distribution and skills in the healthcare workforce. Although shortfalls and shortcomings in human resources for health cross all disciplines, we have focused in this section on human resources for maternal health.

Global deficit – Shortfall

WHO estimates that the global shortfall in trained professional health workers is more than four million[469]. With reference to MDG 5a, no more than 40% of births in low income countries are currently being assisted by properly skilled attendants[470]. Scarcity of skilled attendants is perhaps the most fundamental challenge to maternal and newborn services worldwide. The WHO estimates that in countries where 95% of maternal deaths take place, 700,000 additional midwives are needed globally to fill the gap to meet the 90% target by 2015[471]. WHO proposes two standards for measuring adequacy of coverage of health service providers; three doctors, including one specialist in Gynaecology and Obstetrics, per 3,600 births/year and one midwife per 175 births/year[472] with a density of 2.28 (2.02 to 2.54) doctors, nurses and midwives per 1,000 population[473].

HIV/AIDS is significantly contributing to the decimation of the healthcare workforce in some settings. World Bank projections suggest that a country with 15% adult seroprevalence rate for HIV can expect to lose between 1.6 and 3.3% of its healthcare providers from AIDS annually[474]. Furthermore, a healthworker with AIDS is likely to be absent from work due to sickness up to 50% of the time in his/her final year of life[475]. A recent analysis of trends in coverage for maternal and newborn care in Sub-Saharan Africa shows that countries with the heaviest HIV/AIDS burden have experienced the greatest erosion of antenatal care, trained staff attending deliveries, and children's immunisation rates[476]. In addition, the scale up of GHI interventions has led to significant additional demand on health workers[477].

Global deficit – Shortcomings – Skilled birth attendants

Health professionals with midwifery skills are fundamental components in the system for providing skilled intrapartum care[478]. There is strong evidence that the system cannot operate safely and effectively when their number is inadequate, or if they are not adequately skilled or are poorly deployed, and if they are unable to engage in opportunities for training and updating their skills base[479]. In addition, to be properly effective, skilled attendants need an enabling environment that includes reliable supplies of essential drugs, medical supplies, and a referral system with doctors/obstetricians providing high quality essential obstetric care[480].

The lack of skilled attendants at facility level puts lives at risk. There is strong evidence that the availability of health personnel is correlated with quality of care and other healthcare outcomes[481,482]. The root cause of many adverse events and "near misses" has been linked to inadequate midwifery staffing, ineffective deployment of midwives and lack of training and updating opportunities, and even poor skill mix[483]. It is not just scarcity of staff that is an issue. There is evidence of low levels of competency among all health professionals contributing to in-facility delays in obstetric care[484] and affecting the quality of essential obstetric care[485].

Fauveau *et al.*[486] highlight the need to build not only quantity but quality of the workforce, indicating the need for a high level of competence in a number of very specific areas, including: curricula that ensure sufficient time for hands on practical training and appropriate clinical instruction and mentorship; gender sensitivity (this applies to all SRH activities) as lack of a female provider is

suggested as a major barrier to use of services; and excellent inter-personal communication and cultural competencies, which are essential to help support appropriate decision making by families in all aspects of reproductive health. The study concludes that no significant maternal mortality reduction can be achieved without a strong political decision to empower midwives and others with midwifery skills, and a significant strengthening of health systems with a focus on quality as well as numbers.

Other major barriers to the delivery of evidence based care by health professionals in many countries relate to the regulations governing their professional practice, which prevent some cadres of staff from delivering life saving care[487]. This is a serious barrier to the implementation of evidence based packages of care described in Part Two. The formulation of positive standards, policies and laws to ensure evidence based, transparent and fair access to reproductive and sexual services is critical in order to achieve the MDGs[488]. Some restrictions in women's access to health services are based on religious and moral beliefs rather than scientific evidence. For example, whether or not emergency contraception should be made available[489], and if so, whether to permit access from pharmacists without prescription by physicians[490]. Other restrictions exist because of a lack of access to scientific knowledge. For example, restrictions on the use of oxytocin to prevent postpartum haemorrhage by skilled attendants other than doctors, and the use of misoprostol as an alternative to injectable oxytocics, and the inclusion of magnesium sulphate for hypertensive disorders in pregnancy on essential medicines lists[491].

In addition, there is mounting concern that HIV prevention programmes are not based on the social science evidence of actual sexual behaviours and the scientific evidence of condom effectiveness, but rather rely on moral and religious teachings of what is appropriate sexual behaviour[492]. Where decisions are not based on evidence of predominant medical assessments and knowledge of the impact of such decisions on women's health, the decision making agencies will lose legitimacy, public respect, and influence. An example of this is the legal attempts to prohibit the availability of emergency contraception presently threatened in several countries, including Chile, Colombia, Ecuador and Mexico[493].

Strategies for scaling up human resources for health

Overall shortages, low retention, poor performance, low morale, absenteeism and unwillingness to work in remote areas are almost universal human resource problems in low income countries[494]. A core component of a strategy to reduce maternal mortality must include ensuring effective country level human resource planning, with a long term vision and focus on CEOC and BEOC facilities/providers[495]. Development of management capacity is often missed in human resource strategies, which usually focus on planning, training, deployment, and retention. Specific issues for maternal health include lack of specialists in obstetrics/gynaecology and in anaesthesia; failure to attract and retain specialists in rural areas; failure to retain short term trained MBBS doctors in surgery or anaesthesia; over medicalisation and exploitation; lack of transparent process for posting, transfer, and promotion; and a lack of operation theatre nurses and laboratory technicians[496].

The 2006 World Health Report[497] identified a number of specific strategies that have been demonstrably successful in improving the quality, quantity and performance of the health workforce. These include training local workers in local languages and in skills relevant to local conditions, which helps stem the exit of health workers. Other successful strategies for attracting and retaining health workers include ensuring attractive pay and financial incentives, assuring safety, good management and career development and improving the living conditions, housing and education of family members[498,499].

Dussault *et al.'s* [500] recent synthesis of published and grey literature on the process of scaling up the health workforce describes "scaling up the workforce" as increasing the capacity of human resources to deliver more and better quality health services. The findings are applicable across the health sector and conclude with the need for a complementary mix of strategies to improve effectiveness (using quality maintenance and enhancement strategies and mechanisms) and geographical coverage and distribution. Four categories of intervention for scaling up the stock of workers are suggested: 1) augmenting the production of new workers, 2) improving retention rates, 3) recruiting inactive and retired workers and 4) importing health workers. The synthesis concludes that success in scaling up the stock of health workers is limited by lack of: strategic planning, stakeholder mobilisation, political will, commitment, continuous assessment of the effects of interventions, and adequate financial resources to cover associated costs (salaries, benefits, training, equipment etc.).

Task shifting

Task shifting and task sharing are identified as strategies with good potential for expanding the skill pool and thus increasing access to services[8]. A Cochrane Review found that at primary care level, appropriately trained nurses can produce as high quality care and achieve as good health outcomes for patients as doctors. However, the authors caution that the research available is limited[501]. *Reproductive Health Matters* dedicated a recent issue to task shifting, including a range of examples of innovative efforts to increase access to skilled reproductive healthcare in settings where doctors are in short supply and may not be needed because the skills involved in a procedure have been simplified to the extent that trained mid-level providers can be effectively deployed[502]. These include: IUD insertion, taking pap smears[503], carrying out caesarean sections[504], providing anaesthesia for essential obstetric care[505], and providing an early medical abortion[506]. Despite good evidence that task shifting and task sharing represent important options for increasing access to core MNH and SRH services, Phillips *et al*. (2008) caution against these as a substitute for training and retaining sufficient numbers of the right grades/cadres of staff for the health system. They warn that focussing exclusively on task shifting issues diverts attention away from the overall human resource problems outlined above[507].

Studies considering the potential role of mid-level providers have concluded that not only is some degree of task shifting feasible, but it can also be cost effective[508,509]. However, the use of clinical officers to perform caesarean sections in Burkina Faso[510] was associated with higher rates of newborn mortality than when the procedure was undertaken by general practitioners and specialist obstetricians. This suggests that care is needed when undertaking such strategies and due regard should be given to cost and effectiveness evidence, with clarity about the nature of the appropriate comparison. For task shifting to work well, careful implementation is needed, with tutoring and close monitoring of outcomes. Long term investments in trained obstetrician/gynaecologists, anaesthesiologists, paediatricians, midwives, paediatric and anaesthetist nurses are critical[511].

There is insufficient evidence on the extent to which components of task shifting or sharing might constitute an effective longer term strategy or a practical interim solution. However, there are indications that a range of strategies can be effective in meeting the global deficit of human resources for health, and that these need to be context specific and staged, with short and medium term strategies nested within a longer term one. This may mean investing in short and medium term approaches that are not the gold standard, but have demonstrated a positive health impact. This will

[8] **Task sharing:** Sharing tasks with other groups of health workers trained to support the delivery of a package of health care **. Task shifting:** Extending the role of mid-level providers such as nurses and midwives to undertake tasks previously the responsibility of doctors

require a practical and flexible context specific approach, which makes the most of the resources at hand while investments are made in building the human resources needed for the longer term.

The role of professional associations

Countries that have been successful in reducing maternal mortality include Sri Lanka, China, Cuba and Malaysia[512]. These successes have been attributed to prioritising maternal mortality as a public health issue[513], and by the expansion of professional maternity care and family planning[514]. Implementation of such expanded care requires input from all cadres of healthcare providers: midwives or healthcare providers with maternity skills to manage normal pregnancies and deliveries, and doctors to perform medical interventions when complications arise. Chamberlain *et al.* [515] show that countries with high maternal mortality rates are most commonly those that lack a professional association of obstetricians. While this does not take into account other political contextual issues, it does reflect the role that professional associations can play in reducing maternal mortality.

Collaboration between professional bodies of different cadres of healthcare providers can contribute to improved governance relating to maternal health[516]. Collaboration requires mutual respect of each association's roles and skills in order to maximise the comparative advantage of each professional body[517]. Participants from multidisciplinary, multi-country workshops held by PMNH indicated that weaknesses in healthcare professional associations are due to lack of resources and poor leadership. This has led to public authorities attaching low importance to these associations, resulting in their exclusion from the planning and implementation exercises[518] in which they should be involved[519].

Professional associations at both national and international levels can collaborate to offer a unified voice for women's health by performing a number of roles[520]. They can lobby at political level to pressurise governments and donors to meet their commitments at national and international levels[521]. Professional associations determine clinical and professional standards of care and can therefore influence training and the promotion of continuing, evidence based education and practice[522,523]. They can also raise awareness among the public about health issues, and stimulate better teamwork between multi-disciplinary members of the healthcare system[524,525].

Section 3: Challenge: Referral

Interventions designed to avert deaths and injuries to women around the time of delivery and in the immediate postpartum period, when the risk to mother and baby is greatest, remain a central challenge in low income countries. The importance of a functioning referral system stands out as a critical foundation for improvements in maternal health outcomes. The strength of the referral network is effectively a test of the broader health system and can reflect and exacerbate the social and economic barriers to access. As strengthening the referral system will itself have multiple benefits to the wider health economy this should be prioritised in national, regional and local strategies. Murray and Pearson's[526] scoping review on maternity referral systems identifies nine priority areas; encompassing organisational, technical, and socio-relational (see demand side barriers in Part Four) issues, which are important for optimising district level maternity referral systems.

Requisites for well-functioning maternity care referral systems:

1. A referral strategy informed by assessment of health system capabilities (government and non-government) and areas of overload, and by assessment of population needs: this latter to include local disease patterns affecting pregnant populations; cultural and ethnic diversity in needs and inequalities in access; and reasons for bypassing and self-referral on the one hand and non-acceptance of referral advice on the other
2. An adequately resourced referral centre (including reachable 24-hour provision of CEOC)
3. Active collaboration between referral levels and across government and non-government sectors
4. Formalised communication and transport arrangements for obstetric and other health emergencies (ranging from solar powered cell phones or radio transmitters, telemedicine consultations, community alert systems, to routine vehicle maintenance programmes, contracting of ambulance services, and imaginative use of networks of private commercial transport)
5. Agreed setting specific protocols for referrer and receiver
6. Accountability for providers' performance and supportive supervision
7. Pro-poor protection against the costs of emergency referral
8. Capacity to monitor effectiveness at district management level. (Gender aware indicator sets encompassing key resources, emergency preparedness, local life saving skills, EOC resources, availability of urgent communication and transportation, across the government and non-government sectors)
9. Policy support at national or state level.

Source: *Murray, S.F., Pearson, S.C., 2006. Maternity referral systems in developing countries: Current knowledge and future research needs. Social Science and Medicine, 62(9), pp.2205-15.*

Section 4: Challenge: Infrastructure

It is vital that health facilities have effective infrastructures, medical equipment and supplies and qualified staff to assist women seeking EOC[527].

To ensure women seek, utilise and receive appropriate EOC, and the need for it is met, it is essential that EOC facilities have the right infrastructure (appropriate building materials, running water, electricity, infection prevention measures and operating theatre) and required equipment and medical supplies. In Uganda, functional EOC facilities with the required infrastructure (operating theatre, electricity, laboratory, and staffing levels) were found to reduce maternal deaths. However it was also found that most health facilities lacked the basic infrastructure and equipment to provide quality of care[528]. These basics need to be in place, in tandem with the correct mix and number of staff, adequate staff training, skills and supervision; streamlined management information systems to monitor cases, evaluate and learn lessons; improved communications and community linkages; community mobilisation; and strong referral systems to CEOC facilities when the need arises[529]. Upgrading or rehabilitation of EOC facilities has also been shown to improve staff morale and service provision[530,531,532].

Successful examples of interventions that have included a component for facility, equipment and supplies upgrading or rehabilitation and have improved services and maternal outcomes in EOC centres (reducing maternal deaths and increasing utilisation and met need for EOC) can be found in Viet Nam, Peru[533], Nepal[534] and Bangladesh[535,536]. In the Dinajpur Safe Mother initiative, Bangladesh[537], it was found that a combination of EOC facility upgrades (renovation of buildings; reorganisation and regular supply of equipment, drugs and supplies; provision of training for doctors and paramedics; introduction of monitoring tools) with a quality of care intervention (prompt attention to emergencies; easy access to services), and community support systems in each village with birth planning and community mobilisation to increase EOC utilisation, resulted in a large increase in met need and percentage of women delivering in medical facilities. In a comparison area, where upgrades were made without community mobilisation for demand creation or quality of care interventions, there was a statistically significant increase in facility deliveries and met need, but it was not as marked as in the intervention site. In the control area, where no intervention was implemented, no statistically significant increases were seen.

Once EOC facilities have been rehabilitated or upgraded it is necessary to ensure adequate resources are allocated to their ongoing maintenance and provision of equipment and supplies, to prevent their falling into disrepair[538,539]. Given the uneven distribution of qualified EOC facilities, prioritisation of the upgrading of existing non-qualified first referral hospitals to comprehensive EOC standard and upgrading existing strategically located health facilities to basic EOC facility standard, particularly in rural areas, is recommended[540].

Section 5: Challenge: Essential drugs, supplies and equipment

Skilled attendants can only perform effectively if they are properly equipped and supplied[541]. There is consistent evidence that a lack of, or poor quality, drugs, equipment and supplies at MNH facilities has an adverse effect on the utilisation of non-emergency services and on women's survival chances[542,543]. A wide range of common problems with equipment and supplies within MNH health facilities have been documented[544]. These include equipment which lacks a recognised evidence base; equipment purchased without being subject to a careful procurement review[545] or without adequate technical support or training; a shortage of skilled maintenance personnel; inadequate funds allocated for inputs, maintenance or replacement; surplus equipment at referral hospitals with shortages of commonly used equipment at peripheral facilities and/or available equipment not working due to lack of maintenance and repair[546]; and barriers to safe blood supplies which are frequently related to shortages of equipment and supplies such as functioning refrigerators, blood bags, needles and syringes[547].

Essential supplies are often missing, incomplete or not readily at hand in MNH facilities. To address this gap, the Global Campaign for the Health MDGs[548] has proposed provision of kits which are made available to each woman when she arrives at the facility in labour.[9] The total cost for each kit has been estimated at US$3-4 per delivery (or US$0.10-0.14 per capita) for most developing countries[549]. While the Campaign acknowledges these basic supplies cannot alone assure a healthy mother and newborn - support from a professional midwife implementing best practices using the kit and a well equipped health facility are also required - this approach should be introduced and evaluated in several settings to provide the evidence needed to support uptake of this approach to overcome the challenge of limited and insecure supplies.

MNH services are highly dependent on the availability of the essential drugs, identified as effective and relatively inexpensive[550] and included in the WHO essential drugs list[551]. There is good evidence that the use of national lists of essential drugs has contributed to improvements in quality of care and to a considerable saving in drug costs[552,553]. A national drug policy is a key component of any strategy to improve the management and use of drugs[554]. Despite many essential drugs being cheap and having long shelf lives, many providers lack knowledge about them, clinical guidelines are out of date and drug supply systems are inefficient or ineffective, making access to these drugs either unpredictable and/or entirely absent. Many countries have weak drug assurance systems because they lack the necessary basic components of adequate drug quality assurance legislation and regulations, and a functioning drug regulatory authority[555]. Without these, substandard and counterfeit products can circulate freely. In addition, inappropriate handling, storage and distribution can alter the quality of drugs leading to serious health consequences and wasted resources[556,557,558]. The drug situation also affects the way in which health services are regarded[559]. Users associate a lack of drugs with poorer quality of care[560].

To ensure timely maintenance and repair of equipment, there is strong evidence that adequate emphasis needs to be given to including this in the operating costs of health facilities at the time of planning. To counter low budgeting of equipment repair and maintenance, cost centre accounting, or at least a well developed maintenance record system, is necessary as part of planning[561].

[9] Basic kit for quality facility birth (QFB) aim to prevent deaths from complications of bleeding, infection of both mother and baby, prolonged labour, and asphyxia for babies, and include: Hand-held birth record with partograph, gloves, birth cloth, chlorhexidine swabs, disposable cord clamps, sterile blade, oxytocin injection, mucus extractor and sanitary pads.

Procurement as a mechanism to strengthen access to essential drugs, supplies and equipment

Ensuring the right drugs, supplies and equipment are in the right place whenever they are needed depends on a functioning and effective procurement system. As safe motherhood and STI commodities tend to fall within government essential drug budgets, procured and supplied through government channels, they are exposed to the systemic problems of drug supply management described above[562]. With contraceptive commodities often funded and procured by donors, national governments face the challenge of managing multiple funding and procurement routes for maternal, STI, family planning and HIV/AIDS products, which can lead to fragmented procurement with high transaction costs[563].

