

Improving Reproductive, Maternal and Newborn Health: Reducing Unintended Pregnancies

Evidence Overview

A Working Paper (Version 1.0)



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Preface to the RMNH Evidence Series

This Preface provides the context for a series of evidence reviews relevant to improving Reproductive, Maternal and Newborn Health (RMNH) in low-income countries. The series reflects a process of incremental knowledge-building, with the intention of adding further reviews as required. This flexible approach to evidence synthesis is primarily aimed at informing the implementation of the UK Government's RMNH Business Plan (2011–2015) and in the spirit of sharing evidence the reviews are also made available publicly.

The need for decisions on health policies, programmes and practice to be informed by evidence is indisputable. The current debates are around types and grades of evidence, techniques for knowledge appraisal, management and uptake, and on the varying needs of different decision-making purposes and contexts.¹ What is clear is that to inform decision-making the best available evidence must be found and then applied. This, in turn, points to three requirements: the development of evidence-management skills, the promotion of circumstances conducive to the use of an evidence-based approach and recognition of the need to renew decisions in the light of new evidence. Acknowledging these key requirements has helped to drive and shape this series of RMNH evidence reviews.

This series acknowledges three main types of knowledge, set out in Panel 1 below, but draws primarily on empirical or explicit knowledge based on published, quantitative or qualitative research and other systematic approaches to enquiry. The wealth of experiential knowledge from country programmes will be captured elsewhere. In addition, if the best evidence available is to be found and applied to decision-making, it needs to acknowledge the dynamic nature of knowledge creation. New knowledge emerges continuously. Although policy and programme decisions must be made using the best evidence available at the time, there needs to be a system for regular updating as well as for reviewing earlier decisions.

Panel 1: Three main types of knowledge

Empirical knowledge: explicit knowledge from qualitative or quantitative research or other systematic modes of enquiry (e.g. international survey programme – similar to Demographic and Health Surveys).

Theoretical knowledge: derived from different theoretical frameworks applied to problems or issues, sometimes using research but often intuition or logic.

Experiential knowledge: craft or tacit knowledge built-up over a number of years of practice experience.

Source: Brechin A, Siddell M. 2000. 'Ways of knowing' in Gomm R, Davies C (ed). Using evidence in healthcare. Open University.

The wide scope of policy and programme interventions to improve RMNH requires a diverse and substantial body of knowledge to be identified, appraised, synthesised and shared. The scale of the task has required an incremental approach; with component knowledge products made available at different times over the course of almost a year, as set out in Table 1. Some of these are created using standard systematic review methodology and others from structured literature reviews. They do, however, share two important features in common: all have undergone peer-review processes as part of quality assurance and all seek to appraise and synthesis evidence but do not make specific policy, programme or practice recommendations.

The series of 12 evidence reviews will be made available as online resources or reference materials. We plan to add a search function to enable readers to readily locate relevant sub-sections, with the assumption that these materials will not be read cover to cover. This incremental

approach to appraising and sharing evidence also enables regular updates as well as feedback from users to be acknowledged. Feedback is welcome at RMNH-evidencefeedback@dfid.gov.uk

Table 1: The evidence series on RMNH

Series number	Title/topic	Source	Type of evidence review	Expected Availability
1.	The Evidence Towards MDG 5	Options Consultancy Services	Structured review	December 2010 (version Feb 2010)
2.	Burden, determinants & functioning health systems	DFID in-house	Structured review	December 2010 (version 1.0)
3.	Interventions to reduce unintended pregnancy	DFID in-house	Structured review	December 2010 (version 1.0)
4.	Private Sector Engagement in MNH/SRH	HLSP/JHU	Systematic review	December 2010
5.	Interventions for integrated care for mothers and newborns	DFID in-house/outourced	Structured review	April 2011 (tbc)
6.	What kinds of policy and programme interventions around referrals and transport contribute to reductions in maternal mortality?	University of Aberdeen	Systematic review (round 1)	April 2011
7.	What kinds of policy and programme interventions in post-abortion care contribute to reductions in maternal mortality?	Institute of Education	Systematic review (round 1)	April 2011
8.	What are the most effective models of delivery of improved maternal and child health outcomes for poor people in urban areas in LICs?	LSE	Systematic review (round 1)	June 2011
9.	What kind of family planning delivery mechanisms increase family planning acceptance in developing countries?	Portsmouth University	Systematic review (round 1)	March 2011
10.	What is the impact of method mix on contraceptive prevalence in developing countries?	Portsmouth University	Systematic review (round 1)	May 2011
11.	What is the effectiveness of nutrition support programs in reducing maternal mortality and morbidity?	TBC	Systematic review (round 2)	Dec 2011
12.	What is the effectiveness of demand side financing (DSF) measures in increasing maternal health service utilisation and outcomes, particularly for rural, poor and socially excluded women?	TBC	Systematic review (round 2)	Dec 2011

Executive Summary

This Evidence Overview provides a summary of the evidence on reducing the burden of unintended pregnancies in terms of two main packages of care: family planning and safe abortion. For each of these packages, the scope and magnitude of benefits to women and to broader society is reviewed, and the component interventions and delivery modalities outlined. The main body of the paper then synthesizes the evidence on interventions to reduce barriers to the supply of and demand for these services, including estimates of cost-effectiveness.

What is the rationale for providing family planning services?

Each year 75 million unintended pregnancies occur in the developing world (out of a total 186 million). Most of these end in abortions or unintended births, with sometimes catastrophic health economic effects for women and their families. Unintended pregnancies occur because some 215 million women have an unmet need for contraception. In other words, they want to avoid or delay pregnancy but are not using contraception.

Meeting the unmet need for family planning yields multiple benefits, not least through preventing maternal deaths. It has been estimated that a full one-third of the total maternal deaths can be attributed to non-use or lack of availability of contraception - or 150,000 deaths per year. Family planning means that unwanted pregnancies and the resultant abortions can be largely avoided. Adolescent girls are particularly vulnerable to unintended pregnancy. Adolescents are twice as likely to die during pregnancy and delivery as women in their 20s.

Reductions in family size are also associated with significant economic benefits for families and societies. When a family has fewer children, all of whom are likely to survive, they are able to invest in the children's nutrition, health and education, in a way that is much harder to achieve for families with nine or ten children. This investment in each person then leads to higher incomes and better standards of living.

A limited number of qualitative studies demonstrate that enabling women to achieve their reproductive goals also reaps personal and psychological rewards for women within the household, wider community and workforce. More research is needed on the personal, household and societal (non-health) benefits of contraceptive use.

What do we know about family planning methods?

There are now at least a dozen modern contraceptive technologies available and whilst there are very small health risks associated with some contraceptives, all contraceptive methods are safer than pregnancy and child birth. Several newer technologies (such as hormonal implants) have failure rates approaching zero. However it is important to note that no modern contraceptive approach is 100% effective in reducing unwanted pregnancies.

Long acting and permanent methods (such as implants, intrauterine devices and voluntary sterilisation) are the most effective contraceptives, (between 3 and 60 times more effective than short acting methods during a year of typical use) and they require little action by the client. Yet, despite these advantages, they are often difficult for clients to access and are not used as widely as other methods, particularly in Africa.

What do we know about barriers to access to family planning services?

Limited knowledge of contraception is still a more prominent barrier in some parts of Sub-Saharan Africa, and in all regions it is more common in rural areas and among poor and uneducated women. Many survey-based and in-depth qualitative studies suggest that women's fears about perceived health risks and side effects associated with modern contraceptives are a major barrier to adoption or reason for discontinuation.

The evidence also indicates that fear of social disapproval and lack of social acceptability of family planning is another potential barrier to contraceptive use. Women often face real or perceived opposition from their husband or families, reflecting culturally prescribed gender roles. Where the status of women is low, social barriers to accessing family planning methods can be very high.

Definitive evidence on financial and geographical barriers to access to services is mixed. In particular the influence of price on use of different contraceptive methods is not clear and we need a better understanding of the potential equity impacts.

Many interventions have been developed to reduce barriers to access for adolescents, but surprisingly few have been systematically evaluated, especially in developing countries. WHO is currently undertaking a systematic review of the literature that should be available by early 2011.

What do we know about raising awareness for family planning?

There is good country case study evidence demonstrating the important role of political leadership and support for family planning. Experiences from Rwanda and Kenya emphasise the importance of stimulating demand for family planning at the level of national policy and budgets. For instance in Kenya family planning champions used national survey evidence to advocate for a renewed commitment to contraceptive services. By reframing family planning as an important issue for the nation's economic growth and social development, their efforts ultimately led to government funds being allocated to contraceptive commodities in the 2005 national budget, a first for Kenya. At the same time, this evidence review clearly shows that there is no evidence supporting coercive government population policies.

At the programme level, awareness raising and demand creation interventions have moved from traditional "Information, Education Communication" activities to include elements that explicitly motivate a behaviour change through specific actions. This recognises that individual and family decisions are usually influenced by social and gender norms. There is now strong evidence from systematic reviews to suggest that so-called "Social and Behaviour Change Communication" (S/BCC) interventions can be effective in changing behaviour in settings with higher than socially desired levels of wanted and unwanted fertility. There is a need to further develop and rigorously test S/BCC interventions in settings or among populations with high wanted fertility

What do we know about delivery mechanisms for family planning?

Many of the original large scale family planning programmes in developing countries were organized around a vertical structure with central management and logistics. More recently, there has been renewed attention on strengthening existing models and developing new models for integrating services. At a minimum, integration requires regular access to and availability of contraceptive supplies and strong links between different levels of the health system. A key point in the continuum of care is the extended post partum period and throughout the first 12 months after child birth. However rigorous evidence on different approaches is limited.

Mobile outreach service delivery has potential for meeting the unmet need for a range of contraceptive methods. Evidence from a recent systematic review suggests that outreach and

community based distribution are effective and acceptable ways of increasing access to contraceptives, particularly injectables and long acting and permanent methods.

Engaging the private sector is important for delivering quality products and services. There is increasing evidence to suggest that social marketing and social franchising can be effective approaches to increasing the coverage of affordable family planning services and commodities by both increasing demand and making products more affordable and accessible. However it is less clear whether they can reach the very poorest.

Meeting the needs of adolescents requires specific interventions to reduce the additional barriers they face in accessing information and services. Yet to date, surprisingly few youth-friendly interventions have been rigorously evaluated in developing countries. A number of promising practices are emerging from quasi-experimental studies of interventions for both *unmarried and married* adolescents. These point to the need for context-specific combinations of interventions, including comprehensive BCC, community sensitisation, evidence-based sex education and life skills curricula, youth-friendly clinical services, referral networks between schools and health centres. Plus there is promising evidence for broader interventions to delay age of marriage, such as support for girls to remain in school, group formation and community awareness. There is an urgent need for more rigorous evaluations of such interventions.

Family planning interventions compare favourably with the cost-effectiveness of other health interventions in terms of cost per DALY. However, while there is a growing evidence base on the cost per unit output of different contraceptive technologies (measured by couple years of protection) there is far less evidence on how cost-effectiveness varies between different delivery models.

What is the rationale for providing safe abortion services?

Unsafe abortion is one of the major causes of maternal mortality globally. It is estimated that 47,000 (out of 358,000 maternal deaths) women died in 2008 as a result of unsafe abortions, many more suffer severe health consequences. According to the WHO, the risk of dying of an unsafe abortion is higher in Africa than anywhere else in the world.

There is evidence that providing safe abortion services has contributed to improvements in maternal health by preventing unsafe abortion. For instance, evidence from Bangladesh shows that part of the reduction in maternal mortality was due to a fall in abortion related deaths through the provision of safe abortion.

The economic case for action on unsafe abortion is also strong, with several studies now documenting the huge economic burden of unsafe abortion. Estimates of the cost of unsafe abortion and related morbidity and mortality in developing countries lie somewhere between \$375 and \$838 million a year.

What do we know about safe abortion interventions?

The availability and delivery modality of safe abortion services in a country depend to a large degree on its legal status. Unsafe abortion is most common in countries where abortion is highly restricted. Observational evidence shows that death from unsafe abortion is rare in countries where abortion is permitted and quality services are available.

In countries where abortion has fewer legal restrictions, provider and delivery systems vary substantially. In many developed countries, abortion is often part of the basic health services available. Compared with childbirth and other surgical procedures, and when performed by properly trained health personnel in well equipped facilities, abortion is a relatively safe procedure. There are virtually no maternal deaths associated with safe abortion in the developed world.

What do we know about barriers to access to safe abortion services?

Barriers to access to safe abortion include its legal status, lack of information and knowledge (even where it is legal), shame and secrecy around clandestine abortion and lack of donor funding. Due to the small sector, the limited number of actors working in the area and the presence of legal restrictions in many countries, much of the evidence on how to remove barriers and improve access to safe abortion care is generated by NGOs in the form of country case studies and programme evaluations.

Evidence from case study analysis in many countries demonstrates that increasing legal access to safe abortion is associated with improved sexual and reproductive health. Conversely, unsafe abortion and related mortality are both highest in countries with the most restrictive abortion laws.

As more developing countries have reformed their abortion laws, new evidence is emerging to suggest that legal abortion can save lives. For instance in South Africa, six years after liberalising its abortion law, deaths due to unsafe abortion dropped by at least 50% and the number and severity of post abortion complications also fell.

Qualitative evidence on how to reduce the impact of restrictive abortion laws or broaden the conditions under which abortion can be legally performed suggests that a combination of research, coalition building and communication strategies can be effective.

What do we know about improving the delivery of safe abortion services?

Based on country case study evidence, effective interventions to improve the quality of safe abortion services are likely to include the training of health personnel in safe abortion techniques, including medical abortion and counselling, for comprehensive abortion care. Interventions targeting life saving post-abortion care, improving the provision of drugs and equipment for health facilities and developing service protocols are also important.

Overall, however there is still limited evidence on interventions to improve the quality and delivery of safe abortion services in different settings and for different populations, including adolescents. More research is needed to monitor progress in improving health outcomes. Important unknowns include how to reach the poorest and most vulnerable groups and what are the best interventions to reduce delays and its effect on the safety of abortion. Similarly, more comparative evidence is needed on the relative cost-effectiveness of different service delivery models.

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Acroynms

ART	Antiretroviral therapy
BCC	Behaviour Change Communication
CBD	Community based distribution
CPI	Client-provider interactions
CSM	Contraceptive social marketing
CYP	Couple years of protection
CHW	Community Health Workers
DALY	Disability Adjusted Life Year
D&E	Dilatation and Evacuation
CP	Contraceptive prevalence
DFID	Department for International Development
DHS	Demographic and Health Surveys
DMT	Decision-Making Tool
DSF	Demand side financing
FP	Family Planning
ICT	Information and Communication Technologies
IEC	Information, Education, Communication
IPPF	International Planned Parenthood Federation
IUD	Intrauterine device
LAM	Lactational amenorrhea method
LAPM	long acting and permanent
LHW	Lay health workers
MA	Medical Abortion
MDG	Millennium Development Goals
MSI	Marie Stopes International
MVA	manual vacuum aspiration
NGO	Non-government organisation
PAC	Post abortion care
PEPFAR	US President's Emergency Plan for AIDS Relief
PITC	Provider Initiated Testing and Counselling
PMTCT	Preventing mother-to-child transmission
PMNCH	Partnership for Maternal, Newborn and Child Health
RCT	Randomised Control Trial
RMNH	Reproductive, Maternal and Newborn Health
RH	Reproductive Health
S/BCC	'Social and Behavioural Change Communication
SBA	Skilled birth attendant
SDIP	Safe Delivery Incentive Programme
SRH	Sexual and Reproductive Health
STIs	Sexually Transmitted Infections
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization
WLHA	Women living with HIV

1. Introduction

Today, a woman living in the United Kingdom is likely to plan and have around two children and faces a risk of dying during pregnancy and childbirth of just 1 in 5000.² The comparison with a woman living in, say, Sierra Leone is stark: she is likely to have 6 children if she completes her reproductive life but also has a risk of 1 in 21 of dying of maternal causes. The contrast for neonatal mortality is equally alarming: respectively 3.1 and 38.6 deaths in the first month of life per 1000 live births.³ The current low levels both of unintended pregnancies and of maternal and newborn mortality in high income countries are the hallmark of functioning health systems, achieving high and equitable coverage of efficacious clinical interventions and good quality services for women, for mothers and for babies, supported by broader socioeconomic development.⁴ This success story, combined with more recent others from lower and middle-income countries, is reflected in the common phrase among the global health community – ‘we know what works.’⁵

1.1 Scope of this paper

This paper represents the fourth in a series of reviews summarising the current state of evidence on ‘what works’ to improve reproductive, maternal and newborn health (RMNH). The primary audience for the series is policy and programme decision-makers in DFID country offices and in partner organisations, and aimed at informing the implementation of the UK Government’s RMNH Business Plan (2011–2015). Each paper in the series acts a resource to support practical decisions. The intention is to present the evidence rather than to draw conclusions or recommendations for policy or programmes, important further steps which are taken in other DFID documents. The papers rely heavily on existing evidence summaries and syntheses, with some providing comprehensive structured overviews and others undertaken as full systematic reviews. The structure and content of the evidence series was driven by a simple conceptual framework which sets out the pathways and levels of interventions to improve RMNH, as described below.

This forth paper in the series provides an overview of the evidence on interventions to reduce the burden from unintended pregnancies.

1.2. Conceptual Framework for Evidence Series

The health of women, newborns, children and adolescent girls is inextricably linked across life cycles and across generations.⁶ This synergy is captured in the Continuum of Care framework first promoted by the World Health Organization (WHO)⁷ in 2005 and now depicted as in Figure 1.⁸ There are two dimensions implied in this continuum framework: across time and target group – from pre-pregnancy to childhood, and across place – from home to referral hospital. In terms of the former dimension, this evidence series focuses on a sub-set of the life cycle continuum which covers the period from before pregnancy through to the end of the postnatal period at six weeks for mothers and at 28 days for the newborn. This interval of time captures the extreme negative outcomes – maternal and neonatal deaths and stillbirths, as well as positive outcomes as defined by the WHO: ‘complete physical, mental and social wellbeing and not the mere absence of disease’. (See Annex for key terms).

Figure 1 The RMNCH Continuum of Care



Source: www.pmnch.org 7

In practical terms, the need to consider the evidence both on interventions to assure positive health outcomes and to prevent negative ones increases the scope and complexity of this evidence series beyond that found in a more disease-focused set of reviews.⁹ As with other outcomes, RMNH and avoidance of death can be achieved through both preventive and curative strategies. However, given that pregnancy is the conditionality, by definition, for pregnancy-related health and death, then avoidance of unintended pregnancy is clearly also an important primary preventive strategy. Once pregnant, a woman's health and that of her baby can be assured by routine maternity care – during and after childbirth, and should complications arise – by time access to effective curative care.¹⁰ Avoidance of unintended pregnancy – the focus of this paper – and safe childbirth are thus the two main intermediate outcomes affecting the health and survival of women who are of reproductive age and of newborns that are considered in the evidence series.

Interventions to avoid unintended pregnancy or to achieve safe childbirth operate at different levels of abstraction and are delivered at different points on the continuum of care from home to referral hospital.⁶ In this evidence series, a distinction is made between clinical interventions which directly intervene to avoid pregnancy, such as hormonal contraception, or to prevent death from severe newborn sepsis, such as antibiotics, versus those interventions that affect the availability and quality of services, versus those affecting the demand for care, versus those which involve more distal determinants, such as female education.

This hierarchy of levels of interventions has implications not only for the type of evidence available but also its generalisability.⁹ For example, magnesium sulphate as the drug of first choice for the management of eclamptic convulsions in pregnant woman has been proven to be efficacious through high quality RCTs and is evidence of wide relevance and applicability. On the other hand, interventions to improve emergency transport for obstetric or newborn complications include a diverse range of options often specific to a particular context and with varying effectiveness, so making their relevance and applicability more limited, and this is often further compromised by the use of weak evaluation designs by scientific standards.

This example also highlights the crucial distinction between single interventions, such as insecticide treated bed nets versus composites or packages of interventions (or care) which are typically delivered as services.¹¹ A further important distinction is between *content interventions*, such as drugs or clinical procedures, versus *implementation interventions*, which improve the delivery of proven interventions. Defining 'what works' under these circumstances must take into account these issues and complexities, as discussed in the Methods section below. Given the main target

audience for this evidence series, the main focus is on evidence on interventions to improve the implementation of packages of care.

1.3 Methods

As mentioned earlier, the full evidence series includes some papers which are structured literature reviews and others which are systematic reviews (see Forward); this third paper falls into the former category. The methods for finding evidence thus vary somewhat between the papers, although all employ formal search applied to the main literature database. Additionally, snowball searching was also used, along with contacting experts and agencies working on RMNH and reviewing abstracts published in recent relevant conferences. Expert panel reviewers for the evidence series also suggested further key materials.

Identified reports and studies were included in the following categories:

1. Published research summary papers and reports, including systematic and synthetic reviews, providing evidence from primary studies
2. Published reports from international organisations
3. Peer-reviewed publications on relevant historical, ecologic or programmatic experiences across multiple countries
4. Published research paper on major primary studies of high grade, where no systematic or synthetic review was available.

For those papers in the evidence series which are not formal systematic reviews, reliance is placed on strength of evidence according primarily to design and source, and no further grading of quality is undertaken.¹² Given the diversity of types and levels of interventions include in this overview, a scheme was developed, adapted from the National Institute for Clinical Excellence (NICE), SIGN¹³ and others¹⁴, for gauging the strength of the evidence (see Table 2). This combines the standard classification of evidence which is based on study design, with an assessment of the strength of non-research evidence on implementation interventions based on plausibility, since evaluation by experimental design may not be realistic for some of these.¹⁵ The aim is to bring findings together to create 'evidence statements' on interventions, and then group these into three categories to differentiate what is known reliably, what looks promising and what are the important unknowns (see Table 3). This synthesis process is ongoing and will be completed in subsequent updates of this working paper.

Table 2: Strengthening of evidence grading

Narrative used	Specification
Very strong plausibility	Very strong logical or theoretical basis, substantial multi-country programme experience, very strong consensus from respected authorities.
Strong plausibility	Strong logical or theoretical basis, some multi-country experience, strong consensus from respected authorities.
Very strong evidence	Evidence from at least one systematic review of multiple, well-designed RCTs.
Strong evidence	Evidence from at least one properly designed RCT of adequate size.
Moderate evidence	Evidence from well-designed trials without randomisation.
Other evidence	Evidence from well-designed observational studies from more than one centre or group.

Table 3: Categorisation of ‘What is known’

Category	Basis
What do we know reliably?	Very strong to moderate evidence from studies across multiple (N>3) countries (i.e. generalisable) that an intervention/package is effective, or strong plausibility of benefit.
What looks promising?	Very strong to moderate evidence that an intervention/package is effective but only from 3 or less countries, or moderate plausibility of benefit.

1.4 Structure of this paper

This forth paper in the series provides an overview of the evidence on reducing the burden of unintended pregnancies in terms of two main packages of care: family planning and safe abortion. For each of these packages, the scope and magnitude of benefits to women and to broader society is reviewed, and the component interventions and delivery modalities outlined. The main body of the paper then synthesises the evidence on interventions to reduce barriers to the supply of and demand for these services, including estimates of cost-effectiveness.

