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Exploring the quality and effect of comprehensive postnatal care models in East and Southern Africa

Charlotte E Warren



Thesis submitted to the Faculty of Medicine and Health Sciences, Ghent University in fulfilment of the requirements for the degree of Doctor (PhD) in Social Health Sciences

ICRH Monographs

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LIST OF ABBREVIATIONS

AIDS	Acquired Immuno Deficiency Syndrome
ANC	Antenatal care
ART	Antiretroviral therapy
ARV	Antiretroviral
BCC	Behaviour change communication
BCG	Bacillus Calmette–Guérin
CICT	Client initiated counselling and testing
COC	Combined oral contraceptive
CPI	Client-provider interaction
CS	Caesarean section
CT	Counselling and testing
CTX	Cotrimoxazole
CHW	Community health worker
DHMT	District Health Management Team
DHS	Demographic Health Survey
DRH	Division of Reproductive Health
ENM	Enrolled nurse midwife
EPI	Expanded Program of Immunisation
FANC	Focused antenatal care
FBC	Full blood count
FP	Family planning
HFA	Health facility assessment
HIV	Human Immuno-deficiency Virus
HTSP	Healthy Timing and Spacing of Pregnancy
IDI	In depth interview
IEC	Information, education and communication
IMCI	Integrated Management of Childhood Illness
IUD	Intra Uterine Contraceptive Device
KAIS	Kenya AIDS Indicator Survey
KEMRI	Kenya Medical Research Institute
KfW	German Development Bank
KQM	Kenya Quality Model
LAM	Lactational Amenorrhea Method
LARC/PM	Long acting reversible contraception/permanent method
LFT	Liver function tests
LSHTM	London School of Hygiene and Tropical Medicine
MCH	Maternal and Child Health
MDG	Millennium Development Goal
MICS	Multiple Indicator Cluster Survey
MNCH	Maternal Newborn and Child Health
MNH	Maternal Newborn Health

MOH	Ministry of Health
NASCOP	National AIDS and STDs Control Programs
NVP	Nevirapine
OBA	Output based Aid
PAC	Post abortion care
PITC	Provider initiated testing and counselling
PMTCT	Prevention of mother to child transmission
PNC	Postnatal care
PPH	Postnatal hemorrhage
POP	Progestin only pill
QoC	Quality of Care
RH	Reproductive health
RNM	Registered nurse midwife
SARA	Service availability and readiness assessment
SPA	Service provision assessment
STI	Sexually transmitted infection
SRH	Sexual and reproductive health
SSA	sub Saharan Africa
VCT	Voluntary Counselling and Testing
VMA	Voucher Management Agency
WHO	World Health Organization

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PREFACE

There has been huge progress in the last two decades in reducing both maternal and child mortality globally. In particular the Millennium Development Goals for maternal and child health have focused many countries to develop strategies to accelerate the decline in mortality. However there are still places where the risks to pregnant women remain high and neonatal mortality makes up an increasingly large proportion of the under-five mortality rate. Sub-Saharan Africa continues to have some of the highest maternal and newborn mortality including stillbirth in the world where many women who are poor, uneducated and from marginalised or rural populations live. The HIV epidemic also has an impact on maternal and child survival.

Many pregnant women attend antenatal services at least once and an increasing number are beginning to receive care from skilled professionals during childbirth. However the postnatal period is a neglected period. The 6 week postnatal check is a visit for survivors. The artificial division that is commonly drawn between labour and delivery and the immediate postnatal period (within 12– 24 hours after birth) become mixed up with the values and meaning of late postnatal care at 6 weeks. This has fatal consequences in the first few days after childbirth. Indeed postnatal care is often called the Cinderella of maternity services due to the fact that it is considered the least important and least resourced component of a woman's journey from pregnancy to motherhood and is often not prioritised in maternal and child health national policies. However it appears that postnatal care is now receiving more attention globally. There is increasing discussion on what the content of each contact should include and how frequently these contacts should occur. It is hoped that the studies described here can contribute to the global discussion—so that women both survive their pregnancies and enjoy their children.