A study of Reproductive Health Commodity Security (RHCS) in four countries with poor MNH SRH indicators (Cambodia, Nigeria, Uganda and Zambia)[564] highlights the drawbacks of multiple donor and government procurement where government systems lack adequate oversight capacity. One of the main findings was the inability of the countries to translate national policy objectives into implementation and results. Wider political will was found to be questionable and there was weak ownership, capacity and coordination at all levels. This affected the allocation of funds to RH commodity procurement and logistics at local and devolved levels, where RH may not be a priority. Contraceptives were found to be on the countries' essential drugs lists, but some maternal health drugs and equipment were not. Missing products included magnesium sulphate, oxytocin and MVA kits. All the countries lacked information and strategies for addressing maternal health commodity security, although the importance of supplies was usually stressed in reproductive health policies.

The literature suggests a number of broad principles to guide the procurement process but the evidence base is incomplete:

- Government led procurement plans and budgets need to drive government and donor procurement and provide the tool for harmonising inputs.
- A purchasing plan should be drawn up to project annual requirements.
- Finance arrangements need to reflect development and recurrent expenditure[565].
- Requirements should be clearly defined before potential suppliers are contacted. Tenders should be issued with appropriate specifications.
- Appropriate equipment should be defined for each level of care and a detailed list should be prepared bearing in mind user preferences, relevance to priority health problems, ease of use and maintenance and safety.
- Health workers, planners and technical experts should be involved in decision making.
- Investment in government level budgeting and planning expertise is essential.

The example of Zambia

Reproductive Health Commodity security in Zambia (2005) has been hampered by:

- Lack of emphasis on reproductive health in national level policies and plans.
- Lack of overall leadership and responsibility for RHCS , therefore lack of accountability on the issue
- Limited capacity in the RH Unit and no integration with the Sector Wide approach and government procurement systems. The unit is working in a project based environment.
- Human resource shortages
- Lack of faith in government systems and lack of political will.
- Parallel arrangements in forecasting, procurement and distribution causing fragmentation and inefficiency.
- Only three donors (USAID, UNFPA and DFID) for RH commodities, and they provide support through parallel financing and procurement.
- Vertical sources of health funds (for example GFATM) are substituting funds and diverting NGO activity away from RH. However the PMTCT programme is an opportunity to improve RH commodity security.

Source: *Brown, A., Syacumpi, M., 2006. RHCS Country Case Study: Zambia. DFID Health Resource Centre.*

In Zambia donor technical assistance to ensure commodity security has been successful showing the importance of staffing and coordination in managing the technical complexities of forecasting, ordering and procurement[566].

Section 6: Challenge: Health financing mechanisms for maternal health

Restructuring of health systems in developing countries has led to the introduction of pre-payment and cost recovery systems with numerous country governments employing user fees as a means of increasing healthcare budgets. However, in recent years, evidence and indeed support from organisations such as WHO, PMNH, DFID, and the World Bank has grown in favour of abolishing user fee systems[567,568] as they have been shown to perpetuate inequity and barriers to accessing services[569]. Increasing access to maternity services and safe delivery in particular are crucial if countries are to meet MDG 5, however, cost remains the dominant barrier to uptake of safe motherhood services in many of the C*ountdown* nations[570].

This section of the report discusses major health financing strategies employed for financing MNH, reviews evidence of impact where available, and considers the equity implications. Some approaches, such as vouchers, can be implemented through either the public or private sector or a combination of the two and use either demand side or supply side methodologies. Discussion of evidence pertaining to the private sector is presented in the following section of the report and is closely linked.

User fees

The literature discusses a number of reasons to support user fees. User fees have the potential to positively impact service utilisation and quality of care, as they ensure funds reach the lower levels of healthcare services by direct input of users, rather than relying on the trickle down effect from national or regional health budgets. Additionally, the perception in some settings was that user fees were associated with "better quality" healthcare and therefore would encourage increased utilisation of services. User fees could, in theory, promote local governance, management, and increased awareness of cost by those working at the lower levels of the healthcare system. Still others make the case that user fees encourage increased adherence to treatment regimens, as users have paid to access them, and warn that free services could encourage frivolous misuse of scarce healthcare resources.[571] In practice, however, the introduction of user fees has fallen short of expectations, to the detriment of many people's health and their ability to access services.[572] Systems in which out-of-pocket funds are required from women and their families mean that the poorest women are most likely to be excluded from antenatal and safe delivery services, relying on self treatment, traditional healers, and delivery at home without SBAs more often than those in higher socio-economic groups. As women may have less access to funds than men and less negotiating power, choice in services for ANC and safe delivery can also be restricted.[573]

The case for removal of user fees and provision of universal healthcare for pregnant and lactating women is strong, but it is not based on evidence from longer term studies. Evidence suggests that in practice user fees raise little money to increase and sustain national health budgets and are inefficiently and inequitably managed[574]. The use of exemption policies or waivers for maternal health, antenatal care and family planning services within user fee systems have been largely unsuccessful in practice, as they are often inconsistently or unfairly applied[575]. For example, evaluations of the exemption policy for maternity services in Tanzania revealed three-quarters of women delivering in public facilities were still paying for services by way of registration fees and unofficial charges for drugs, hygiene products such as sheets and rubber gloves, and under-the-table tips for staff[576,577]. However, recent evidence of targeting poor women with vouchers for maternal health services in India and Kenya has shown that allocation of vouchers can be successfully targeted using locally relevant poverty assessment tools (see below)[578,579]. Demand is currently inadequate for maternal health services, and evidence shows user fees contribute to the often catastrophic financial burden faced by those accessing care and deter those who cannot generate funds needed at the point of care from seeking treatment promptly or altogether[580]. User fees for safe delivery

reduce utilisation of services, particularly amongst the poor and most vulnerable within populations[581] and are a barrier to increasing demand for maternal healthcare services[582,583]. Introduction of user fees in Nigeria, Kenya, Zimbabwe, Sudan, and Nepal led to rapid and significant decreases in the numbers of women presenting for care[584,585].

Donors such as DFID and the World Bank have increasingly been working with country governments to abolish user fees as the impact on access to maternal health services is clear[586]. Removing user fees has already shown promising results in Burundi, Malawi, Zambia[587], Senegal[588] and Burkina Faso[589]. Ghana and Uganda simultaneously experienced substantial increases in women presenting for institutional deliveries upon removal of user fees, and although the amount was not significant, Ghana did see a decrease in deaths around the time of delivery. Evidence from Ghana confirmed the largest increase in service utilisation occurred amongst the poorest and least educated, thus uptake was encouraged by those most at risk of complications and with significant barriers to access under the previous fee based system.[590]

Removal of user fees for pregnant women can lead to substantial increases in planning for both ANC and facility deliveries, as seen in South Africa[591], and has the potential to reduce maternal mortality and morbidity[592] as countries work towards MDG 5. By increasing demand and reducing mortalities, providing free maternity care may allow ministries of health to focus attention on other pressing but tangential issues or, by allowing facilities to function albeit at a basic level, it may afford donors and governments time to prepare to tackle more challenging or sensitive health reform issues including political governance and supply side functioning[593].

It is crucial for donors and governments to recognise that removal of user fees must be in tandem with increased investment in safe motherhood programmes and overall health system strengthening. As user fees are abolished and demand for services increases, additional forms of revenue must be in place to fill the resource gap, prevent shortages in equipment, drugs, and human resources, ensure quality of care and prevent the emergence of unofficial fees. The reimbursement system for health services following removal of user fees needs to be carefully designed to ensure it does not reward poor clinical practice. For example, in Nepal reimbursement rates for normal delivery are Rs.1,000, for complicated deliveries Rs.3,000, and caesarean deliveries Rs.5,000. Careful monitoring of the profile of claims is necessary to regulate inappropriate claims or changed clinical practice, such instrumental or caesarean section delivery where it is not clinically indicated, in order to qualify for the higher claim[594]. As the capacity of poor countries to absorb the financial implications of removing user fees is uncertain, donors will play an important role in increasing investment in the overall health system and in maternal health in particular.[595] Just as there has been increased donor support for abolition of user fees for health services at point of care, there has also been a call for increased emphasis upon pre-payment systems and ensuring that contributions to such schemes are equitable and based upon ability to pay[596] (see sections on “Social and community based health insurance”, “Cash transfer schemes” and “Community based emergency funds” below). Further research (in particular prospective evaluations) is needed to evaluate the longer term impact of removing user fees for maternity and neonatal care on the demand for services (from an equity and access/social inclusion perspective), quality of care, outcomes, and provider performance (including the charging of informal fees) before rolling out national policy changes such as removing user fees[597].

Social and community based health insurance

Social health insurance has received more attention since user fees have been abolished in many developing countries, and there has been a call for pre-payment systems that spread risks and are equitable. Acknowledging that “irrespective of the source of financing for the health system selected, pre-payment and pooling of resources and risks are basic principles in financial risk

protection" the 115th session at the 58th World Health Assembly in January of 2005 urged its Member States to "ensure that health financing systems include a method for pre payment of financial contributions for health care, with a view to sharing risk among the population and avoiding catastrophic health care expenditure and impoverishment of individuals as a result of seeking care" and to "ensure adequate and equitable distribution of good quality health care infrastructures and human resources for health so that the those insured will receive equitable and good quality health services according to the benefits package."[598].

The quality of evidence on the impact of social and community based health insurance on access of the poor is weaker than for user fees[599]. Social health insurance schemes are generally not appropriate in low income countries with weak healthcare infrastructure, low formal sector employment and poor geographical access to facilities. Reviews of Bolivia's Mother and Child Insurance Programme (SUMI) show that while it has increased access to and utilisation of delivery and antenatal services overall, it has not overcome pre-existing inequities between income groups and rural-urban populations; coverage in rural areas lags behind urban, in part due to poor physical access to facilities, and cultural barriers[600].

Community based health insurance schemes, which have taken off in low income settings, have been shown to increase service utilisation, for example, a 45% increase among members in Rwanda, and 12% in The Gambia[601]. However, equity is an issue, with examples of the poorest unable to afford premiums, as members often rely on out-of-pocket expenditure to fund up to 40% of their health needs. A Joint NGO Briefing Paper on health insurance reported that such insurance schemes had covered two million people in Africa (or 0.2% of the population) as of May 2008[602].

The small scale of schemes also affects the range of services they can cover while keeping premiums affordable; often maternity services are omitted on the grounds of their expense. Evidence that community based health insurance can be scaled up is still in the balance and needs to be analysed within a broader health financing and policy framework to assess its ability to achieve universal access. A survey conducted in 2000 evaluated 35 out of 66 known community based health care organisations in the Philippines, the majority of which are small or very small. On average, these organisations serve less than 2,000 beneficiaries, with a combined total of less than 200,000 – about 0.25% of the population[603]. The most successful of these schemes, operating in the province of Bukidnon, collapsed as soon as the Governor withdrew his support.

The World Bank conducted a literature review on the impact of community based health insurance schemes and found that community involvement in resource mobilisation increases access to health care for those covered, and financial protection is also accorded by reducing out-of-pocket spending. However, the report indicated that schemes still exclude the poorest and perhaps those most in need[604]. A major problem with community based insurance is the limited protection for members, sustainability (the small size of resource pools makes them particularly vulnerable to failure), inability to cover the poorer parts of the population (since they cannot contribute), and limited effect on the delivery of care (ability of such insurance schemes to leverage quality care from providers is low).

Findings in the World Bank report also showed that poor people were often willing and able to pay for community based health insurance where:

- their payments were subsidised by public or donor funds and at the same time ensured their access to good quality health care services;
- community members were directly involved in designing and managing the schemes;
- the benefits included easy access to a network of health care providers;
- top down interference with the design and management of the schemes was minimised, as this appeared to have a particularly negative effect on sustaining them.

Community based emergency funds

Community based emergency funds are a common feature of community support systems developed to reduce the delays in accessing obstetric care and to have cash on hand to cover emergency transport and related expenses. Experience with community based emergency funds is mixed. In Kano and Jigawa States in Northern Nigeria, community based emergency funds were an important mobilising pillar for the community and built on existing practices among men and women for communal savings[605]. In other contexts, such as Nepal, experience has been that while women contribute to the saving, they are reluctant to draw on the emergency fund unless they have exhausted other routes, such as borrowing from family and neighbours[606]. While emergency funds can increase the use of maternal services they face a number of management and sustainability constraints, and their success is often tied up with the level of community mobilisation and local leadership.

Private health insurance

Although private for profit health insurance can increase financial protection and access to (quality) health services for those able to pay, it is particularly inequitable unless poor people are subsidised[607]. Inequalities of access (with coverage of the highest income percentiles while the lowest percentiles are covered by social health insurance) have been reported in Argentina, Chile, Colombia, Brazil, and Peru[608].

Generally insurance risk analysis argues against insuring family planning and deliveries as stand alone benefits (but they can be packaged with other benefits)[609] and this is also often true for community based insurance. Deliveries are usually excluded due to moral hazard (people join the scheme to have the baby and then leave). Furthermore, purely private health insurance programmes rarely reach the poor and are generally targeted at the wealthier, formal sector groups in employment.

Cash transfer and Voucher schemes

Demand side subsidies, such as vouchers for SBA delivery, can give a woman the purchasing power to choose where she delivers from among a group of approved providers. Demand side financing is increasingly being implemented to promote access to MNH SRH services in developing countries[610]. The basic idea behind such demand side financing is that subsidising demand among priority population groups for specific services (and patient costs related to specific services such as transport, etc.), while creating or stimulating a competitive market, may be more beneficial than using the same resources to subsidise the supply of these services[611,612]. Demand side strategies aim

to link subsidies with MNH SRH services delivered, producing incentives to attract more patients as the remuneration received by the service provider depends upon the outputs produced and their quality.

SRH services have been the focus for using vouchers to increase access for specific groups (the poor, adolescents, sex workers and so on). Examples of different projects include vouchers for STI diagnosis and management for sex workers (Nicaragua), for sexual health advice and services for young people (Nicaragua), vouchers for a package of maternity services (comprising ANC, delivery, complications of delivery and PNC) in Bangladesh, India, Kenya and Uganda, vouchers for STI diagnosis and treatment in Uganda and for adolescent reproductive health services (Kenya). Although the evidence base is still weak, it is increasingly seen that vouchers are particularly good for targeting under served groups for specific time bound services that have a beginning and an end such as pregnancy and delivery, STI diagnosis and treatment, or abortion. There is less evidence on the use of vouchers for increasing access to and utilisation of general health care (difficulties include what services to cover or exclude, how to communicate this information to poor families, how to price vouchers, and so on).

The Population Council in Nairobi is managing an evaluation programme for five voucher programmes funded by the Gates Foundation, which will conduct evidence based research on how vouchers impact on access to and utilisation of SRH services. It will assess projects in Kenya, Uganda, Bangladesh, Cambodia and Tanzania, which between them cover vouchers for ANC, deliveries, PNC, FP and STIs.

MNH SRH voucher schemes have demonstrated effectiveness in:

- Targeting high priority groups:
  - Family planning in Taiwan[613].
  - STI treatment for high risk groups[614,615].
  - Providing treated bed nets for pregnant women[616].
  - Delivery services and family planning in RH
  - Voucher Scheme in Kenya[617,618] and in the Chiranjeevi Scheme in Gujarat, India[619]
- Improving efficiency and quality:
  - Through competition[620.]
  - By reducing the overhead costs of providing services: the Kenya voucher scheme for safe deliveries and family planning spends only 11% of its funds on administration[621,622]
- Improving choice:
  - Buying a voucher is a decision and a competitive scheme allows the woman to choose where she delivers[623].
- Developing standardised indicators for measuring outputs. This work is being actively pursued by several donors that support voucher schemes including GPOBA, KfW and the Gates Foundation.

An evaluation by KfW of the voucher schemes for STIs in Uganda and for safe delivery and family planning in Kenya in 2007 identified a number of key elements of voucher schemes needed for success and efficiency[624]. The most important lessons include:

- An independent and autonomous agency is needed to manage the scheme
- Independent accreditation mechanisms are important

- A mix of public, private and NGO providers encourages competition and quality improvements
- Interventions suitable for voucher schemes should be common, well known and important for the population and of significant value to justify administration costs.

The most important failing in the schemes has been the low priority given to measuring their activities and inputs, especially the failure to objectively measure improvements in service quality.

Cash transfers

There is good experimental evidence that conditional cash transfers targeting poor people are effective in increasing equitable uptake of services, improving health and nutrition outcomes and reducing poverty[625]. However, the majority of health outcome evidence for social transfers relates to child health, nutrition and education, with more limited reference to maternal and reproductive health services. The *Oportunidades* in Mexico increased low income women's use of health and nutritional supplements, and participation in health education sessions[626], and evaluations of large-scale conditional cash transfer programmes in Latin America and the Caribbean have demonstrated increases in service utilisation for children's health and education services (Honduras, Nicaragua, Colombia) and decreases in childhood stunting (Mexico, Nicaragua, Colombia)[627] (see also the section below on Results-based Financing Approaches).

Interesting evidence is also emerging that cash transfers targeting areas such as education can have a positive impact on health behaviours such as early marriage, teenage pregnancy and self-reported sexual activity. An evaluation of the on-going Zomba Cash Transfer Programme which provides cash conditional upon satisfactory school attendance for girls, in addition to direct payment of secondary school fees, found that the probability of getting married and falling pregnant declined for those out of school at the baseline by more than 40 and 30 percent respectively[628].

The relative benefits of conditional and unconditional cash transfers are currently under scrutiny by DFID, World Bank and others, and large knowledge gaps still exist. Mixed uptake of vouchers by targeted beneficiary groups raises the question of who does or does not participate and why. There is an urgent need to pilot, monitor and evaluate cash transfer (conditional and unconditional) and voucher schemes in low income countries and assess their relevance for obstetric care[629]; field experience suggests that the high and unpredictable costs of caesarean sections may work against transfers as a viable method[630].