2. Family planning

2.1 The rationale for family planning

Each year 75 million unintended pregnancies occur in the developing world (out of a total 186 million).¹⁶ Most of these end in abortions or unintended births, with sometimes catastrophic health and economic effects for women and their families. Unintended pregnancies occur because some 215 million women have an unmet need for contraception. In other words, they don't want to get pregnant but are not using contraception.

The reasons for this unmet need are lack of knowledge, difficult access to supplies and services, financial costs, fear of side effects and opposition from spouses, other family members and often the wider cultural or legal environment. These reasons are discussed further below. Family planning programmes have been shown to be effective in reducing these obstacles, the evidence for this is also discussed later on.

The unmet need for family planning is greatest in Africa and Asia. Unmet need for modern contraceptives ranges from 28% of married women aged 15–49 in sub-Saharan Africa and 23% in Asia (excluding East Asia) to 18% in Latin America and the Caribbean.¹⁷

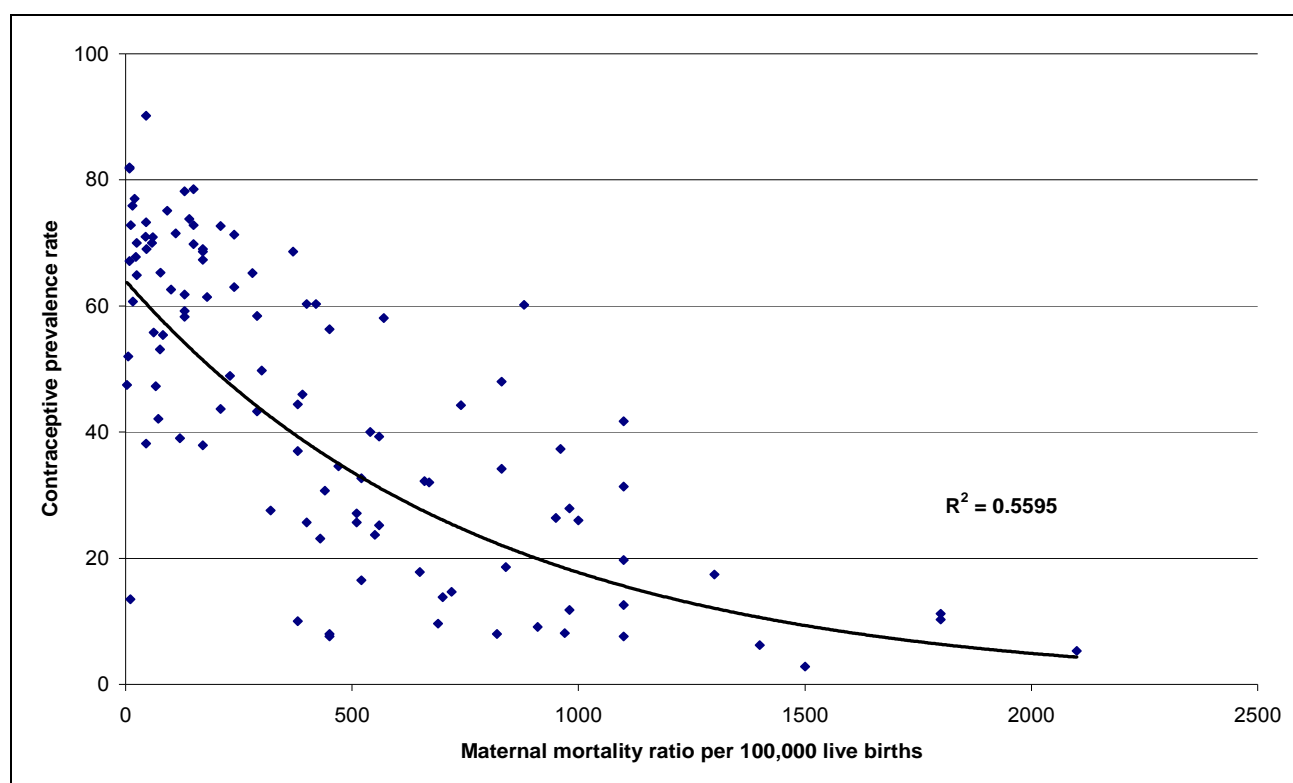
Failing to prevent unwanted pregnancy leads some women and girls to induce abortion: every year, 42 million or 20% of all pregnancies end in induced abortion.¹⁸ In 2008, an estimated 22 million unsafe abortions took place, resulting in about 70,000 deaths of women and girls.^{19,20} This is equivalent to one unsafe abortion for every seven live births. More than 97% of all unsafe abortions were in developing countries. An estimated five million are hospitalised for the treatment of serious complications such as bleeding or infection.⁹ The following sections outline in more detail the potential benefits from investment in family planning programmes.

2.1.1 Maternal health

Reducing the number of births, reduces the number of times a woman is exposed to the risk of mortality. Although it is difficult to attribute change in the maternal mortality ratio to a particular cause, evidence exists to support the link between meeting the unmet need for family planning and reducing maternal mortality. According to recent analysis of DHS data from 68 countries, Stover and Ross estimate that the drop in observed total fertility rates from 1990 to 2005, due primarily to increased contraceptive use, resulted in 1.2 million fewer maternal deaths – 15% fewer than would have occurred with no fertility decline.²¹ Overall, it has been estimated that one third of the total maternal deaths can be attributed to non-use or lack of availability of contraception – or 150,000 deaths per year.²²

Just meeting unmet need for contraception could reduce current unintended pregnancies by 71%, the equivalent of a reduction from 75 million pregnancies in 2008 to 22 million (preventing 53 million unintended pregnancies per year).²³ If family planning is focused on women in the highest risk categories for pregnancy and birth (for example older or younger women, women who have had a birth or abortion in the past two years, women of short stature, or high parity women) then both the maternal mortality ratio and the lifetime risk of death can be reduced, although to a lesser extent.²⁴ Figure 2 shows the strong association between the contraceptive prevalence rate and the maternal mortality ratio.

Figure 2: Relationship between contraceptive prevalence rate and maternal mortality ratio



Source: WHO World Health Statistics data. 2008.

The evidence regarding the effect of shorter birth intervals on maternal health (as opposed to infant health which is detailed below) is more limited although it is likely that there is an effect of maternal nutritional depletion, for example increased anaemia, which increases the fatality rate from postpartum haemorrhage.²⁵

Contraceptive use can also impact on women's risk of maternal mortality at either end of the reproductive age span. Adolescence, older reproductive age, and parity greater than 4 births elevate the risk of maternal mortality. Providing contraceptive services to these groups can reduce the maternal mortality ratio by up to 58%.²⁶

Indirect evidence on the impact of family planning on maternal health comes from Bangladesh where the maternal mortality ratio declined from 850 deaths per 100,000 live births in 1990 to 380 per 100,000 in 2000 – even though only 12% of births were attended by a skilled birth attendant in 2002.²⁷ The decline has been attributed to Bangladesh's great success in expanding family planning access and reducing fertility rates.

2.1.2 Reducing unsafe abortion

Family planning means that unwanted pregnancies, and the resultant abortions, can potentially be avoided.^{28,29} The main causes of mortality and morbidity associated with unsafe abortion are sepsis, following incomplete removal of the foetus, and perforation of the uterus.³⁰ The legality and safety of abortion are strongly correlated.³¹ In the developed world where abortion is generally legal, abortion mortality is as low as 0.2 to 1.2 deaths per 100,000 procedures.

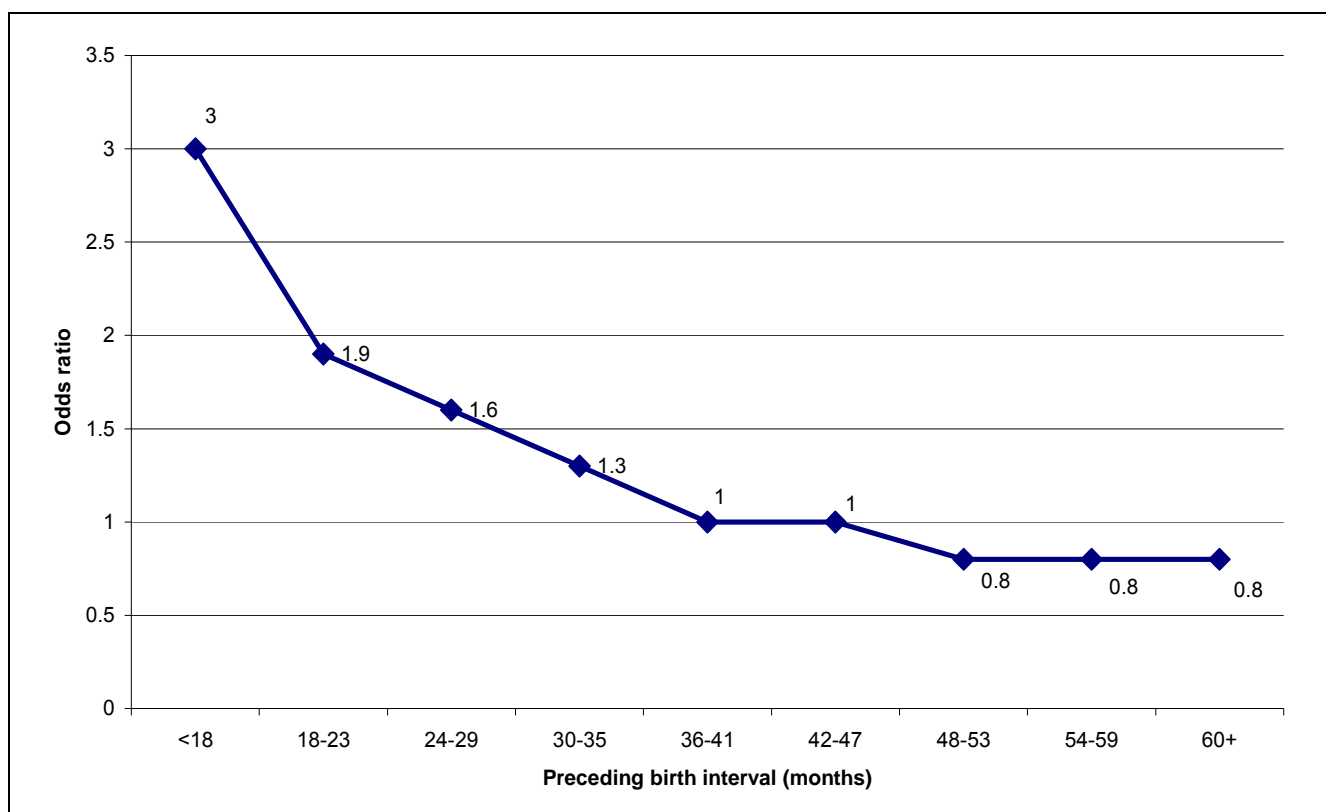
The WHO estimates that unsafe abortion rates are over 30 per 1000 women in Eastern and Middle Africa.³² In particular, young women in sub-Saharan Africa are at particular risk from unsafe abortion – they account for 25% of all unsafe abortions compared with 16% of births.³³

Based on contraceptive use data from DHS surveys and WHO unsafe abortion rates, it is estimated that 89% of the disease burden in 2000 due to abortion complications was attributable to unprotected sex or use of less effective traditional contraceptive methods.³⁴ This amounted to 51,000 deaths and 4.4 million disability-adjusted life years (DALYs), with 82% of the burden falling on women aged <30 years.

2.1.3 Infant and child wellbeing

Family planning can help a woman space her births. A large literature now exists that demonstrates that increased birth intervals have a positive effect on outcomes for both the index child and the older sibling, with the optimal birth interval between two and five years³⁵, as shown in Figure 3, taken from DHS data. It should be noted that there is not an association between unmet need and the prevalence of short intervals, mainly because countries with high unmet need and high fertility levels often have traditional practices to space births such as postpartum breastfeeding and/or abstinence.³⁶

Figure 3: Odds ratio of index child death by preceding birth interval



Source: Rutstein (2005)³⁷

There is debate in the literature as to whether this is a spurious or causal relationship, since there are so many confounding factors, such as socioeconomic status, premature birth of the infant and breastfeeding behaviour. The majority of the literature does point to this relationship being causal with studies increasingly sophisticated and presenting increasingly compelling evidence to the causal relationship. What is less clear is the mechanism by which shorter birth intervals cause higher infant mortality.

Three main mechanisms are suggested:

- **Maternal depletion syndrome:** short birth intervals do not allow the mother to replete her nutritional status which puts the index infant at risk due to foetal malnutrition and a compromised intrauterine environment.³⁸
- **Sibling rivalry:** when an additional child is born while his or her siblings still require a high level of parental resources, then there is increased rivalry for those resources. This rivalry for resources impacts upon the incidence of morbidity and the fatality rate from illness and accidents.^{39,40}
- **Exposure to infectious disease:** short birth intervals lead to the index child having increased exposure to infectious diseases from siblings. The highest prevalence of infectious disease is at around two years. Where there has been a short birth interval, this time in the older sibling will coincide with decreasing immunity from the mother in the index child as the child is weaned from breast milk.⁴¹

There is also conflicting evidence about when short birth intervals have the greatest effect. Some researchers have found that the neonatal period has the greatest increased risk whereas other have pointed to the post-neonatal period as being more significant.^{42,43} It is important to note that the shortest birth intervals may be short because of a premature birth (which may be compounded by maternal depletion) which means that the effect of the shortest birth intervals may be skewed if the confounding effect of premature birth is not controlled.^{44,45}

Orphaned children have far worse health outcomes, especially maternal orphans. The youngest orphans, although making up a smaller percentage of all orphans (16%), are those most likely to be orphaned through maternal mortality but are the least resilient and have the greatest need for physical care and nurturing. As a result, the survival of young children under the age of three is at stake when their mothers have recently died.

Research in both sub-Saharan Africa and Asia found that the youngest maternal orphans have much higher chances of dying than non-orphaned children.^{46,47} In particular, infants who survive the death of their mother during childbirth are at extreme risk; recent research in Bangladesh confirms that babies and children up to 10 years of ages are less likely to survive if they have lost their mother than those whose mothers are alive.⁴⁸

One important concern is that orphans, especially maternal, will acquire less education. There are different types of missed opportunities in education, including lack of enrolment, interrupted schooling and poor performance while in school. Longitudinal evidence from South Africa shows that maternal orphans are at lower education levels than other children of the same age and also compared to other non-orphans with whom they live.⁴⁹

2.1.4 Adolescent girls

The potential benefits of family planning to adolescent girls are especially high. In 2008, adolescents aged 15–19 in the developing world had an estimated 14.3 million births, about one eighth of all developing world births. An estimated 44% of married adolescents aged 15–19 in developing countries want to avoid pregnancy. Adolescents aged 15–19 account for 14% of all unsafe abortions.⁵⁰

Adolescents are particularly vulnerable to unintended pregnancy because most are poor or lack money of their own because they are still in school, married with little or no control of household

resources, not working or able to earn only very low wages. They also have inadequate knowledge about contraception, little independence in making decisions about the timing of births and inexperience in obtaining family planning services.⁵¹

Older adolescents are twice as likely to die during pregnancy and delivery as women in their 20s, partly as a result of physical immaturity.⁵² Girls giving birth before the age of 15 are five times more likely to die during pregnancy or delivery as women in their 20s, partly as a result of physical immaturity according to DHS research.⁵³ It is likely that the social and health disadvantages of early motherhood are particularly concentrated among very young mothers who give birth before the age of 16.

Younger mothers have babies who are more likely to die young. Evidence across 76 countries shows that when a first born child is born to a young mother (12 to 20 years old), then the child is at a greater risk of dying before the age of five, being stunted, being underweight, and suffering from anaemia compared to a mother 24 to 26 years old.⁵⁴

Because adolescent girls face so many problems in protecting themselves from unintended pregnancy, a disproportionate number of abortions occur in this age group. Unsafe abortions are much more prevalent among those less than 20 years old and are a significant part of the problem of maternal deaths. Fourteen percent of all unsafe abortions in low- and middle-income countries are among women aged 15–19 years. About 2.5 million adolescents have unsafe abortions every year, and adolescents are more seriously affected by complications than are older women.⁵⁵

A review of 27 studies of hospital-based abortion data in developing countries revealed that a disproportionate 60% of hospital admissions for abortion complications are adolescents.⁵⁶ Complications include pelvic sepsis, septicaemia, haemorrhage, renal failure, and an array of reproductive tract injuries. Without treatment, these are fatal.

2.1.5 HIV and STIs

Use of barrier methods, in particular condoms, has an additional benefit in preventing HIV and other STIs. Each year there are around 340 million new cases of common sexually transmitted infections (STI) including HIV and syphilis – many with serious effects on health and fertility. It is estimated that each year, globally, more than 340 million new cases of common bacterial and protozoal sexually transmitted infections (STIs) occur in men and women aged 15–49, such as syphilis, gonorrhoea, chlamydial genital infections and trichomoniasis.⁵⁷ The largest proportion of these cases are in south and south-east Asia followed by sub-Saharan Africa, Latin America and the Caribbean.⁵⁸ Viral STIs such as HIV, human herpes viruses, human papillomaviruses (HPV) and hepatitis B are also transmitted across the world each year. Many STIs have long term and severe consequences for women such as infertility, potentially fatal ectopic pregnancy and chronic illness as well as acute symptoms.⁵⁹

Among married women in high HIV prevalence countries condom use is low. In addition as a proportion of contraceptive method mix, has remained almost unchanged in developing countries. Of the 12 countries with a 2003 HIV prevalence of at least 5%, only Cameroon and Namibia have shown rising condom use among married women (see Table 6 below).⁶⁰ Increasingly, HIV is being spread within marriage⁶¹ which means that the potential for condom use to influence the spread of HIV when used for family planning is increasing. Unfortunately, condom use within committed relationships is stigmatised due to its relationship with extra-marital and commercial sex^{62,63} and may not be considered an appropriate form of family planning for marital relations.^{64,65} Two significant areas needing further research are the use of condoms for family planning outside of marriage and also the influence of price on the uptake of the female condom.

Prevention of HIV has an additional effect on infant and child survival in addition to the prevention of orphan-hood. Children orphaned by HIV have even higher mortality than those orphaned by other reasons.⁶⁶ Therefore, use of condoms has beneficial effects on infant and child health as outlined previously, as well as additional benefits through preventing adult HIV morbidity and mortality.

Furthermore, prevention of maternal HIV will lead to less need for maternal to child transmission prevention and will reduce the overall number of infants born with HIV.

Table 4. Condom use in 12 countries with high HIV prevalence among adults

Country	% of adults with HIV, 2003	% of married women reporting condom use		
		Earliest	Most recent	Average annual % of change
Cameroon	6.9	2.1 (1998)	7.6 (2004)	0.9
Cote d'Ivoire	7.0	0.7 (1994)	1.8 (1999)	0.2
Haiti	5.6	2.6 (1995)	2.9 (2000)	0.1
Kenya	6.7	0.8 (1993)	1.2 (2003)	<0.1
Malawi	14.2	1.6 (1992)	1.8 (2004)	<0.1
Namibia	21.3	0.3 (1992)	5.2 (2000)	0.6
Nigeria	5.4	1.2 (1999)	1.9 (2003)	0.2
Rwanda	5.1	0.2 (1992)	0.4 (2000)	<0.1
South Africa	21.5	0.7 (1987)	1.7 (1998)	<0.1
Tanzania	8.8	1.7 (1994)	2.0 (2005)	<0.1
Zambia	16.5	3.5 (1996)	3.8 (2002)	0.1
Zimbabwe	24.6	2.3 (1994)	1.8 (1999)	−0.

Source: Seiber et al. 2007.⁶⁷

Work by Cleland and Ali among young unmarried African women found that condom use was not related to the severity of the national HIV epidemics.⁶⁸ They found that there are a number of countries with a significant increase in condom use (based on use at last coitus among unmarried woman aged 15–24), with some of the largest increases in west Africa, where HIV prevalence is lower than east and parts of southern Africa, where less of an increase was reported. The authors point out the difficulties of using surveys to measure sexual behaviour and highlight the possibility that the trend may only reflect a growing tendency for young women to provide socially desirable responses.

2.1.6 Population dynamics

Contraceptive prevalence and fertility are closely related. Although there are many other determinants of fertility, contraceptive use, especially modern contraceptives, is a key driver in the contemporary fertility transition. Population growth is almost entirely due to differences in fertility – it is far more important for population growth whether a woman has two or eight children than if she lives for 35 or 70 years. Additionally, as desired fertility drops, the main driver behind population growth is going to be unmet need.⁶⁹

Population momentum is another important factor in determining population growth. Although replacement level fertilityⁱ, over time, will eventually lead to zero growth rates, the past high fertility levels mean that there will be population growth even if fertility rates drop. This is due to 'population momentum' which is the effect of the larger cohorts of girls (from past high fertility) entering the reproductive age and beginning their own childbearing.ⁱⁱ Estimates show that if replacement fertility was immediately achieved (an unlikely scenario as fertility decline is usually gradual), the population of the least developed countries would still grow by 1.51.⁷⁰

ⁱ Where, on average, each woman replaces herself with a girl taking into account mortality up to the end of the reproductive age (usually 50). This figure is usually around a Total Fertility Rate of 2.1 but will be more or less depending on the levels of female mortality and the sex ratio at birth (which naturally is about 1.05 boys for each girl but may be artificially skewed towards boys through sex selective abortion).

The most appropriate measure is the Net Reproduction Rate which can be interpreted as the average number of daughters that female members of a cohort would bear during their reproductive life span if they were subject to the observed age-specific fertility rates and mortality rates throughout their lifetimes. If the NRR is greater than 1 then a cohort of girl babies would leave behind a larger cohort of daughters than they themselves represented.

ⁱⁱ This was one of the reasons that the 'One Child Policy' in China was so strictly enforced in the 1980s. There had been extremely high fertility in the 1960s and even replacement level fertility would have led to high levels of population growth in the 1980s.

Another factor, often overlooked, linking fertility and population growth is how old women are on average when giving birth. Even if completed fertility is the same, a population where women are having their babies earlier will grow faster than one where women have their children laterⁱ. The impact of generational length on population growth has been recognised in population policies that attempt to delay childbearing to older ages, for example, in China and those which concentrate childbearing on younger ages (followed by sterilisation), for example in India.⁷¹

As discussed earlier, reducing adolescent fertility is good for maternal and child health – and also reduces population growth, regardless of whether overall fertility is reduced. This effect also means that the reduction in the population growth rate resulting from a reduction in the Total Fertility Rate is proportionate rather than absolute – in terms of its impact on long-term growth rates, fertility reduction clearly has increasing returns.ⁱⁱ

2.1.7 Economic benefits of family planning

Over the last decade, advocates of family planning services have justified family planning on the basis of health and human rights benefits. Yet, reductions in family size are known to produce significant economic benefits for families and societies and be a major driver of development in low and middle income countries. This process is known as the *demographic transition* and consists of a virtuous circle of rising income per capita, lower desired family size, greater use of contraception, lower numbers of children, and so rising income per capita. When a family has fewer children, all of whom are likely to survive, they are able to invest in the children's nutrition, health and education, in a way that is much harder to achieve for families with nine or ten children. This investment in each person then leads to higher incomes and better standards of living.

This effect is also illustrated by looking at the relationship between female labour force participation, per cent of women workers who receive wages and fertility. As women spend less time looking after their children, they spend more time in work, thus boosting income and reducing poverty.⁷² Fertility declines are associated with increases in women's paid labour force participation (see Figure below).