EXECUTIVE SUMMARY

Every year in Africa, at least 125,000 women and 870,000 newborns die in the first week after birth, yet this is when coverage and programmes are at their lowest along the continuum of care. The first day is the time of highest risk for both mother and baby. In high countries with HIV prevalence, women living with HIV are at increased risk during the postnatal period. Moreover many postnatal women have an unmet need for family planning in the year following birth with limited access to long acting reversible contraception or permanent methods. The fact that 18 million women in Africa currently do not give birth in a health facility poses challenges for planning and implementing postnatal care for women and their newborns. Regardless of place of birth, mothers and newborns spend most of the postnatal period (the first six weeks after birth) at home. Postnatal care programmes are among the weakest of all reproductive and child health programmes in the region.

With this in mind this thesis set out to determine to what extent the provision of timely and improved quality of maternal and newborn health services in the much neglected postnatal period would result in increased uptake of a range of postnatal services and improve care and follow-up of postnatal women and their infants.

In section 4.1 the study describes the introduction of a comprehensive postnatal package of care in maternal and child health clinics in Embu District, Eastern Kenya. The intervention to introduce the postnatal package consisted of training of health care providers and practical materials (job aids) to be used during the postnatal consultations. There were three targeted assessment periods; 1) within 48 hours of birth; 2) at one to two weeks; and 3) at six weeks. We found that even though counselling for maternal and newborn complications, infant feeding and family planning improved (in that provision for counselling services more than doubled); the overall quality of postnatal care, although improved, remained disappointingly low. This is possibly because the trickle-down effect of real and lasting change will take longer than the five month intervention period. It is also important to recognise that postnatal care in the maternal and child health clinics where the study took place was virtually non-existent (at baseline).

In 4.2 a similar study was conducted in Swaziland over a year. In 2006 the prevention of mother to child health transmission of HIV program was linked to maternal and newborn health services, but was mainly focussed on counselling and testing for HIV. Existing maternal and newborn health services were also inadequate, especially postnatal care for both mothers and babies, with postnatal visits only occurring at 4 to 6 weeks after delivery. Following training of staff from seven health facilities in promoting and providing early postnatal care; a final evaluation showed a 20-fold increase in the number of early postnatal visits (within the first three days after birth). We also saw improvements in the proportion of women breastfeeding within one hour of giving birth by 41% in HIV-positive mothers and 52% in HIV-negative mothers. Although health workers were observed providing counselling, maternal recall of messages was deficient, sug-

gesting the need for additional strategies for promoting healthy behaviours. The study demonstrated that high-quality integrated prevention of mother to child transmission programmes and postnatal services are feasible and acceptable, and can result in promoting early postnatal visits and improved care for both HIV-positive and HIV-negative mothers and their babies.

Alternative financing mechanisms such as output based aid or voucher programs are an attempt to improve access to and quality of effective postnatal care. One such program described in Section 4.3 was introduced by the Kenyan government in 2006 in selected districts with poor demographic indicators. The output based aid program provides safe motherhood vouchers targeted at poor women to support access to maternal health services. Although the voucher is supposed to cover antenatal care, delivery and postnatal care, providers are not reimbursed to provide postnatal care, and therefore appear to neglect this period unless they provide care in the immediate few hours after birth (if the birth takes place in a hospital). We anticipated that the quality of postnatal care in voucher facilities would be equal to or better than non-voucher facilities; based on the fact that the facilities were reimbursed for maternal health services. However we saw no differences – and in fact the non-voucher facilities performed better in the range of clinical services in more areas than the voucher facilities. The only area where voucher facilities performed better was in public health facilities which had more essential equipment and supplies required for providing maternal care, suggesting that public health facilities within an output based aid program focus on ensuring the availability of infrastructure, equipment and supplies first. Nevertheless women attending all facilities were satisfied with the postnatal care that they received.