Targeting

There are pros and cons to targeting and many ways of implementation[631]. It is difficult to avoid some wrongful inclusion and exclusion; it can be expensive, administratively difficult, and reduce social solidarity. However, when universal access is beyond reach, targeting can reach vulnerable groups that may otherwise remain excluded from services. Conditional cash transfer experiences in Mexico and Chile show targeting can successfully increase demand when incentives are conditional on behaviours and service use. Effective targeting requires investment in targeting techniques and monitoring. When these are not well developed, targeting is best kept simple, for example based on age or location, with universal access within the selected group. Experience from health equity funds in Cambodia raises the practical problem of identifying individual beneficiaries. Key research from the multi-site Immpact programme suggests that targeting services to poor groups is not only stigmatising but is of little use, since identification of poor individuals is usually inadequate, and providers frequently prefer to deliver services to those able to pay high fees[632]. Furthermore, and of great importance for EOC, many more households than those defined as poor are at risk of

impoverishment from the high costs of care, making selective insurance ineffectual[633,634]. Having said this, where targeting programmes already exist, such as the Below Poverty Line (BPL) scheme in India, they can be used effectively to increase uptake of SBA attended delivery among the poor[635]. Geographic targeting, especially if focused on fairly small areas such as district or sub-district, is likely to be the least expensive yet effective way of reaching the poorest groups[636].

The Chiranjeevi Scheme: A case study

In Gujarat, the Chiranjeevi Scheme, a public-private-partnership, targets Below Poverty Line (BPL) pregnant women to encourage them to seek antenatal and delivery care from empanelled private providers. Pregnant women are mobilised and provided with vouchers which they can use for delivery with doctors listed on a panel. Findings show that the scheme, which achieved a high level of targeting accuracy, with 94% of beneficiaries falling into the BPL category, led to a significant increase in institutional delivery rates, and saved beneficiaries on average $82 per delivery compared with non-beneficiaries. However, families do still incur costs for transport and drugs, which are not included in the scheme, and the take up rate has been moderate. Despite shortcomings, the scheme is achieving the equity and maternal health objectives set, and is an interesting model being considered for scaling up in Gujarat and other states in India.

Section 7: Challenge and opportunity: Making the most of the private sector

The private sector represents an important source of health care for all socio-economic groups, including the poorest[637]. The Business of Health in Africa report states that in 2005 some 60% of total health expenditure in Sub-Saharan Africa was provided through private sources – mostly through out-of-pocket payments – and fully a half of all expenditure was captured by private providers, with this proportion constantly growing[638]. Although the extent of private provision varies from country to country, available data demonstrate a similarly high proportion of health care expenditure through private providers for a large number of LMIC. This is particularly true for the provision of sexual and reproductive health services[639].

In all countries the private health sector is a highly fragmented and heterogeneous group, straddling the formal and informal sectors, and including for profit and not for profit providers, as well as insurers, social enterprises and manufacturers[10]. They range from sophisticated inpatient facilities delivering advanced medical care of the highest international standard, through individual practices of doctors, nurses, and midwives, sometimes working in parallel with their public practice, to unqualified drug sellers in markets. What evidence there is suggests that poor people are more likely to use the lower quality, highly dispersed and fragmented end of this spectrum[640]. However, there is a widespread lack of data on the operation of the private and informal sectors in most LMIC, and this is particularly true for the provision of maternal health services[641]. A review of the evidence on the contribution of private sector efforts to supporting achievement of MDG 5 is therefore necessarily complex. It is made more so by the highly polarised nature of the debate, as evidenced by the recent report by Oxfam and the responses and blogs from CGD, World Bank and others[642].

Not only does the private sector cover a very wide range of different actors, but the boundaries between public and private sectors are increasingly blurred[643]. Some public facilities officially charge user fees, public health professionals (particularly in LMIC) work in both public and private sectors, and some governments subsidise private health care provision (through social security systems, social health insurance, subsidised voucher programmes and so on). It is also common for supposedly "free" public health services to charge unofficial fees.

There is abundant evidence from many developing countries that the poor benefit less from collectively funded health services, notably MNH and SRH services, and suffer a disease burden as great as or greater than the wealthy[644]. A recent study of slum dwelling pregnant women in Nairobi found that the median cost for an uncomplicated delivery was over 60% higher in a public facility than in a private facility[645]. The study also found (sample size 1,926 women who had given birth) that residents in the more disadvantaged settlement were more likely than those in the better off settlement to give birth in private facilities. However, it is also true that poor women are often afraid of accessing maternity services from private and fee charging[11] public providers because of the cost of EOC, particularly caesarean section. This leads to delays in seeking care and contributes to increased maternal morbidity and mortality in hospitals. Given this situation, governments (often supported by donor or other international agencies) have experimented with a number of mechanisms for delivering subsidies to the poor and other vulnerable groups (and eliminating payment at the point of service) with the aim of increasing access to SRH and maternal, newborn and child health (MNH) services using a variety of PPP approaches.

There are many different ways in which the private sector is involved in the delivery of health services and products, including formal public-private partnerships (PPP) such as Build-Own-Operate-Transfer (BOOT) schemes and private finance initiatives, contracting in and out of training,

[10] The latter, mostly through employee health schemes, health insurance and also corporate social responsibility programmes.

[11] Including both official charges for e.g. medicines and "unofficial" charges in supposedly free systems e.g. in Tanzania and in Uganda

service provision (to private for profit agencies and NGOs), social franchising, social marketing, insurance, voucher programmes and other demand side subsidy programmes. Any review of the evidence needs to take into account the type of provider and the specific services concerned.

PPPs are a way of involving the private sector (sometime referred to as "non-state actors" and encompassing both for profit and not for profit) in providing MNH and SRH services, while government remains responsible for planning, contracting, subsidising and monitoring the services provided. PPPs are an effective way to bring private providers into the regulated health sector: payments for services are a powerful incentive for private providers to join the system and they are then prepared to reach the appropriate standards to remain there. PPPs also require the government to develop (or be supported to develop) a stewardship role and become expert contractors to ensure good quality MNH SRH services reach the intended beneficiaries and provide value for money.

Public sector programmes with private sector participation, as distinct from privatisation, have a contribution to make in improving the health of the poor by combining the different skills and resources of various organisations in innovative ways. As such, PPPs can lead to improved services, can build capacity in public agencies (including the skills of a workforce), may be an effective way of restructuring the public sector and improving public services and can help to build stronger community support and accountability[646]. Kenya is currently selling a PPP financing model to development partners as the preferred long term solution to the poor state of healthcare facilities[647]. The policy is hinged on the injection of private sector discipline in the management of public hospitals, provision of subsidies to institutions that train health professionals and in the procurement of equipment and drugs. Several public hospitals will receive over US$300m from private equity funds (such as IFC Fund and the Investment Fund for Health in Africa) in exchange for private management. Investment will be used to upgrade facilities, expand provider networks, increase the quality of services and increase access by low income people.

However, there is a strong need for studies to develop evidence based understanding of the feasibility and impact of contracting out maternal healthcare[648] (see below). In areas such as public health policy making and regulatory approval, the concept of partnership with for profit enterprise is not appropriate. The purposes of partnerships should therefore be carefully considered and well articulated. When governments work with the private sector in any official capacity, there needs to be a contractual relationship. The following sections look at different ways in which governments can involve the private sector to meet public health and in particular SRH objectives, including social marketing and social franchising, and performance based contracting.

Social marketing

Social marketing is a form of private sector engagement in the delivery of health products. A DFID commissioned review of social marketing, which looked among other things at equity, cost effectiveness and value for money, found that up to 70% of social marketing project budgets may be disbursed through the private sector – procured as products or services – and where social marketing products need clinical support, this is frequently also provided by the private healthcare sector[649]. Where social marketing is based on a public private partnership, a government contracts a private organisation to increase demand for, access to, and use of a specific product: the most common in LMICs being contraceptive products (condoms as short term FP for both birth spacing and prevention of HIV transmission) and bed nets to reduce the transmission of malaria. Other products include oral rehydration solution and, in richer countries, promotion of cessation of smoking, wearing seat belts and even screening programmes for early detection of breast and cervical cancer.

Social marketing is a cost effective way of contributing towards behaviour change and improved access to commodities, particularly for vulnerable and stigmatised groups where products are distributed through a combination of retail outlets, community based channels and NGOs. Social marketing organisations are thought to be responsible for around 50% of all condoms distributed globally and to have contributed to the achievement of MDG 5[650]. However, the DFID review and other reports also point to the questionable track record of social marketing in serving the needs of the very poorest. For instance, in spite of significant overall gains in bed net coverage achieved by a social marketing project in Tanzania, there remained a marked inequity among the poorest and most at-risk households[651]. A review of evidence of the impact and effectiveness of condom social marketing programmes on reaching the poor and vulnerable with information, services and products found that it was difficult to reach definitive conclusions due to the reliance on sales data for evaluating interventions and lack of more in depth data. Interestingly, the review did suggest that condom social marketing programmes are unlikely to be pro-poor in their early stages in terms of the distribution of benefits, but as they mature inequities in access diminish, followed by reduced inequities in condom use[652]. The inability of social marketing programmes to reach the poorest was partially addressed in Nepal through the inclusion of community based peer education, skill training and outreach to the target populations in the group of non traditional outlets for condom social marketing[653].

Social franchising

The social franchising model groups existing providers under a franchised brand, supported by training, advertising and supplies, aiming to improve access to and assure quality of some types of clinical medical services[654]. Yet while there are many evaluations of social marketing programmes, there is very little evidence based research on the impact of social franchising in LMIC. A literature review by the Cochrane Collaboration, published in January 2009, found not one single study that was eligible for inclusion in this review (covering randomised controlled trials, non-randomised controlled trials, controlled before and after studies and interrupted time series)[655]. There is therefore an urgent need for rigorous research in this area.

More than a decade ago, Options conducted a project to develop a blueprint for franchising family planning and other RH services, which, despite the time lapse, remains highly relevant today. The report highlighted the fact that RH services can be formed into “franchisable” packages of care; training and delivery protocols can define minimum standards of care which can be monitored through the franchise[656]. In theory at least, franchising should be a good approach in LMICs with a high demand for FP and RH care, which is not being met by existing public or private sector supply, and where there is under utilised capacity amongst cadres of medical practitioners. Potential benefits include consistent standards of care at affordable prices and managerial skills for providers in terms of focus on financial sustainability. However, LMIC legal systems can undermine effectiveness of the franchise agreements which mediate and define the relationship between franchisor and franchisee and is an important means of control. Other challenges are aptly summarised by Dominic Montagu in his 2002 review article: quality control of services provided by independent practitioners is difficult, positioning branded services to compete on either price or quality requires trade offs between social goals and provider satisfaction, and understanding the motivations of clients may lead to organisational choices which do not maximise quality or minimise costs[657].

One of the best known examples of a social franchise in SRH, widely believed to illustrate best practice in social franchising, is the GreenStar franchise in Pakistan which also distributes FP products through social marketing (supported by PSI). GreenStar is the country’s second largest provider of family planning after the government, and trained some 24,000 doctors, paramedics and

pharmacists between 1995 and 2006[658]. Other SRH franchises include the Janani Franchise in Bihar (supported by DKT) and the AMUA franchise in Kenya (supported by MSI).

An independent review in 2005 of full and fractional social franchising pilots[12] being implemented by MSI in Nicaragua and Honduras found that fractional franchises were more cost effective with lower levels of investment and credit costs for the number of service users. Furthermore, without external funding to subsidise services, none of the franchise models were able to reach populations with severely limited or no capacity to pay for services[659].

A population level comparative analysis of a national health insurance programme, PhilHealth, and a social franchise, Well-Family Midwife clinics, was carried out in the Philippines to determine the extent to which each affected prenatal care visits and institutional deliveries in pregnant women. It was found that, although the health insurance programme had a greater reach among poorer families, neither had affected institutional delivery rates, due to the lack of transport provision and failure to address embedded traditional practices of home birth[660].

Performance-based Financing Approaches

The Taskforce on *Innovative International Financing for Health Systems* defines Innovative Results Based Financing as a range of mechanisms which includes output based aid, results based loan "buy-downs", provider payment incentives, and conditional cash transfers[661]. The goal is to shift the emphasis away from distributing and using resources and move it towards results. Norway supports the pay-for-performance (P4P) approach and is also a strong proponent of results based financing in general. Results based financing schemes can be targeted at different levels, such as recipients of healthcare, individual providers of healthcare, healthcare facilities, private sector organisations, public sector organisations, sub-national governments, and national governments. They also encompass both demand-side and supply-side incentives. Demand-side incentives are aimed at changing behaviour and enabling access while supply-side incentives are meant to improve performance and quality.

Results based financing is a potential mechanism for delivering aid and can also be seen as a strategy for strengthening health systems, using mechanisms such as payment for performance, financial incentives and performance based contracts to improve quality of care and service provision, in both public and private sectors. Results based schemes such as conditional cash transfers can also be regarded as one route to increase utilisation of services by addressing demand side financial barriers to access (see discussion above on health financing).

The Norwegian Government is funding results based financing in six pilot countries to accelerate progress on MDGs 4, 5 and 1b. This is managed by the World Bank, with funding linked to broader International Development Association (IDA) credits[662]. While the global evidence for the success of results based financing remains weak (NORAD's own paper states, "It is not possible to disentangle the effects of results based financing and there is very limited quantitative evidence of it having an effect per se"[663]), a recent book by Eichler and Levine refers to, "strong evidence that performance incentives have the potential to improve health outcomes – and strengthen entire health systems"[664]. The biggest challenges lie in designing the schemes well to avoid perverse incentives, such as those seen in Honduras where the conditional cash transfer scheme was thought to have contributed to a rise in fertility[665], and then to implement and monitor the schemes. Performance based contracting is just one of many terms used to link payments (often bonuses or salary top ups,

[12] A fractional franchise expands the service menu of an already existing health provider to include specific services – in this case SRH services – under the brand name and quality standards of the franchisor.

but sometimes whole contracts) to outputs defined in terms of specified performance measures. Other terms include pay for performance, performance based financing and performance based payments. The evidence varies for different providers (whether private for profit or NGO for instance) and for different services. While Unger *et al*. point out that both qualitative and quantitative studies provide evidence of the failure of contracting out of obstetric care[666], other reviews highlight the effectiveness of contracting in harnessing private providers[667]. Loevinsohn and Harding investigated 10 cases of contracting out basic health services (including maternal health care) and found many of the anticipated difficulties with contracting were either not observed in practice or did not compromise its effectiveness. They concluded that contracting for health service delivery should be expanded and future efforts must include rigorous evaluations. [668]

Several systematic reviews of the current published and grey literature on approaches such as Pay-for-Performance (P4P) (transfer of money or material goods conditional upon taking a measurable action or achieving a predetermined performance target*), performance based financing and performance based payments[1,2,3] conclude that there are significant weaknesses in the current evidence base on the success of such initiatives in low income countries. The existing evidence also raises big questions around:

- How performance is defined and measured
- The capacity of public health systems to monitor contract performance[4]
- How targets may skew the activities and performance of providers in ways that undermine longer term health systems development and even endanger women's health; for example, in a fee paying system, health professionals may unduly increase the indicators for procedures such as caesarean sections, especially among more affluent women. Demographic and Health Survey data show the highest caesarean section rates in the world among private hospitals in Brazil (36% to 72%), Mexico (52%) and Colombia (59%)[5]
- How appropriate it is to transfer much of the risk to providers working in more challenging or fragile settings
- The feasibility and cost of adequately monitoring the behaviour of providers.

Source: ** An overview of research on the effects of results-based financing. Report from Norwegian Knowledge Centre for the Health Services, nr 16-2008, Systematic Review; 1. Ibid. 2. Toonen, J. et.al., 2008. Performance based financing: An international review of the literature. Royal Tropical Institute (KIT) Development Policy and Practice; 3. Eldridge, C., Palmer, N., 2009. Performance-based payment: Some reflections on the discourse, evidence and unanswered questions. Health Policy and Planning, 24, pp.160-166; 4. McPake, B., Ngalande Banda, E., 1994. Contracting out of health services in developing countries. Health Policy and Planning, 9(1), pp.25–30; 5. Cited in Unger, J-P. et.al.. International health policy and stagnating maternal mortality: Is there a causal link? Reproductive Health Matters, 17(33), pp. 91-104.*

Performance based contracts can be useful tools to enforce service quality and accountability[669,670]. In Rwanda, for example, the performance based payments to health facilities model in Cyangugu province (Cordaid Rwanda) reported increases in contraceptive prevalence rates from 3% to 10% province wide, and quality of care improved. Out-of-pocket payment for services decreased by 62% with user fee reduction from 2.5% to 0.7%, while institutional deliveries increased from 27% to 62% during the three year pilot[671]. Certain conditions were critical to this success: adequate funding, monitoring, verification and auditing; evaluation of the process; involvement of community organisations; and scope for faith based and other private providers to create a public-private provider mix.

Contracting out can also be a viable approach in fragile and post conflict environments and an evaluation of the contracting out of a package of basic health services in Afghanistan to non-government providers indicated significant increases in utilisation of SRH and MNH services. Available data demonstrated that between 2004 and 2007 antenatal care increased from 5% to 41%, institutional deliveries increased from 3% to 23%, albeit from very low levels, and the proportion of health facilities with at least one trained female health worker increased from 25% in 2002 to 76% in 2007[672]. The EU Monitoring Report also highlighted the fact that the Ministry of Population and Health in Afghanistan are looking at moving more towards "contracting in" (not out) which they see as a process of "Afghanisation" and increased government ownership. Reviews and evaluations of the impact of Health Equity Funds in Cambodia also demonstrated that districts with health services contracted out to NGOs delivered care more efficiently and equitably than those that remained under government control[673]. Other countries using contracting as a mechanism to extend the reach of primary health services include Guatemala, East Timor and Nicaragua, and it is being considered for Southern Sudan.