ⁱ Intuitively, if women in population A have, on average, four children each at an average of 20 and in population B four children at an average of 40, after 80 years, women in population A will have reproduced four times and women in population B only twice. Women in population A will have 16 descendents compared with eight in population B.

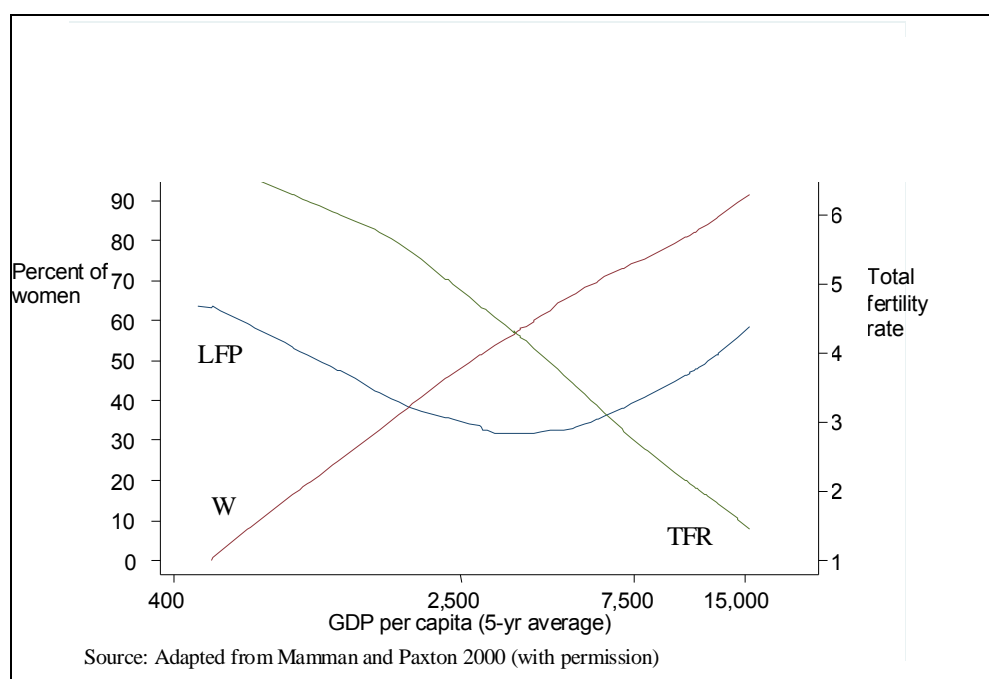
Using the NRR from footnote 16, the relationship can be expressed mathematically:

Population growth rate = $\ln(\text{NRR}) / \text{mean generation length}$.

ⁱⁱ This can be expressed mathematically as:

$\Delta r = [\ln(\text{TFR}(2) / \text{TFR}(1)) / T]$ Where r is the population growth rate, T is the generation length, TFR is total fertility rate and $\text{TFR}(1)$ and $\text{TFR}(2)$ refer to the total fertility rates at times 1 and 2 before and after the change in fertility.

Figure 4: Relationship between female labour force participation (LFP), % of female workers who receive wages (W) and total fertility rate (TFR)



Source: From Mamman and Paxton (2000).⁷³

Countries undergoing demographic transition often witness a change in their age structure whereby falling birth rates result in a lower proportion of young dependents and a bulge in people of working age. The economic benefit of a high ratio of working age to dependent population during the demographic transition is known as a 'demographic gift' and was seen to be one of the major drivers of the development of China and the Asian Tiger economies.⁷⁴

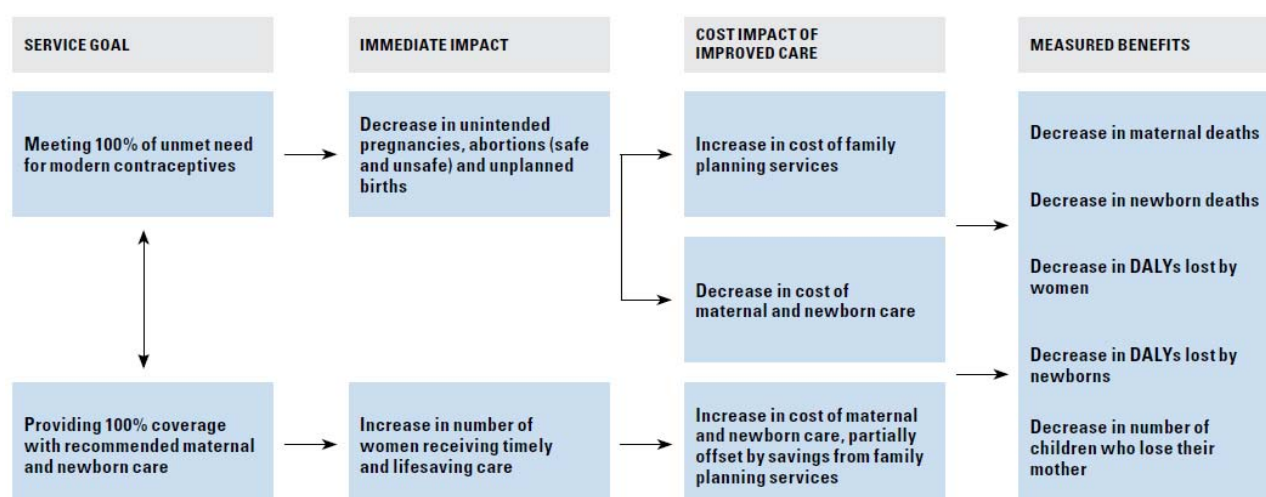
The main driving force behind a demographic transition is an increasing desire to limit family size. Investing in family planning services can enable families to realise this goal by helping meet rising demand for contraceptive commodities. Furthermore there is evidence from developing countries that well-implemented family planning programmes that meet unmet need in a sustainable manner will lead to increased demand for family planning in the long term.⁷⁵

Quantifying the economic benefits of reduced fertility is difficult but in a recent evidence paper published by DANIDA it was estimated that in developing countries, 'for each percentage point of fertility reduction, per capita GDP *growth* will likely increase by 0.25%.'⁷⁶ As much as one third of East Asia's economic growth between 1965 and 1990 has been attributed to the demographic dividend resulting from falling fertility rates.

The prevention of unintended pregnancies can also generate large savings to the health and education sectors, and wider development investments. For instance, Speigal et al estimated that for every US\$1 a government spends on family planning service delivery, US\$2 to US\$6 can be saved in providing other interventions, including basic health and education for fewer children, maternal health services, and improvements in water and sanitation.⁷⁷

Another estimate for Zambia argued that one dollar invested in family planning saved four dollars in other health and development areas, including maternal health, immunisation, malaria, education, and water and sanitation.⁷⁸ Preventing unintended pregnancy (and providing safe abortion) is less expensive than treating the complications of unsafe abortion, pregnancy and delivery. The intervention transmission mechanisms are illustrated in the figure below.

Figure 5: Intervention transmission mechanisms, costs and benefits



Source: Singh et al, 2009

2.1.8 Women's rights, empowerment and gender equality

In addition to the health benefits of family planning for women and their children, and the macro-level economic benefits of the demographic dividend, studies have found that women who voluntarily plan their families reap personal, psychological and economic rewards.⁷⁹ Enabling women to have choices in their lives, especially the right to determine the number, timing and spacing of their children free of discrimination, coercion or violence, is key to women's empowerment and gender equality.

When women enjoy equal rights and opportunities, including the right to determine their fertility, they are better able to make decisions in the household, participate in society and in non-domestic activities. The main and oft-cited source of such evidence is the Women's Studies Project (WSP), a five-year, multi-country qualitative research by Family Health International set up to examine the impact of family planning on women's lives, moving beyond the impact on women's physical health.⁸⁰ The range of social and economic benefits associated with contraceptive use include several aspects of women's empowerment and quality of life, including:

- Greater freedom to participate in the work force. Bolivian women using modern contraceptives were more likely to have paid jobs; so were Indonesian women using long-acting methods. In Cebu, the Philippines, the average income growth for women with one to three pregnancies was twice that of women who had undergone more than seven pregnancies.⁸¹
- Indonesian and Brazilian women found that family planning offered freedom from fear of unplanned pregnancy and could improve sexual life, partner relations and family wellbeing.
- Increased women's self-esteem and self-image and less worry about unplanned pregnancies (the Republic of Korea).
- More time to participate in civil society such as parent-teacher associations and religious organisations, and greater opportunities to socialise (Western Visayas, the Philippines, but not Zimbabwe).
- More satisfied with their lives and more likely to share in household decision-making (Western Visayas, the Philippines).
- However, whilst family planning helps women meet their practical needs, it is not sufficient to help them meet all their needs. For example, domestic violence did not lessen for contraceptive users in the Philippines.

It is important to note that existing studies have not determined the direction of causality of these relationships. It could be argued that women with these characteristics are more likely to use contraception. Indeed, it is striking that there is little more recent evidence on the benefits of family planning on gender equality and women's rights and empowerment. As Smith et al (2009) note, 'much more research is needed on the personal, household and societal (non-health) benefits of contraceptive services.'⁸²

2.1.9 Climate change and family planning

The links between rapid population growth and concerns regarding climate change have received relatively little attention in the environmental literature. In part this is possibly due to a concern for an over-reaction in the policy response, similar to the dehumanising 'population control' policies of the 1960s and 1970s. Yet reduced unwanted fertility, and smaller families can potentially reduce vulnerability to the effects of climate change and lessen pressure on scarce natural resources. Developing countries also recognise this threat; 37 of the 40 national plans for climate change adaptation recognise that rapid population growth exacerbates harmful impacts on water and land availability and food security.⁸³

Recent work by the Centre for Global Development, whilst not negating the urgent need to cut carbon emissions in the developed world, suggests that reduced population growth will also reduce climate change in the medium to long term.⁸⁴ They identified family planning as the best buy for single interventions to reduce green house gasses at a cost of US\$4.50/ per carbon tonne. Combining family planning with girls' education is considered to be the best investment of all.

2.1.10 Other impacts

Investing in family planning not only saves lives but potentially results in large savings to the other sectors. With fewer children to educate, governments can extend safe water and sanitation services to a greater share of their populations. This will in turn have benefits in terms of reduced water-borne illnesses and deaths due to diarrhoea. When population growth occurs more slowly, there is also less pressure on scarce land and water resources and less environmental degradation due to deforestation, salinisation of soil, and air pollution. In Kenya, for example, meeting unmet need for family planning at a cost of US\$71 million can be expected to reduce expenditures on education by US\$115 million, on immunisation by US\$37 million, on water and sanitation by US\$36 million, on maternal health by US\$75 million, and on malaria by US\$8 million.⁸⁵ For every dollar spent on family planning, Kenya would recoup US\$3.79 in savings in these sectors alone.

2.2 What do we know about family planning methods?

Contraceptive methods can be separated into modern and natural family planning methods. Modern contraceptive methods include all hormonal methods (such as oral contraceptives, patches, vaginal rings, injectables, implants and levonorgestral intrauterine contraception). Nonhormonal methods include male and female condoms and other barrier methods, as well as copper intrauterine devices (IUDs). Implants and intrauterine contraception and sometimes injectables, are also categorized as long acting, reversible contraceptive methods.⁸⁶ Surgical sterilisation is a permanent method of family planning. Long acting and permanent methods (LAPM) are often grouped together in the programmatic literature. Natural or fertility awareness methods include lactational amenorrhea method (LAM), periodic abstinence and withdrawal.ⁱ Two hormonal regimens have proved to be safe and effective for emergency contraception: combined oral contraceptives and progestin only pills. Both can be taken up to 120 hours after unprotected intercourse.

ⁱ Traditional methods are a wider group which include natural family planning methods plus any other country specific folk method. This report focuses on unmet need for modern contraceptives.

Contraceptive effectiveness is a measure of the success of typical use of a method. It incorporates efficacy (how well a method works when used consistently and correctly) with ease of compliance.⁸⁷ No modern contraceptive approach is 100% perfect in reducing unwanted pregnancies but in general, long acting and permanent methods (LAPMs) are the most effective (>99% protection against pregnancy over a year if use). An advantage of these methods is that they are independent of the user once initiated. Shorter acting hormonal methods (such as oral contraceptives, patches and vaginal rings) are somewhat less effective than LAPMs. These methods have high efficacy but suffer from problems with compliance (eg missing doses). The table below lists all contraceptive options along with the clinical and actual use pregnancy rates.ⁱ

Table 5: Contraceptive methods ranked by effectiveness

Family planning method	Pregnancy rates		12-month Pregnancy Rates
	Consistent and correct use	As commonly used	As commonly used
Implants	0.05	0.05	
Vasectomy	0.1	0.15	
Levonorgestrel IUD	0.2	0.2	
Female sterilisation	0.5	0.5	
Copper-bearing IUD	0.6	0.8	2
Lactational Amenorrhea Method (for 6 months)	0.9c	2c	
Monthly injectables	0.05	3	
Progestin-only injectables	0.3	3	2
Combined oral contraceptives	0.3	8	7
Progestin-only oral pills	0.3	8	
Combined patch	0.3	8	
Combined vaginal ring	0.3	8	
Male condoms	2	15	10
Ovulation method	3		
Two Day Method	4		
Standard Days Method	5		
Diaphragms with spermicide	6	16	
Female condoms	5	21	
Other fertility awareness methods		25	24
Withdrawal	4	27	21
Spermicides	18	29	
Cervical caps	26d, 9e	32d, 16e	
No method	85	85	85

a) Rates largely from the United States. Source: Trussell J. Contraceptive efficacy. In: Hatcher R et al (eds) . Contraceptive technology. 19th ed. 2007 (in press). The Rates for monthly injectables and cervical cap are from Trussell J. Contraceptive failure in the United States. Contraception. 2004; 70(2): 89—96.
b) Rates from developing countries. Source: Cleland J, Ali MM. Reproductive consequences of contraceptive failure in 19 developing countries. Obstetrics and Gynaecology. 2004; 104(2): 314—320.
c) Rate for consistent and correct use of LAM is a weighted average from four clinical studies cited in Trussell (2007). Rate for LAM as commonly used is from Kennedy K et al. Consensus statement: Lactational amenorrhea method for family planning. Int J Gynaecology Obstetrics. 1996; 54(1): 55—57.
d) Pregnancy rate for women who have given birth.
e) Pregnancy rate for women who have never given birth.

Source: Adapted from WHO 2007.⁸⁸

ⁱ Up to date information on use and medical eligibility criteria for all contraceptive options can be found in WHO Four Cornerstones of Family Planning Guidance: Family Planning: a Global Handbook for Providers, 2007. Available at : http://info.k4health.org/globalhandbook/book/fph_frontmatter/whocornerstones.shtml.

There are now over a dozen modern contraceptive technologies available, and whilst there are very small health risk associated with some contraceptives, all contraception methods are still safer than pregnancy and child birth. New product innovations in modern contraception are improving acceptability, widening choice and reducing unit costs. Examples include sub dermal implants that are technologically improved, easier to insert and remove (see box below) and contraceptive vaginal rings releasing Nestorone and ethinylestradiol, which have good user acceptability in developed countries.

Box 1: Innovations in contraceptive technologies

Delivery of injectables using 'Uniject'

'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 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.'

Hormonal implants

Hormonal implants are a highly effective, very safe, convenient and simple form of contraception that is provided easily in an outpatient setting. Implants are small, thin, flexible rods or capsules made of soft plastic that are placed beneath the skin of a client's upper arm. A trained provider performs a minor surgical procedure under local anaesthesia to insert or remove the rods. Hormonal implants are highly effective, comparable to IUDs, female sterilisation, and vasectomy. Risk of failure (pregnancy) in the first year of use is 0.05%.

Two newer implants, Jadelle® (a two-rod system effective for five years) and Implanon® (a one-rod system effective for three years), are even easier to insert and remove than the previously available implant, Norplant® (a six-capsule system effective for seven years). Hormonal implants are an excellent contraceptive option for women at all phases of their reproductive lives—those who want to delay, space, or limit births.

Although, implants are the most costly contraceptive method, their availability in programs reduces demand on health services because they are more effective and their continuation rates are higher than short-acting methods, such as pills and injectables.

Sources: Sivin I, Mishell DR, Alvarez F, Brache V, Elomaa K, Lahteenmaki P et al. Contraceptive vaginal rings releasing Nestorone and ethinylestradiol: A one-year dose-finding trial. *Contraception*. 2005; 71: 122–9; and Implants: the next generation. Population Reports. Johns Hopkins Bloomberg School of Public Health: Baltimore; 2007.

2.2.1 Method mix, discontinuation and switching

Women's preferences for spacing versus limiting their total number of births influences their choices of contraceptive methods. Those wanting to stop child-bearing are likely to use one of the most effective methods (sterilisation or a long acting reversible method, such as the IUD or implants), while those wishing to postpone a birth choose among short acting reversible methods.⁸⁹ Of the 818 million women who wish to avoid a pregnancy: 17% use no method; 9% use traditional or natural methods (e.g. periodic abstinence and withdrawal); 43% rely on short acting reversible methods; 31% have had a tubal ligation (contraceptive sterilisation) or have a partner who has had a vasectomy.

The contraceptive 'method mix' is of great interest to programme managers because it acts as a proxy for method availability and client choice. Method mix varies substantially from country to country and region to region and reflects many factors, including the availability of various contraceptive methods and people's awareness of them, their cost, and where they can be obtained. In addition, personal preferences, social norms, and perceived acceptability of family planning use affect contraceptive choices.

According to DHS data, longer acting methods are the most popular in Asia, with the IUD and female sterilisation accounting for nearly two thirds of women using contraceptives.ⁱ The use of female sterilisation as the dominant contraceptive method globally is especially influenced by contraceptive practices in China and India. In sub-Saharan Africa, the picture is different. The IUD and sterilisation only account for about 10% of all contraceptive users. The condom has increased in popularity from 3% in 1980–84 to 8% in 2000–05 – a large relative increase although still representing only a small proportion of contraceptive users. Natural family planning methods or traditional methods (which includes natural methods plus country specific folk methods) are the most popular methods in sub-Saharan Africa, representing up to 31% of users. The high level of use of traditional methods may reflect demand for spacing rather than limiting and also the tradition of extended breastfeeding and postpartum abstinence in many areas of sub-Saharan Africa.

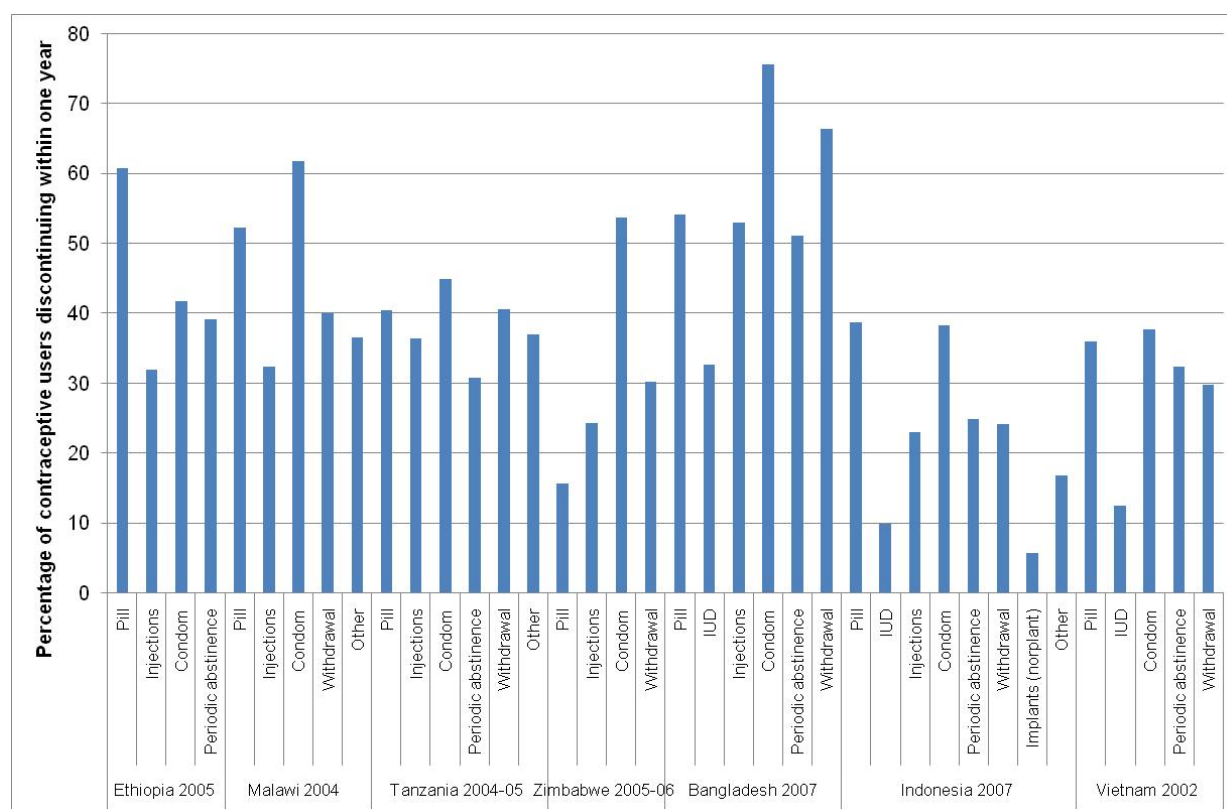
LAPMs as a method are worth particular mention. They are the most effective contraceptives, (between 3 and 60 times more effective than short acting methods during a year of typical use) and they require little action by the client. Yet, despite these advantages, they are often difficult for clients to access and are not used as widely as other methods, particularly in Africa. Analysis of data from demographic and health surveys conducted in 11 sub-Saharan Africa between 2003 and 2005 suggests that more than 20% of women in nine countries do not want any more children.⁹⁰ But in each of the nine countries, fewer than 7 percent of women are using an LAPM. Given LAPMs are highly effective, their wider availability and use would reduce fertility rates more than would wider use of most other methods.

In order to provide high quality family planning services, it is also important to understand why some women discontinue using contraception and why others switch. Condoms tend to have high discontinuation rates, most likely due to the possibility of casual use. In many countries, the pill also has high discontinuation rates. Discontinuation does not necessarily indicate failure; a woman may wish to become pregnant or she may wish to switch to a more effective method.

According to DHS data, the most common reason for contraceptive discontinuation is because women wish to become pregnant. This is especially true in high fertility countries where contraceptives are mainly used for spacing. Health concerns and side effects are often cited as a reason for discontinuation. While, undoubtedly, many women do experience side effects and have legitimate health concerns, ensuring women have access to the most appropriate type and accurate information may help reduce the high proportion of women switching or discontinuing for these reasons.

ⁱ See accompanying DFID Evidence Overview : Burden, Determinants and Health Systems for country breakdowns on method mix.

Figure 6: Discontinuation rates by method used, selected countries



Source: DHS data, DFID analysis.