In settings where sexually transmitted infection and HIV prevalence is high, the postnatal period is a time of increased biological susceptibility to pregnancy related sepsis. Enabling women living with HIV to avoid unintended pregnancies during the postnatal period can reduce vertical transmission and maternal mortality associated with HIV infection. Section 5.1 focuses on a cross sectional survey on the family planning practices and fertility intentions of a cohort of HIV-positive and HIV-negative postnatal women attending postnatal care in Swaziland. Research findings among this group of women revealed that more than two thirds reported that their most recent pregnancy was unintended. Half of HIV-positive women and more than a third of HIV-negative women reported that they had been using a family planning method when they became pregnant. Only short-acting methods were available to these women before the most recent pregnancy; and available during the postnatal visit. One fifth of all women received a modern contraceptive method during the current visit. Among the four fifths who did not receive a method 17.3% reported they were already using a method or were breastfeeding. HIV-positive women were more likely to have already started a method than HIV-negative women. There are few differences overall between the experiences of both HIV-positive and negative women in terms of family planning experiences, unintended pregnancy and services received during the postnatal consultations. Access to a wider

range of effective methods is urgently needed if high levels of unintended pregnancy are to be reduced among HIV-positive and HIV-negative women living in Swaziland.

Section 6.1 describes the implementation process of the Kenya output based aid or voucher program (see 4.1) in more detail using a policy lens. We used project reports and qualitative data from in-depth interviews with a range of stakeholders to elicit understanding of the program at all levels. The output based aid implementation process was designed in phases providing an opportunity for learning and adaptation. The design consisted of five components: a defined benefit package, contracting and quality assurance; marketing and distribution of vouchers and claims processing and reimbursement. Key implementation challenges included limited feedback to providers on the outcomes of quality assurance and accreditation, and budgetary constraints that limited effective marketing leading to inadequate information to clients on the benefit package. Claims processing and reimbursement were sophisticated but required adherence to time consuming procedures and in some cases private providers complained of low reimbursement rates for services provided. Overall the findings demonstrate that voucher schemes can be implemented successfully in similar settings. However the government's role is critical and should include provision of adequate funding, stewardship and looking for opportunities to utilize existing platforms to scale up such strategies.

Alternative financing mechanisms such as OBA do provide a platform to strengthen the health system through maternal health services (and increase access to poor women) but such mechanisms require effective education, marketing and implementation and strong motivation for change. Unless effective postnatal programmes are implemented women and newborns will continue to die in unnecessary numbers during the postnatal period

Taking the five studies together, what emerges is that good postnatal care is feasible to provide and acceptable to both providers and clients when properly supported – but challenges do remain. It is possible to improve the timing, content and quality of the postnatal package of care. Most facilities do have the necessary equipment, supplies, medicines and human resources – which make up the structural attributes for the provision of postnatal care and family planning, so implementation of improved postnatal care services by way of training (and support supervision) is critical.

Recommendations

1. Evidence suggests that packages of postnatal interventions provided in a comprehensive manner lead to improved performance and quality of care (4.1 and 4.2).
2. Train and supervise providers in comprehensive postnatal package of care, including re-organization of health facilities to accommodate women and newborns accessing care together including support to ensure that new ideas are 'internalized' into health facilities' working culture.

3. Opportunities that can be used as platforms to improve comprehensive postnatal care include using immunization of the infant as an entry point to encourage uptake of postnatal family planning.
4. Alternative financing mechanisms such as output based aid do provide an opportunity to strengthen the health system and increase uptake of delivery services by poor women, but the focus should now be on investing in human resources to provide comprehensive postnatal care (4.3).
5. Link community based health workers with facility based or more skilled workers to work as a team to operationalize, improve, and sustain linkages between homes and hospitals.
6. Incorporate community based awareness-raising interventions among women and families about the importance of seeking postnatal care, especially in the immediate and early postnatal period.
7. Comprehensive postnatal package of care for women living with HIV can address their sexual and reproductive health needs, meets their fertility desires and ensures healthy motherhood.
8. Challenges of measuring postnatal care.
9. Recommendations for future research:
 - Conduct further implementation research to assess optimum timing and content of a focused postnatal package including who can provide care in various settings. This includes comparing different personnel providing different services at both home and facility by linking community health workers and midwives.
 - Where is the best care provided? Where do women and families want to receive postnatal care? Can services be provided in facilities and communities and linked? How to locate pregnant women and new mothers who do not access antenatal care or delivery in health facilities? How can referral systems be strengthened?
 - Develop key global indicators for postnatal women that can be measured in household surveys.