Implications: Supply side challenges

- Sustained political will and momentum is a prerequisite to improvements in maternal health.
- Successful strategies indicate improvements in human resource numbers and quality will rely on recruitment and retention, training, management, networks, pay, living conditions, and responsibilities (task sharing and shifting in appropriate settings). International treaties and agreements to regulate the migration of skilled health workers are also needed.
- National policies, plans (including workforce planning) and activities need to be implemented to promote and ensure the availability of sufficient numbers and mix of skilled health care providers and other key staff for the provision of quality MNH services, in particular skilled attendants and the wider SRH workforce.
- Task shifting has good potential for expanding the skill pool but this practice is not a substitute for training and retaining sufficient numbers of the right grades of staff for the health system. Other areas of SRH care delivery would benefit from guidelines on task shifting like those produced by WHO for HIV/AIDS. There is also a need for a legal and professional regulatory framework for professional practice.
- For better access to drugs and supplies, donor procurement and logistics should be harmonised and should include capacity building for government systems. Essential drugs lists should be audited to ensure all essential family planning and reproductive health drugs and supplies are included.
- Governments should foster and reward political leadership, at all levels, in the area of maternal health.
- Strengthening accountability for maternal health at national level through horizontal and vertical accountability mechanisms is a priority. Greater investment in information systems and building capacity to use data in planning and management at all levels of the health system, including dissemination to the public, is needed.
- Gains are to be made by integrating maternal, newborn and child health care into district packages of care tailored to the resource, institutional and social context, with incremental strengthening of services as systems build up capacity. In situations where competing departments are responsible for delivering health and family welfare services, mobilising stakeholders at district level for coordination may be more promising than relying on higher level cooperation to trickle down.
- Governance improvements have to be context specific. It may be useful to map politics and power relationships within the health system, to identify champions and change agents and analyse more thoroughly where critical decisions about resource allocation are being made. There is also a need for better understanding about successful change processes.
- Financing strategies for MNH need to be tailored to the political, economic and institutional context. Evidence gaps need filling on the comparative strengths of various financing strategies for MNH in specific contexts, recognising the challenge of transferability.

- When user fees are abolished, the evidence currently available indicates that careful investment is needed to ensure that the increase in demand is met by quality services with adequate human resources, equipment, drugs and supplies. Donors have a role to play in ensuring governments have the funds to cover this.

- Governments need to be supported to learn how to manage the private sector effectively, to adopt and build their stewardship role, including effective policy formulation, quality assurance and accreditation, contracting, regulation and its enforcement, monitoring and evaluation and feedback mechanisms.

- More research is needed on:

  - How to catalyse and sustain political commitment to maternal mortality reduction.

  - The identification of change agents within the health system with supporting research and analysis to capture information about how change processes have been implemented.

  - The role of training curricula on retaining health professionals.

  - New ideas on human resource development and management, based on country examples.

  - The role of professional bodies as aiders and blockers to health outcomes and their potential as part of strategies to improve health outcomes.

  - The long term impact of the removal of user fees.

  - The capacity of results based financing and output based aid to increase utilisation of and demand for MNH and SRH

  - The identification of successes and challenges for public private partnerships in MNH and SRH and to build the evidence base on how these partnerships can be made most effective and equitable.

Part Four: The Demand Side of MNH: Equity, Access, Advocacy and Accountability

The demand side of MNH: Equity, access, advocacy and accountability

Main findings

- Evidence indicates the futility of strengthening the supply side of a health system without addressing the major demand side barriers that currently prevent many of the poorest women from accessing health services.

Social Exclusion

- Socio-economic differences in the use of maternity care are huge. Ethnic, cultural and religious factors can have an impact on women's status and their ability to access health care.

- Sri Lanka and Chile provide good examples of reduction in health inequalities. Both show that a multi-sectoral approach is necessary and financial and gender barriers to health are crucial.

Women's status, empowerment and education

- Maternal mortality is inversely proportional to women's status and better educated women are more likely to receive ANC, safe delivery and postnatal care. Secondary education has a strong positive effect on women's empowerment and is associated with higher age of marriage, lower fertility and mortality, good maternal care and reduced vulnerability to HIV and AIDS.

- Women with strong decision making power, with their own income or with access to micro-credit show a greater use of maternal health services.

- There is little evidence of how the above findings work in practice and in detail, and more research is needed.

- Strategies to improve the status of women and girls, including increased educational and employment opportunities as well as legal, political and cultural reforms, will make a contribution to the creation of an enabling environment for maternal health.

Financial barriers

- Cost remains the dominant barrier to uptake of safe motherhood services in many of the *Countdown* nations. In systems where payment is required for maternity services, women with low incomes may be excluded from antenatal and safe delivery services and are more likely to rely on traditional healers, self treatment and delivery at home.

- Removal of user fees has shown promising results in Burundi, Malawi, Zambia, Senegal and Burkina Faso. Ghana and Uganda experienced substantial increases in numbers of women accessing institutional deliveries when user fees were removed. In Ghana the largest increase in service utilisation occurred amongst the poorest and least educated.

- Evidence on social and community based health insurance has shown that it can increase utilisation, but does not address inequity of access. It can be inappropriate for low income countries with weak health care infrastructure, low formal sector employment and poor geographical access to facilities. Community based health insurance schemes often omit maternity services.

- Cash transfers and vouchers have been shown to increase uptake and are a good way of targeting particular groups. However evidence is thin and there is a need to pilot, monitor and evaluate these schemes in low income settings for the sexual and reproductive health of women.

- Community based emergency funds have had mixed success and they depend on the level of community mobilisation and local leadership.

Physical barriers

- Transport costs can form a major share of out-of-pocket spending on maternal healthcare and this can delay or inhibit care seeking. Approaches that have improved women's access to obstetric care include: improvements in roads, hire of private vehicles by health workers, community based emergency transport systems, insurance schemes that cover transport costs, and awareness raising in transport unions. However more research is needed.

- Transport solutions are most effective when they are coordinated with quality of care improvements and integrated into a comprehensive health referral system.

Social and cultural barriers

- Work on maternal health is affected by social and cultural factors. There is little robust research showing successful interventions as this area is wide ranging, including political and legal action, health system and service delivery reforms, advocacy and public education, and community based interventions.

- Community mobilisation for maternal health and community interventions for safe abortion and post abortion care have shown improvements in maternal health in some contexts.

Advocacy, voice and accountability

- International, regional and national Civil Society Organisation (CSO) advocacy can be very effective in increasing political will.

- CSOs can hold government to account to increase maternal health services and improve governance, but it works best where government is able to work with CSOs and to communicate openly. More research is needed in this area and in health governance in general.

Social determinants of health impact on women's equality and rights, the priority given by governments to women's health services, and the relative access women from different social and geographical backgrounds have to functioning health services. All of these create critical demand side challenges. Section 1 of this Part examines five major inter-related demand side barriers to access which mediate the effectiveness of implementation strategies that aim to increase access to the packages of care described in Part Two: social exclusion; women's status, empowerment and education; financial barriers; physical barriers; and social and cultural barriers. The evidence below strongly indicates the futility of strengthening the supply side of a health system without addressing the major demand side barriers that currently prevent many of the poorest women from accessing health services. We also look at evidence on successful approaches to addressing social determinants, including the social norms that underpin women's SRH (Section 2), and the potential for building political commitment (Section 3) and accountability for MNH (Section 4).

Major demand side barriers relate to finance and the out-of-pocket costs of using services, geographical and transport related factors, lack of information and sense of entitlement, social and cultural beliefs and norms including social exclusion, and the perceived quality of services. Lack of security affecting physical mobility is an issue in conflict situations. Strategies to improve access may be addressed through the demand or supply side, and are most effectively achieved when demand and supply side gaps are dealt with holistically. Strengthening health systems and services without due attention to increasing access and demand runs the risk of underutilisation, particularly from the very poor and socially excluded.

Section 1: Demand side barriers

Challenge: Social exclusion

"The poorest women in the poorest regions of the world have the lowest service coverage."

Source: *Gill, K., Pande R., 2007. Women deliver for development. Lancet, 370, pp.1347-57.*

There is a growing body of evidence on the extent and causes of inequalities in maternal health. A systematic review of inequalities in the use of maternal health services concurs with other studies that differences exist within and between population groups within countries[674]. Inequalities between socio-economic groups based on a study of Demographic and Health Surveys from 45 countries found socio-economic differences in the use of maternity care to be huge, and far greater than use of child health interventions[675]. Ethnic, cultural and religious factors underpin differences in beliefs and preferences and influence women's autonomy, gender relationships and social networks, which all affect use of maternal healthcare. In India, the level of women's autonomy, of which continuing ties to the parental family is a factor, has been found to influence use of maternal health services; living with or near the parental family after marriage increases women's freedom to leave the home[676] and seek care. Gender discrimination is often a source of exclusion.

WHO classifies poverty, culture, race, language, gender, and perceptions of care and its cost, as "external" sources of exclusion. "Internal" sources of exclusion refer to how the health system operates to exclude people, including health policies, health service organisation and financing, and the quality of care. For example, in China, policies to restrict family size, have been shown to deter women who break these rules from seeking maternal care[677]. Discrimination by providers towards poor women has been shown to lead to abuse, neglect and poor treatment. The World Health Report 2005 notes that, "many mothers and children are excluded from what they are entitled to because of the failure of the health system to deliver the right services at the right time, to the right people, and in the right manner"[678].

Differentiating coverage of services by wealth groups along a continuum of massive deprivation to marginal deprivation is gaining currency as an analytical framework (see for example Koblinsky *et al.*, 2006). Massive deprivation refers to countries where there are major problems in the supply of services and low density health networks, such as in many Sub-Saharan African countries. Marginal deprivation refers to situations, seen in rich or middle income countries, where distinct population groups remain excluded, such as indigenous populations in Brazil. Often overlooked in the literature are the many countries between these two extremes, which WHO refers to as "queuing", where poor and marginalised people fare less well than the better off, and are waiting for health system benefits to trickle down once the wealthier groups have gained full access to services[679].

The diversity of contexts and driving forces behind exclusion underline the importance of tailoring country and sub-national approaches to tackling social exclusion and promoting equitable access. At the macro level, it is argued that where exclusion is limited to small and marginalised populations, targeted approaches to increase access and eliminate barriers to care, addressing the underlying causes of social exclusion, and financial protection, are paramount. In situations of massive deprivation, such as in Chad and Ethiopia, strengthening the health system and services is the primary objective[680,681].

There are good examples of success in middle income economies in reduction of health inequalities. Sri Lanka's success in reducing socio-economic differences in maternal health are attributed to its early and sustained focus on achieving equitable access to health, education and nutrition services. This included the delivery of free comprehensive health and social services that reached the rural poor, the strategic use of information for management and quality improvement and in identifying and including vulnerable population groups, and empowering women and families to use services[682]. Chile has also been effective in reducing socio-economic differences. Political commitment to reducing health inequalities led the government to set policy targets for reducing the differences between the poorest and richest on a set of health outcomes. Since 1990, this goal has been implemented through a social protection system targeting the extreme poor with programmes to improve the health of women and children, including: free distribution of contraceptives at primary health centres, national guidelines on the control of sexually transmitted diseases, and adolescent health interventions[683].

Mainstreaming an equity lens into health policies, financing and systems, and monitoring the impact of programmes and interventions on different population groups is essential for profiling, informing and driving equitable health systems development. However, there has in the past been a lack of attention by policymakers and researchers to the impact of interventions and reforms on different population groups. There is a pressing need to collect more rigorous data to inform policymakers how best to address different patterns and sources of exclusion[684]. More evidence is needed on what works to reach vulnerable population groups and how interventions can be taken to scale. Given the importance of context, an understanding of the factors that inhibit transferability of social inclusion initiatives is important.

Challenge: Women's status, empowerment and education

The relationship between women's status and maternal mortality is very strong. In countries of similar economic development, maternal mortality is inversely proportional to women's status[685]. Measures of women's status in the literature typically include education, employment, and decision making power. Women's education increases their use of maternal health services independently of urban or rural residence or socio-economic status. Better educated women are more likely to receive ANC earlier and more frequently than less educated women, and are more likely to have a safe delivery and receive postnatal care[686]. Female education is a strong predictor of maternal mortality independent of socio-economic status[687].

Girls' secondary education deserves special mention, more so than primary, as it has a strong positive effect on women's empowerment and is associated with higher age of marriage, lower fertility and mortality, good maternal care, and reduced vulnerability to HIV/AIDS[688]. In a study of the determinants of the reduction in maternal mortality in Matlab, Bangladesh, it was found that women with more than eight years of formal education had an MMR of 150 per 100,000 live births, nearly three times lower than women with no formal education[689]. Abortion mortality was 11 times lower among highly educated women compared to those with no education. Female secondary education can also play a key role in reducing violence against women and strengthening women's ability to leave abusive relationships[690].

Women's employment has been shown to be associated with maternal mortality and increased use of maternal services, although the evidence is less compelling than for female education. Women's control over their own income is reported to have a stronger bearing on maternal health than household socio-economic status, possibly as women have greater access to resources during pregnancy. Involvement in micro-credit programmes has also been shown to increase women's autonomy and decision making power[691]. The degree of women's involvement in household decision

making is also associated with use of maternal health services. In Nepal, it has been shown that women with strong decision making power were more than twice as likely to have an institutional delivery then women with low decision making power[692].

Understanding of the mechanics of how facets of women's status, such as education, control over resources, and household decision making power, affect maternal health is less clear. More research is needed to better understand how women's status is mediated to impact on maternal health. At the macro level, however, strategies to improve the status of women and girls status, including increased educational and employment opportunities, as well as legal, political and cultural reforms, will make a contribution to the creation of an enabling environment for maternal health.

Involving men in sexual and reproductive health of women is also essential for the development of improved services. It has been found that family planning information is generally very women targeted and that when it is targeted to men as well, there is better communication and understanding between men and women about SRH.

Nakuru: A model of integrated services

Reaching out to men – Developing an inclusive approach

Recognising that its clientele was almost exclusively female, Family Health Options Kenya (FHOK) made an effort in the mid-1990s to encourage male involvement in family planning, by opening three clinics for men only. The initiative was an eye opener. The Association realised that the traditional messages and activities of family planning tended to be female oriented, and the very real needs and concerns of men were neglected. It noticed over time that in the places where the male involvement project was operating (but not elsewhere):

- there was an increase in the number of men accompanying their partners to the main FHOK clinic
- there was a significant reduction in the number of women leaving their appointment cards on file at the clinic out of fear their partner would discover they were using contraception
- more and more women were taking away condoms, even when not accompanied by their partners – an indication of increased acceptance of family planning by men, and easier communication between couples, which is a vital component of healthy sexual relationships.

Valuable lessons were learned about how to create a more inclusive image for sexual and reproductive health and to make FHOK's regular services more male friendly. These included the need to:

- develop information materials targeting men (which, importantly, have the effect of empowering them in family decision making, too)
- advocate for family planning and other sexual and reproductive health services in places where men gather, such as football clubs and barbers' shops
- make sure that clinic opening times are convenient for men

After four years, separate male clinics were no longer considered necessary and were closed. It was at this point that the Nakuru clinic changed its name to the Family Care Medical Centre, to reflect both its new orientation and the comprehensive nature of the sexual and reproductive health services it provides, including HIV/AIDS prevention, treatment and care.

Source: *WHO, UNFPA, UNAIDS, IPPF, 2008. Gateways to integration: A case study from Kenya. Linking sexual and reproductive health and HIV/AIDS.*

Challenge: Financial barriers

Increasing financial access to maternal health services

Cost is the foremost constraint women and their families report in accessing services in many *Countdown* countries. Various approaches have been tried to reduce the financial barriers poor people face in accessing services and to increase demand. These can be classified as direct strategies such as vouchers and cash transfers, or health systems improvements such as targeting public finances to the poorest regions to improve coverage and quality of services, or taking services closer to the people[693] to reduce transport and opportunity costs. In practice, finance mechanisms need to be implemented alongside systems and service developments, as barriers are often inter-related and

sustaining increased use of services calls for improvements in the quality and availability of services. Health financing options were discussed in detail in Part Three and are not repeated here.

The evidence overwhelmingly shows that context matters; there is no "best bet strategy" for overcoming the financial barriers faced by poor and vulnerable populations in accessing maternal health services. Rather, policies and programmes need to be tailored according to the way the health service is organised and financed, the availability of resources, the mix of demand and supply side constraints, and the socio-cultural and political context. Witter *et.al* conclude that the "key ingredients are local commitment, perseverance over time, a holistic approach which addresses demand and supply side barriers, and maintaining a focus on universal coverage as the ultimate, if not the immediate, goal"[694].

Challenge: Physical access to maternal health services

Transport costs can form a major share of out-of-pocket spending on maternal health, and often delay or inhibit care seeking, especially for poor families living in remote or difficult to reach places. In Tanzania and Nepal, transport costs have been shown to make up 50% of household spending on a normal delivery[695]. With a few exceptions, health system led financing mechanisms do not tend to cover transport costs, and tackling the physical barriers to access has been driven by community and civil society initiatives. Evidence on effective transport interventions tends to come from programme reports and related studies and has not been the subject of rigorous trials. Further research is needed to test approaches to tackling physical access in a variety of settings.

Context is important, as demand for transport is influenced by a range of direct and indirect factors including cost, social and cultural beliefs, local decision making structures, availability of transport, and perceived quality of care at health centres. Approaches that have been shown to increase women's physical access to obstetric care include:

- Improvements in rural roads and transport infrastructure
- Funding and authorisation of health workers to hire private vehicles to transport emergency cases in the absence of functioning ambulances, as in Malaysia and Sri Lanka[696]
- Community based emergency transport systems that improve speed of transport availability, including for example, community based cycle and motorcycle ambulances in The Gambia, Kenya, Nepal and Nigeria[697]; mobile and radio demand systems such as in Sierra Leone
- Community insurance schemes that cover transport costs
- Involvement of transport unions to raise awareness and support for transporting women needing EOC[698]
- Community mobilisation of gatekeepers and efforts targeted at breaking down stigma and discrimination attached to transporting socially excluded groups, for example reluctance of high caste men to help transport Dalit women in Nepal.

International experience shows that transport solutions are most effective when they are coordinated with quality of care improvements and integrated into a comprehensive health referral system. Community based approaches, especially those anchored in community mobilisation, have reduced barriers in many countries, and although issues of financial and organisational sustainability exist, they can be short to medium term approaches to tackling access while broader health and rural access systems are put in place. Future studies need to consider transport effectiveness and equity.

Challenge: Social and cultural barriers

The impact of social norms and cultural beliefs and practices, including gender and social inequity, on maternal health, household decision making and access to maternal services, and the behaviour of health providers towards socially excluded groups is widely recognised. Several of the evidence sources mentioned earlier note how effectiveness of interventions is affected by social and cultural factors. For example, in Ghana, local beliefs relate delivering at home to showing a woman's fidelity to her husband[699].

Initiatives to address social and cultural barriers span a wide range of activity from the political and legal, to health systems and service delivery reforms, advocacy and public education, and community based interventions. Often programmes include a package of complementary and synergistic approaches. Opening and sustaining dialogue between providers and communities to make services more culturally acceptable has been shown to affect use of services[700]. Several good practice manuals and reports highlight the need to take social and cultural factors into account in the design of interventions. The broad scope and very nature of social transformation make interventions non-conducive to experimental research, and this challenges researchers to find appropriate, robust methods for studying the impact of interventions.