2.3 What do we know about barriers to access to FP services?

2.3.1 Financial barriers to access

Women's ability and willingness to pay fees for family planning depends on many factors, including economic conditions, how high fees are set, whether clients see an associated improvement in the quality of services, and even the type of contraceptive for which the fee is charged.⁹¹ There is concern that charging fees will be an economic barrier to services for poor people, especially for women who have less control over household resources than men.⁹²

Definitive evidence on the price elasticity of contraceptive demand is still scarce and much evidence tends to come from observational studies in the 1980s and 1990s.⁹³ One study indicates that demand is surprisingly inelastic, with a doubling of contraceptive prices resulting in declines in overall use of 0–15%.⁹⁴ An older review from the 1980s of 13 studies in Asia⁹⁵ found that prices were generally inelastic where increases were modest (increases of up to \$0.20). They also found that there was no difference in demand between low or moderately priced contraceptives and free contraceptives; suggesting that clients value commodities where they pay (even a small fee), which explains why fee increases of US\$0.10–0.20 cents may not lead to lower use. However, income was a factor in determining the elasticity of demand, implying that poor people are more likely to be affected by user fees than those with middle-level incomes or the wealthy.

A qualitative study conducted amongst poor communities in Malawi suggests that the long term health benefits of contraception are considered to be greater than a marginal increase in the cost of methods.⁹⁶ An increase in the cost of temporary methods was seen as bearable, while financing permanent methods was seen as more problematic. Those most likely to be affected by user fees are rural residents, for whom targeted assistance may be required to maintain contraceptive use. However, this study design is limited in analysing intentions rather than measuring the actual impact of user fees on use of different methods, disaggregated by wealth quintile. Overall, there have been

few recent studies examining out-of-pocket expenditures on reproductive and sexual health, with the exception of Puri et al. (2007).⁹⁷

Important unknown

The influence of price on different contraceptive methods is not clear. More up to date rigorously designed studies are needed on the impact of user fees or out-of-pocket payments on contraceptive use and reproductive health and potential equity impacts.

2.3.2 Geographic barriers to access

The evidence on geographic barriers to access is also mixed. Lack of physical access and distance from services is less often cited as a reason for non-use by women and men in need of family planning.⁹⁸ Cross-national studies of survey data demonstrate that use of contraceptive methods falls only modestly with increasing distance or travel time to the nearest source of contraception.⁹⁹ In their review of empirical research, Casterline and Sinding (2000) find that inadequate access to services is not one of the predominant causes of unmet need.¹⁰⁰

Although women rarely cite lack of access as a primary reason for not using contraceptives, rigorously designed comparisons of women with adequate and inadequate geographic access might reveal substantial differences in the prevalence of unmet need. Several quasi-experimental studies in different settings suggest that improved access can at least in part have an effect on contraceptive prevalence (for Bangladesh, see Koenig et al. 1992¹⁰¹ and Cleland et al. 1994¹⁰²; for northern Ghana, see Debuur, 2002¹⁰³).

2.3.3 Lack of knowledge

Lack of knowledge can relate to a) lack of awareness that fertility regulation is possible which contributes to high fertility preferences and b) lack of knowledge of specific methods of fertility regulation including sources, side effects etc. The first affects the demand for family planning the second affects the unmet need for family planning.

Limited knowledge of contraception is still a more prominent barrier in some parts of sub-Saharan Africa, and in all regions it is more common in rural areas and among poor and uneducated women.¹⁰⁴ Cleland et al. (2006) cite that for a small proportion of women (10–25%), low perceived risk of conceiving (due to infrequency of sex or breastfeeding) is the main reason for unmet need.¹⁰⁵ The proportion is much higher when looking at just married women (37% of married women with an unmet need in sub-Saharan Africa, 61% in North Africa and west Asia).¹⁰⁶ For other women, it is a combination of demand-side and supply-side obstacles that prevent the translation of genuine need into contraceptive use. The most commonly reported reasons that emerge from the range of reviews are lack of knowledge, health concerns, and social disapproval.

Analysis of DHS data in the late 1980s, shows that one of the most frequently reported reasons for not using modern methods of contraception was lack of accurate information about different contraceptive methods, how to use them, and information on their potential side effects.¹⁰⁷ Lack of knowledge was the reason given by 25–44% of women with unmet need in five of the eight countries with trend data. However, this fell to only 0–12% in the surveys conducted since 2000.¹⁰⁸ This shift suggests that family planning programmes have had an important impact in raising women's awareness about contraception over the past two decades and in increasing desires for fewer children and/or better spaced pregnancies. Yet despite this promising shift, inadequate information on specific contraceptive methods continues to constrain access. For example, inadequate information targeted towards men has inhibited growth of realistic access to vasectomy for men in Brazil.¹⁰⁹

2.3.4 Health concerns and side effects

Many survey-based and in-depth qualitative studies identify women's fears about perceived health risks and side effects associated with modern contraceptives as a major barrier to adoption or reason for discontinuation.¹¹⁰ Sedgh et al (2007) found that fear of side effects and health concerns were the most common obstacles to using contraception. These reasons were cited by 20–50% of married women with an unmet need in 26 of the 36 countries with information on this question, and by about a quarter of never-married women with unmet need in seven of the 19 African countries.¹¹¹

Campbell et al.'s (2006) review of the qualitative evidence highlighted fears related to concerns that side effects could be uncomfortable, costly, interfere with spousal sexual relations, and that some side effects are not in accord with religious beliefs.¹¹² A woman's social context can influence her perception of a method's side effects. For example, some women may need to avoid methods associated with increased or irregular vaginal bleeding if their religion forbids participation in religious rites during menstruation. In communities where amenorrhea is perceived as harmful to young women, any method with this side effect will be unpopular.¹¹³ And in contexts where many men prefer 'dry sex', such as South Africa, vaginal wetness was recorded as the second most common side effect by women using progestogen-only injectable contraceptives and was a reason for discontinuing use.¹¹⁴

The demographic literature often makes little distinction between actual side effects and the perception of harmful impacts on health from practicing contraception.¹¹⁵ Qualitative studies from many other developing countries report women expressing concerns such as fear of permanent infertility from using oral contraceptives and injectables, and causing disease.

Reliable evidence

Women's fears about perceived health risks and side effects associated with modern contraceptives are a major barrier to adoption or reason for discontinuation.

2.3.5 Social and cultural norms

Fear of social disapproval and lack of social acceptability of family planning is another potential barrier to contraceptive use. Women often face real or perceived opposition from their husband or families, reflecting culturally prescribed gender roles. Where the status of women is low, social barriers to accessing family planning methods can be very high. For example, a study in the Punjab, Pakistan, found that women's two main obstacles to using a contraceptive were a) the woman's perception that such use would conflict with her husband's preferences and attitudes towards family planning and b) her perception of the social or cultural costs using a method.¹¹⁶

Analysis of DHS data by Sedgh et al (2007) found that opposition to use (using an index combining personal opposition and others' opposition) was a reason given by more than 20% of married women with unmet need in 15 countries. In Chad, Guinea, Mauritania and Nigeria, it was as high as 30–45%. Amongst never-married women with unmet need, opposition to use was less frequently cited as a reason than for married women.¹¹⁷

A community-based pilot in Ghana exploring the impact of deploying health service nurses to support family planning found that social barriers, in particular husband opposition and community leaders views, played an important role in a woman's contraceptive decision-making and recommends that practitioners consider the wider communities' values when offering family planning services.¹¹⁸

2.3.6 Additional barriers faced by young girls

Adolescent girls face many challenges in their transitions to adulthood, all of which have a bearing on reproductive health outcomes. There is a large and growing body of evidence on adolescent reproductive health. Obstacles to achieving good reproductive health for adolescents exist at three levels¹¹⁹:

1. The individual: adolescents themselves may be hesitant to seek sexual and reproductive health services due to personal objections, a lack of financial resources, and inadequate knowledge of needs and services.
2. The health system: reproductive health services may not be sensitive to the needs of unmarried adolescents, with providers who are unwilling or ill-equipped to serve young people, facilities which lack adequate provision to ensure privacy and confidential services, and products and services which do not meet adolescents' needs.
3. The socio-cultural context: socio-cultural norms against premarital sex based in religion and ethnicity may prevent sexually active adolescents from accessing services. For married adolescents, the need to demonstrate fertility immediately after marriage means that delaying a first pregnancy through using family planning is often impossible. Moreover, married adolescents may need their husband's permission (or other family members, such as mother-in-law) to practice FP for spacing the second and subsequent pregnancies.

Among sexually active unmarried adolescents, young girls from the poorest households are least likely to use contraception and as a result have higher fertility levels compared to girls from wealthier households.¹²⁰

2.4 What do we know about raising awareness for family planning?

One of the most well known examples of an intervention to increase contraceptive prevalence through both stimulating demand and increasing supply is the Matlab experiment in Bangladesh.¹²¹ This experiment is particularly valuable since it is rare to find a randomised social experiment to document the efficacy of family planning programs to reduce lifetime fertility and to improve the long-run welfare of women and their families. In the treatment area, villages were provided with intensive family planning services, including visits every two weeks to each currently married, fecund woman by a project employee. The family planning worker presented information, discussed family planning needs, and offered a variety of contraceptive methods (the pill, condoms, IUDs, injectables). The other half of the Matlab region received no additional family planning information or services beyond the usual government services.¹²²

Nearly two decades after the programme was begun, exposure to the programme was associated with a statistically significant 13% reduction in fertility in 1996.¹²³ Sinha also showed that the decline in fertility was also due to a decline in demand for children and not just through meeting the latent demand for family planning.¹²⁴ A greater effect was noted in the immediate years following implementation of the programme,¹²⁵ however, the temporary effect on period rates can be greater than the long-term effect on completed fertility if contraceptives are used to space rather than limit fertility. Additionally, no impact was seen on intended fertility in the short term, which means that initially family planning programmes only meet unmet demand rather than stimulating additional demand.¹²⁶

The concept of a 'family planning program' such as Matlab is no longer a reality in most developing countries, given the trend towards comprehensive reproductive health programming and integrated services. Instead, investment in family planning needs to be considered alongside broader health systems strengthening including integration with MNH services.

The experience of Kenya and Rwanda (see also Box) offer important lessons of more system wide ways to stimulate demand for family planning. Following stalled improvements in the contraceptive prevalence rates in Kenya, family planning champions used national survey evidence to advocate for a renewed commitment to contraceptive services.¹²⁷ Advocates reframed family planning as an important issue for the nation's economic growth and social development, by stressing the links between family planning and the nation's development. They also linked family planning to the MDGs and promoted integration with HIV/ AIDS and other reproductive health issues. Finally, they worked to demonstrate that family planning was more than a women's issue but had benefits for men, children, and the nation at large. Their efforts ultimately led to government funds being allocated to contraceptive commodities in the 2005 national budget, a first for Kenya. This accomplishment was especially important because Kenya's earlier successes relied heavily on external funding. Kenya's most recent DHS (2008) shows a CPR of 39%.

Box 2 - 'Family planning is priority number one, not just talking about it, but implementing it.' President Paul Kagame, November 2007

Rwanda, one of the poorest, most densely populated countries in the world, demonstrates the potential for family planning success in Africa. The Rwandan government, led by President Paul Kagame, made the case that high fertility and rapid population growth were stifling the country's development. The government worked closely with donors to coordinate resources and build up the health system, including community based outreach, and encouraged the NGO community to expand services. 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. As a result, Rwanda has achieved one of the most rapid increases in contraceptive use ever recorded, from 10% in 2005 to 27% of women of reproductive age in 2008. Skilled attendance at birth rose from 39 to 52 per cent in the same period. The average family size has decreased from 5.8 to 5.5 over the same period.

Source: Solo J. 2008.¹²⁸

2.4.1 Awareness raising interventions

Interventions to raise awareness for family planning (FP) include a broad range of activities intended to achieve several reproductive behaviour outcomes. Among populations with high levels of wanted fertility, such interventions address socio-cultural norms that support large families and the concept of individuals and couples not able to control their own fertility, usually by communicating messages advocating the benefits of smaller families or spacing births and by promoting the idea of practising FP through using contraceptive methods and/or 'natural family planning' behaviours. For populations in which smaller families are desired but there is still unwanted fertility because of difficulties in preventing unintended pregnancies, demand generation interventions provide education about FP services and how to access them, and particularly the use of more effective contraceptive methods, as well as dispelling rumours and myths to reduce barriers to use.

Most awareness raising interventions move beyond an Information, Education, Communication (IEC) model and draw from a variety of social change theories to include elements that explicitly motivate a behaviour change through specific actions, including partner/family communication, actively seeking FP information, or initiating or sustaining contraceptive use; hence the term 'Behaviour Change Communication' (BCC). Recognising that individual and family decisions are usually influenced by social norms, and that interventions to generate FP demand may often need to influence social and gender norms, the term 'Social and Behavioural Change Communication' (S/BCC) is now frequently used.

Demand generation activities were an integral and crucial element in early FP programmes, particularly in programmes serving populations with high fertility norms; creating social support for practising family planning was critical to enable a demand for contraceptive methods to be generated. As fertility transitions began and smaller family norms prevailed, emphasis and investment shifted from mass media and community mobilisation for social change to reducing the emerging unmet need for FP through promoting the use of contraceptive methods generally, and

effective methods specifically, as well as addressing health concerns about these. Interpersonal communications through FP providers, satisfied users and opinion leaders were commonly used interventions.

A systematic review of media campaigns from 1970–1999¹²⁹ drew the following conclusions: a) FP campaigns can generate an immediate demand for FP services, but this can decline after programming ends; b) exposure to FP messages through mass media campaigns is associated with approval of FP, partner communication about fertility and FP, and increased contraceptive use; and c) exposure to general and targeted mass media messages about FP influences social norms through stimulating group, interpersonal and spousal communication, thereby indirectly affecting reproductive behaviours.

A meta-analysis of 38 FP campaigns implemented between¹³⁰ 1986–2001 found that exposure to campaigns greatly increased knowledge of contraceptive methods and also increased interpersonal and partner communication, approval of FP, intentions to and actual use of contraceptives. An analysis of entertainment and education programmes¹³¹ also found that exposure to dramas on radio and TV was associated with increased contact with FP providers, greater use of FP¹³² and decreased desired family size.

These conclusions are based, however, on evaluation designs that have primarily used non-experimental designs. Random allocation of populations to be exposed or not exposed to an S/BCC intervention intended to reach the whole population is usually impossible. Apart from the Taichung study conducted in Taiwan¹³³ in the 1960s, which did use an experimental design, only one evaluation has been published that used a quasi-experimental design (a 'natural experiment with a matched control group) to evaluate a radio soap opera in Tanzania.¹³⁴ Instead, most evaluations have analyzed associations between self-reported exposure (itself a problematic indicator) to general mass media coverage of population and FP issues and/or to specific S/BCC interventions, and various reproductive behaviours, using multivariate analyses to control for confounding variables, to evaluate programme effectiveness.^{135, 136, 137} Hutchinson and Wheeler¹³⁸ give a useful summary of evaluations that have used this analytical approach and compare and contrast three alternative statistical techniques.

The major weaknesses with this method of evaluation are validity of self-reported exposure, exposure to multiple communications messages, and the directionality of effect. For the latter, it is usually assumed that exposure to S/BCC interventions 'causes' the reproductive behaviours observed, but the real possibility exists that those already having small family norms, discussing FP with spouses and using contraception are more likely to be exposed, or report exposure to, FP messages. Proving this is virtually impossible without time-series data; longitudinal studies in Navrongo, Ghana¹³⁹ and Nepal¹⁴⁰ concluded that spousal communication does predict contraceptive behaviour, but with strong cautions that there is tremendous complexity in these relationships and direct causality should not be assumed.

Even with the evaluation designs used, there is sufficient evidence from the elaborate and sophisticated statistical analyses that S/BCC interventions, and especially mass media using entertainment and education strategies, are essential for generating ideational change in settings with high wanted fertility and for stimulating discussion about and use of contraception among couples where unmet need is high. Moreover, evidence from Kenya¹⁴¹ and a comparison of Pakistan with Bangladesh¹⁴² demonstrate the converse, that is, when there is little or no investment in S/BCC interventions, as has been the case over the past decade in many countries with high wanted and unwanted fertility, FP use stagnates and fertility declines stall.

An on-going review of this evidence¹⁴³ is underway and will be published in 2011. Current gaps in evidence concerning demand generation interventions include:

- developing and evaluating BCC interventions explicitly tailored to communicate messages to reduce unmet need (insufficient knowledge about contraceptives; fear of social disapproval; fear of side effects; perceived partner opposition);

- developing and rigorously testing S/BCC interventions in settings (e.g. much of west Africa) or among populations (e.g. poorest, socially marginalised, conservative traditions) with high wanted fertility;
- organising and funding S/BCC interventions in settings where privatisation of FP services is rapidly expanding;
- How best to exploit existing and emerging Information and Communication Technologies (ICTs) for S/BCC interventions.

Reliable evidence

Social and Behavioural Change Communication interventions, and especially mass media using entertainment and education strategies, are important for stimulating discussion about and use of contraception among couples where unmet need is high.

2.4.2 Coercive policies

There is a controversial debate on the ethics and effectiveness of interventions involving government incentives for fertility decline. It is often difficult to isolate the effect of government policies from other effects leading to a reduction in fertility. Even fertility decline in China, with its firm and widely enforced population policy, is attributed to other factors in addition to the policy.¹⁴⁴

Some of these population policies are considered authoritarian and coercive. For example, limiting lucrative jobs to people with smaller family sizes or creating strong incentives for sterilisation that are irresistible to impoverished people.¹⁴⁵ Sen points out that the Indian states which achieved the fastest decline in fertility, namely Kerala and Tamil Nadu, had far less authoritarian and coercive population policies than the northern Indian states (such as Uttar Pradesh, Bihar and Rajasthan) which continue to have higher fertility levels.¹⁴⁶ In addition, there are complex human rights and ethical issues involved in implementing a coercive population policy,¹⁴⁷ which a donor agency may not wish to become associated with.

There is no clear evidence supporting a coercive government population policy to increase demand for and use of family planning. Furthermore, even less coercive population policies may not work where the demand for high fertility is firmly entrenched in the social, cultural and economic framework.¹⁴⁸ But this does not negate the role of government endorsement, support and leadership in family planning. The examples from Rwanda and Kenya (see above) as well as the comparisons of Pakistan and Bangladesh above demonstrate the importance of government in creating an enabling environment for meeting the unmet need for family planning. While strong support is not the same as coercion, there may be a perception that there is a thin line between them. Donors, governments and family planning advocates need to be sensitive to this.

2.5 What do we know about delivery mechanisms for family planning?

Given the variety of users, the differing country contexts and the many different forms of contraceptive methods, a wide range of service delivery models have evolved over the last two to three decades.¹⁴⁹ Some programs are dedicated to providing only family planning services, sometimes referred to as vertical programs, whereas other programs are more integrated and provide a range of reproductive and other health services, and some programs try to reach current and new clients through community outreach methods and through engaging with the private sector through social marketing initiatives.

2.5.1 Fixed versus integrated service delivery

As documented in a review by Levine et al, many of the original large scale family planning programmes in developing countries were organized around a vertical structure with central management and logistics.¹⁵⁰ Family planning workers based at fixed sites which were run either by the government or by NGOs. These programs were dedicated exclusively to providing information, services and contraceptive commodities related to family planning. Ear marked funding often came from external donor agencies and this was often separate from those of other health services. Some of the biggest programs (such as in India), promoted sterilization on a large scale. Others, such as in Bangladesh, relied more on the provision of information and contraceptive commodities through female outreach workers.¹⁵¹

More recently, and especially in Africa, there has been increasing emphasis on integrating family planning programs into other health services, particularly other types of reproductive health services. This type of service delivery model acknowledges that women's health needs are not confined to contraception and that a broader range of reproductive and other health services must be provided. There is now renewed attention on strengthening existing models and developing packages of integrated services.¹⁵² At a minimum, integration requires regular access to and availability of contraceptive supplies and strong links between different levels of the health system. The table below summarises WHO recommendations on packages of interventions and where they can be delivered.

Figure 7: WHO Recommended packages of care for family planning by health system level

Interventions at home/COMMUNITY level	Key supplies and commodities needed
<p>Health education to women, men, families and community:</p> <ul style="list-style-type: none"> - To increase awareness on benefits of safe sex, family planning - and birth spacing starting from the pre-pregnancy period, during pregnancy and after childbirth. - Enable adolescents, women, men to access to various reproductive health services through integrated and linked services - Counselling and distribution of contraceptive methods including emergency contraception - Awareness of signs of domestic and sexual violence and referral 	<p>Counselling, health education and promotion materials</p> <p>Job aids</p> <ul style="list-style-type: none"> - Contraceptive methods - Condoms for STI/HIV and pregnancy prevention - Oral contraceptives including emergency - Contraception
Interventions at FIRST LEVEL FACILITIES	Key supplies and commodities needed
<p>All of the above plus:</p> <ul style="list-style-type: none"> - Counselling and provision of the full range of family planning methods - HIV testing and counselling in generalized epidemics - Dual protection (female and male condoms) - Screening for and recognition and possible management of STI - HIV testing and counselling - Screening for and management of signs/symptoms of domestic violence and sexual assault - Screening for cancer of the cervix and of the breast - Identification of initial needs of the infertile couple, and referral - Management or referral of problems 	<p>All of the above plus:</p> <ul style="list-style-type: none"> - Decision making aids for clients - Full range of contraceptive methods (including vasectomy) - Oral and parenteral antibiotics - Laboratory tests kits for STI/ HIV - Surgical equipment to insert/remove implants - Sphygmomanometer
Interventions at REFERRAL FACILITIES	Key supplies and commodities needed
<p>All of the above plus:</p> <ul style="list-style-type: none"> - Treatment of medical conditions, side effects and/or complications. - Management of methods of choices if not provided at first level of care (tubal ligation/vasectomy/insertion and removal of implants, difficult removal of devices etc). - Appropriate management of the infertile couples including HIV - discordant couples. 	<p>All of the above plus:</p> <ul style="list-style-type: none"> - Appropriate operating theatre for surgical methods - Surgical equipment

Source: WHO (2010) www.who.int/making_pregnancy_safer/documents/fch_10_06/en/index.html

Integration with MNH and postpartum care

Between the onset of pregnancy and the end of infancy, a typical woman will come into contact with health services on 6–12 occasions. This is a powerful argument for the integration of family planning into routine obstetric and child health services. Cleland et al report a small positive relationship (5–10%) between health services contacts and contraception adoption after (controlling for confounders such as mother's education, age, desire for another child).¹⁵³

A key point in the continuum of care is the extended postpartum period and throughout the first 12 months after child birth. A large component of unmet need is reported by women following childbirth, safe abortion or post abortion care. Across 27 less developed countries, two thirds of women within a year of their last delivery have an unmet need for contraception and that nearly 40% plan to use a method but have not done so.¹⁵⁴ Non experimental operational research studies have shown that making contraceptive methods available in the postpartum period leads to higher contraceptive prevalence rates.

A review of over 50 published and unpublished studies in Africa, Asia and Latin America found mixed evidence on the effectiveness of providing information about postpartum family planning during the antenatal period.^{155,156} Effectiveness depended on ensuring women also attends for postpartum care. Male involvement produces positive health outcomes, but ensuring their engagement can be problematic. Immediate postpartum uptake of interventions offers much more potential given that over half of all births in poorer countries take place in medical facilities. It is also an important opportunity to promote the IUDs.¹⁵⁷ Immediate post-delivery provision of FP information and contraceptive methods is effective in enhancing postpartum FP use, although some challenges exist to doing this in hospitals and maternities. More needs to be done to strengthen the obstetric family planning link.