CHAPTER 1

INTRODUCTION AND BACKGROUND

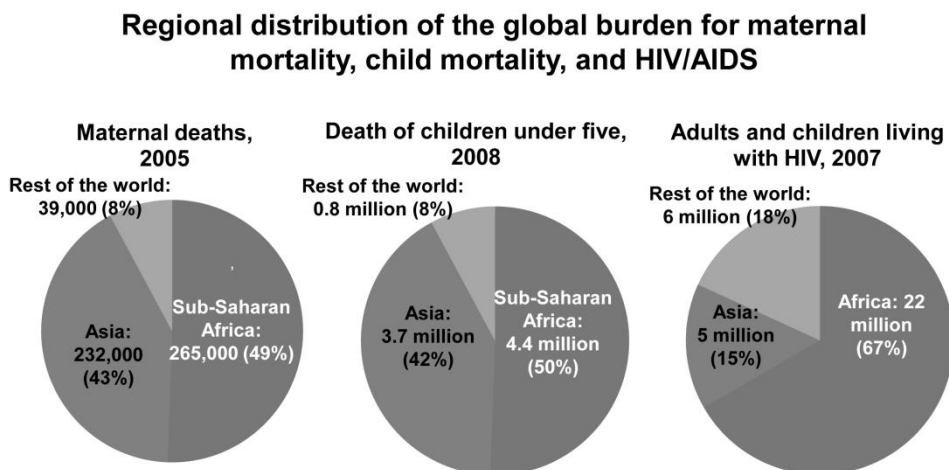
CHAPTER 1: BACKGROUND AND INTRODUCTION

1.1 Introduction

Every year in Africa, at least 265,000 women and 1,208,000 newborns die in the first month after birth due to complications of pregnancy and childbirth [1]Newborn and Child Survival: The 2010 Report, yet this is when coverage and programmes are at the weakest across all reproductive and child health programmes [2]. The most vulnerable time for mother and baby is the first hours and days after birth. The fact that over 18 million women in Africa currently give birth at home poses challenges for planning and implementing postnatal care (PNC). Regardless of place of birth, mothers and newborns spend most of the postnatal period at home.

The postnatal period—defined as the first six weeks following childbirth—is critical to the health and survival of a mother and her newborn. Lack of care during this time period can result in death or disability as well as missed opportunities to promote healthy behaviours, affecting women, newborns, and children. Therefore providing effective services to women and their newborn can substantially reduce maternal and infant morbidity and mortality, and contribute to efforts to achieve the maternal and child health (MCH) millennium development goals (MDGs) 4 and 5. The risk of unwanted pregnancy is also high during the year following the birth of a child; and so providing family planning (FP) during this period enables women to avoid an unintended pregnancy [3]. Where HIV prevalence is high, the postnatal period also offers opportunities to deliver key treatment and care services for HIV-positive women and their babies, thereby contributing also to MDG 6 (which combats HIV and AIDS, malaria, and other diseases). Figure 1 demonstrates the burden of maternal and child mortality and HIV in sub Saharan Africa.

Figure 1: Regional distribution of the global burden for maternal mortality, child mortality and HIV/AIDS [4]



1.2 Background

Lack of care during the postnatal period may result in death or disability as well as missed opportunities to promote healthy behaviours, affecting women, newborns and children:

Effects on women

Half of all postnatal maternal deaths occur during the first week after the baby is born, and the majority of these occur during the first 24 hours after childbirth [5]. Haemorrhage is the leading cause of maternal mortality in Africa and accounts for 34 percent of deaths [4]. Severe pre-eclampsia and eclampsia can occur up to 72 hours after delivery [6, 7]. Sepsis and infection claim another 10 percent of maternal deaths, virtually all during the postnatal period [4, 8]. Sepsis is highest in the first 6 weeks after birth but stays high after 6 weeks for women because of issues such as untreated anaemia, sepsis or repeat pregnancy [9] (see Table 2).

Where HIV prevalence is high, women living with HIV and with limited access to antiretroviral (ARV) drugs are also at increased risk of maternal death in the first few weeks after birth [4, 10–12]. In fact in countries with high rates of HIV, indirect causes of maternal deaths from HIV associated infections now exceed direct causes of hemorrhage, hypertension and sepsis [10, 11, 13, 14]. Some estimate that HIV-infected mothers' risk of dying is eight to ten times higher than that of HIV-negative mothers [15, 16]. In fact Zaba et al predict that around 24 percent of deaths in pregnant and postnatal women are attributable to HIV in SSA [16]. Of the 19,000 maternal deaths attributed to HIV worldwide, 89 percent are in SSA [17].