In northern Nigeria, rural Hausa women in Jigawa and Kano need permission from their husbands to leave the community. As part of a demand side safe motherhood programme, community mobilisation through male and female peer groups, traditional and religious leaders and elected officials, social approval of maternal health was generated. "Standing permission" from husbands to allow women the freedom to seek EOC if needed became common practice, as did the donating of blood to non-family members. The pace of social change was rapid, this is in part a reflection of the relative homogeneity of Hausa villages, and the influence of local leaders in negotiating new social practices and attitudes. In this context, the potential to impact on maternal health seeking behaviours by addressing social and cultural barriers through participatory community interventions is high; strengthening the supply side is taking place in parallel, but is proving far more challenging[701].

There is some evidence that improvement of male sexual and reproductive health has a knock-on effect on the health of their sexual partners[702]. A review by Barker *et al.* (2007)[703] of evaluations of 58 sexual, reproductive or maternal health programmes designed to involve males and include a gender perspective, found that gender transformative programmes[704], rather than gender neutral or sensitive ones, were more effective. However, although many of these projects were found to be effective, they were often short term pilots which were not then incorporated into public policy or scaled up.

Section 2: Increasing demand through community mobilisation and engagement

This section reviews evidence indicating the positive impact effective community mobilisation and engagement can have on health outcomes. Community mobilisation is "a capacity building process through which community members, groups, or organisations plan, carry out, and evaluate activities on a participatory and sustained basis to improve their health and other conditions, either on their own initiative or stimulated by others"[705]. It was the successful, small scale community mobilisation efforts in the 1970s, such as the Jamkehd Project in India, which underpinned the focus on community participation in the launch of primary healthcare. Community participation fell out of favour in the 1990s, in part as national programmes failed to successfully scale up approaches, and as vertical initiatives dominated attention. With the spotlight on MDGs 4 and 5 and the ineffectiveness of existing programmes in the poorest countries, there is now a renewed focus on community mobilisation for maternal, newborn and child health.

Impact on health outcomes

The Warmi Programme in Bolivia in the early 1990s used community mobilisation in isolated rural indigenous communities with the aim of reducing maternal and perinatal mortality. A gender sensitive participatory methodology for identifying problems, planning, implementing and evaluating solutions, to be known as the community action cycle, was developed and introduced. Comparing before and after results, the programme showed a large reduction in perinatal mortality following the introduction of the community mobilisation process, with a fall from 117 deaths per 1,000 births to 43.8. Reductions in maternal deaths were also recorded, although the numbers were too small to determine significance.

Scaling up the scope of the Warmi exercise, the Makwanpur Project, Nepal (2001-3) tested the use of women's groups as a platform for community mobilisation for reducing maternal and neonatal mortality as a cluster randomised controlled trial[706]. Makwanpur adopted the community action cycle developed by the Warmi Programme and the trial showed a 30% reduction in neonatal mortality rate, and found significantly fewer maternal deaths in the intervention clusters compared to control areas. The MMR was 69 per 100,000 live births (two deaths for 2,899 live births) in intervention areas, and 341 per 100,000 live births (11 per 3,226 live births) in the control areas. Both control and intervention clusters received limited supply side strengthening inputs. Compared with the control clusters, women in the intervention areas were more likely to receive antenatal care, give birth in a facility, and use a trained attendant and hygienic care during delivery. Although the trial was not designed to measure maternal mortality and the deaths were low in number, the findings are important evidence of the potential of community mobilisation through women's groups to impact on maternal and newborn mortality and improve health behaviours.

As discussed in Part 2, the Dinajpur Safe Mother Initiative in Bangladesh tested the effects of a package of demand side interventions and facility based quality of care inputs on the use of government obstetric services in North Western Bangladesh (1998-2001), comparing this with a comparison and control area[707]. The comparison area received basic upgrading of the facility but no quality of care inputs or community mobilisation, while the control area received no inputs. The study found that met need for EOC increased by 13% in the comparison area, 24% in the intervention area, and not at all in the control area. The conclusion drawn is that a combined package of demand and supply side interventions has greatest impact on maternal mortality. Further cluster randomised controlled trials are ongoing to test the impact of different women's group models on maternal and child health in Mumbai, Mchinji (Malawi), Jharkhand and Orissa (India), Bangladesh, Dhanusha (Nepal) and Ifakara (Tanzania)[708].

Mobilisation as a vehicle for participation and empowerment

Community mobilisation takes many different forms but fundamental is the potential to address the underlying social, cultural and political causes of maternal and newborn mortality[709]. By encouraging community consciousness, social solidarity and action, community mobilisation through women's groups has the capacity to address the social and power imbalances that act as barriers to women, and disadvantaged women in particular, accessing care and promoting maternal and newborn health. By addressing inequality and the social determinants of maternal health, community mobilisation has an important role to play in increasing access to and use of essential maternal healthcare[710]. Although a growing body of literature exists on programme experience with community mobilisation, documenting women's empowerment through this process, published results of cluster randomised controlled trials to date have not explained how community mobilisation works to empower women, to increase community capacity and improve health outcomes. Unpublished findings from the Jharkhand and Orissa trials suggest that increased women's empowerment in terms of decision making, has been one outcome of the intervention[711]. There is a need for more detailed longitudinal research to explain how community mobilisation addresses the social determinants of maternal health and impacts on women's empowerment, social exclusion and discrimination. The Nepal Support to the Safe Motherhood Programme (SSMP) provides qualitative evidence of how women led mobilisation, as part of a broader social mobilisation approach, can empower women in very poor and excluded communities[712].

Scaling up community mobilisation

Few countries have attempted massive scaling up of community mobilisation; those that have include Bangladesh, Bolivia, Cuba, Peru, and Sri Lanka. Rosato *et al.* note that capacity and commitment to scaling up in the poorest countries is weak, and there is a risk that scaling up may not end up benefiting the most vulnerable populations[713]. Kerber *et al.* argue that because community and family interventions are not perceived as part of the health system, they have tended not to be integrated into care packages or scaled up[714]. Further research is needed to answer questions on how community mobilisation can be taken to scale effectively; and in which social, political and health contexts community mobilisation makes a cost effective difference to increasing access to maternal and newborn health services given its capacity to "get below" and enable socially excluded and disadvantaged groups to overcome the multitude of barriers they face in accessing care, and achieving maternal well-being. USAID programme experience suggests that community mobilisation programmes receiving less than three years of support may not achieve sustainable results and those that receive 5-10 years of support are more likely to be sustainable[715].

Section 3: Building political commitment through advocacy

Part Three presented the importance of strong political commitment and social leadership in progressing improvements in access to quality maternal and reproductive healthcare. This section examines evidence of the potential of political advocacy to foster and sustain such commitment to MNH and the leadership required.

There has been limited academic research into what drives political will for maternal health or for global health initiatives more broadly. The work of Jeremy Shiffman and colleagues on generating political priority for maternal mortality and global health provides the main body of research into this area of enquiry. Shiffman identifies the factors that have shaped political priority for maternal mortality in five countries: Guatemala, Honduras[716], India[717], Indonesia, and Nigeria[718]. Findings show wide variation in the level of political priority across the five countries, with the national political and social context bearing a strong influence on enabling or limiting advocacy efforts. The critical factors underlying successful political advocacy is an area in need of much greater research and attention[719].

Factors which influence effectiveness of advocacy

Shiffman and Smith[720] found that a wide range of conditions related to political context influenced advocacy effectiveness; the two most important factors being major political reforms that affect governance arrangements, and competition faced from other health priorities, such as HIV/AIDS. The political dispensation of the return to democracy in Nigeria, for example, created space on the national agenda for social issues such as maternal mortality. In India, Shiffman and Ved[721] found maternal mortality was squeezed out by population control and child survival priorities in the 1980s, finding its way back onto the political agenda only recently. They conclude that while the determinants of political priority can be framed broadly, building political priority is not a formulaic exercise and political strategies have to be tailored to national context.

A case study of the adoption of a Maternity Incentive (later becoming Safe Delivery Incentive) scheme in Nepal is an interesting example of how the timing and use of evidence, in this case on the costs surrounding delivery, converged with political interests to rapidly translate evidence into policy[722]. It found that although research laid important groundwork, it was the convergence of political interests of the weak coalition government to implement a policy with wide public appeal that led to the relatively quick policy acceptance. Political champions who were well connected to the political elite played a supporting role in this process, as did the fortuitous timing of donor negotiations for future support.

The ascendancy of the maternal mortality issue in India shows how champions from within professional associations unblocked implementation bottlenecks to translate political commitment into action[723]. Champions within the Indian Anaesthetic Association and the Federation of Obstetricians and Gynaecologists of India, working in partnership with senior government officers negotiated the training of non-specialists in basic anaesthetics and obstetrics, and resolved a major hurdle in increasing access to emergency obstetric care.

Using communications and advocacy to increase SBA in Tanzania: Play your part – The White Ribbon Alliance

"Play your Part" is a grassroots, participatory film made in Tanzania by five midwives and a doctor, who are members of the White Ribbon Alliance for Safe Motherhood in Tanzania (WRATZ). The midwives not only did the filming and interviewing, but also decided the storyboards and took part in the editing process.

The whole of this film – from the day the midwives held a camera for the first time, to the screening in the capital city – was made in less than two weeks. It is still work in progress, with the team in Tanzania continuing to film and to make further shorts. The film has also been screened on national television and at international events. In every version we see the struggles of people at grassroots level as they try to reach health facilities, as well as the heroic attempts of health care workers to provide mothers, babies and children with the services they need.

When the film was aired on Tanzanian television in 2007 - the night before a budget debate - WRATZ members called Members of Parliaments and urged them to watch. This led to uproar in Parliament the next day as MPs demanded better services for the mothers of Tanzania.

The government has responded to the WRATZ campaign by doubling the numbers of skilled birth attendants trained each year, and by immediately employing new midwifery graduates, especially in rural areas. A 10% increase in skilled health workers can save the lives of two women every day in Tanzania

National safe motherhood advocates have been found to be most successful when they[724,725,726]:

- Form cohesive policy communities made up of networks of actors from across a range of organisations, including government (and parliamentarians) and civil society, which are both knowledgeable about safe motherhood, and carry moral authority which they use for political influence;
- Frame information and ideas about safe motherhood to resonate with political leaders and catalyse action, as well as developing frames that resonate within the policy community to forge consensus;
- Are led by respected national political entrepreneurs who have clear vision, good coalition building skills, generate commitment by appealing to social values, and have strong rhetorical skills;
- Use credible evidence of the severity of maternal mortality in the country to give visibility, and act as a catalyst for political action. In contrast, for example, the absence of sub-national maternal mortality data in Nigeria has left state and local government leaders unaware of the extent of the problem and unprovoked into action[727].
- Organise "focusing events" such as national forums to promote visibility. The march to the Taj Mahal in India in 2000 organised by the White Ribbon Alliance of India, attracted wide scale media coverage. This impetus converged with others, including the New Delhi hosting of World Health Day which was centred on maternal and child health, and contributed to the Indian Government's prioritising of maternal mortality in 2005.

- Present clear policy alternatives that enjoy consensus among policy communities, and demonstrate to national leaders that the problem can be addressed.

The role of national civil society organisations

The WHO *World Health Report 2005* argues that national civil society organisations play a critical role in pressuring political leaders to act, and in sustaining national political commitment over time in the face of changing governments and shifting donor agendas[728]. Reviews of Global Health Initiatives, particularly the Global Fund for AIDS, TB and Malaria, identify the participation of civil society organisations in governance and implementation as an important factor in the Fund's success[729,730].

Analysis of the waves of political support to reproductive health and rights prior to and following the International Conference on Population and Development (ICPD) in Cairo in 1994, likewise point to the importance of civil society. The influence of a broad coalition of global and national NGOs is generally credited with shaping the Cairo agenda and, as a result, the direction of the family planning movement[731]. The coalition made vital contributions to the success of ICPD in framing reproductive health around human rights, women's empowerment and societal development, and the move away from an emphasis on population control. Similarly, civil society advocacy has been vocal and influential in the decision to include MDG Target 5b to achieve universal access to reproductive health by 2015[732]. Civil society organisation participation has also been seen to open up the policy debate by bringing the breadth of reproductive health concerns, including sensitive issues such as safe abortion and adolescent pregnancy, to the table. They play an important role in forging connections between health and the social determinants of gender inequality, poverty and social exclusion. For CSOs to perform policy influencing, advocacy, monitoring and watchdog functions over the long term, financial and technical capacity building support is required.

In the post ICPD era, the decline in political commitment to reproductive and sexual health is in part attributed to the weak resonance and understanding of political leaders and policy makers of the holistic and rights based approach the ICPD spawned[733]. Some analysts argue that as the link between population control and socio-economic development was dropped in favour of rights and empowerment, political interest and the support of finance ministers and donors diminished. The pull of economic arguments to global health causes is reinforced by the strong economic rationale portrayed by HIV/AIDS advocates and the huge political commitment received. The policy community, divided by politics and the absence of powerful champions capable of pulling the disparate threads of the reproductive and sexual health community together, further contributed to its neglect. Indeed, the views of those working in the policy community reflected the characteristics of an international family planning movement in a state of fragmentation, or even demise[734].

Similarly, in a case study on the generation of political priority for maternal mortality at the global level, Shiffman and Smith[735] identify several critical weaknesses to the international movement that help explain the sub-optimal prioritisation of maternal health; findings that are widely endorsed in the literature. This includes: a fragmented global policy community, absence of a guiding institution and institutional home, organisational rivalries, lack of a charismatic leader, weak civil society voice and mobilisation, the struggle to find resonating frames to bind the policy community and catalyse societal leaders into action, problems with measurement of maternal mortality, perception that maternal deaths are relatively low compared to other health problems, and an absence of simple solutions.

Global political priority

In accord with other broad reviews of maternal health, including the *World Health Report 2005*, Shiffman argues that the four challenges to generating global political priority for maternal health and exploiting the policy window offered by the MDGs are:

- To build on growing cohesion among the policy community and speak in unity. The 2006 Lancet Maternal Health Series and the recent Women Deliver Campaign were significant moves to draw advocates together. Signs of strengthening of high level cohesion are visible, such as the MNH Consensus declaration of the Global Campaign for the Health Millennium Development Goals Report 2009[736], which specifically focuses on sustaining political momentum and advocacy. The Consensus, which articulates the intent of the Network of Global Leaders from 12 developed and developing countries, is not only a timely example of how high level advocacy can have impact on global players, including the G8 countries that recently endorsed the Global Consensus[737], but has created a political opportunity to be grasped by all concerned stakeholders.
- To create guiding institutions to sustain and lead advocacy efforts, and a single institution to take leadership and coalesce the various policy and advocacy networks[738]. The Partnership for Maternal, Newborn and Child Health may potentially fill this role, although it is too soon to assess whether it carries the leadership authority and has the capacity to build linkages and cohesion across newborn, maternal and child health policy communities to aspire to this role.
- To find a resonating frame that can convince global political leaders of the importance of maternal mortality and provoke action. The complexity of the causes of maternal mortality and its solutions run counter to the framing of simple, compelling messages for decision makers.
- To build stronger links with national initiatives and domestic civil society organisations, essential for effective national advocacy, and grounding of global advocacy initiatives.

The impact of US policy on funding and the distorting effects of aid restricted by the Global Gag Rule on local NGOs involved in the delivery of reproductive health services in developing countries has been well documented. The change in US leadership engendered by the election of Barack Obama as President marked a radical change in US policy. In his first week in office, President Obama announced his intention to work with Congress to restore US funding for UNFPA in order to *"join the 180 other donor nations working collaboratively to reduce poverty, improve the health of women and children, prevent HIV/AIDS and provide family planning assistance to women in 154 countries."* The enactment of the 2009 Appropriations Bill resulted in the first US contribution to UNFPA, coinciding with a global review of population and development priorities at an annual meeting of the Commission on Population and Development. This was the first of several United Nations events that will mark the 15th anniversary of the ICPD held in Cairo in 1994[739]. The potential for sustaining the profile of MDG 5 that recent advocacy efforts have achieved is strengthened by these developments.

Taking a gender and human rights perspective

"pregnancy-related deaths…are often the ultimate tragic outcome of the cumulative denial of women's human rights. Women are not dying because of untreatable diseases. They are dying because societies have yet to make the decision that their lives are worth saving."

Source: *Fathalla, M.F., 2006. Human rights aspects of safe motherhood. Best Pract Res Clin Obstet Gynaecol, 20, pp.409-19.*

Women's low status and lack of power, their lack of access to information and care, restricted mobility, early age of marriage, and the low political priority and resources afforded to their health and to health systems as a whole are indicators of the failure of the state to assure women's rights. Cairo and the commitment to reproductive and sexual health and rights spearheaded the move to position reproductive health on a rights platform that included women's empowerment and gender equality, the elimination of all kinds of violence against women, and women's control over their fertility.

Analysing, advocating and addressing maternal mortality from a human rights perspective brings:

- Legally binding instruments and monitoring mechanisms for ensuring compliance, which can lead to international consensus on the human rights implications of maternal mortality and morbidity[13]
- The opportunity to "shame and blame" or "expose and denounce"[740]
- The potential for immediate impact, using a human rights based approach to not only repeal policies and/or programmes which are harmful to women's health, but to also progressively implement policies and programmes which respect, protect, and fulfil women's right to healthcare and the right to not die in childbirth[741].

The human rights framework also pulls together women's human rights and reproductive and maternal health rights, which are enshrined in international treaties and conventions, endorsing and promoting linkages between all three areas. In this way, advocacy efforts may have a significant positive impact on a wider range of healthcare issues. Work in this area is slowly growing. Until recently, there had been little case law or international agreement on the human rights implications of maternal mortality and morbidity. The former Special Rapporteur on the right to the highest attainable standard of health, Paul Hunt, has led efforts to raise maternal mortality as a human rights issue through the Human Rights Council and treaty monitoring bodies. In June 2009, a landmark resolution was passed by the Human Rights Council recognising maternal mortality as a human rights issue[742].

With this resolution, a developing body of international, regional, and national case law[14] is likely to emerge, which will be used by the human rights based advocacy movement[15] to enhance the focus

[13] See, e.g. the Convention on the Elimination of All Forms of Discrimination Against Women, The International Covenant on Economic, Social, and Cultural Rights, and the International Covenant on Civil and Political Rights

[14] See, e.g. Alyne da Silva Pimentel v. Brazil (Committee on the Elimination of Discrimination Against Women), U.L. v. Poland (European Court of Human Rights), and Sandesh Bansal, the coordinator of Jan Adhikar Manch, a network of local health NGOs vs. the State of Madhya Pradesh (India).