In principle, the use of LAM for a short period when a woman resumes sexual activity can be effective, but distinguishing between counselling for breastfeeding and for LAM seems problematic.¹⁵⁸ Integrating FP services into the traditional six-week (40 day) postpartum consultation is thought to be feasible and effective, although using outreach or community-based visits at this time can help reach underserved populations. Gaps in understanding around postpartum family planning include effective approaches for improving supervision of care during the postpartum period.

Looks promising

Operational research studies from several settings suggests that making contraceptive methods available in the postpartum period leads to higher contraceptive prevalence rates.

Integration with post-abortion and abortion care

Post-abortion women are at risk of repeat pregnancy in two to three weeks post procedure.¹⁵⁹ However, while the pre and post abortion period is a good opportunity when the motivation for adopting contraception is high and women are likely to be receptive to family planning messages, few post abortion care programs are available to provide these services in developing countries. There is therefore very little evidence on effectiveness of different approaches. Cleland et al suggest that the existing high motivation is likely to translate into higher contraceptive acceptance rate and this should be encouraging for implementing post abortion contraceptive services in settings where abortion is legal.¹⁶⁰ They also argue that IUDs, which are less likely to be discontinued than hormonal methods, can be easily inserted following termination and there are no significant differences in risk of complications among women who have immediate versus delayed post abortion IUD insertions.

Looks promising

Although evidence from different settings is still limited, providing counselling on contraceptive methods during post-abortion care is likely to translate into higher contraceptive use.

Integration with HIV/AIDS services

Meeting the family planning needs of women living with HIV can be addressed through two broad strategies: a) integrating FP and HIV/AIDS services; and b) strengthening existing family planning services.¹⁶¹ The rationale for linking FP (and other sexual and reproductive health services) with HIV/AIDS services is well-articulated internationally¹⁶² and supported by sufficient evidence of feasibility and effectiveness¹⁶³ to convince both HIV-oriented and FP-oriented donors and organisations to develop integrated services; importantly, these include the Global Fund and PEPFAR.

Data on the delivery of FP services to, and their use by women living with HIV following delivery are surprisingly rare. Although the evidence to date has convinced donors, policymakers and programme managers to start integrating services, the evidence base describing which models work effectively, efficiently and equitably is still modest and with generally low levels of scientific rigour.¹⁶⁴

Studies are needed that measure unintended pregnancies, HIV/STI incidence and stigma as outcomes, as well as comparisons of outcomes between linked services with stand-alone services.ⁱ

However, integrating FP services into HIV services for testing (e.g. VCT), including Preventing mother-to-child transmission (PMTCT) or for antiretroviral therapy (ART) and support,¹⁶⁵ can also reach women who know or suspect that they are living with HIV. In particular, the potential benefits of integrating FP into PMTCT services is recognised as one of the four 'prongs' of a comprehensive PMTCT programme¹⁶⁶, and estimates from numerous modelling analyses demonstrate substantial effects in terms of averting unintended pregnancies among Women living with HIV (WLHA), thereby reduced perinatal HIV transmission, and at much reduced costs compared with treatment only.¹⁶⁷ Integrating FP services with PMTCT or ART programmes, while directly reaching WLHA and therefore potentially having a direct effect, do only reach women knowing their status, which is currently a small proportion of all WLHA.

Including HIV screening and prevention (and potentially treatment) into FP services through Provider Initiated Testing and Counselling (PITC) can enable women who did not know they were living with HIV to be counselled on fertility and FP options at the same time as learning their status. Proven to be effective through experimental and quasi-experimental studies in South Africa and Kenya, and cost-effective compared with VCT¹⁶⁸, these models are currently being rolled out nationally and extended to include referrals for treatment.

In settings where routinely integrating HIV services into FP services is not deemed acceptable or cost-effective, simply strengthening FP services to reduce unmet need overall would be a highly effective intervention for reducing unintended pregnancies among WLHA; for example, it has been estimated that even existing levels of contraceptive use in South Africa prevent 400,854 unintended pregnancies and averts 120,256 HIV-positive births.¹⁶⁹ Reducing unmet need and unintended pregnancies in the general population, with or without women knowing their status, could have a significant impact on reducing perinatal HIV transmission.

Looks promising

Reducing unmet need for family planning and unintended pregnancies in the general population, with or without women knowing their status, could have a significant impact on reducing perinatal HIV transmission.

Integration with post-rape care and emergency contraception

Access to emergency contraception is potentially important in reducing unsafe abortion. While it is not considered a formal family planning method due to issues around efficacy rather than safety, it can be used post-coitally to reduce the risk of an unintended pregnancy. Therefore, it is very useful in cases of rape, unplanned and unprotected sexual intercourse, and recognised contraceptive failure (e.g. breakage of a barrier method). Treatment may be initiated up to five days after intercourse.

Wider use of emergency contraception could prevent a substantial proportion of unintended pregnancies.¹⁷⁰ Even in developed countries, emergency contraception is not always routinely offered to the victims of rape.¹⁷¹ Given the burden of rape in many countries, provision of emergency contraception could be a very important public health intervention. Currently, there is no evidence on such an intervention.

ⁱ A consortium comprising IPPF, Population Council and LSHTM is currently undertaking studies in Kenya and Swaziland designed to evaluate these outcomes through quasi-experimental designs, the results of which will be available in 2012.

Only one in four women attending public-sector health clinics in South Africa had heard of emergency contraception.¹⁷² Even women who had heard of emergency contraception were misinformed as to where it could be obtained and its specific attributes, for example the length of time after unprotected sex in which it could be taken. The researchers did find that when informed about emergency contraception, women had generally positive attitudes towards it and indicated that they would be willing to pay for it.

Similar findings from Nairobi and Mexico City indicate that while accurate information is lacking, clients of family planning programmes would use such a method or recommend it to friends, although a large proportion cited concerns about side effects.^{173,174} Similar findings were found among female Nigerian undergraduate students – although their awareness of emergency contraception was higher, few had accurate information, with many feeling that it is safer to seek an abortion than use emergency contraception.¹⁷⁵ These four studies in different locations indicate that an intervention to increase awareness of emergency contraception and provide accurate information could increase uptake and lead to a reduction in abortion.

Evidence from Malaysia suggests that it is vital to ensure that emergency contraception is not confused with abortion. Since abortion is usually more stringently regulated than family planning, as well as the social stigma and religious disapproval associated with abortion, ensuring that emergency contraception is perceived as qualitatively different from abortion is important to ensure its wider use.¹⁷⁶ Given the safety of emergency contraception, especially compared with unsafe abortion, making it available over-the-counter could ensure much greater uptake. Evidence from France demonstrates that making emergency contraception available over the counter increased access to contraception but had no effect on risky sexual behaviour.¹⁷⁷

Looks promising

Wider use of emergency contraception could prevent a substantial proportion of unintended pregnancies and is potentially important in reducing unsafe abortion.

2.5.2 Mobile and outreach services

Mobile outreach service delivery can be defined as FP services provided by a mobile team of trained providers, from a higher-level health facility to a lower-level facility, in an area with limited or no FP or health services.¹⁷⁸ Mobile outreach has great potential for meeting the unmet need for a range of contraceptive methods, particularly long acting and permanent methods.

Mobile outreach services can be provided at lower-level health facilities or locally available community facilities that are not used for clinical services, such as schools, health posts or other community structures. The outreach team brings any equipment and supplies and they may also upgrade the lower level health facility. Many mobile outreach interventions have focused on long acting and permanent methods such as implants, IUDs and sterilisation, but many women lack access to other methods (e.g. injectables).¹⁷⁹

Cross sectional utilisation data strongly suggests that outreach plays an important role in expanding access to modern contraceptives. For instance, Marie Stopes International (MSI) uses outreach in 18 countries and now provides over 80% of all long acting and permanent methods via mobile outreach. In Tanzania, 60% of MSI clients also received services via outreach.¹⁸⁰ In Nepal, the 2006 DHS data show that government mobile clinics were the source of contraception for 21.6% of all users of modern methods, more than one third of female sterilisation, and almost half of male sterilisation. Promising evidence on service quality is provided by comparing DHS surveys in 1996 and 2006. The 2006 survey found that 6% of women who were sterilised or whose husbands were sterilised regretted the operations.¹⁸¹ This was half the rate of regret indicated in the 1996 survey. However, more rigorously designed research is needed to test the real impact of mobile clinics on quality and access in different settings.

Box 3: Outreach clinics in Malawi: *Banja La Mtsogolo*

'With 83% of its population living in rural areas, access is a key challenge for FP in Malawi. Banja la Mtsogolo (BLM), an independent NGO affiliated to MSI, implements the Community Outreach Clinic Initiative, working jointly with the Ministry of Health. Trained staff from BLM clinics travel to MOH facilities to provide clinical FP services that are not available at these facilities. The network of community outreach clinics now totals 307 sites, a threefold increase from the 102 sites included in 2004. BLM provides more than one third (35%) of contraceptive services in the country, with a significant proportion through outreach.

Through this initiative, BLM is able to provide services to people who cannot afford transport costs because of high poverty levels and poor road infrastructure. The importance of this initiative has been acknowledged by the MOH – particularly for permanent FP methods – to the point where they even provide some funding to BLM.

By also going into communities to provide free services under the Community Outreach Clinic Initiative in over 200 sites, BLM has assisted the government in scaling-up provision of services in the Essential Health Package. The services provided to communities in the remote and hard-to-reach areas are making a difference to poor and vulnerable people. Since last year, BLM has been funded by my Ministry in recognition of its contribution to Government efforts. BLM is a high-capacity institution. With only 5% of the health infrastructure, they provide over 42% of all permanent family planning methods in Malawi per the 2004 DHS report.'

Speech by Khumbo Kachali, Minister of Health, June 24 2008 (Government of Malawi, 2008) cited in: Solo J. 2010. Expanding contraceptive choice to the underserved through delivery of mobile outreach services. A handbook for program planners. USAID.

2.5.3 Community based distribution

Community-based distribution (CBD) programmes were first implemented in Latin America in the 1960s, in Asia in the 1970s and 1980s, and in Africa during the 1980s and 1990s.¹⁸² CBD programmes have been rolled out in many parts of sub-Saharan Africa, although rarely with the same careful approach to hypothesis testing and evidence gathering in new contexts. The only two rigorous evaluations of the impact of CBD on fertility were undertaken at Matlab in Bangladesh¹⁸³ and Navrongo in Ghana.¹⁸⁴ There has been a resurgence of interest in CBD including expanding the role of community health workers to include FP, task-sharing between CBDs and clinical staff, and in expanding the range of FP services provided at community level (most notably injectables). However, most research-based evidence is still pretty dated, from the 1990s and early 2000s

Traditionally, CBD systems have been considered appropriate in areas that are underserved by fixed site clinics, where cultural barriers might prevent women accessing clinics and or where lack of knowledge prevents people from accessing clinics, and where there is low demand for family planning.¹⁸⁵ CBD approaches cover a range of interventions, some that share similar traits with social marketing or social franchising. CBD systems have been developed to deliver other health services, including malaria treatment, oral rehydration therapy, sexual health advice and onchocerciasis control.¹⁸⁶

There is some evidence that CBD systems expand the reach of family planning services to hard to reach areas, although it is unclear how important distance from a physical facility is in determining uptake of contraceptives.¹⁸⁷ Evidence from Madagascar¹⁸⁸ and Kenya¹⁸⁹ suggest that systems help to increase access by increasing awareness and knowledge of contraceptives and also helping to stimulate demand for family planning services.¹⁹⁰

A study from Navrongo in Ghana¹⁹¹ shows that combining CBD with nurse outreach reduced fertility by 15%, or an average of one birth fewer than the pre-test total fertility rate, although the study cannot rule out confounding variables as there was a concomitant regional decline in fertility. However, in West Africa some studies suggest a substitution of traditional postpartum abstinence for modern contraceptives with no overall effect on fertility rates.¹⁹²

Training community health workers to deliver injectables

Increased demand for injectable contraceptives have led several countries to explore CBD mechanisms for providing this method. While there is limited evidence of the quality of care delivered by CBD agents in general, there is growing evidence that they can be effectively trained to deliver oral contraceptives as well as clinics and there is good evidence that they can deliver injectable contraceptives effectively.

A recent systematic literature review for a WHO technical consultation on expanding access to injectables found that community-based provision of progestin-only injectable contraceptives by appropriately trained community health workers is safe, effective, and acceptable.¹⁹³ Evidence was collected from a total of 20 studies or projects in nine countries (Afghanistan, Bangladesh, Bolivia, Ethiopia, Guatemala, Haiti, Madagascar, Peru, and Uganda). The majority of these programs involved provision of injectables by CHW. Overall, the study authors concluded that the evidence supports the introduction, continuation, and scale-up of community-based provision of progestin-only injectable contraceptives, provided as part of a family planning program offering a range of contraceptive methods.

Reliable evidence

Evidence from a recent systematic review suggests that outreach and community based distribution are effective and acceptable ways of increasing access to contraceptives, particularly injectables and long acting and permanent methods.

2.5.4 Engaging the private sector

One solution for both expanding access and improving the quality of family planning services has been contracting and engaging with the private sector. In many developing countries, when people first seek diagnosis and treatment for illness they often visit a private pharmacist, drug seller or clinic. The non state sector is particularly significant in Asia.¹⁹⁴ Where the non-state sector is large the role of government in overseeing the provision of services by private providers becomes critical. Accreditation, regulation and public subsidy are all important factors in enabling the poorest to benefit from affordable high quality services by private or non state providers.¹⁹⁵ Two forms of private sector engagement - social marketing and social franchising - have played a particularly important role in expanding access to affordable family planning commodities.

Social marketing

Social marketing refers to a variety of strategies using traditional commercial-marketing techniques to promote socially beneficial behaviours, products and services.¹⁹⁶ In family planning, social marketing has focused on making supplies of methods of contraception more widely available in commercial retail outlets and on promoting these contraceptives to consumers through the mass media.¹⁹⁷ There are now several large international NGOs specialising in social marketing (e.g. Population Services International and the Futures Group). In theory, social marketing programs should be readily subject to evaluation because it should be relatively easy to keep track of sales figures for products, advertising spots and market share. In Pakistan, Greenstar Social Marketing now has about 80% of the market share in condoms.¹⁹⁸ Although it is important to note that 80% share of a market does not indicate growth in use of condoms, only that they are now mostly distributed through social marketing rather than other mechanisms previously.

Harvey notes that contraceptive social marketing (CSM) contributed over 4 million couple years of protection (CYPs) in Bangladesh and 10 million CYPs in India in 2005 alone.¹⁹⁹ In Pakistan, social marketing has been averaging about 2.5 million CYPs per year over the last three to four years.²⁰⁰ However, again these figures need to be seen in the context of the national CYP total for the year to make a robust case of the potential contribution of CSM.

There have been at least 3 large scale reviews of the literature in this area. A DFID funded systematic review of 29 social marketing programmes in 11 sub-Saharan African countries indicated that such techniques have had a positive impact on clients' knowledge and access to contraceptive methods.²⁰¹ The review also indicated increased use of certain types of contraception, with the largest increases for condoms. However, the extent of knowledge and behavioural change varied between country programmes. None of the social marketing programmes was evaluated in terms of their impact on equity.

Another systematic review of published evidence on uptake of condoms in sub-Saharan Africa and Asia reported that social marketing that target sex workers achieved larger increase in condom use compared with those that target casual relationships and/or young people.²⁰² Results from non randomised controlled interventions in South Africa²⁰³ and Cameroon²⁰⁴ both report a positive increase in self reported condom use after targeting young people with a social marketing campaign focusing on the benefits of condoms. The South African study found a higher increase in the proportion of young women reporting use whilst the Cameroon study reported an increase in self reporting condom use in young men.

A study exploring the impact of mass media family planning programmes on awareness and contraceptive use in urban areas of Bangladesh found that women reported being more aware of family planning messages from the radio (38%) compared with television or print (18.5% or 8.5%).²⁰⁵ A review of a social marketing campaign to increase awareness and use of condoms in Cameroon concluded that a diverse strategy is required to ensure that different population groups are reached.²⁰⁶ However none of these studies explore which type of media is most effective in reaching the poorest.

The most recent systematic review (albeit again with wide inclusion criteria) looked at the results of six social marketing evaluations.²⁰⁷ The authors concluded that there was strong evidence of a positive impact from social marketing to increase access to FP products and messages but very little information on access by poor people. Although they cited evidence that social marketing has the potential to be cost-effective, utilisation was very sensitive to price, suggesting that the impact on poor people could be significant. However, the impact on equity was not measured directly and urgently needs more research.

Social franchising

In recent years, social marketing programs have evolved and expanded their focus to delivery of clinical services through social franchises. Social franchising represents a type of contracting whereby a private provider agrees to join a branded franchised chain and maintain certain quality standards and often an agreed fee structure.²⁰⁸ In exchange, the franchising agent may offer demand generation activities such as interpersonal communication and mass media advertising; training; product supply; and/or equipment. Franchise members usually agree to join and stay as active participants because of the promise of increased business.²⁰⁹ The number of franchises has grown dramatically over the last few years and there are now 40 companies operating around the world. Of these 90% provide family planning products.²¹⁰

Social franchising is being implemented in many developing countries with the aim of increasing the quality and use of reproductive health services, improving client perceptions of service quality and satisfaction.²¹¹ However, there is still limited research-based evidence of the impact of social franchising on quality of care, access by the poorest or influence on the nature of uptake of reproductive health methods.

A 2008 Cochrane Review found no studies on social franchises meeting their stringent (randomised control trials / pre-post studies) criteria.²¹² Unsurprisingly, the authors concluded that '...there is an urgent need to develop rigorous studies to evaluate the effects of social franchising on access to and quality of health services in low- and middle-income countries. Such studies should be informed by the wider literature to identify models of social franchising that have a sound theoretical basis and empirical research addressing their reach, acceptability, feasibility, maintenance and measurability'.

A less rigorous systematic review of the effectiveness of social franchising techniques to improve health service provision in low income countries included a very small sample of social franchising services that targeted reproductive health provision (11 studies from a possible 71 included in the review as a whole).²¹³ Their findings produced mixed results, with five of the studies included in the reproductive health service provision section of the review finding that social franchising techniques increased the use of contraceptive methods. The remaining studies did report positive perceptions of quality of care, but did not report on the impact of service provision on contraceptive uptake or the socio-economic composition of those attending social franchised reproductive health services making it difficult to ascertain that impact of the method on improving equity or access and uptake of contraceptive methods. A cross sectional study of survey data from socially franchised clinics also found that there was an increased level of customer satisfaction and increase of client volume attending socially franchised clinics. The study also found that family planning brands were more available in socially franchised clinics.²¹⁴

A more recent systematic review with wide inclusion criteria reviewed six social franchising studies.²¹⁵ They concluded that there was strong evidence of impact of franchising to increase FP service use and moderate evidence of increased use by poor people. They also suggested that there was at least moderate evidence of improved quality of care. Overall, however, while the evidence on the impact of social franchising on use and user satisfaction looks very promising, more research is needed which is more experimental in design.

Looks promising

Engagement with the private sector via social marketing and franchising can increase access to contraceptives to women who need them. Although, it is less clear whether they can reach the very poorest.

2.5.5 Interventions to tackle supply side barriers and quality of care

Good quality care ‘requires the presence of trained personnel in well-equipped clinics where clients are treated courteously and provided with a variety of appropriate services’²¹⁶, in other words, the health system has to be ready to offer acceptable, effective and appropriate services, and clients must receive a technically correct and safe service delivered with courtesy and meeting their needs. Two broad forms of intervention are discussed below: improving supportive supervision and clinic management and improving client-provider interactions.

Supportive supervision and improving clinic management

The effect of interventions on quality of care that strengthen health system supervision of FP providers, through ‘facilitative’ or ‘supportive’ supervision, has also been demonstrated through a small number of published systematic evaluations in Ghana²¹⁷ (of a CBD program), Guatemala²¹⁸ and Mexico.²¹⁹ Although supervision improvement interventions act indirectly on client-provider interactions (CPI), these studies documented improvements in terms of enhanced technical skills of providers when delivering services, more client-focused, less authoritarian communication styles, and higher client satisfaction.

Interventions to improve system readiness, provider competence and provider supervision are implemented under the assumption that they will lead to improvements in CPI and in quality of care, which in turn will improve client adoption and continuation of contraception and ultimately on achievement of reproductive intentions. Evidence from Bangladesh²²⁰ and Tanzania²²¹ indicates that individual and community perceptions of quality of care are important determinants of contraceptive use.

Evidence as to whether improved quality of care reduces contraceptive discontinuation is mixed, with some studies demonstrating better CPI (through more thorough counselling, receiving preferred method) is associated with reduced discontinuation^{222, 223}, and others indicating no effect.²²⁴ To date, there have been no longitudinal studies to evaluate the impact of improving CPI

and quality of care on women's ability to achieve their fertility intentions in terms of avoiding unintended pregnancies.²²⁵

Improving client-provider interactions

It is widely recognised that health providers play a critical role in the quality of sexual and reproductive health services and clients' access to them. They have considerable discretionary power in determining how policies and guidelines are implemented, and sometimes this power can translate into routines or procedures that pose serious barriers to clients. Like their clients, providers are strongly affected by local traditions, social norms and beliefs which can result in discriminating against certain groups of women.

The interaction between clients and providers during FP counselling sessions is one of the critical elements determining the quality of care, perceived or real, experienced by FP clients, in clinics, during outreach and from non-clinical contraceptive distributors. High quality care is considered both a right of the client²²⁶ and a key factor determining their satisfaction with the services received and consequently the acceptability of using FP services and of continuing use for the duration needed.²²⁷

Many providers discourage clients by being rude, moralistic, rough or abrupt.²²⁸ Providers also discourage clients by not ensuring privacy and confidentiality, by making their clients wait, being unwilling to answer clients' questions. For example, fear of rude treatment was the reason given by 22% of women in urban Pakistan for not using family planning services.²²⁹ Stigmatising attitudes and behaviours by providers are often reported as major barriers by adolescents, women with fewer assets or whose husband has less education, by women with disabilities and women who are HIV positive.²³⁰

Many programmes have developed and tested a range of interventions that seek to improve CPI, with the intention of improving perceptions of quality of care, satisfaction with services, and sustained, effective use of contraceptive methods. These can be broadly categorised into a) health-system strengthening interventions that seek to improve the 'readiness' of facilities or programs to deliver quality services, including management strengthening; b) targeted interventions that focus on improving CPI through provider training and supervision, and service delivery policies and guidelines, and management; and c) interventions oriented to enhancing clients' capacity to influence the care they receive.

System-wide interventions are fairly straightforward to implement as they generally require an assessment of facilities and programmes to identify gaps or weaknesses in commodities / supplies, infrastructure and staffing, followed by investment in the necessary resources needed to bring the system to full 'readiness' to offer FP services at an acceptable level of quality. One of the most widely applied is the 'client-oriented provider-efficient (COPE) tool'²³¹; however, its effect on CPI has not been systematically evaluated. Indeed, even well-resourced interventions may not always be effective in increasing readiness, as a study in Uganda has shown.²³² A range of 'Health Facility Assessment' (HFA) tools have been developed to guide programme managers in identifying gaps and specific actions and investments needed to strengthen readiness.²³³

Although system readiness is a necessary condition for facilities to offer quality services²³⁴, it is not sufficient and so interventions that focus on enhancing CPI are needed if quality of care is to be improved. Moreover, clients' contraceptive behaviour seems to be more closely associated with the perceived or actual quality of the consultation than with the system's readiness to offer FP services.²³⁵

Systematic management processes, such as Quality Assurance²³⁶, Continuous Quality Improvement²³⁷, Service Quality Improvement²³⁸ and Performance Improvement²³⁹ have been used extensively to improve quality of care through improved management of service delivery, but none have been rigorously evaluated in terms of their effect on CPI.