Countries in SSA that have a high proportion of maternal deaths attributed to HIV of 20 percent or more are Swaziland (67.3%), South Africa (59.9%), Zambia (30.7%) and Kenya (20.2%) [17] (see Table 1). In a meta-analysis, Calvert and Ronsmans predict that 12 percent of all deaths during pregnancy and up to one year postnatal are attributable to HIV in regions where HIV prevalence among pregnant women is two percent. This increases to 50 percent when prevalence is around 15 percent among pregnant women [11]. Moreover in other meta-analyses the same two authors describe that HIV-infected women had over three times the risk of puerperal sepsis compared with HIV-uninfected women [13].

Table 1: Estimates of maternal mortality ratio, number of maternal deaths and maternal deaths attributed to HIV by United Nations MDG region [17]

Region	MMR	Number of MDs*	HIV attributed MMR**	#AIDS related indirect MDs attributed to HIV	% AIDS related indirect maternal deaths
World	210	287000	14	19,000	6.5
Developed Region	16	2200	2	220	10.0
Developing Regions	240	284000	15	18,000	6.4
Northern Africa	78	2800	0	9	0.3
Sub-Saharan Africa	500	162,000	52	17,000	10.4
East Asia	37	6400	0	69	1.1
South Asia	220	83,000	2	920	1.1
South East Asia	150	17000	2	230	1.4
Western Asia	71	3500	0	1	0.0
Caucasus/ Central Asia	46	750	1	9	1.2
Latin America and Caribbean	80	8800	2	260	3.0
Oceania	200	520	5	14	2.6

*MD—maternal death. **MMR—maternal mortality ratio.

Better understanding of pregnancy complications such as hemorrhage in the early post-natal period, has shown the importance of postnatal care [18]. It has been suggested that for each maternal death, 20 or 30 women suffer from long term consequences of obstetric morbidity [19, 20]. Severe maternal morbidities include, fistula, uterine rupture, genital or uterine prolapse, and maternal mental health issues. Malnutrition, including maternal anaemia, iodine deficiency, and poor-quality diet, can also contribute to severe maternal morbidity [21]. In SSA, malaria causes up to 400,000 cases of severe maternal anaemia per year [22].

Effects on newborns

Neonatal mortality rates are very high in SSA. Each year, at least 1.16 million African babies die in the first 28 days of life – and 850,000 of these babies do not live past the week they are born [23]. Moreover an estimated 880,000 babies are stillborn in SSA [3, 7]. There has been slow progress in reducing newborn deaths, especially deaths in the first week of life. Two major causes of newborn deaths are preterm birth complications and intra-partum related (previously called “birth asphyxia”), which are closely linked to the quality of care provided during labour and delivery and in the management of any complications during childbirth [4]. The greatest cause of newborn deaths is infec-

tion yet this is the most feasible cause to prevent and treat—38 percent of babies in sub-Saharan Africa die of infections, mainly after the first week of life [1, 23] Newborn and Child Survival: The 2010 Report. The majority of these deaths are low birth weight (LBW) babies, many of whom are preterm. In addition, long term disability and poor development often originate from childbirth and the early postnatal period [24]. See Table 2 for time period of greatest risk of dying for the newborn. In areas of Africa with stable malaria transmission, malaria infection during pregnancy is estimated to cause from 75,000–200,000 infant deaths each year [22].

Effects on children

Around a quarter of all child deaths occur in the first month of life. In SSA 3,192,000 children, who survived their first month of life, die before their fifth birthday [25]. These deaths often take place before child health services begin to provide care, usually at six weeks for the first immunisation visit. Low coverage of care in the postnatal period negatively influences other maternal, newborn, and child health (MNCH) programmes along the continuum of care. For example, the lack of support for healthy home behaviours, such as breastfeeding, can have ongoing effects for the child in terms of under-nutrition. Additionally, newborns and mothers are frequently lost to follow up during the postnatal period for prevention of mother-to-child transmission.