[15] See, e.g. Centre for Reproductive Rights, 2008. Broken promises: Human rights, accountability and maternal death in Nigeria. New York: Centre for Reproductive Rights. Available at: http://reproductiverights.org/en/document/broken-promises-human-rights-accountability-and-maternal-death-in-nigeria. / Centre for Reproductive Rights, 2008. Maternal mortality in India: Using international and constitutional

on maternal mortality as a human rights issue. The resolution is likely to raise the probability of more impact litigation on the violation of the right to health, the right to life, and the right to non-discrimination inherent in the persistently high rates of maternal mortality. There will be opportunities for influencing government policy and financing through the courts. The resolution also offers a high level political boost to rights based approaches to maternal health, using the human rights principles of participation, inclusion and accountability to advocate and influence policy and programme improvements[743,744].

Perhaps the strongest example of the success of using a human rights framework in sexual and reproductive health is access to anti-retrovirals in developing countries. A groundbreaking case decided in the South African Constitutional Court held that access to life saving drugs was indeed a human right and that it was the government's legally binding obligation to ensure access this (in this case, for pregnant women). After this case was decided, similar actions took place across the globe and became the catalyst for forcing governments to respect, protect, and fulfil the right to health.[745]

Similar human rights based advocacy efforts have led to widespread improvements in the realisation of sexual and reproductive health and rights, particularly around access to abortion, contraception, and the elimination of coercive policies (such as forced sterilisation)[16].

Human rights advocacy against maternal mortality has been driven by a small set of civil society organisations working at international and national levels, although there are relatively few national CSOs driving the agenda domestically. As the attention of international human rights institutions to maternal mortality increases in prominence, and operational tools are developed for monitoring progress in realising the right to health[746], scope for integrating human rights analysis into national policy development on sexual, reproductive and maternal health is likely to grow. This knowledge, combined with political commitment, advocacy and strong leadership, enables donors and governments to begin to tackle the challenges of both supply and demand side health systems strengthening.

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law to promote accountability and change. New York: Centre for Reproductive Rights. Available at: http://reproductiverights.org/en/document/maternal-mortality-in-india-using-international-and-constitutional-law-to-promote-accountab. / Centre for Reproductive Rights, 2008. Bringing rights to bear: Preventing maternal mortality and ensuring safe pregnancy. New York: Centre for Reproductive Rights. Available at: http://reproductiverights.org/en/document/bringing-rights-to-bear-preventing-maternal-mortality-and-ensuring-safe-pregnancy. / Centre for Reproductive Rights, 2003. Claiming our rights: Surviving pregnancy and childbirth in Mali. New York: Centre for Reproductive Rights. Available at: http://reproductiverights.org/en/document/claiming-our-rights-surviving-pregnancy-and-childbirth-in-mali. / Hofbauer, H., Garza, M., 2009. Missing link: Applied budget work as a tool to hold governments accountable for maternal mortality reduction commitments. Washington, DC: IBP and IIMMHR. Available at: http://righttomaternalhealth.org/sites/iimmhr.civicactions.net/files/Missing%20Link%20WEB-1.pdf.

[16] See, e.g. L.C. v. Peru (UN Committee on the Elimination of Discrimination against Women) Lakshmi Dhikta v. Government of Nepal (Supreme Court of Nepal), Z. v. Moldova, Achyut Prasad Kharel v. Government of Nepal (Supreme Court of Nepal) Paulina Ramírez v. Mexico (Inter-American Commission on Human Rights), KL v. Peru (United Nations Human Rights Committee), D. v. Ireland (European Court of Human Rights), Tysiac v. Poland (European Court of Human Rights), R.R. v. Poland (European Court of Human Rights), Ana Victoria Sánchez Villalobos and others v. Costa Rica (Inter-American Commission on Human Rights/Costa Rica), A.S. v. Hungary (United Nations Committee on the Discrimination against Women), María Mamerita Mestanza Chávez v. Peru (Inter-American Commission on Human Rights), Ramakant Rai v. Union of India (Supreme Court of India).

Section 4: Increasing accountability from below

Holding leaders to account: Citizen participation, voice and accountability

There is growing evidence that citizens can play a critical role in holding their political leaders, at all levels, to account; demanding leadership to improve the accountability and functioning of the health system and improving access to high quality services.

Entitlement deficits and weak governance inhibit the functioning and delivery of health services, and empowering citizens to demand their entitlements to maternal health, enabling citizens to take part in health sector decision making, are widely seen as a means of increasing policy and service responsiveness. However, evidence on the conditions for effectively empowering citizens to demand entitlements to maternal health services and engage in "constructive accountability"[747] is weak. This review has found a range of stakeholder participation, voice and accountability initiatives and experiences scattered across health programmes, but generally without impact evaluations.

A joint donor evaluation of citizens' voice and accountability across a wide range of sectors found many examples of citizen's voices having an effect on behaviour and practice, as well as some evidence of effect on policy and legislation. However, overall it was concluded that the effect of interventions has been limited and isolated, with little scope for scaling up.

Programme level evidence from the health sector, including efforts focusing on maternal and reproductive health, show many examples of mobilisation of citizens to make demands on the system, even in fragile and extremely challenging contexts, through long and short routes of accountability[748]. However, more in depth, rigorous research is needed to measure impact and test the effectiveness of different approaches. Some examples of experiences are presented below.

State led public hearings in Orissa (India) are providing citizens, especially women, with an effective forum for informing state policy makers (Orissa State Women's Commission), and state and district managers of service failings. Experience shows has raised community awareness about their healthcare entitlements, and stimulated policy makers into holding providers accountable for poor practice, including disciplinary action. Field reports suggest that, following a public hearing, there has been a reduction in bribe seeking by local health workers, and in some areas an increase in the institutional delivery rate[749]. Through the National Rural Health Mission, community based monitoring, including public hearings, is being scaled up in focal states across India. In Orissa, Ekjut found that community monitoring teams are having an effect on demand for maternal health services and for better quality care, including full and timely payment of state benefits to pregnant women[750].

In Malawi, the Women and Children First, Perinatal Care Project found that collection of birth and death data has empowered communities to demand better quality care and encouraged women to deliver in facilities[751]. The power of collecting birth and death data to strengthen community voice in this way has also been seen in Nigeria[752].

Political complexity and the nature of power relationships means that raising voice alone may not translate into increased accountability. The moderating influence of organisational structures and authority arrangements, the incentive systems to which providers subscribe, the nature of the political system, the social and cultural environment, and the strength of the voices being raised, inevitably impact on the effectiveness of citizen demands. In situations where the health system is very weak and providers themselves lack basic support and supervision, achieving constructive engagement and mobilising community support for services at the local level is more likely to be

effective than rallying public protest. As experience from Nigeria testifies, raising demand without formal avenues of engagement and response can lead to weak personal and patronage driven responses. Navigating the political landscape and designing best bet approaches for voice and accountability must be driven by the context and actors[753].

Implications: Addressing the demand side of maternal health: Equity, access, advocacy and accountability

- There is no "best bet strategy" for overcoming demand side barriers. Context matters; local demand and supply side constraints, the way the health service is organised, and the socio-cultural and political context all determine national strategies towards universal access. This applies to addressing financial barriers as well as socio-cultural and physical ones.

- To promote equitable access to MNH services, equity and social inclusion have to be firmly placed at the heart of maternal health strategies, supported by socially inclusive policies, and with health systems development, health financing, and community interventions tailored to address social and geographical inequalities.

- Evidence of the extent, nature, causes and impact of social exclusion on reproductive, maternal and newborn health is critical for advocacy, responsive programming and accountability, and better intelligence is needed. At a minimum, the systematic measurement of the impact of supply and demand side interventions on poor and excluded populations needs to be mainstreamed into management systems.

- Commonalities in the social determinants of reproductive, maternal and sexual health call for combined demand side efforts to address them, wherever the context permits.

- Community based strategies have tended to be neglected by health authorities. Strong evidence of the positive contribution of community mobilisation to newborn health, and the benefits to maternal health and women's empowerment, underscore its importance as an integral component of the continuum of care.

- Civil society participation in advocacy, agenda setting, policy formulation and monitoring is key to successful global and domestic health advocacy. This requires funding and technical support to developing country organisations to enable coordinated, well researched, hard hitting advocacy efforts. Donors have an important role to play.

- Human rights and rights based approaches to addressing maternal mortality are on the ascendancy and deserve attention and support, particularly as they draw together the underlying determinants of maternal mortality and linkages between gender, reproductive health and rights, and maternal health.

- More research is needed in the following areas:

  - The impact of demand side interventions on the social determinants of maternal health, and how they work together according to context. Robust evidence is needed upon which policy makers can make informed choices of demand side interventions and their sequencing, including, for example, the merits of conditional versus unconditional cash transfers versus vouchers for maternal health, and the relative merits of different approaches to tackling physical, social and cultural barriers.

  - The process and impact of scaling community mobilisation up to the national level.

- The potential of community based strategies as part of longer term health improvement strategies, particularly for maternal health outcomes. Little is known about the associated costs and cost effectiveness of such investment.

- The impact and effectiveness of different approaches to citizen voice and accountability on maternal health, particularly with scale up and wide scale impact in mind.

- How women's status is mediated to impact on maternal health, and how, with this goal in mind, linkages with other sectors can be forged.

Part Five: Results for Improved Outcomes

A key hindrance to tracking progress in maternal mortality is the difficulty of directly measuring maternal death rates in developing countries, given weak vital registration systems, the need for large sample sizes in surveys, which make their continuous use expensive, and methodological shortcomings. The first section of Part Five explores the ways in which key indicators and methodologies are used to track progress in maternal and reproductive health at national and international levels, in the light of their strengths and weaknesses. There is further discussion of how results reporting can be improved and used for lesson learning, such as through programme evaluations, and the need for harmonisation of donor demand for data.

The second section of Part Five looks at effective aid mechanisms by reviewing the global aid architecture for health, which represents a complex landscape, and the Global Health Initiatives (GHI) that have emerged since the Millennium Declaration of 2000.

Results for improved outcomes

Main findings

- The difficulty of direct measurement of maternal deaths in developing countries has proved a key hindrance to tracking progress in maternal mortality.
- No simple solutions for monitoring progress towards MDG 5 on MMR are available. Rather, opportunities should be seized to gather data, such as decennial censuses, indirect approaches embedded in large surveys, innovations in sampling, population surveillance sites, and adjusted routine facility based data.
- WHO MMR estimates enable global comparison but are less useful for tracking change over time at a country level where robust national or sub-national estimates exist.
- At a minimum, mortality estimates should separate abortion from other direct obstetric causes, and so-called coincidental causes should be identified within maternal mortality statistics.
- Indicators need to measure differing access to care between or within countries and to identify and target populations to reduce inequity.
- The greater integration of health services and increased use of sector wide budget support and basket funding approaches in development assistance makes it increasingly difficult to break down and differentiate expenditures by type of population assistance activity, which in turn increases the risk of certain areas, such as family planning or maternal and reproductive health, being neglected or de-prioritised.
- There is an urgent need to strengthen this skill base for all aspects of health information systems in developing countries.

- Reliable data are needed at many levels of health systems and for a number of functions, including tracking of deaths, funding and financial flows for maternal health; coverage and equitable distribution of essential interventions; promotion of accountability of governments and their partners, with a focus on results; national stewardship; and for district management.

- Data can be used to galvanise political commitment and new legislation.

Aid effectiveness

- The potential impact of MNH and SRH strategies are hampered by fragmented aid architectures.

- Funding through PRBS and SWAps alone has not always improved maternal health services. Augmenting PRBS and SWAps with other aid instruments is thought to have a positive impact on maternal health.

Section 1: Tracking progress in maternal and reproductive health

What should be counted for maternal health, and how?

Tracking progress against the MDG indicators

The challenge of reliably measuring trends in maternal mortality is substantial, and while there is a need to support longer term efforts to improve vital registration, no simple solutions exist for monitoring progress towards MDG 5 on MMR. Rather, opportunities should be seized to gather data[754], such as decennial censuses, indirect approaches embedded in large surveys, innovations in sampling, population surveillance sites, and adjusted routine facility based data. It is recommended that all countries should report the MMR and the total number of maternal deaths. At minimum, mortality estimates should separate abortion from other direct obstetric causes, and so-called coincidental causes should be identified within maternal mortality statistics[755].

Where countries do invest in intensive efforts to capture MMR estimates to inform their national strategies and programming, the calculated MMRs are not reflected in WHO estimates. For example in Bangladesh, a study which included over 100,000 households estimated the MMR to be considerably lower than WHO estimates[756]. DHS (2006) data[757], a recent national burden of disease study[758] and a major Maternal Mortality and Morbidity study[759] in Nepal all indicate an MMR considerably lower than the WHO estimates. A mechanism needs to be designed to incorporate robust national estimates into the *Countdown* tracking system or the disconnect between the calculations and advocacy at the global level and knowledge and efforts at national level will be exacerbated. The WHO estimates enable global comparison but are less useful for tracking change over time at a country level where robust national or sub-national estimates exist.

There have been few publications on the comparative costs and benefits of different measurement opportunities and options. Generally speaking, routine and continuous systems, such as civil registration or demographic surveillance, are more cost effective than special studies, but require long term commitment and attention to quality.[760] Censuses are major undertakings, both in terms of human and financial resources, but the marginal cost of adding questions on maternal mortality is small[761] and the Health Metrics Network is providing valuable support to countries in this regard.

Unlike mortality measures, monitoring the proportion of women who give birth with a skilled attendant can be measured over short periods of time, is more precise, and is sensitive to change[762]. Its particular strengths are that it covers delivery irrespective of location, and focuses on the primacy of human resources as a key health systems element for improved maternal and newborn health. It is usually available from household survey data, principally DHS. However, there are also important limitations to skilled birth attendant data. Accuracy depends on women's ability to identify the level of skilled person who attended them and may not adequately capture the quality of care, particularly when complications arise.

The new MDG Target 5b recognises the centrality of reproductive health and reproductive rights in improving maternal and newborn health and in reducing poverty. Its four indicators (unmet need for family planning, contraceptive prevalence rate, antenatal care coverage, and adolescent fertility rate) highlight core aspects of service provision. These data are also derived primarily from household surveys, can be measured over short periods of time and are sensitive to change, although each has its limitations. For example, antenatal care coverage and contraceptive prevalence rates do not necessarily capture quality of provision. The adolescent fertility rate covers young women aged 15-19 years, and not the younger adolescents who experience the highest morbidity and mortality risks. Unmet need for family planning uses data derived only from women

who are married or in a union, and cannot speak to wider needs, such as that for emergency contraception.

Measuring this small set of MDG 5 indicators is therefore valuable but not sufficient. Such measurements need to be complemented by information that informs local action and can contribute to generating information in a format that can be used by professional organisations and other elements of civil society to pressure for resources and for accountability[763]. A joint WHO and UNFPA Technical Consultation[764] recognised that "for country programmes to measure and monitor the achievement of universal access, a more comprehensive set of indicators, that addresses the multiple components of sexual and reproductive health, is needed"[765].

The Consultation came up with a recommended framework of indicators for five priority aspects of sexual and reproductive health and for monitoring progress in achieving universal access to sexual and reproductive health, and decision making at national and sub-national level that went beyond the WHO list of 17 RH indicators[766]. The framework includes 59 indicators, covering the five key aspects of SRH: family planning; maternal, perinatal, and newborn health, including eliminating unsafe abortion; sexually transmitted infections (including HIV) and reproductive tract infections (STI/RTI); other reproductive morbidities, including cancer; and sexual health, including adolescent sexuality and harmful practices. It is divided into a framework of the four categories of determinants: policy and social factors; indicators of access: availability, information, demand, quality; indicators of use; and indicators of output/impact[767]. Indicators were further graded into core, additional and extended, with core indicators being those on which all countries should report. The technical consultation also recommended possible indicators on linkages between SRH and HIV/AIDS, in recognition of the call for greater integration of the two for potential synergies, given they both serve the same target populations and this would minimise missed opportunities to increase access and coverage[768]."

Countdown to 2015

Countdown to 2015 represents a common evaluation framework for tracking coverage of proven interventions and measures of mortality and nutrition in countries with the highest burden of mortality in mothers and children. An important element of the two to three yearly *Countdown* cycles is identification of gaps in data and evidence to thereby catalyse development of methods and instruments to better assess coverage over time, and there is a commitment to extend focus on access to reproductive health in subsequent cycles. One of the important premises of *Countdown* is that provision of comparative data showing differences between countries can help to stimulate action[769], and has been used for advocacy with parliamentarians. It will be important to trace the impact of such work in the future.

To strengthen the continuum of care, global attention must focus both on tracking relevant data (for example through the *Countdown to 2015* process) and on country level capacity to use such data to design and improve integrated services, particularly at district level. Most data come from household surveys, released every five years. Increased frequency of coverage of key indicators would help to accelerate action.

Audit and verbal autopsies

Approaches with the main purpose of identifying or improving interventions to prevent maternal deaths include quality of care case note audits[770,771], systematic verbal autopsies[772,773], and confidential enquiries[774]. For example, national facility based mortality audits for maternal, perinatal and child deaths are an important source of data for action in South Africa[775]. Maternal mortality is audited through the National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD).

After its *Saving Mothers 1999–2001* report identified incorrect use of the partograph as a concern, a quality assurance programme was established to address this. Subsequent audit data showed progress with coverage of the programme ranging from 18% to 100%. However, programme coverage did not correlate well with scoring on correct use of the partograph, and further enquiry into the barriers to real improvement then identified staff shortages and high turnover as primary factors.

There are also a number of approaches and indicators which may act as proxy measures of maternal mortality, and provide information for monitoring programmes, such as unmet obstetric need[776] which quantifies the extent of exclusion from major life saving obstetric interventions, and the WHO, UNICEF, UNFPA and AMDD *Indicators for EOC*[777], which can be used to "measure progress in a programmatic continuum: from the availability of and access to EOC to the use and quality of those services". These approaches have been reviewed in several recent papers[778,779]. Experience with the measurement of non fatal outcomes, such as obstetric fistulae and psychological morbidities, is increasing, and efforts are underway to improve analysis of perinatal outcomes.