Training providers is an obvious intervention to improve the quality of CPIs. Published evaluations, using some form of quasi-experimental design, support the effectiveness of structured training

interventions, in Nigeria²⁴⁰, Ghana²⁴¹, Uganda²⁴², India²⁴³, Indonesia²⁴⁴, Philippines²⁴⁵ and Brazil²⁴⁶ and Pakistan²⁴⁷, on a number of indicators of improved quality of CPI, including more options being offered during counselling, more complete information about contraceptive methods, more choices being made by clients, better follow-up over time and greater satisfaction expressed by clients. However, training targeted to improve the quality of care for family planning services must be supported by appropriate supervision and sustained 'readiness' of health systems to support quality of care improvements initiated by one-off training sessions. Moreover, the evidence around attitudinal change among providers is mixed, with training more easily able to improve technical competencies than to change deep-rooted biases and prejudices against certain clients because of their age, marital status, ethnicity or other characteristics.

Many types of job aides (e.g. checklists, flip-charts, decision-making algorithms, IEC materials for clients and providers) have been developed to help providers improve the quality of CPI by providing the correct technical needed and guiding them through key steps that should be followed during a FP consultation. Few have been systematically evaluated, however. The two job aides that have been most rigorously evaluated are the Balanced Counselling Strategy (BCS)²⁴⁸, which uses an algorithm to determine the most appropriate method(s) for the client, supported by information cards and leaflets, and the Decision-Making Tool (DMT)²⁴⁹, which is a flip-chart used by the provider during consultation. Quasi-experimental studies in Kenya and South Africa have demonstrated effectiveness with the BCS Plus²⁵⁰ (a version of the BCS adapted for use in high HIV prevalence settings), although using structured observations of CPI rather than mystery clients. A pre-post design in Mexico²⁵¹ demonstrated that the DMT increased the amount and quality of information exchanged and increased the clients' engagement in the process.

Overall gaps in the evidence base on provider bias and quality remain. There is evidence from quasi-experimental design that quality improvement interventions can be successful but the extent to which improving quality leads to changes in contraceptive use and continuation will also depend on other factors. Evidence is also lacking on whether quality improvement leads to better achievement of client reproductive health goals.^{252,253}

2.5.6 Adolescent friendly services

For FP, adolescents, both unmarried and married, are a commonly excluded group; the reasons for and incidence of their exclusion is becoming increasingly well-documented but as these can vary tremendously by population it is critical that the determinants of exclusion are assessed and understood before interventions are developed. Many interventions have been developed to reduce barriers to access for adolescents, but surprisingly few have been systematically evaluated, especially in developing countries. WHO is currently undertaking a systematic review of the literature that should be available by early 2011.²⁵⁴

Two reviews published in *The Lancet* series on adolescent health in 2007 provide the best description of the current evidence available. A review by Tylee et al²⁵⁵ of youth-friendly models of primary care concludes that 'little evidence is available, since many of these initiatives have not been appropriately assessed. Appropriate controlled assessments of the effect of youth-friendly health-service models on young people's health outcomes should be the focus of future research agendas.' They point out that in developing countries, young people are less willing to seek professional help for more sensitive matters preferring friends or family or health educators for sexual advice; however, often, it is the adults around the adolescent decide whether or not health care needs to be sought, and if so when and where it should be sought.

In presenting evidence from their review, the authors lament the lack of rigour in evaluation designs, indicating that most have been undertaken using uncontrolled observational studies, especially in developing countries. Only one randomised control trial (RCT) could be identified, of an intervention to make pharmacies more youth-friendly in Bolivia by training pharmacists and providing materials improved access to contraceptive advice for young people²⁵⁶, and three quasi-experimental studies in Bangladesh²⁵⁷, South Africa²⁵⁸ and Zambia²⁵⁹, all demonstrated models for increasing access.

Only one study was found using a quasi-experimental design (in China) that effectively increased contraceptive use in unmarried young people aged 15–24 years through provision of information, community sensitisation, improved provision of services, and education of health workers. The reviewers also searched for studies that evaluated interventions to improve provider performance, but could find none that had been systematically evaluated in developing countries.

They conclude that although the barriers young people face in accessing primary-care services are well-known, the benefits of youth-friendly initiatives on their health has not been appropriately demonstrated. They suggest that further evidence on whether involving young people in the development of quality indicators for primary care enhances provider training and guidance, access and outcomes, indicating that several RCTs are underway that could provide this evidence. More well-designed studies are needed to assess the effect of screening and counselling services on health outcomes and on engagement, satisfaction, and access; of the sustainability and responsiveness of these system changes; and of the cost–benefit of implementing youth-friendly services.

Bearinger et al²⁶⁰ focused specifically on the sexual and reproductive health of adolescents and concluded that despite the necessary diversity in approaches found globally, there are some common elements in prevention and health promotion and organise their review around three key strategies: clinical services (for which they refer to the Tylee review); sex education programmes that provide developmentally appropriate, evidence-based curricula; and youth development strategies to enhance life skills, connections to supportive adults, and educational and economic opportunities.

In a review of 83 evaluations of sex education programmes²⁶¹ including 18 in developing countries, evidence demonstrated that curriculum-based programmes can have positive effects on risky sexual behaviours in young people, with two-thirds of the studies finding an effect on one or more reproductive health outcomes and one third having a positive effect on two or more outcomes, with findings being very similar between developing and developed countries and effective with both low-income and middle-income youth groups, in rural and urban areas, with girls and boys, with different age groups, and in school, clinic, and community settings. They also summarise the 17 common characteristics found in these effective programmes.

Typically, the effective programmes reduced sexual risk-taking by a third or less and a few programmes had an effect on STIs or pregnancy rates. Given the broader determinants of sexual behaviour, they recommend that approaches focusing exclusively on changing individual behaviours are unlikely to produce substantial improvements in reproductive health status.

Finally, a recent systematic review identified 32 studies which investigated increasing both young people's demand for sexual and reproductive health services and community support for their use.²⁶² In school based settings the most promise appears to be shown by setting up formal referral networks between schools and health centres. The review cites evidence from India which suggests that a similar system of referral could be possible from community based education programme. On the basis of costs, the review did not support investment in fixed site youth centres compared to supporting outreach or peer promotion. Health facilities supplying IEC outreach activities also shows potential for increasing demand, as does engagement with the private sector via social marketing and social franchising. The private sector in particular needs further research as there is some evidence that of young people prefer this source when seeking commodities and services (see section below).

Interventions for married adolescents

The interventions described above are primarily intended to meet the needs of unmarried adolescents, recognising the particular social and legal barriers they face in accessing information and services, whether or not they are sexually active. The majority of sexually active adolescent girls in developing countries are married.²⁶³ Indeed, it has been argued 'that married adolescent girls are a universe of their own and, by virtue of their age, marital status, and gender, are at a confluence of social vulnerabilities'.²⁶⁴ Interventions to address the FP needs of married

adolescents are relatively new and generally tend to take two approaches:²⁶⁵ a) delaying the age of marriage, with the intention of delaying sexual initiation and childbearing and thus the need for such services; and a) reaching and supporting married adolescents and their husbands and families, with targeted activities and services. At this point in time, few rigorous evaluations have been completed to provide strong evidence for either broad approach, but there are a number of promising practices emerging from studies using quasi-experimental designs.

Two examples can be found in India: a project in Bihar used a combination of community, couple and individual BCC strategies to build a supportive social environment and education on services, together with facilitated access to RH services.²⁶⁶ Random sample surveys before and after with logistic regression analysis found that women in intervention areas were more likely to have increased knowledge, and that demand for contraception increased from 25% at baseline to 40% at follow-up in intervention areas, but remained virtually unchanged in comparison areas. At follow-up, contraceptive use had risen in both areas, but the adjusted odds of use in intervention areas were 3.8 times those in comparison areas.

A similar intervention was tested more rigorously in Uttar Pradesh, where a comprehensive BCC model educated young couples and community members about healthy birth spacing practices, including LAM and postpartum contraception.²⁶⁷ The study used a quasi-experimental pre-post control group design and followed 600 women in the experimental and control groups who were three to six months pregnant with a parity of zero or one. Knowledge of spacing methods increased significantly in the experimental areas. At nine months postpartum, 62% of women in experimental sites used modern contraceptives and 22% used LAM at four months postpartum, compared to 31% and 0% respectively in the control group. The condom was the main method used. Of the 22% of women who used LAM as a contraceptive, 68% transitioned to a modern contraceptive.

In Ethiopia, the *Berhane Hewan* project aimed to reduce the prevalence of child marriage in rural Ethiopia, through a combination of group formation, support for girls to remain in school and community awareness.²⁶⁸ A quasi-experimental research design with baseline and endline surveys was used to measure changes in social and educational participation, marriage age, reproductive health knowledge and contraceptive use. In addition, economic incentives (a goat) were provided to families who did not marry off their daughters during the project period. The evaluation demonstrated that, among girls aged 10–14, those exposed to the program were more likely than those in the control area to be in school at the end line survey (odds ratio, 3.0) and were less likely to have ever been married (0.1). However, among girls aged 15–19, those in the intervention area had an elevated likelihood of being married by the end line (2.4). Sexually experienced girls exposed to the intervention had elevated odds at end line of having ever used contraceptives (2.9).

A similar intervention tested in Bangladesh, *Kishori Abhijan*, created opportunities to inspire girls and their families to seek alternatives to early marriage by providing a safe space for girls to meet, offering life skills lessons, and access to livelihoods training, savings, and credit options.²⁶⁹ At the end of two years the quasi-experimental evaluation design demonstrated success in delaying marriage among the youngest and poorest girls. However, because girls' families still must pay dowry and older girls have to pay higher dowries, the average dowry paid among those who delayed marriage increased.

2.5.7 Improving accountability

Interventions to empower clients to pro-actively request and hold the provider accountable to providing a high quality, gender-sensitive service have not been widely implemented, and no examples could be found of evaluations of their effectiveness. Work in this area was undertaken initially by the International Planned Parenthood Federation (IPPF)'s western hemisphere office, which has defined clients' rights²⁷⁰ and developed a manual for evaluating quality of care from a gender perspective.²⁷¹ Subsequently the Population Council adapted this methodology to develop a tool for facilities to accredit themselves,²⁷² evaluated it in Bolivia²⁷³ and subsequently supported its implementation in several other Latin American countries.²⁷⁴ The pre-post study in Bolivia showed

improved client satisfaction, a significant reduction in unmet need and improvements in partner communication.

The evaluation methodologies used to generate the evidence described here has been similar across most studies and has evolved little since originally developed in the 1990s: non-participant structured observations of client-provider interactions (sometimes with audio or video recording) to generate a series of quality of care indicators; exit interview with clients immediately afterwards; interviews with providers; and inventories of health facilities. Randomisation of facilities or clients is difficult and so most designs have been quasi-experimental, with pre-post measures and experimental and comparison groups.

Compared to other areas the evidence base on existing interventions to improve CPI and quality of care is reasonably good and evaluation methodologies are well-developed and can be used to evaluate new interventions as they are developed. Two challenges are emerging that do require further attention. First, more evidence is needed on how to develop and evaluate CPI-strengthening interventions for FP services integrated with other services. On this some work has already been started for FP-HIV integration and for FP in postpartum care, but as the trend towards delivering FP within a broader package of RH services increases, rigorous evaluations will be needed to guide future implementation.

A second challenge relates to the fact that public sector programmes (and private providers) have shown little interest in evaluating provider performance and ensuring that minimum standards of care are both designed and enforced. However the situation may change with increasing interest in output-based programming through demand-side financing. For both public and private sector providers, setting quality standards, accrediting providers and facilities, and assessing and assuring that quality standards are met, will become critical elements if programmes are to successfully evolve, become more efficient while maintaining quality and safety standards and be held accountable to their clientele.

2.6 Cost-effectiveness of family planning interventions

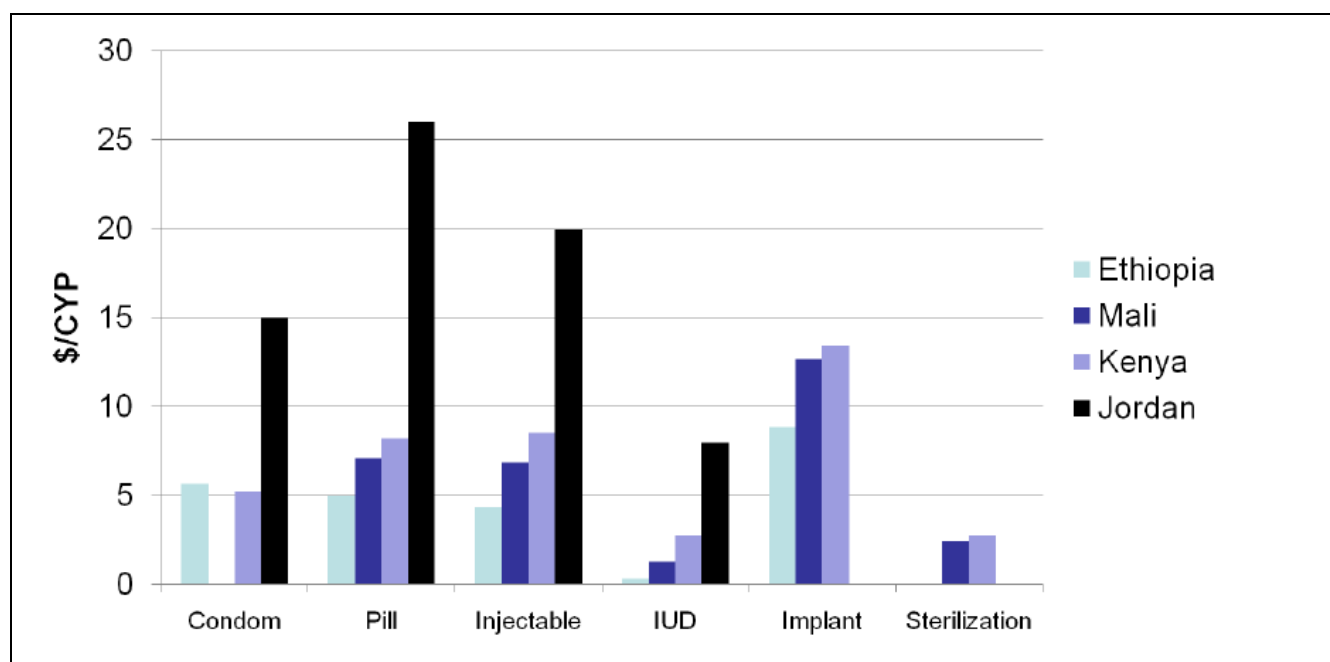
2.6.1 Cost per CYP

There is now a fairly large evidence base on the unit costs of delivering family planning interventions. A literature review undertaken in 2007 for USAID identified 61 studies providing unit cost estimates. The majority of estimates were from the mid 1990s or earlier.²⁷⁵ After standardising costs to 2006 prices for comparison, the study showed that the IUD and female sterilisation were the least costly options with median costs per couple year of protection (CYP)ⁱ of around \$6 and \$7 per CYP respectively. The most costly methods were condoms (above \$35 per CYP), followed by oral contraceptives at \$15.

Despite the large number of studies, few authors have adopted standardised approaches to estimating unit costs which makes generalising costs to different settings difficult. Different accounting methods, the method mix, the level of unmet need and the quality and of the existing supply will all influence costs. In response to this, Stover et al (2010) have attempted to document unit delivery costs in four countries using a standardised costing methodology.²⁷⁶ Factors affecting financial unit costs included the level of development, source of commodities (donated commodities may be cheaper than self purchase) and who delivers the service. Since average annual salaries differ by personnel type and country and the type of personnel delivering services varies by country, this leads to greater variation in cost per CYP for some interventions (see Figure 7).

ⁱ The CYP is a commonly used measurement of family planning performance. It is estimated that one full CYP is the equivalent of one year of protection from unintended pregnancy for one couple. Based on Guttmacher's recent estimates, three CYPs will avert an average of roughly 1 unwanted pregnancy, although this does not take into account variation across regions, so provides an estimate only.

Figure 7: Direct costs per couple years of protection vary across countries



Source: Stover, J. et al 2010.²⁷⁷

Comparative cost data for different service delivery models are harder to find. An early study by Barberis and Harvey (1997) reviewed 14 large family planning programs and again found considerable variation in costs per CYP by region and mode of service delivery.²⁷⁸ These data were later updated by Levine et al (2006).²⁷⁹ Clinic based sterilisation services provided both the highest volume and the lowest cost per CYP, with a weighted average cost of \$2.34 per CYP. Social marketing programmes had the next lowest cost per CYP, with a weighted average of \$3.00, although these costs were highly dependent on setting. For instance, in African countries, where such programs were less developed, the costs were high – up to \$19.00 per CYP. Costs of community-based distribution programs ranges from \$4.85 to \$35.37 per CYP, with a weighted average of \$12.55. The highest costs were for clinic based services with a community based distribution component ranging from \$4.44 to \$19.38, with a weighted average of \$18.21. The table below shows estimated weighted average costs for Africa and Asia. Costs are generally higher in Africa for all program modalities except clinics with community distribution.

Table 6: Estimated weighted average programme costs per CYP, in sub-Saharan Africa and Asia

Region	Mode of service delivery	Cost per CYP (US\$)
Africa	Social marketing	15.95
	Community-based distribution	20.32
	Clinics	16.65
	Clinics with community-based distribution	8.02
Asia	Social marketing	2.59
	Community-based distribution	6.50
	Clinics	5.07
	Clinics with community-based distribution	19.38

Source: Levine et al. (2006) using data from Barberis and Harvey (1997)²⁸⁰

It is worth noting some of the limitations of CYPs as a measure of output. The cost per CYPs ignore whether a particular programme is reaching high risk or marginalised groups.²⁸¹ They also cannot account for method mix where users who obtain contraception from a family planning programme are already buying or would otherwise have bought contraceptives from commercial providers or would have relied on natural methods. Given these and other limitations, efforts are underway to develop alternative approaches to calculating CYPs.

The role of programme size is also important to consider in assessing cost-effectiveness. Larger programmes benefit from economies of scale in procurement and so unit costs decline as the number of contraceptive users increase. It follows therefore that average costs decrease as fixed costs from training and from information, education and communication programmes are distributed over more units. However, one study found that as marginal costs diminish with size, so may marginal returns in mature programmes.²⁸² Few studies take this into account when reporting cost-effectiveness ratios.

2.6.2 Cost-effectiveness estimates

Strictly speaking, cost per CPY are not true estimates of cost-effectiveness since they refer to outputs rather than health *outcomes*, so it is not possible to compare them with other health interventions. Table 7 below shows estimates of the average cost per birth and death and disability adjusted life year (DALY) for family planning from an analysis by Levine et al.²⁸³ The cost per maternal death averted varies between \$5,172 and \$18,917 in Africa and South Asia.²⁸⁴ The cost per DALY averted ranged from \$30 to \$49. Health interventions that cost less than \$100 per DALY averted are considered highly cost-effective by international standards. Table 8 shows that family planning also compares favourably with the cost-effectiveness of other health interventions in terms of cost per DALY saved. In terms of global costs, Guttmacher estimates that meeting all the need for contraception in the developing world would cost an average of \$1.20 per person year or \$8 per year per woman using modern contraception.²⁸⁵

Table 7: Regional average costs per benefit of family planning US\$

Region	Cost per births averted	Cost per infant death averted	Cost per maternal deaths averted	Cost per DALY saved
Middle East and North Africa	\$97	\$1,989	\$18,917	\$49
South Asia	\$113	\$1,577	\$5,172	\$30
Sub-Saharan Africa	\$131	\$1,367	\$10,231	\$34

Source: Levine et al. 2006.

Table 8 : Cost-effectiveness of common health interventions

Intervention	Cost per DALY saved (US\$)
Insecticide treated bed nets	\$13–\$20
Malaria prevention for pregnant women	\$29
Tuberculosis treatment (epidemic situations)	\$6–\$60
Family Planning*	\$30–\$49
Antiretroviral therapy	
India	\$150
Sub-Saharan Africa	\$252–\$547
BCG vaccination for children	\$48–\$203
Oral rehydration therapy	\$1,268
Cholera immunisation	\$3,516

*South Asia, sub Saharan Africa, Middle East and North Africa

Source: Guttmacher Institute (2009) and Levine et al (2006)

Cost-effectiveness of integrated approaches

Some studies also offer insights into how cost-effectiveness can be improved by changing the mix of services and integrating family planning into other health services. Combining family planning with HIV prevention services would be particularly cost-effective in countries affected most by the epidemic. The analysis by Levine et al showed that adding family planning to services that prevent mother-to-child transmission of HIV (PMTCT) significantly lowered prevention costs. Helping HIV positive women avoid unintended pregnancies by integrating family planning services also reduces the number of maternal deaths and the number of children orphaned by HIV. They estimate that averting an AIDS related maternal death costs \$1,824.²⁸⁶

A cost-effectiveness study conducted in Kerala showed that adding family planning and abortion services to PMTCT programmes improved their cost-effectiveness from US\$ 124 per DALY for an ARV treatment alone to US\$ 93 per DALY averted for a strategy which included both ARV treatment and family planning.²⁸⁷ The benefits of an integrated approach are also shown by a modelling study in 14 high prevalence countries which looked at the costs and benefits of adding family planning services to programs for the prevention of mother to child transmission of HIV.²⁸⁸ They estimated that family planning could double the impact of PMTCT programs in reducing HIV positive births and can have an even larger impact on reducing child and maternal deaths. The cost of adding family planning to PMTCT services was about \$360 per child death averted – below the cost of averting deaths using traditional PMTCT services.

A recent modelling study in India by Goldie et al predicted that the inclusion of family planning (alongside access to safe abortion) in an integrated maternal health service is as cost-effective as childhood immunization or treatment of malaria.²⁸⁹ Increasing effective family planning was shown to be the most effective single intervention to reduce pregnancy related mortality. Increased family planning to reduce unmet need by amounts ranging from 25% to 100% reduced maternal deaths by amounts ranging from 7.0% to 28.1% in rural India and 5.8% to 23.5% in urban India. These findings are similar to an earlier study in Mexico which also showed that increasing the provision of family planning and assuring access to safe abortion are feasible, complementary and cost-effective strategies that would provide the greatest benefits within a short timeframe.²⁹⁰

Overall there is now good evidence to justify funding for family planning programs, but decision makers still lack information on: how best to spend funds within their programs; how to deliver family planning interventions in various settings; how to direct subsidies to the poorest; and, how best to combine related services.²⁹¹

Reliable evidence

Investing in family planning is a cost-effective way to avert births and mortality compared to other interventions.