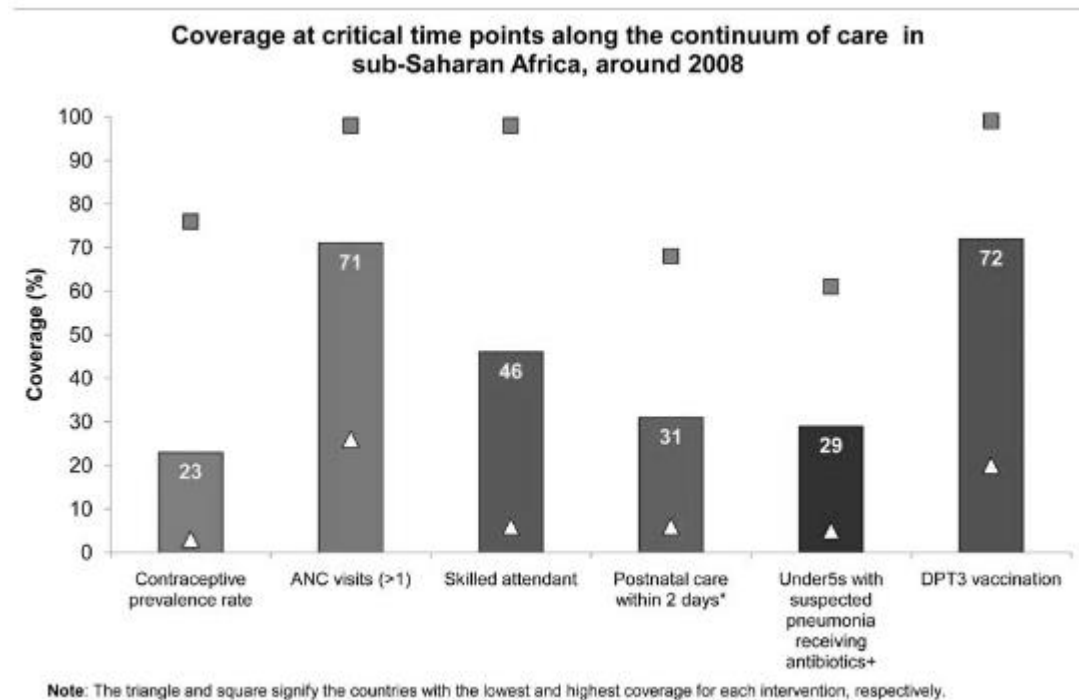
Table 2: Risk of dying in the postnatal period: by day and cause for mother and newborn [7]

Postnatal period:	Immediate		Early		Late	
	Day 1	Days 2–4	Days 5–7	Days 8–14	Days 15–42	
Mother						
Postnatal hemorrhage						
Pregnancy induced hypertension						
Sepsis						
Newborn						
Intra-partum related						
Trauma						
LBW/small						
Sepsis						
Tetanus						

Despite the burden of morbidity and mortality immediately after childbirth and the following days and weeks, uptake of PNC in developing countries is usually extremely low, typically less than half the level of uptake for antenatal care [18] or uptake of third im-

munisation that infants receive during the same period (See Figure 2) [4]. Indeed PNC is often called the ‘Cinderella of maternity services’ due to the fact that it is considered the least important and least resourced component of a woman’s journey through pregnancy, childbirth and motherhood and is often not prioritized in maternal, infant and child health national policies [9, 26].

Figure 2: Limited uptake of early postnatal care compared to ANC, skilled attendance and DPT3 vaccination in sub-Saharan Africa (Kinney 2010)



1.3 Defining postpartum and postnatal care

In many countries postpartum or postnatal care is not clearly defined in national guidelines and standards. The taxonomy around the period after birth is also confusing with “postpartum” generally attributed to the mother and “postnatal” to the baby but sometimes used interchangeably – although neonatal is also applied for the first month of the baby’s life. WHO is now recommending the term ‘postnatal’ applicable to both mother and baby [7] [27] (and used throughout this thesis).