Linking coverage to equity and quality

Indicators also need to measure differing access to care, between or within countries, and to identify and target populations to reduce inequity. Freedman *et al.'s* 2007 paper, drawing together experiences from AMDD, ACCESS, Immpact, and the Skilled Care Initiative, highlights the importance of linking coverage indicators to equity and to quality[780]. In Ghana, for example, Immpact found that while Government removal of user fees was associated with an increase in the proportion of deliveries with health professionals, the reduction in out-of-pocket payments for care was only 14% for the poorest women compared with 22% for the richest[781].

To capture coverage disparities, the 2008 *Countdown* report used a new measure, the "coverage gap", which represents the percentage of the target population not receiving critical services such as immunisation, maternal and newborn care, family planning and treatment of child illness. In several *Countdown* priority countries, the gap in coverage between the richest and poorest segments of the population is threefold, and the greatest inequities in service are in maternal and newborn care. There are also large disparities between those who have access to family planning, and those who do not[782].

Inequity may exist across several dimensions of social disadvantage, including wealth, locality, religion, caste, and ethnic origin[783], often with interactions between these. Much of the current work concerns poverty issues. Techniques exist for showing the magnitude of wealth inequity in the MMR using data from Demographic and Health Surveys[784]. Other indicators focus on specific services such as unmet obstetric need, which provides an equity sensitive measure of access to caesarean sections[785]. New methods are being developed to assess equity in service use at facility level[786]. The costs incurred for delivery or emergency care and the effect these have on different households can be very different; even relatively small costs can have serious implications for impoverished household economies[787].

Indicators on quality of care have been divided into different aspects of care in some studies, to reflect quality in both the provision and experience of care at a facility (such as respect and dignity, emotional care, cognition and experience of staff, supplies and infrastructure)[788,789]. Suggested indicators range from measuring the availability and quality of equipment, drugs and other key supplies, to the management of human resources, the technical skill levels of staff, the arrangements for referral from home to hospital and the ability to provide accurate and updated information systems within a facility[790]. The UNICEF/WHO/UNFPA process indicators on availability

and use of back up care have contributed significantly to the monitoring of skilled care and its quality. Data is now available from a number of countries to describe the availability and distribution of facilities that are able to give emergency back up care, met need for such care, deliveries by caesarean section and the case fatality rate in facilities treating major complications[791,792]. The data collection process for these indicators is intensive, but does yield very useful information for the operation of health services[793].

Linking coverage to equity in Burkina Faso: A case study

Inequities in the use and coverage of skilled maternity care persist within poor countries, and the same goes for maternal outcomes[1,2]. Overall, women from the wealthiest income, or the most educated groups, are much more likely to use skilled care during pregnancy, delivery and the postpartum period, than the poorest or least educated women[3,4], this being reflected in their higher chances of survival[5], with the poorest women being up to six times more likely to die during childbirth than richer women[6]. These inequities are particularly true in South Asia and Africa[7].

A maternal health intervention in a district of Burkina Faso, which aimed to improve availability and access to quality of maternity care, particularly at the primary care level, has been successful in closing the maternity care utilisation gap between the richest and the poorest wealth quintiles[8]. The intervention, carried out under the Family Care International Skilled Care Initiative, achieved this through focusing primarily on strengthening maternity care services at primary health care level, which poorer rural women were more likely to access than the district hospital providing more advanced care, which was located further away and charged more than double the fees of primary health centres. At the district hospital the skills of maternity care providers were upgraded, gaps in essential obstetric equipment and supplies were addressed, the referral system was strengthened, a quality assurance methodology was introduced, and management systems were improved. The district hospital was also upgraded to provide anaesthesia and caesarean section delivery. Primary health centres were staffed and equipped with basic supplies and infrastructure providing for basic obstetric care. Use of skilled care before, during, and after delivery was promoted through community based communication strategies and birth preparedness counselling at individual antenatal care consultations.

As a result, the large wealth inequities in use of professional care during childbirth were almost eliminated in the intervention district. There was a four-fold increase in institutional delivery among the poorest quintile and this was mostly due to their increased use of lower level health facilities, rather than hospitals. This wealth gap in utilisation was also closed for women with delivery complications. In contrast, wealth inequities increased in the comparison district.

This study finding that the poor did not use the hospital, but lower level facilities, provided evidence of the potential of primary care facilities to reduce the poor-rich benefit ratio in maternity services.

Source: *1. Brazier, E., Andrzejewski, C., Perkins, M.E., Themmen, E.M., Knight, R.J., Bassane, B., 2009. Improving poor women's access to maternity care: Findings from a primary care intervention in Burkina Faso. Social Science and Medicine, 69, pp.682-90; 2. USAID Health Policy Initiative, 2007. Inequalities in the use of family planning and reproductive health services: Implications for policies and programs. Washington, DC: USAID; 3, 5, 7-8. Brazier, E., Andrzejewski, C., Perkins, M.E., Themmen, E.M., Knight, R.J., Bassane, B., 2009. Improving poor women's access to maternity care: Findings from a primary care intervention in Burkina Faso. Social Science and Medicine, 69, pp.682-90; 4. Anwar, I., Sami, M., Akhtar, N., Chowdhury, M.E., Salma, U., Rahman, M., Koblinsky, M., 2008. Inequity in maternal healthcare services: Evidence from home-based skilled-birth-attendant programmes in Bangladesh. Bulletin of the World Health Organisation, 86, pp.252-59; 6. Ronsmans, C., Graham, W., 2006. Maternal mortality: Who, when, where, and why. Lancet, 368, pp.1189–1200.*

Monitoring excessive medicalisation

A necessary corollary to the measurement of unmet need is monitoring of excess and potentially iatrogenic care. Unnecessary interventions can cause harm, and in maternity care four interventions are particularly subject to over use: caesarean section, episiotomy, routine early amniotomy, and routine use of oxytocin to accelerate labour[794]. Clinical audits can be used to regulate practices. Monitoring other medical abuses, such as female sterilisation at caesarean without the woman's consent is important, and requires special studies. Trends in Caesarean section rates can also be monitored through surveys and can serve as a warning for both under supply and over medicalisation. The resource implications of unnecessary use of caesarean section have rarely been calculated. Monitoring outcomes and interventions by physician, facility, type and cost will help establish not only the level of over use by type of intervention, but by provider and facility, and calculate the resource implications of such practice. This type of analysis is becoming standard in the UK National Health Service as a routine part of performance monitoring.

Maternal healthcare measurement as measurement of the strength of a local health system

The challenge is to define a small number of good indicators that capture district level programme inputs and management appropriately, but will not overwhelm fragile reporting systems. This is important for both wider health system strengthening and specific maternal health purposes[795].

Bailey *et al.*[796] make the case for the use of availability of EOC as a measure of the strength of the health system, nationally or sub-nationally, and argue for routine collection of the necessary data. Like the percentage of births attended by skilled personnel, the link to maternal mortality is inferred, and it indicates the capacity of the health system to respond to obstetric and newborn emergencies and provides information on whether facilities have provided life saving services in recent months. Its strength lies in its ability to guide policy and programming, and as an accountability tool. Often systemic service provision bottlenecks can be identified by analysing the missing signal functions required to construct the indicator. AMDD field experience with this indicator has led to policy changes in Peru, where midwives have been trained to perform manual vacuum aspiration, usually the preserve of physicians; in Bangladesh, modifications in the distribution system of supplies and equipment reduced the time to delivery from 10 months to two; and in Nicaragua, improved emergency drug supplies and staff training at health centres have reduced the referral rates to comprehensive facilities in project areas by up to 70%.

Kerber *et.al.*[797] also argue that monitoring implementation of the continuum of care for the health of mothers, neonates and children can be used to track the performance of health systems, since a functional continuum depends on public health planning and strengthening of health systems. Coverage indicators for selected packages of care along the continuum are compatible with the *Countdown to 2015* tracking mechanisms, but currently available data do not adequately measure the entire continuum, in particular the community package. Moreover, existing data could be used more effectively. Indicators that sufficiently measure use of services often do not test quality or level of integration; for example, whether antenatal visits include management of sexually transmitted infections and counselling on birth preparedness, or whether postnatal care includes family planning.

Work on indicators for monitoring universal access to reproductive health services is still in progress. A number of useful field programme based guides exist[798,799], and a set of core, additional and extended indicators for national level monitoring is now available from WHO[800]. This covers aspects of family planning; maternal, perinatal, and newborn health; elimination of unsafe abortion, sexually transmitted infections including HIV, reproductive tract infections, reproductive morbidities,

including cancer; and sexual health, including adolescent sexuality and harmful practices. Indicators are grouped for dimensions of social and policy determinants, access to care, service use, and outcomes and impact.

Monitoring and utilising data on the maternal health workforce

As indicated in Part Three: Supply Side Challenges, there is a growing need for high quality information on human resources in health systems to inform decision making for policies and programmes at national and international levels. As already highlighted in the context of skilled attendants, counting health workers poses challenges, including how to define them. Various permutations and combinations of what constitutes the health workforce potentially exist, depending on each country's situation and the means of measurement. Sources of data include population census, household surveys, polls, economic census, establishment (or facility based) surveys, administrative registers, Labour Registration Databases, National Health Accounts, college and vocational school databases, and trade union databases[801]. The WHO cross nationally comparable data on health workers in WHO Member States, available in the Global Atlas of the Health Workforce, provides a framework for harmonising the boundaries and constituency of the health workforce across contexts. Although a great step forward, these datasets still do not offer any easy means of identification of staff engaged specifically in maternal, MNH or reproductive health services. Data on the number of skilled attendants of each cadre produced per year, how many are still practising, and documentation of the skill level of each cadre, continue to be hard to obtain and this is a priority for the future.

Quantifying costs to the user of maternal healthcare

The effects of expenditure on maternity care for poor households is only just beginning to be properly documented[802]. Surveys that seek to quantify out-of-pocket costs and catastrophic health expenditures are not uncommon, but data are seldom disaggregated by health expenditure in an amenable way[803]. Studies such as those by Borghi and colleagues that specifically focus on maternal health expenditure for obstetric emergencies[804,805,806] and their impact on meagre financial reserves and assets are rare. Yet these are vital to inform strategies to protect women and their families from unexpected costs and exploitative practices.

National accounts and sub-accounts to improve allocation of funds to maternal health

The greater integration of health services and increased use of sector wide budget support and basket funding approaches in development assistance makes it increasingly difficult to break down and differentiate expenditures by type of population assistance activity[807], which in turn increases the risk of certain areas, such as family planning or maternal and reproductive health, being neglected or de-prioritised. This need not pose an obstacle. Some countries, such as Rwanda, have published reproductive health sub-accounts with their overall National Health Accounts, to help track the proportion of total health expenditure on reproductive health relative to other areas[808]. Rwanda's 2006 RH sub-account found that RH received only 6% of total health expenditure, although it had been identified as a priority area by policy makers because of the relatively poor RH status and high maternal mortality among Rwandans. In 2002 it constituted 16% of total health expenditure[809]. This information was used by the government and health planners to prioritise FP/RH in the 2008 national Joint Annual Health Work Plan[810] and the government acknowledged that the improvement of women's health status was a key element of any development strategy putting it at the forefront of the national agenda[811]. (For more information see case study below).

Reproductive health sub-accounts can be used to unmask inconsistencies in health spending and help policy makers make better decisions about resources for health, based on health sector need.

Sub-accounts can provide a "robust monitoring and evaluation process, while encouraging transparency and accountability"[812]. Maternal and reproductive health sub-accounts need to become standard practice, given that standardised national health accounting is already carried out in over 100 countries. WHO is currently trying to incorporate routine reporting of expenditures in maternal, reproductive and child health in routine reporting systems. It is being pilot tested this year [*2009*], mostly in African countries. "Technical support needs to be provided to countries for them to start reporting, however, funds are lacking to enable this at the right scale"[813].

Case study: RH sub-accounts show trends in RH financing in Rwanda

Rwanda had a large influx of donor funding for health between 2002 and 2006, so that 53% of the $300 million spent on health in 2006 came from donors. However, very little of this was earmarked for RH, more was channelled into diseases like malaria and HIV/AIDS. This resulted in a 1.5 fold increase (from US$12.7 million to US$19.1 million) in RH expenditure between 2002 and 2006 but a drop in relative terms from 16% of total health expenditure to 6%. During this period, total health spending on HIV/AIDS increased dramatically from US$11.9 million (15% of the total) to US$ 73.4 million (24% of the total) and government agents went from controlling 52% of the RH funds to 35%. NGOs and donors went from controlling 36% of RH funding to 55%.

Maternal health services made up three-quarters of RH expenditures. There was a large increase in spending on antenatal care from US$1 million in 2002 to US$4 million in 2006 and an even greater one for in-patient maternal care (deliveries) from US$1 million to US$10 million. Hospital deliveries accounted for 51% of total RH spending (71% of MH care spending), 21% of RH spending went to antenatal care (29% of MH care spending), but spending on postnatal care was insignificant.

Total spending on contraceptive commodities in Rwanda increased from US$750,000 to US$2.4 million and relative to household spending on contraceptive commodities, donor subsidisation rose from 51% in 2002 to 83% in 2006.

Sources: *Wright, J., Sekabaraga, C., Kizza, D., Karengera, S., De, S., Waza, C., 2008. Trends in reproductive health financing in Rwanda. USAID Health Systems 20/20. Presentation at the American Public Health Association, San Diego on 27 October 2008; Republic of Rwanda Ministry of Health. July 2008. National Health Accounts Rwanda 2006 with HIV/AIDS, Malaria, and Reproductive Health Subaccounts. Kigali, Rwanda.*

Validation of data within performance based financing

Performance based financing schemes sharpen demands for Monitoring and Evaluation (M&E) capacity. The Rwanda experience with piloting of performance based financing indicates that putting in place an efficient and cost effective system to validate the accuracy of data and monitor patient satisfaction is essential to the success of this approach. Rusa *et al.*'s account[814] of these pilots concludes that performance based financing indicators should be easy to verify, the number of indicators should be kept reasonable, and that quality of care should be verified only periodically. Finally, indicators need to be reviewed and revised in a learn-by-doing environment, to ensure that they are clearly articulated and provide the right incentives. Close consultation with end users of both quality and quantity indicators at health centre and hospital levels is good practice, ensuring ownership by health facilities and district authorities.

Each pilot scheme in this setting used a different approach to monitor results and validate data. In Butare, for example, the steering committee monitored results, limiting the need for additional personnel and funds. The scheme relied primarily on data generated by the Health Management Information System (HMIS), with periodic, random cross checks. This obviated the need for a parallel information system, but did not always guarantee the reliability of data. However, according to key informants, one of the positive spill-over effects was improved timeliness and accuracy of reporting. The Butare model also introduced third party monitoring by commissioning the School of Public Health to survey client satisfaction every six months, but these surveys proved costly and infrequent.

Rusa *et.al* highlight the use of community associations in the Cyangugu scheme as a promising and innovative way to empower civil society groups in this process. The Cyangugu scheme had an independent verification system, with dedicated staff for monitoring, and also piloted a civil society mechanism for monitoring results, whereby community organisations conducted patient satisfaction surveys on a quarterly basis. Community representatives were chosen by the local community and included clergy, local leaders, and representatives of associations of people living with HIV/AIDS. Results from civil society monitoring were shared with facilities, which could receive a special award of a maximum of 15% on top of their monthly fees if their performance was deemed exceptional. Such examples suggest interesting new directions, but long term follow up will be crucial to explore institutionalisation, transparency and sustainability of such approaches.

What is needed to support improvements in results reporting and lesson learning?

Strengthening institutional capacity

All measurement strategies depend on the skills and capacity of personnel in-country, to competently undertake all stages, from design to communication, sometimes with external technical support[815]. There is an urgent need to strengthen this skill base for all aspects of health information systems in developing countries. The Health Metrics Network works to progress these stages of measurement strategy in a concerted manner, avoiding diversionary “single disease” metrics set-ups and providing clear and practical guidance in its Framework and Standards for Country Health Information Systems[816].

Institutional capacity has to include, at a minimum:

- The skill and understanding to know what to do with the information once it arrives in the hands of the intended users;
- The ability to successfully determine objectives, logic models and construct indicators;
- The ability to collect, aggregate, analyse and report on performance data against the indicators and their baselines[817].

A service level understanding of why the data is being collected and how it will be used is essential. Without some understanding of this, those who collect the information (often service delivery staff) see the process as time consuming and unrewarding, which leads to poor compliance, low quality and unreliability. Health Information Systems are rarely evaluated, in developed or developing countries, but one study investigating the functioning of the District Health Information System (DHIS) in 10 rural clinics in KwaZulu, Natal[818] found a high perceived work burden associated with data collection and collation. Some data collation tools were not used as intended. There was good understanding of the data collection and collation process but little analysis, interpretation or utilisation of data, and no feedback to clinical staff.

Awareness of risks of behaviour distortion in accountability systems

Building an M&E system has been described as "adding the fourth leg to the governance chair", alongside budget systems, human resource systems and auditing systems[819]. By providing a feedback system on the outcomes and consequences of government or other delegated organisation actions, it is argued that an M&E system provides an additional public sector management tool and possibilities for accountability. The shift in emphasis from inputs to outputs and outcomes is accompanied by an increased use of performance indicators and policy targets.

Performance indicators are intended to encourage desirable behaviours. However, probably one of the greatest challenges in using performance measures is that of avoiding distorting behaviour[820]. Most organisations that have moved into results based management have encountered this phenomenon[821,822]. The classic problem is that, by selecting a few specific indicators with accompanying targets, managers and staff focus on improving those numbers, possibly to the detriment of the overall aims of the programme. Rapidly increased rates of institutional delivery for example, will be missing the point if they result in overcrowding and greatly diminished quality of care.

Mayne[823] suggests that if sensible use of performance information is encouraged and supported by the right incentives, the danger of distorting behaviour will be lessened. Performance measures should be reviewed and updated regularly to ensure they remain relevant, useful and are not causing perverse behaviour or other unintended effects.