3. Safe abortion

3.1 The rationale for tackling unsafe abortion

Each year 75 million pregnancies are unintended and it is estimated that around 44 million end in abortion.^{292,i} In 2008 an estimated 21.6 million unsafe abortions occurred globally, with the overwhelming majority in developing countries.²⁹³ Unsafe abortionⁱⁱ is one of the major causes of maternal mortality globally. It is estimated that 47,000²⁹⁴ (out of 358,000 maternal deaths)ⁱⁱⁱ women died in 2008 as a result of unsafe abortions, many more experience severe health consequences.²⁹⁵ According to the WHO the risk of dying of an unsafe abortion is higher in Africa than anywhere else in the world. Depending on the methodology used, abortion accounts for anything up to 14% of all maternal deaths in sub-Saharan Africa, and a much higher proportion in some countries, the vast majority due to unsafe abortion.^{iv}

Measuring the full severity and consequences of unsafe abortion (and therefore the full benefits of providing safe abortion) is difficult and relies on country case studies. A study in Cambodia found that 40% of post-abortion patients had complications of high severity. In general, the most common complications are incomplete abortion, excessive blood loss and infection. Less common but with very serious consequences are septic shock, perforations of the intestines and peritonitis.²⁹⁶ Surveys of health professionals in Latin America, Pakistan and Uganda suggest that around 4 in 10 women having unsafe abortions experience complications and many do not obtain care.²⁹⁷ One in four women who have had an unsafe abortion will need medical attention.²⁹⁸

There is evidence that providing safe abortion services has contributed to improvements in maternal health. In the Matlab study in 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 Manual Vacuum Aspiration.²⁹⁹ Guttmacher also cite evidence from South Africa which showed a 91% decline in abortion related mortality following legalisation.³⁰⁰

The economic case for action on unsafe abortion is also strong, with several studies now documenting the huge economic burden of unsafe abortion.³⁰¹ About five million women are hospitalised each year in developing countries due to complications from unsafe abortion, making it the largest proportion of admissions for gynaecological services in some countries.³⁰²

The cost of unsafe abortion and related morbidity and mortality to health systems in developing countries lies somewhere between US\$375 and US\$838 million a year, with abortion complications being most expensive to treat in sub-Saharan Africa.³⁰³

An estimated 5 million DALYs are lost each year by women of reproductive age as a result of mortality and morbidity from unsafe abortion.³⁰⁴ Between 13 and 40% of all maternal deaths in Nigeria are due to unsafe abortion, where 142,000 women seek post abortion care (PAC) treatment per year, of which at least 3,000 die. PAC treatment costs 4 times more than safe abortion, total cost of PAC is about US\$19 million per year, 71% of this cost born by households and the remainder by health system.

The indirect costs of unsafe abortion are not easy to quantify, and further research is required in this area. They include the loss of productivity from abortion related morbidity and mortality³⁰⁵, the diversion of scarce medical resources for treatment of abortion complications, and the effect on the

ⁱ The evidence for the magnitude of unsafe abortion and its impact on maternal health is limited and quoted figures may be underestimates of the true scale of the problem. The figures provided here are the best available at this time. However WHO is working on new estimates of scale and these should be available in 2011.

ⁱⁱ An unsafe abortion is defined by the WHO as a procedure meant to terminate an unintended pregnancy that is performed by individuals without the necessary skills, or in an environment that does not conform to the minimum medical standards, or both.

ⁱⁱⁱ 358,000 figures based on latest UN figures.

^{iv} Accurate estimates of maternal mortality due to abortion is difficult. A recent systematic review estimated that 4% of maternal deaths were due to unsafe abortion. Kinney et al (2010). The higher estimate of 14% is based on WHO survey data in 2003.

estimated health, education and survival of the 220,000 children worldwide whose mothers die from unsafe abortions each year.³⁰⁶

Economic losses from a resulting decrease in productivity in developing countries are estimated to be more than US\$400 million.³⁰⁷ Out of pocket expenditure is estimated to cost up to US\$400 million globally and US\$200 million in sub-Saharan Africa. Long term morbidities resulting from unsafe abortion may cost billions of dollars annually.

Some 20–50% of women who have unsafe abortions are hospitalised for complications³⁰⁸ 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.³⁰⁹ Recent research on the global economic costs of abortion suggests the cost of unsafe abortion related morbidity and mortality to health systems is around US\$500 million.³¹⁰ 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. Studies in South Africa and Nigeria have estimated the national costs to be US\$11.7 million (in 1997)³¹¹ and US\$19 million (in 2002)³¹² respectively. To put this in perspective, 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.³¹³

3.2 What do we know about safe abortion interventions?

The availability and delivery modality of safe abortion services in a country depend to a large degree on its legal status. Restrictive laws force women to resort to unsafe services. More than 8 in 10 women in developing countries (excluding China and India) live under highly restrictive abortion laws.³¹⁴ Just over a third of the world's population (39.3%) can access an abortion without a reason being given. However, even in the remaining countries that offer access to abortion procedures, specific restrictions are often placed on the circumstances in which the procedure can be accessed. Table 11 summarises the legal status of abortion in Africa and Asia.

Table 9: Legal status of abortion in Africa and Asia

Reason	Countries
Prohibited altogether, or no explicit legal exception to save the life of the woman	Angola, Central African Republic, Congo (Brazzaville), Democratic Republic of the Congo, Egypt, Gabon, Guinea-Bissau, Lesotho, Madagascar, Mauritania, Mauritius, São Tomé and Príncipe, Senegal, Somalia, Iraq, Laos, Oman, Philippines
To save the life of the woman	Côte d'Ivoire, Kenya, Libya (e), Malawi (f), Mali (a,b), Nigeria, Sudan (a), Tanzania, Uganda, Afghanistan, Bangladesh, Bhutan (a,b,d), Brunei Darussalam, East Timor (c), Indonesia, Iran (c), Lebanon, Myanmar, Sri Lanka, Syria (e,f), United Arab Emirates (e,f), West Bank and Gaza, Yemen
To preserve physical health (and to save a woman's life)	Benin (a,b,c), Burkina Faso (a,b,c), Burundi, Cameroon (a), Chad (c), Comoros, Djibouti, Equatorial Guinea (e,f), Eritrea (a,b), Ethiopia (a,b,c,d), Guinea (a,b,c), Morocco (f), Mozambique, Niger (c), Rwanda, Togo (a,b,c), Zimbabwe (a,b,c), Jordan, Kuwait (c,e,f), Maldives (f), Pakistan, Qatar (c), Saudi Arabia (e,f), South Korea (a,b,c,f)
To preserve mental health (and all of the above reasons)	Algeria, Botswana (a,b,c), Gambia, Ghana (a,b,c), Liberia (a,b,c), Namibia (a,b,c), Seychelles (a,b,c), Sierra Leone, Swaziland (a,b,c)
Socioeconomic grounds (and all of the above reasons)	Zambia (c)
Without restriction as to reason	Cape Verde, South Africa, Tunisia
*Includes countries with laws that refer simply to 'health' or 'therapeutic' indications, which may be interpreted more broadly than physical health.	
Notes: Some countries also allow abortion in cases of (a) rape, (b) incest, (c) foetal impairment or (d) other grounds. Some restrict abortion by requiring (e) parental or (f) spousal authorisation. Countries that allow abortion on socioeconomic grounds or without restriction as to reason have gestational age limits (generally the first trimester); abortions may be permissible after the specified gestational age, but only on prescribed grounds.	

Source: Guttmacher, 2009.^{315,316}

In countries where abortion has fewer legal restrictions, provider and delivery systems vary substantially. In many developed countries, abortion is often part of the basic health services available. For instance Singh et al report that 87% of abortions carried out in 2006 in England and Wales were funded by the National Health Service and free at the point of use – 48% in private facilities under contract to the government.³¹⁷

3.2.1 Safe abortion care

Tables 11 and 12 describe the available safe abortion interventions. Compared with childbirth and other surgical procedures, and when performed by properly trained health personnel in well equipped facilities, abortion is a relatively safe procedure. There are virtually no maternal deaths associated with abortion in the developed world.³¹⁸

First trimester abortions

Vacuum Aspiration (both electric and manual) and medical abortion are recommended by the WHO as the preferred methods of abortion before 12 weeks.ⁱ Systematic reviews have shown the efficacy of Manual Vacuum Aspiration to be similar to that of electrical vacuum aspiration, with completion rates of at least 98%.³¹⁹ Evidence from systematic reviews also shows that this method can be used safely and effectively by mid-level health service providers, such as midwives.³²⁰

For gestation up to 9 weeks, Medical Abortion (MA) methods are available and have been proven to be effective and safe.^{321,322} Combined regimens are more effective than single agents, and usually rely on administration of mifepristone, an antiprogesterone, followed by administration of prostaglandin such as misoprostol, which is more effective if given vaginally, 36–48 hours later.³²³ The use of mifepristone together with misoprostol has become the most common method of medical abortion.

Second trimester abortions

Second trimester abortions account for 10% to 15% of abortions performed worldwide.³²⁴ It is not clear as to whether surgical or medical methods are optimal for second trimester pregnancy termination.³²⁵ 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.³²⁶ A review of trials found MA to be as effective and acceptable as D&E, but caused more pain and adverse effects.³²⁷ Evidence favours D&E over mifepristone and misoprostol³²⁸, but larger randomised trials are needed.

Medical abortion has been found to be acceptable in several low resource settings³²⁹, although it may require more clinic visits than surgical abortion.³³⁰ In the case of a failed or incomplete medical abortion, surgical abortion is required, so facilities offering medical abortion must also offer, or provide referral and access to, vacuum aspiration for complications or other indications.³³¹ A continuing challenge to provision of D&E is the availability of a large enough pool of skilled providers.³³² More details of all abortion methods are summarised in the annex.

ⁱ WHO (2003) guidance is in the process of being updated, with this revision expected in early 2011.

Table 10 Abortion interventions

Type		Description
Surgical abortion	First trimester surgical abortion	Manual Vacuum aspiration (MVA) or suction-aspiration uses aspiration to remove the contents of the uterus through the cervix. It may be used as a method of induced abortion, a therapeutic procedure used after miscarriage, or a procedure to obtain a sample for endometrial biopsy.
	Second trimester surgical abortion	Dilation and evacuation procedures combines vacuum aspiration with use of forceps and can be used safely between 13 and 16 weeks gestation with some medical professionals performing this procedure through to 20 weeks or more.
Medical abortion	Mifepristone	Mifepristone, which is taken orally (swallowed), blocks progesterone activity in the uterus, leading to detachment of the pregnancy. Mifepristone increases uterine sensitivity to prostaglandins (like misoprostol) and softens the cervix. Mifepristone is used with misoprostol for medical abortion.
	Misoprostol	Misoprostol, a synthetic prostaglandin, stimulates uterine contractions and causes uterine evacuation. Misoprostol is inexpensive, stable at room temperature, and available in many countries for the prevention and treatment of gastric ulcers. Misoprostol can be used to prevent and treat postpartum hemorrhage, treat incomplete abortion or miscarriage, induce abortion (by itself or with mifepristone), and induce labor. In abortion care, misoprostol is commonly taken buccally (between cheek and gum), sublingually (under the tongue) or vaginally. ³³³
	Mifepristone plus Misoprostol	The combination of mifepristone plus misoprostol is more effective in achieving complete abortion than either drug used alone. ³³⁴

Table 11 Recommendations for delivery of safe abortion care

	Procedure	Gestational age	Type of Provider	Type of facility
Surgical abortion	Manual Vacuum Aspiration (MVA)	5–12 weeks (strong evidence), >12 weeks; weak evidence)	Gynaecologist, trained general physician, trained midlevel provider	Primary care facility
	Dilation and Evacuation	≥13 weeks (strong evidence)	Gynaecologist, trained general physician,	District hospital, secondary or referral facility
Medical abortion	Misoprostol	≤ 9 weeks (strong evidence)	Trained midlevel provider	Primary care facility
	Mifepristone and misoprostol	5–9 weeks (strong evidence); 10–12 weeks; limited evidence)	Gynaecologist, trained general physician, trained midlevel provider	Primary care facility
Later medical abortion	Mifepristone followed by repeated doses of misoprostol or vaginal prostaglandins	≥13 weeks (strong evidence)	Gynaecologist, trained general physician, trained midlevel provider	District hospital, secondary or referral facility

Source: Adapted from Guttmacher 2009.

Box 4: Innovations in medical abortion

Medical abortion provides choice to women in addressing their reproductive health needs and gives access to a safe method which can be provided by non-physicians. Not only does medical abortion allow women increased access to safe services but many providers, who otherwise would have been unwilling to be associated with the provision of abortion services, are willing to help women to access medical abortion.

A combined mifepristone/misoprostol abortion pill called Medabon® (containing one tablet of 200mg mifepristone and four tablets of 200µg of misoprostol) is now available. The mifepristone is taken orally and then the misoprostol is taken vaginally approximately 48 hours later.

However, it is still only slowly becoming available in developing countries. This is due to significant access barriers to the products, particularly the regulatory approval process in many countries. It is gradually being registered and introduced into the market in Africa and South Asia.

Source: Concept Foundation.

Post abortion care

Death and suffering from the complications of unsafe abortion can be reduced if women receive the right care in the post abortion period. Post abortion care (PAC) encompasses emergency treatment for incomplete abortion and other complications from unsafe abortion,, the provision of family planning services and counselling and referral for other reproductive health care needs. The medical needs for treating the more severe complications from unsafe abortion are similar to emergency care of pregnant, intrapartum and postpartum women. Current recommended interventions (based on expert consensus) and delivery modalities are summarised below in Table 11.

Table 11 Recommendations for provision of post-abortion care

	Level of provider	Level of facility	Contraceptive counselling and services	STI/HIV care
Incomplete abortion	Gynaecologist, trained general physician, trained midlevel provider	Primary care or higher-level facility	Counsel about health benefits of delaying next pregnancy until complete recovery	Counsel about need for STI/HIV protection and condom use
Complete abortion	Gynaecologist, trained general physician, trained midlevel provider	For MVA: District, secondary or tertiary hospital; for misoprostol: primary care or high-level facility	Counsel about range of contraceptive methods and help women choose a method	Offer (or provide a referral for) testing and treatment for STIs
Infection/ sepsis	Gynaecologist, trained general physician	District, secondary or tertiary hospital	Provide a method or refer elsewhere	Provide counselling or referral for HIV/AIDs
Uterine, vaginal or bowel injuries	Gynaecologist, trained general physician	District, secondary or tertiary hospital	Provide emergency contraception	
Shock	Gynaecologist, trained general physician	District, secondary or tertiary hospital		

Source: Adapted from Guttmacher 2009.

Reliable evidence

Compared with childbirth and other surgical procedures, and when performed by properly trained health personnel in well equipped facilities, abortion is a relatively safe procedure.

3.3 Options for delivering safe abortion care

WHO-recommended packages of care, based on expert consensus, comprise: a) ensuring access to safe abortion to the full extent of the law, b) access to treatment for complications of spontaneous abortion and unsafe abortion, c) recommended surgical and medical methods for uterine evacuation, d) contraceptive information, counselling and methods e) Screening, treatment and referral for other sexual and reproductive health needs.³³⁵ The figure below summarises WHO recommendations on packages of interventions for each health system level. In particular, WHO now recommends that medical abortion be made available at all first level health facilities.

Overall, however, there are still a few gaps in our knowledge on how to deliver abortion services in different settings, especially in resource-poor countries and in countries where abortion is subject to legal restrictions. Specific questions include what is the comparative safety and advantages of methods of second trimester abortions in resource-poor settings; do instruments inserted into the uterus need to be sterile or is high level disinfection adequate the optimal regimen for misoprostol used alone for early abortion and the potential for task-shifting or even self-administration.³³⁶

Figure 8 WHO Recommended packages of care for safe abortion care

Interventions at Home/COMMUNITY level	Key supplies and commodities needed
<ul style="list-style-type: none"> Health education to women, men, families and community: <ul style="list-style-type: none"> Sexual and reproductive health, including safe sex, family planning, unwanted pregnancy, coerced sex, consequences of unprotected sex, legal grounds for safe abortion Consequences of unsafe abortion Availability of family planning services Availability of pregnancy detection and safe abortion services Distribution of methods of contraception, including emergency contraception Identification of signs of domestic and sexual violence and referral Identification, first aid and prompt referral of women with signs of complications of unsafe abortion 	<ul style="list-style-type: none"> Counselling, health education and health promotion materials Job aids Contraceptive methods <ul style="list-style-type: none"> Condoms for STI/HIV and pregnancy prevention Oral contraceptives including emergency contraceptives Injectables Pregnancy test kits
Interventions at FIRST LEVEL HEALTH FACILITIES	Key commodities needed
All of the above plus: <ul style="list-style-type: none"> Counselling for contraceptive methods Uterine evacuation for first-trimester and, incomplete abortions Diagnosis and treatment of common complications of abortion including infection, bleeding or injury Referral mechanisms for timely treatment of abortion-related complications Diagnosis and treatment of STIs/HIV 	All of the above plus: <ul style="list-style-type: none"> Vacuum aspiration equipment Medications for induced abortion (mifepristone + misoprostol) Analgesics and local anaesthetics Antibiotics Uterotonics Full range of contraceptive methods (including vasectomy)
Interventions at REFERRAL FACILITIES	Key commodities needed
All of the above plus: <ul style="list-style-type: none"> Uterine evacuation for pregnancies beyond the first trimester Management of women with any complication of abortion Management of ectopic pregnancy Provision of all contraceptive methods including tubal ligation 	All of the above plus: <ul style="list-style-type: none"> Parenteral and oral antibiotics Intravenous fluids Oxygen Blood and transfusion sets Operating theatre drugs, and equipment

Source: WHO (2010) www.who.int/making_pregnancy_safer/documents/fch_10_06/en/index.html

3.4 What do we know about removing barriers to access?

Barriers to access to RMNH services in general are outlined in detail in the accompanying evidence paper on Burden, Determinants and Health system interventions. For safe abortion care, barriers particularly relate to its legal status; lack of information about safe abortion services; gender inequality; stigma around unwanted pregnancy and lack of donor funding for safe abortion or post abortion care. Due to the small sector, the limited number of actors working in the area and the presence of legal restrictions in many countries, much of the evidence on how to remove barriers and improve access to safe abortion care is generated by NGOs in the form of country case studies and programme evaluations.

While interventions to increase access to modern contraception are key to preventing unintended pregnancies, this will not eliminate the need for safe abortion because no contraceptive technology is 100% effective and people do not always use contraceptive methods correctly or consistently. High levels of violence, rape and coerced sex (particularly in conflict affected countries) will also increase the rate of unintended pregnancies. Evidence from case study policy analysis in many countries demonstrates that increasing legal access to safe abortion is associated with improved sexual and reproductive health. Conversely, unsafe abortion and related mortality are both highest in countries with the most restrictive abortion laws.

There are obvious challenges to undertaking research on liberalisation of the law on abortion. Clearly, it is not ethically or practically feasible to use more experimental research designs. Some comparative studies analyse the case-fatality rate from unsafe abortions in settings with different legal frameworks. The evidence presented here may be limited in how far it can be generalised for other settings, but there are still lessons that are important to document.

A review of WHO estimates on unsafe abortion found that the highest prevalence of unsafe abortion (up to 23 unsafe abortions per 1000 women aged 15–49 years) is in the 82 countries with the most restrictive legislations.³³⁷ In contrast, the 52 countries that allow abortion on request have a median unsafe abortion rate of just 2 per 1000 women of reproductive age. The case-fatality rate from unsafe abortions is highest in countries where abortion is legally restricted – median ratio for unsafe abortion mortality is 34 deaths per 100,000 live births. This ratio decreases to one or less per 100,000 live births in countries that allow abortion on request.

The law in Mexico City changed in April 2007 allowing for elective abortion up to 12 weeks.³³⁸ The government began to provide safe abortion care in 14 public hospitals immediately and at the primary level by May 2008. They developed guidelines, trained social workers and nurses, implemented a public information programme, a free 24-hour hotline and a system to gather and analyse data. From August 2007 the number women accessing safe abortion care went from zero to 1,400 per month. Between April 2007 and June 2010 a total of 84,000 women had accessed services, with approximately 50% in the private sector. 80% of women accessing safe abortion obtain a contraceptive method.

In Romania, under Ceausescu's restrictive pro-natalist policy, maternal mortality ratios rose to 148 deaths per 100,000 live births in 1989, with abortion accounting for 87% of the deaths. After the repeal of the laws following Ceausescu's death in 1989, the ratio decreased by over half to 68 within the first year of safer access. By 2002, mortality from unsafe abortions was down to 9 per 100,000 live births; abortion deaths accounted for less than half of maternal deaths.³³⁹ In South Africa, abortion-related deaths fell by 91% from 1994 to 1998–2001, after abortion became legal and available on request in 1997. The incidence of infection resulting from abortion decreased by 52%.³⁴⁰

Unsafe abortion is most common in countries where abortion is highly restricted. Death from unsafe abortion is rare in countries where abortion is permitted and quality affordable services are available.³⁴¹ Countries that liberalised their abortion laws and increased access to family planning, such as Barbados, Canada, South Africa, Tunisia and Turkey, did not have an increase in abortion. The Netherlands, with unrestricted access to free abortion and contraception, has one of the lowest abortion rates in the world.³⁴²

Evidence on how best to reduce the impact of restrictive abortion laws, or broaden the conditions under which abortion can be legally performed, is captured in the form of country case studies on lessons learned, and toolkits for advocacy groups.³⁴³ Several legal research groups, activists and reproductive health organisations have developed strategies aimed at overcoming obstacles to abortion reform and at advancing legal reform. Effective research, coalition-building and communication strategies are common strategies. Advocacy strategies are rooted in public health, human rights and economic arguments.

Legal change can come about as a result of persistent (often over 20 years) advocacy and pressure from civil society organisations and professional groups as well as regional policy work, building on human rights frameworks. In Nepal, the 2004 revised Nepal Legal Code granted all women the right to terminate a pregnancy on broad grounds. Yet the foundations for this were laid by legal activists in the mid-1980s when prominent law professionals, judicial administrators, social scientists and others addressed abortion in a national forum. In the 1990s, activists publicised research showing that hundreds of women were being prosecuted and imprisoned for ending unintended pregnancies. Relatively little public opposition emerged to law reform, perhaps because abortion had become relatively acceptable due to its legality in neighbouring India.³⁴⁴

The law reform in Ethiopia in 2005 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: a) build public opinion, b) shift policy makers' perspectives and (iii) create an enabling environment for service providers.³⁴⁵

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:³⁴⁶

- 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 organisations
- looking beyond the moment of political success to define and plan for steps needed to actualise and protect reforms, including informing women and healthcare providers about changes in the law and training and equipping healthcare professionals to offer safe abortion.

Legalisation of abortion is just one step towards eliminating unsafe abortion.³⁴⁷ Increasing women's access to safe abortion also requires strong communication strategies to increase women's

awareness of the law, health worker training, revision of operational guidelines for health care providers and action to reduce stigma at community and health facility levels.

Looks promising

Increasing legal access to safe abortion is associated with improved sexual and reproductive health. Making abortion legal, safe and accessible does not appear to increase the number of abortions, but is likely to transform unsafe abortions into safe abortions.

3.5 What do we know about improving the delivery of safe abortion services?

One key contributing factor to unsafe abortion is the lack of safe abortion. However, even when legal, safe abortions may not be available. The relationship between abortion and legality is not straightforward; illegal abortions are not always unsafe and legal abortions are not necessarily safe. Furthermore, clandestine abortions can occur for many reasons (including stigma and community and health worker opposition) – even in countries where abortions are legal and free of charge.³⁴⁸

Where the health systems are poorly functioning, provision of safe abortion services will be subject to many of the same constraints that affect family planning and maternal health services in general. Unfortunately, there is limited rigorous evidence on the interventions to enable access to safe abortion. For example, in India, even though abortion is legal and provided free of charge in government authorised clinics, many abortions take place in uncertified settings, a large proportion of which are unsafe. The reasons for this include the poor quality of care in public facilities and inaccessibility of services, particularly in rural areas where there are only a limited number of government certified abortion clinics.³⁴⁹

One way of improving provision of safe abortion is to increase awareness among providers of the need for safe abortion. Work in Ghana has demonstrated a significant lack of knowledge of safe abortion techniques and provisions of abortion law among providers.³⁵⁰ One intervention to increase awareness and lead to behaviour change was a series of workshops among stakeholders in abortion care in Limpopo province in South Africa. Stakeholders self-reported behaviour change and increased awareness. This study raises the possibility of improving provision through similar interventions elsewhere.³⁵¹ However, self-reported behaviour is subject to reporting and recall bias. Furthermore, the study participants were relatively tolerant of abortion at the beginning of the intervention – it is questionable whether the same intervention would be successful in moving participants from opposed to tolerant.

Another intervention in India sought to improve comprehensive abortion care in public hospitals in a rural area of India.³⁵² Not only was care weak and fragmented but even trained providers were not familiar with WHO recommended methods. The intervention involved identifying barriers to provision at the macro level and also training medical doctors and nursing staff in comprehensive abortion care techniques, including the provision of medical abortion. Training centres were identified and developed, followed by training of master trainers. The intervention did lead to significant improvements in comprehensive abortion care provision, with the availability of medical abortion for rural women particularly important in reducing unsafe abortion and complications. Surgical abortions were also increasingly carried out with safer techniques such as vacuum aspiration. The intervention demonstrated that it is possible to decentralise access to safe abortion services, particularly among rural health centres. The study found that access could have further been improved if awareness had increased about safe abortion provision in rural areas. It is not clear how generalisable these results are to Africa, although it is possible that this model could be built on in other parts of India and South Asia.

In Cambodia, an intervention to integrate comprehensive abortion care services in maternal and child health centre led to significantly improved outcomes.³⁵³ Although this intervention introduced safe abortion techniques, medical abortion was not available during the study period. Evidence

showed that during the study period, the number of women attending for abortion care more than doubled. The rate of complications dropped from 9.4% to 1.3%. The post-abortion acceptance of contraceptives increased and, while lower than in other similar interventions, had a higher proportion of acceptors of long-term contraceptive methods. The use of maternal and child health services to deliver abortion and post-abortion depends on the profile of abortion users and network of maternal and child health services.

Little evidence has been found, thus far, on interventions that specifically target safe abortion provision for vulnerable groups such as adolescents and unmarried women and women living with HIV. However, there is evidence that providers do discriminate against these groups, meaning that de facto provision may be limited. For example, in Indonesia, young unmarried women face resistance in accessing legal and officially approved menstrual regulation procedures. Interviews with providers highlighted that many providers would either refuse outright to perform an abortion on an unmarried woman or impose more stringent restrictions than for married women.³⁵⁴ Adolescents are also more likely to be slower in recognising and accepting the pregnancy, they are less likely to know where to seek advice and help, they are more likely to use ineffective methods to induce an abortion, and they are more likely to not be able to afford the fees for a safe abortion.³⁵⁵

Women living with HIV who wish to terminate a pregnancy face similar barriers to women not living with HIV, especially where access to safe abortion services is legally and/or socially restricted. While they can safely undergo surgical and medical abortion, whether there are greater risks of morbidities because of their HIV status, for both safe and unsafe abortion procedures, is not well understood.³⁵⁶ Even in settings where abortion is easily accessible, there are very few links with HIV services and women seeking abortion services have reported being stigmatised.³⁵⁷ There has been extremely little research undertaken on abortion among WLHV;³⁵⁸ a recent conference on pregnancy intentions and HIV-positive women highlighted this issue and proposed several areas of research needed to inform policy and programme development, both in countries where access to abortion is available and restricted;³⁵⁹ Cases of WLHA being forcibly sterilised or offered no other option when seeking FP services have also been reported,³⁶⁰ indicating their vulnerability to rights abuses.

An important determining factor in the safety of abortion is the gestational age; the earlier an abortion is carried out, the better.³⁶¹ Therefore, any delays in seeking and obtaining an abortion increase the riskiness of the procedure. This can include delays in becoming aware of pregnancy, delays in deciding to seek an abortion and delays in obtaining an abortion. To date, the authors have not seen any evidence on interventions to reduce the delays and its effect on safety in resource-restricted environments.

Important unknowns

What are the best ways of delivering safe abortion interventions in different health system contexts?

What are the best ways of reaching the poorest and most vulnerable such as adolescent girls and women living with HIV?

What are the best interventions to reduce delays and its effect on safety of abortion?

3.6 Cost-effectiveness of safe abortion interventions

Guttmacher estimates the average costs of providing post abortion care to be US\$5 per woman and that US\$0.9 billion is needed to scale up post abortion care to all women who need it.³⁶² These costs include both direct costs and the program and system costs of supporting the services.

There is very little robust comparative evidence on safe abortion service delivery models and other interventions. But there have been several studies documenting the relative cost of providing abortion and post-abortion care in different settings. For instance simulation modelling by Goldie et al³⁶³ and Hu et al³⁶⁴ in India and Mexico City respectively provide strong evidence for the cost-effectiveness of scale up of safe abortion service delivery (alongside family planning). In fact many of the intervention scenarios were found to be cost saving.

A comparative modelling study (which to some extent is transferable to other settings) used cost data from Uganda to compare different strategies to improve the quality of care.³⁶⁵ The mean per case cost of abortion care was US\$45 within the setting that placed heavy restrictions on elective abortion and used a conventional approach to service delivery; US\$25 within the restrictive legal setting that used recommended interventions for treating complications; US\$34 within the legal setting that allowed elective abortion and relied on a conventional approach to service delivery; and US\$6 within the liberal legal setting that used recommended interventions.

The study by Johnston et al also found that using recommended technical interventions substantially reduced costs regardless of the legal setting.³⁶⁶ The greatest reduction in costs (86%) occurred from using recommended interventions within a liberal legal setting, rather than using conventional interventions within a restricted setting. Recommended 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.

Technical Annex

A1 Key definitions

Adolescent girl

As defined and measured by the DHS and other surveys, a young woman aged 15-19. Globally, there is growing consensus that the term should include the 10-14 year old group, many of who are 'of reproductive age' and sexually active, especially in countries where early marriage is common.

Antenatal (care)

Period during pregnancy before birth (and the care required/provided during this stage including: recording medical history, assessment of individual needs, advice and guidance on pregnancy and delivery, screening tests, education on self-care during pregnancy, identification of conditions detrimental to health during pregnancy, first-line management and referral if necessary).

Contraceptive prevalence rate

Percentage of women of reproductive age (15-49) or whose partner is using a contraceptive method (modern or modern and traditional; often reported for married women or women in union only).

Couple years of protection (CYPs)

A commonly-used measure of family planning performance at output level, CYPs provide an estimate of protection against unintended pregnancy provided by contraceptive methods, based on volume and types of contraceptive method provided to clients during a one year period.

Disability adjusted life years (DALYs)

Are a measure of the burden of disease from mortality and morbidity

ICPD

International Conference on Population and Development held in 1994 that agreed the respect for reproductive rights and provision of universal access to sexual and reproductive health services.

Incidence

Number of new cases of a disease

Intervention

Drug treatments, clinical procedures or non-medical inputs such as information about danger signs in pregnancy for the prevention of treatment of a problem. A package is a combination of single interventions.

Lifetime risk of maternal death

The probability that a 15-year-old female will die eventually from a maternal cause.

Maternal mortality/death

The death of a woman while pregnant or in childbirth, or within 42 days of the end of pregnancy, regardless of the site or duration of pregnancy, from any cause related to or aggravated by the pregnancy or its management.

Maternal mortality ratio

Annual number of deaths of women from pregnancy related causes per 100,000 live births.

Modern contraceptive methods

Includes all hormonal methods (the pill, injectables, implants), Intra-Uterine Devices, condoms and modern vaginal methods (e.g. diaphragm/spermicides) and permanent methods of male and female sterilisation.

Natural methods

Natural or fertility awareness methods include lactational amenorrhea method (LAM), periodic abstinence and withdrawal.

Neonatal (newborn) mortality/death

Death of a baby during the first 28 completed days of life.

Obstetric Fistula

An abnormal opening between the vagina and the bladder and/or the rectum, resulting in uncontrollable leakage of urine and/or faeces, that is both preventable and treatable.³⁶⁷

Package

Combinations of single interventions.

Perinatal

The period around the time of birth. Perinatal death is one that occurs in the womb or in the first 7 days.

Postnatal (care)

6 week period following the birth (and the care required/provided during this stage, including a visit from a health worker with the right knowledge and skills)

Post partum period

Usually 10 days following birth.

Prevalence

Number of existing cases of a disease

Price elasticity of demand

The responsiveness of demand to a change in price.

Reproductive Health

ICPD defines reproductive health as: 'a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and to its functions and processes'.

Reproductive Rights

ICPD defines as 'basic right of all couples and individuals to decide freely and responsibly the number, spacing and timing of their children and to have the information and means to do so'; 'right to attain the highest standard of sexual and reproductive health', 'to make decisions concerning reproduction free of discrimination, coercion and violence'.

Stillbirth

Death of a foetus occurring after 28 weeks of pregnancy.

Strategy

Specification of the component intervention package, target group and means of distribution

Traditional methods

Traditional methods are defined as natural methods of family planning plus any other country specific folk method.

Unintended pregnancy

A pregnancy that occurs when a woman wanted to postpone conception for at least two years or did not want to become pregnant. The total number of unintended pregnancies includes unwanted and mis-timed births, abortions and unintended pregnancies that end as miscarriages.

Unmet need for contraception

When a woman wants to avoid a pregnancy but is not using any method (modern or modern and traditional); often reported for married women/women in union only.

Unsafe abortion

Procedure meant to terminate an unintended pregnancy that is performed by individuals without the necessary skills, or in an environment that does not conform to minimum medical standards or both.

A2: Contraceptive methods

For up to date information on contraceptive technologies including effectiveness use and eligibility criteria readers should consult the World Health Organization's (WHO) '4 cornerstones' of Family Planning Guidance.^{xv} The following is a summary of key aspects.

i. Modern methods

Method	Description	Pregnancy rates per 100 women (perfect-actual use)
Combined oral contraceptive	<ul style="list-style-type: none"> Pills that contain low doses of 2 hormones—a progestin and an estrogen—like the natural hormones progesterone and estrogen in a woman's body. Combined oral contraceptives (COCs) are also called “the Pill,” low-dose combined pills, OCPs, and OCs. Work primarily by preventing the release of eggs from the ovaries (ovulation). 	0.3-8.0
Progestin only 'mini' pill	<ul style="list-style-type: none"> Pills that contain very low doses of a progestin like the natural hormone progesterone in a woman's body. Do not contain estrogen, and so can be used throughout breastfeeding and by women who cannot use methods with estrogen. Progestin-only pills (POPs) are also called “minipills” and progestin-only oral contraceptives. Work primarily by: <ul style="list-style-type: none"> Thickening cervical mucus (this blocks sperm from meeting an egg) Disrupting the menstrual cycle, including preventing the release of eggs from the ovaries (ovulation) 	0.3-8.0
Emergency contraception	<ul style="list-style-type: none"> Pills that contain a progestin alone, or a progestin and an estrogen together—hormones like the natural hormones progesterone and estrogen in a woman's body. Emergency contraceptive pills (ECPs) are sometimes called "morning after" pills or postcoital contraceptives. Work primarily by preventing or delaying the release of eggs from the ovaries (ovulation). They do not work if a woman is already pregnant. 	-
Progestin-Only Injectables	<ul style="list-style-type: none"> The injectable contraceptives depot medroxyprogesterone acetate (DMPA) and norethisterone enanthate (NET-EN) each contain a progestin like the natural hormone progesterone in a woman's 	0.3-3.0

^{xv} <http://info.k4health.org/globalhandbook/index.shtml#contents>

Method	Description	Pregnancy rates per 100 women (perfect-actual use)
	<p>body. (In contrast, monthly injectables contain both estrogen and progestin. See Monthly Injectables.)</p> <ul style="list-style-type: none"> Do not contain estrogen, and so can be used throughout breastfeeding and by women who cannot use methods with estrogen. DMPA, the most widely used progestin-only injectable, is also known as "the shot," "the jab," the injection, Depo, Depo-Provera, Megestron, and Petogen. NET-EN is also known as norethindrone enanthate, Noristerat, and Syngestal. (See Comparing Injectables, for differences between DMPA and NET-EN.) Given by injection into the muscle (intramuscular injection). The hormone is then released slowly into the bloodstream. A different formulation of DMPA can be injected just under the skin (subcutaneous injection). See New Formulation of DMPA. Work primarily by preventing the release of eggs from the ovaries (ovulation). 	
Monthly injectable	<ul style="list-style-type: none"> Monthly injectables contain 2 hormones—a progestin and an estrogen—like the natural hormones progesterone and estrogen in a woman's body. (Combined oral contraceptives also contain these 2 types of hormones.) Also called combined injectable contraceptives, CICs, the injection. Information in this chapter applies to medroxyprogesterone acetate (MPA)/estradiol cypionate and to norethisterone enanthate (NET-EN)/estradiol valerate. The information may also apply to older formulations, about which less is known. MPA/estradiol cypionate is marketed under the trade names Ciclofem, Ciclofemina, Cyclofem, Cyclo-Provera, Feminena, Lunella, Lunelle, Novafem, and others. NET-EN/estradiol valerate is marketed under the trade names Mesigyna and Norigynon. Work primarily by preventing the release of eggs from the ovaries (ovulation). 	0.05-3.0
Combined patch	<ul style="list-style-type: none"> A small, thin, square of flexible plastic worn on the body. Continuously releases 2 hormones—a progestin and an estrogen, like the natural hormones progesterone and estrogen in a woman's body—directly through the skin into the bloodstream. A new patch is worn every week for 3 weeks, then no patch for the fourth week. During this fourth week the woman will have monthly bleeding. Also called Ortho Evra and Evra. Works primarily by preventing the release of eggs from the ovaries (ovulation). 	0.3-8.0
Combined Vaginal Ring	<ul style="list-style-type: none"> A flexible ring placed in the vagina. Continuously releases 2 hormones—a progestin and an estrogen, like the natural hormones progesterone and estrogen in a woman's body—from inside the ring. Hormones are absorbed through the wall of the vagina directly into the bloodstream. The ring is kept in place for 3 weeks, then removed for the fourth week. During this fourth week the 	0.3-8.0

Method	Description	Pregnancy rates per 100 women (perfect-actual use)
	<p>woman will have monthly bleeding.</p> <ul style="list-style-type: none"> Also called NuvaRing. Works primarily by preventing the release of eggs from the ovaries (ovulation). 	
Implants	<ul style="list-style-type: none"> Small plastic rods or capsules, each about the size of a matchstick, that release a progestin like the natural hormone progesterone in a woman's body. A specifically trained provider performs a minor surgical procedure to place the implants under the skin on the inside of a woman's upper arm. Do not contain estrogen, and so can be used throughout breastfeeding and by women who cannot use methods with estrogen. Many types of implants: <ul style="list-style-type: none"> Jadelle: 2 rods, effective for 5 years Implanon: 1 rod, effective for 3 years (studies are underway to see if it lasts 4 years) Norplant: 6 capsules, labeled for 5 years of use (large studies have found it is effective for 7 years) Sinoplant: 2 rods, effective for 5 years Work primarily by: <ul style="list-style-type: none"> Thickening cervical mucus (this blocks sperm from meeting an egg) Disrupting the menstrual cycle, including preventing the release of eggs from the ovaries (ovulation) 	0.05-0.05
Copper-bearing intrauterine device (IUD)	<ul style="list-style-type: none"> The copper-bearing intrauterine device (IUD) is a small, flexible plastic frame with copper sleeves or wire around it. A specifically trained health care provider inserts it into a woman's uterus through her vagina and cervix. Almost all types of IUDs have one or two strings, or threads, tied to them. The strings hang through the cervix into the vagina. Works primarily by causing a chemical change that damages sperm and egg before they can meet. 	0.6-0.8
Levonorgestrel Intrauterine Device	<ul style="list-style-type: none"> The levonorgestrel intrauterine device (LNG-IUD) is a T-shaped plastic device that steadily releases small amounts of levonorgestrel each day. (Levonorgestrel is a progestin widely used in implants and oral contraceptive pills.) A specifically trained health care provider inserts it into a woman's uterus through her vagina and cervix. Also called the levonorgestrel-releasing intrauterine system, LNG-IUS, or hormonal IUD. Marketed under the brand name Mirena. Works primarily by suppressing the growth of the lining of uterus (endometrium). 	0.2-0.2
Female Sterilization	<ul style="list-style-type: none"> Permanent contraception for women who will not want more children. The 2 surgical approaches most often used: 	0.5-0.5

Method	Description	Pregnancy rates per 100 women (perfect-actual use)
	<ul style="list-style-type: none"> Minilaparotomy involves making a small incision in the abdomen. The fallopian tubes are brought to the incision to be cut or blocked. Laparoscopy involves inserting a long thin tube with a lens in it into the abdomen through a small incision. This laparoscope enables the doctor to see and block or cut the fallopian tubes in the abdomen. Also called tubal sterilization, tubal ligation, voluntary surgical contraception, tubectomy, bi-tubal ligation, tying the tubes, minilap, and "the operation." Works because the fallopian tubes are blocked or cut. Eggs released from the ovaries cannot move down the tubes, and so they do not meet sperm. 	
Vasectomy	<ul style="list-style-type: none"> Permanent contraception for men who will not want more children. Through a puncture or small incision in the scrotum, the provider locates each of the 2 tubes that carries sperm to the penis (vas deferens) and cuts or blocks it by cutting and tying it closed or by applying heat or electricity (cautery). Also called male sterilization and male surgical contraception. Works by closing off each vas deferens, keeping sperm out of semen. Semen is ejaculated, but it cannot cause pregnancy. 	0.1-0.15
Male Condoms	<ul style="list-style-type: none"> Sheaths, or coverings, that fit over a man's erect penis. Also called rubbers, "raincoats," "umbrellas," skins, and prophylactics; known by many different brand names. Most are made of thin latex rubber. Work by forming a barrier that keeps sperm out of the vagina, preventing pregnancy. Also keep infections in semen, on the penis, or in the vagina from infecting the other partner. 	2-15
Female Condoms	<ul style="list-style-type: none"> Sheaths, or linings, that fit loosely inside a woman's vagina, made of thin, transparent, soft plastic film. Have flexible rings at both ends One ring at the closed end helps to insert the condom The ring at the open end holds part of the condom outside the vagina Different brand names include Care, Dominique, FC Female Condom, Femidom, Femy, Myfemy, Protectiv', and Reality. Lubricated with a silicone-based lubricant on the inside and outside. Latex female condoms may be available in some countries. Work by forming a barrier that keeps sperm out of the vagina, preventing pregnancy. Also keep infections in semen, on the penis, or in the vagina from infecting the other partner. 	5-21

Method	Description	Pregnancy rates per 100 women (perfect-actual use)
Spermicides & Diaphragm	<ul style="list-style-type: none"> • Sperm-killing substances inserted deep in the vagina, near the cervix, before sex. • Nonoxynol-9 is most widely used. • Others include benzalkonium chloride, chlorhexidine, menfegol, octoxynol-9, and sodium docusate. • Available in foaming tablets, melting or foaming suppositories, cans of pressurized foam, melting film, jelly, and cream. • Jellies, creams, and foam from cans can be used alone, with a diaphragm, or with condoms. • Films, suppositories, foaming tablets, or foaming suppositories can be used alone or with condoms. • Work by causing the membrane of sperm cells to break, killing them or slowing their movement. This keeps sperm from meeting an egg. 	18-29
Cervical cap	<ul style="list-style-type: none"> • A soft, deep, latex or plastic rubber cup that snugly covers the cervix. • Comes in different sizes; requires fitting by a specifically trained provider. • The cervical cap works by blocking sperm from entering the cervix; spermicides kill or disable sperm. Both keep sperm from meeting an egg 	9-16 (never given birth) 26-32 (given birth)

ii. Natural methods

Method	Description	Pregnancy rates per 100 women (perfect-actual use)
Fertility Awareness Methods	<ul style="list-style-type: none"> • "Fertility awareness" means that a woman knows how to tell when the fertile time of her menstrual cycle starts and ends. (The fertile time is when she can become pregnant.) • Sometimes called periodic abstinence or natural family planning. • A woman can use several ways, alone or in combination, to tell when her fertile time begins and ends. • Calendar-based methods involve keeping track of days of the menstrual cycle to identify the start and end of the fertile time. • Examples: Standard Days Method and calendar rhythm method. • Symptoms-based methods depend on observing signs of fertility. • Cervical secretions: When a woman sees or feels cervical secretions, she may be fertile. She may feel just a little vaginal wetness. • Basal body temperature (BBT): A woman's resting body temperature goes up slightly after the release of an egg (ovulation), when she could become pregnant. Her temperature stays higher until the beginning of her next monthly bleeding. • Examples: TwoDay Method, BBT method, ovulation method (also known as Billings method or cervical mucus method), and the symptothermal method. • Work primarily by helping a woman know when she could become pregnant. The couple prevents pregnancy by avoiding unprotected vaginal sex during these fertile days—usually by abstaining or by using condoms or a diaphragm. Some couples use spermicides or withdrawal, but these are among the least effective methods. 	25
Withdrawal	<ul style="list-style-type: none"> • The man withdraws his penis from his partner's vagina and ejaculates outside the vagina, keeping his semen away from her external genitalia. • Also known as coitus interruptus and "pulling out." • Works by keeping sperm out of the woman's body. 	4-27
Lactational Amenorrhea Method	<ul style="list-style-type: none"> • A temporary family planning method based on the natural effect of breastfeeding on fertility. ("Lactational" means related to breastfeeding. "Amenorrhea" means not having monthly bleeding.) • The lactational amenorrhea method (LAM) requires 3 conditions. All 3 must be met: <ul style="list-style-type: none"> ○ The mother's monthly bleeding has not returned ○ The baby is fully or nearly fully breastfed and is fed often, day and night ○ The baby is less than 6 months old • "Fully breastfeeding" includes both exclusive breastfeeding (the infant receives no other liquid or food, not even water, in addition to breast milk) and almost-exclusive breastfeeding (the infant receives vitamins, water, juice, or other nutrients once in a while in addition to breast milk). 	0.9-2

Method	Description	Pregnancy rates per 100 women (perfect-actual use)
	<ul style="list-style-type: none"> • "Nearly fully breastfeeding" means that the infant receives some liquid or food in addition to breast milk, but the majority of feedings (more than three-fourths of all feeds) are breast milk. • Works primarily by preventing the release of eggs from the ovaries (ovulation). Frequent breastfeeding temporarily prevents the release of the natural hormones that cause ovulation. 	
No method		85

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