Evaluation studies and implementation research

Logic chains form the basis of many results based approaches to analysing project or programme effectiveness that employ a set of pre-defined institutional objectives. If employed with "SMART" (Specific; Measurable; Achievable; Relevant; Time bound) objectives and/or indicators built into programmatic initiatives, this approach has considerable benefits for audit purposes. However it performs less well for lesson learning[824]. Other acknowledged weaknesses include the sacrifice of complexity for measurability, the oversimplification of causal pathways and the mechanisms by which change may occur[825]. Evaluations ought to be seen as playing a key role in performance measurement systems, as they are often the best way to get at hard-to-measure aspects of performance and to deal with issues of attribution[826]. Evaluations may attempt to establish the counter-factual (what would have happened without this programme), or may use techniques such as contribution analysis (construction of a credible contribution story through careful consideration of the theory behind the programme)[827]. There are also participatory monitoring and evaluation techniques, such as Peer Ethnographic Evaluation and Research (PEER)[828], and the "Most Significant Change" technique[829], which are particularly useful for capturing complex and divergent outcomes and for identifying unexpected changes. Lesson learning tends to benefit from qualitative or mixed methods approaches that recognise the complexity of social interventions involving health systems, and that attempt to identify conditionalities - necessary but not sufficient conditions for changes to occur.[830]

Similarly, in their review on scaling up of health service innovations, Simmons and Shiffman[831] argue that successful scaling up requires the systematic use of evidence to guide the process and incorporate new learning, and that existing systems of monitoring and evaluating service delivery are rarely capable of capturing issues relevant to the process and outcomes of moving to scale. "Special research and evaluation procedures are needed to monitor whether the innovation is being implemented as expected and the extent to which local adaptation maintains minimum established standards. Plans and resources for further expansion can be adjusted when problems and dysfunctions are encountered. At the same time, identifying the positive features and results

obtained from scaling up motivates communities, providers, decision makers and managers by demonstrating the value of new approaches." Toolkits, such as that developed by Immpact, which has modules on gathering data on maternal and perinatal mortality, quality of care in maternity services, and health systems and economic outcomes, can be a useful reference for those designing safe motherhood evaluations and help tailor them to the specific context[832].

Other deficits in exclusively indicator focused evaluation can be lack of attention to wider historical, social, political, economic and environmental factors[833] and lack of focus on unintended impacts. The importance of a range of analyses is illustrated by recent ethnographic research in Mexico[834], which reveals how a conditional cash transfer scheme designed to empower women, which was performing well on its target indicators[835], could, through its mode of implementation, also work to dis-empower. The scheme placed no official reproductive conditions on participating women, but required them to attend medical clinics where there was an existing power structure based on gender, class, ethnicity, and educational level. The ethnography revealed that these social relations made it difficult for indigenous rural women to resist clinicians who coercively promoted family planning norms.

Harmonisation of donor demands for data

Reliable data are needed at many levels of health systems and for a number of functions, including tracking of deaths, funding and financial flows for maternal health; coverage and equitable distribution of essential interventions; promotion of accountability of governments and their partners. Focus is needed on results; national stewardship; and for district management. Data can be used to galvanise political commitment and new legislation, as illustrated in Part Four: Building political commitment through advocacy. Coordination with existing global initiatives to improve data systems and data utilisation is essential.

It is increasingly recognised that variety of donor financial and programmatic reporting requirements results in high transaction costs for many governments. Donors need to harmonise requirements, decide what information is really necessary to assess progress made by borrowers, and develop simple reporting formats that can be equally used by numerous donors. Lack of harmonisation on reporting requirements drains the capacity of countries to develop systems that address their needs, first and foremost. The proposed common framework for evaluation[836] of the scale up for the health MDGs is an attempt to translate the spirit of the Paris Declaration in a set of principles of collective action, alignment with country process, balance between country participation and independence, harmonised approaches to evaluation and performance assessment, capacity building, health information system strengthening, and provision of adequate funding (5% - 10% of the overall scale up funds). It argues that a large proportion of these funds should go to in-country efforts to build capacity of national and regional institutions as well as providing dedicated resources for three components: monitoring performance, health information system building by addressing major data gaps, and impact evaluation.

Section 2: Effective aid mechanisms

Making aid investments work for SRH and MNH remains a big challenge. Part One: The Funding Challenge highlights evidence from the *Countdown* Financial Flows Working Group on the funding gap in MNH in low income countries. Making more effective use of existing aid is also a priority.

This section reviews:

- The overall global aid architecture as it relates to the health MDGs.
- Evidence of the effect of the plethora of global health initiatives on health systems strengthening, and in particular on MNH and SRH outcomes.
- The strengths and weaknesses of different forms of development aid for MNH and SRH - including PRBS, SWAps, programmes and projects, and technical assistance.
- Innovative results based financing as a potential mechanism for delivering aid more effectively.
- The implications for DFID and NORAD.

In all these areas, the evidence base relies heavily on programme evaluations, and the analysis of official development assistance funding flows. There is a pressing need for more robust evidence on the impact of aid instruments on SRH and MNH outcomes.

An overview of the global aid architecture

A recent evaluation of Global Aid Architecture and the Health MDGs, undertaken by HLSP[837] for the Government of Norway, used four methodologies:

1. A study of the financing of the global health aid architecture.
2. Analysis of 29 recent evaluations of aspects of health aid architecture.
3. Five brief country reviews (Ethiopia, India, Nigeria, Pakistan and Tanzania).
4. Peer assessment by presenting the arguments to "think tank" audiences.

It describes the components that combine to form the health aid architecture as:

- Well funded global health partnerships which finance the scaling up of particular technical programmes. The largest of the many disease specific global health initiatives (GHIs), such as The Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM), the Global Alliance for Vaccines and Immunisation (GAVI), the US President's Emergency Plan for AIDS Relief (PEPFAR) and the World Bank Multi-Country AIDS Programme (MAP), make a substantial contribution to bilaterally funded health initiatives. The Bill and Melinda Gates Foundation is also a major funder of GHIs. These interventions produce results, but are limited by the coverage and quality of health systems, and their achievements may be expensive to sustain. The Global Fund in particular has created many parallel systems, which have created inefficiencies in implementation.
- Interventions which have not been scaled up, because they have not attracted significant funding and/or have not yet made the case that the interventions are sufficiently streamlined and cost effective (Integrated Management of Childhood Illness, Averting Maternal Death and Disability).
- Four UN agencies (UNAIDS, UNFPA, UNICEF and the WHO), which find it difficult to effectively coordinate their activities and at times compete or duplicate. WHO has the broadest remit in the health sector and is strong in providing technical guidance. UNFPA and UNICEF fulfil important commodity supply functions.

- The World Bank, which provides both technical support and loans/grants. Its strength lies in sector wide analysis, systems and prioritisation – the division of labour between the Bank and WHO is not clear.
- Bilateral agencies, which have multiple roles because they fund multilaterals, partnerships and NGOs. Bilaterals also have their own programmes, which include a huge variety of types of support. They may participate in SWAps and/or fund tailor-made projects to suit particular local needs; some have long term programmes in particular countries, which foster a longer term perspective.
- NGOs also fund a huge range of activities, including significant amounts of service delivery, as well as advocacy and accountability/watchdog functions.
- Coordination partnerships, which are constrained by the lack of accountability of better funded organisations (Roll Back Malaria, Partnership for Maternal, Neo-natal and Child Health).

This complex aid landscape for health - globally and nationally - is characterised by poor coordination between donors, high transaction costs for country governments in dealing with multiple development partners, lack of alignment with country priorities and highly volatile donor assistance, with marked annual fluctuations. There is growing consensus that the MDGs for health will not be achieved without a streamlined approach to implementation of health programmes[838] and that delivering sustainable results requires strengthening the systems that make health services work (see Part Three: Strong Health Systems).

In response to these concerns, the Paris Declaration on Aid Effectiveness (2005), reaffirmed in the Accra Agenda for Action (2008), framed a set of principles for national governments and international donors to commit to: partner country ownership; donor harmonisation; alignment with country plans and systems; mutual accountability; and managing for results.

As an integral part of the Global Campaign for the Health Millennium Development Goals, launched in 2007, the International Health Partnership (IHP+)[839] aims to rationalise the aid architecture around health. It seeks to broker commitments from development partners to provide long term, predictable funding in support of results oriented national plans, and to support strategies that deal with health systems constraints and that help improve alignment. In Nepal, the IHP+ has galvanised energies towards addressing financial barriers to care for the poor, including a government decision to provide free maternity care for all.[840]

The effect of Global Health Initiatives on MNH and SRH

GHIs came into being in the wake of the adoption of the health related MDGs in 2000, in response to the damage the HIV/AIDS epidemic was having on chronically under funded and weak health systems in low to middle income countries, notably in Sub-Saharan Africa[841]. From the outset there was debate about the relationship between GHIs and their effect on health systems in general and MNH and SRH.

There is some evidence that GHI funding could have a beneficial effect on maternal care. In Kenya, ANC attendance has been shown to increase if insecticide treated bed nets are distributed from ANC clinics[842], and in Ethiopia GHI funding has contributed to the establishment of a new cadre of extension health workers that provide not only HIV/AIDS services, but also MNH services[843]. However, examples of this type of reliable evidence of MNH and SRH service improvement "spin-offs" from GHI funding are rare. The scale on which they might be happening (if at all) is dubious when, for instance, WHO estimates that whilst access to HIV services increased from 5% to 31%

between 2003 and 2007, access to delivery with an SBA only rose from 61% to 65% between 1990 and 2006[844,845].

There is little data on the effects of GHI funding on government health and MNH SRH budgets, but some evidence that GHI funding strengthens overall national and sub-national health sector planning capacity in some countries[846]. There has been a welcome recent undertaking by the World Bank, GFATM and GAVI to "streamline their approach to investing in health systems"[847].

The strengths and weaknesses of different forms of development aid for MNH and SRH

Poverty reduction budget support

Poverty reduction budget support can take the form of a general contribution to the overall budget or funding earmarked for a particular sector. It is important for alignment and can increase ownership of the development process by country governments. It is also a good way of harmonising donors and decreasing transaction costs for country governments. However, there are some drawbacks. A review of aid instruments and SRH/HIV outcomes based largely on stakeholder interviews was conducted by the DFID Health Resource Centre in April 2007. This study found no conclusive evidence that any acceleration in progress towards attainment of MDGs 5 (and 6) can be attributed to poverty reduction budget support alone.

Furthermore, there is concern that poverty reduction budget support alone cannot adequately address SRH, especially for the poor, or more sensitive issues, such as safe abortion care and the needs of marginalised groups such as sex workers.[848] Poverty reduction budget support is unlikely to increase political commitment to SRH issues, especially when a government may not want to address issues which are controversial or associated with illegal activities, such as the provision of services for males having sex with males or sex workers.

The review therefore advocates using a basket of aid instruments to achieve greater impact in SRH, including direct funding to NGOs for service delivery, technical assistance and playing a watchdog role (for example providing shadow CEDAW reports) and for advocacy groups to influence national policies (such as for family planning for unmarried adolescents).

SWAps

It has been argued that "sector wide approaches present a unique opportunity to make a sustainable impact on maternal mortality" because, when successful, they allow development partners to support improvements in health systems and offer opportunities to make a sustainable impact on MMR. Improvements in maternal health can be used to measure the performance of the sector wide approach."[849]

The DFID funded West Bengal Health Systems Development Initiative (HSDI, the first sector programme in a federal country, in a state with a population of over 80 million) has reducing maternal and neonatal mortality as one of its four objectives, with unequivocal milestones such as a 50% increase in institutional deliveries and MMR reduced from 250 to 150 by 2010. An independent mid-term review found evidence of the Department of Health and Family Welfare's commitment towards implementation of these strategies to be "ample".[850]

It has also been argued that SWAps offer an opportunity for partners to bring gender issues to the table.[851] It is notable that gender has not been mainstreamed as a concern in global health, and is not discussed in many of the evaluations of different aid instruments.[852] This is an important

omission, given the fundamental importance of promoting gender equality and women's empowerment in order to achieve MDG 5 (see Part Four: Gender and Human Rights).

However, evidence from the Joint External Evaluation of the Health Sector in Tanzania did link a lack of gender equity analysis in strategies, policies and plans to high maternal mortality rates. This was despite progress in ownership, harmonisation (a health SWAp and basket funds) and alignment. This finding indicates that mainstreaming equity and rights into country led plans requires development partners to play a long term influencing role and to support capacity building in government and civil society. Partnerships which fail to address and monitor social objectives, such as gender equality, are unlikely to achieve MDG 5.[853]

Augmenting SWAps

In several countries, some development partners consider that progress towards MDG 5 is off track in the sector programme, or recognise that the partner government does not prioritise sensitive interventions. They have therefore identified aid instruments to supplement SWAps and recognise the need for a mix of aid instruments rather than a "conceptually pure" sector programme.

In Bangladesh in 2005/06, DFID and the EC assessed that the Health, Nutrition, Population Sector Programme (HNPSP) was progressing too slowly towards MDGs 4 and 5, and parallel investments outside the sector programme would be necessary to "kick start" progress in these areas. They took the novel decision to offer joint funding, under one budget head, to UNFPA, UNICEF and WHO, which required the three agencies to work together to accelerate progress towards MDGs 4 and 5 in a (then) unique project. Despite initial resistance from other multilaterals, the joint UN MNH project remains outside HNPSP but was designed to be convergent, and at some stage to be "folded in" to the sector programme. All three UN agencies provide technical guidance, and UNFPA and UNICEF also provide commodity supplies. However, it is too early to assess the effectiveness of this approach on utilisation of MNH services or health outcomes.

In Cambodia, despite progressive safe abortion legislation, unsafe abortion is still very prevalent and a significant contributor to maternal mortality. DFID assessed that, although a pooled sector programme was the best choice of aid instrument, safe abortion would not be given sufficient priority in the Sector Programme, and therefore designed a stand alone project to maintain progress and advocacy in this area[854].

UN implementation of projects and efforts in aid effectiveness

Where SWAps are not appropriate, well targeted and monitored projects, with government ownership, can be the most effective aid modality. The UN agencies are the obvious choice for this, but are hampered by a poor reputation for implementation in some countries. For example, in Yemen, a fragile state with very poor MNH and SRH indicators, the sector was not sufficiently coherent for a SWAp to be appropriate. The Royal Netherlands Embassy (RNE) funded an MNH programme, with DFID as a silent partner, designed to be implemented by UNFPA and UNICEF with WHO technical support[855]. In 2006, the annual programme review found implementation to be unsatisfactory[856]. The capacity of the UN implementing agencies was considered too weak. As a result, their contracts were terminated; the project was redesigned and put out to international tender[857]. Nigeria also provides examples of bilateral donors funding MNH projects[858].

The UN agencies are making efforts to better coordinate in the MNH field. UNICEF, WHO, UNFPA and The World Bank, known as the H4, have been strengthening their collaboration and synergies in

the MNH field, in particular at country level. UNFPA has recently created the Maternal Health Thematic Fund as an inter-agency funding mechanism, which will soon be evaluated.

Bottom up aid

There are too many donors in each country and in each sector and this is having a negative impact on results and effectiveness[859,17]. In 2005 de Renzio and Rogerson suggested that countries should choose which donors they would like, based on their comparative advantages[860]. The countries should be thought of as consumers of aid and allowed to choose their preferred aid partners and be in control of direction of aid. Countries would need the following information to make an informed choice:

- The specific dimensions of different donors (such as volume, type, timeframe and reliability);
- The breadth, depth and terms of availability of professional experience provided;
- The sensitivity of different agencies to country ownership and sovereignty;
- The degree of reciprocal trust developed over time;
- The flexibility of donor systems and procedures, and the degree of willingness to adapt them to existing country systems;
- The record of success or failure of past donor interventions;
- The nature, costs and risks of donor conditionalities involved.

Countries, for their part, would have to demonstrate their commitment to poverty reduction with long term strategies, have transparent and accountable government systems, develop rules of engagement with donors and demand greater transparency from donors. This system of aid is already working in some countries to some extent. This usually has to do with the relative power of that country (India and Brazil), or the level of commitment of local government agencies and donors (Tanzania). More work is needed to understand the conditions to be developed to drastically improve the effectiveness of health aid through a bottom up approach and through thorough implementation of the Paris Declaration. Should donors, for example, begin to specialise in particular sectors, or in particular countries?

Direct funding support to programme implementation is essential, as MNH is still largely under funded. Strategic funding based on careful and repeated assessments/situation analysis is crucial for supporting programme implementation. Creating new funding mechanisms or using existing ones to fund SRH and MNH is under debate.

[17] Knack, S., 2006. The effects of donor fragmentation on bureaucratic quality in aid-recipient countries. Research brief. New York: World Bank.

Implications: Results for improved outcomes

Measuring and tracking maternal and reproductive health

- Opportunities to measure MMR and, at a minimum, ensure that estimates for abortion are separated from other direct causes should be encouraged.
- Further development and use of maternal health indicators (including a range of access to reproductive health indicators) to track strength of health systems at national and local levels should be supported.
- Support for measurement, monitoring, and utilisation of data on the maternal health workforce is needed.
- Measuring quality matters. Over reliance on numerical indicators of quantity in absence of measures of quality should be avoided. Investing in strengthening mechanisms to identify poor clinical practice is an important component of quality and performance management (e.g. inappropriate interventions, iatrogenic morbidity and mortality and medical abuse). Measurement of coverage should be linked to that of quality and equity.
- Investment is needed to support efforts to quantify the costs of maternity care to poor households.
- It is important to be sensitive to potentially distorting effects of indicators for performance management (e.g. number of Caesarean sections)
- The involvement of users and communities in efforts to evaluate and monitor services is critical.
- Investments to strengthen in-country capacities to collect and analyse data for tracking, accountability, national stewardship and district management are needed.
- Far greater investment is needed for needs assessments, evaluation studies and implementation research, which are required for locally tailored interventions, lesson learning and scenario building for scaling up.
- Investment in the monitoring and evaluation of scale ups, as well as pilots, will expand knowledge about what works and should be encouraged and adequately funded.
- Donor harmonisation to reduce drain on country monitoring and evaluation resources is necessary and coordination between measurement initiatives globally is essential.

Aid effectiveness

- More and better aid is needed for maternal health and SRH in general. This should be long term and predictable.

- Urgent action is needed to harmonise international aid to health in developing countries. Better country ownership and alignment would be a good start.

- A mix of aid instruments based on the country context is thought to be more effective for maternal health than just budget support. This is particularly important for issues like safe abortion, family planning, HIV and maternal health and demand side issues.

- Delivering support to SRH and MNH through budget support and SWAps can improve predictability of aid, but there is a need for better tracking to ensure this – including support to public expenditure reviews of government budgets, especially those involving civil society.

- Opportunities afforded by shared results based frameworks[1] should be used to negotiate with partner governments and other development partners to make maternal health a specific headline indicator for budget support – including a choice of measures to reveal inequities, including underlying gender inequalities.

- Linked to the above, investment in strong monitoring and evaluation systems with disaggregated qualitative and quantitative data is needed.

- Investment in research on the effects of GHI funding and new aid instruments on utilisation of SRH and MNH services and outcomes is needed.

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