No single visit addresses all postnatal needs of mother and infant. The content and timing of PNC in the United Kingdom was first formalized following statutory legislation in 1902 because too many women were dying following childbirth mainly due to sepsis

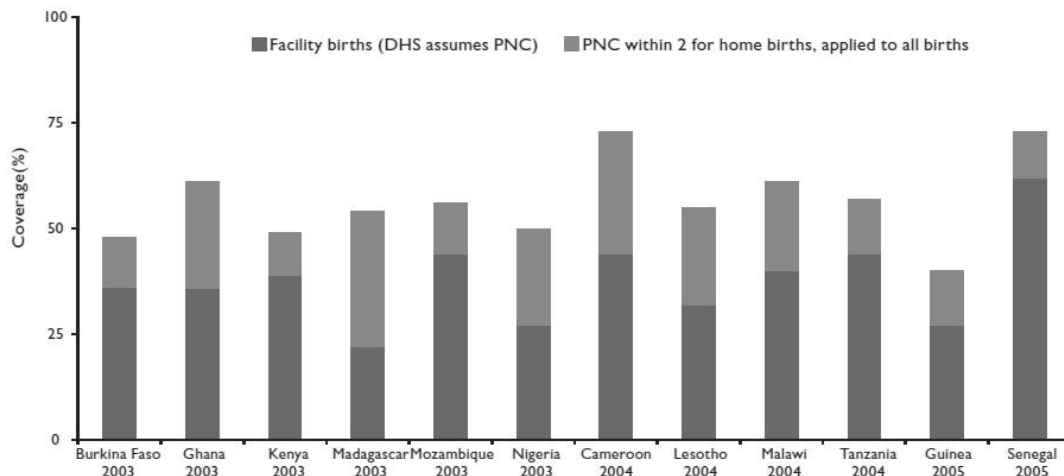
[26]. Another European country that proved successful in reducing maternal mortality dramatically is Sweden and this was dependent on the public health system, which was based in turn on equity and an alliance between midwives and doctors in a system of close supervision and surveillance [28]. By the mid-20th Century many western countries had seen a rapid decline in maternal mortality [29]. However maternal mortality in the postnatal period is still a problem in many African countries. In low income countries the 40th-day visit is, in effect, a visit for the survivors of the postnatal period [24]. The early identification of complications for both mother and baby is therefore critical. Few developing countries have mechanisms in place, however, to ensure that mothers and their newborns are assessed early and monitored closely during the initial six week period.

Evidence suggests that there are some “crucial” moments during the postnatal period when contact with the formal health system through skilled health care workers could be pivotal: The immediate postnatal period covers the first 24 hours following childbirth (whether at home or in a health facility), during which the baby’s physiology adapts and the risks to the mother of postnatal hemorrhage (which is greater than 30 percent of causes of maternal mortality in Africa and Asia [8]), and other significant morbidity are highest. Days 2 through 7 are defined as the early postnatal period and the period from Days 8 through 42 as the late postnatal period [7]. Providing additional care to women in the extended postnatal period from week seven to 6 months or one year would also support the transition to uptake of FP and child welfare services as well as immunizations and nutritional advice for both mother and infant. In recent years there has been more consensus by technical experts on the content of PNC (the what) [7, 27], but questions do still remain about the best timing (when) and place (where) for postnatal visits, and who can deliver the postnatal package.

Current postnatal coverage and trends

It has been estimated that if routine postnatal and curative care in the postnatal period reached 90 percent of babies and their mothers, 10 to 27 percent of newborn deaths could be averted. In other words high PNC coverage could save up to 310,000 newborn lives each year in SSA[30]. The impact on maternal survival is also likely to be significant [24]. An analysis of 30 developing countries’ Demographic and Health Surveys (DHS) was conducted between 1999 and 2004 on the timing and characteristics associated with PNC. Results showed that about one-half of all births in these countries occurred outside health institutions and 7 in 10 of women did not receive PNC after the birth. Between 12 % (Mali and Zimbabwe) and 49% (Indonesia) of women with non-institutional births received any form of PNC within 42 days of the birth. Note: At this time it was assumed that if a woman gave birth in a facility she received some form of PNC (Subsequent DHSs ask this question of all women). However, 40% women said that in their last birth they did not receive any postnatal checkup in the 30 countries investigated. This ranged from 46% in Kenya to 90% in Ethiopia [18]. Figure 3 shows PNC within two days of birth in facilities and at home.

Figure 3: Postnatal care within two days of birth in facilities (assuming all facility births receive postnatal care) or at home, according to DHS data in 12 countries (2003–2005)[24]



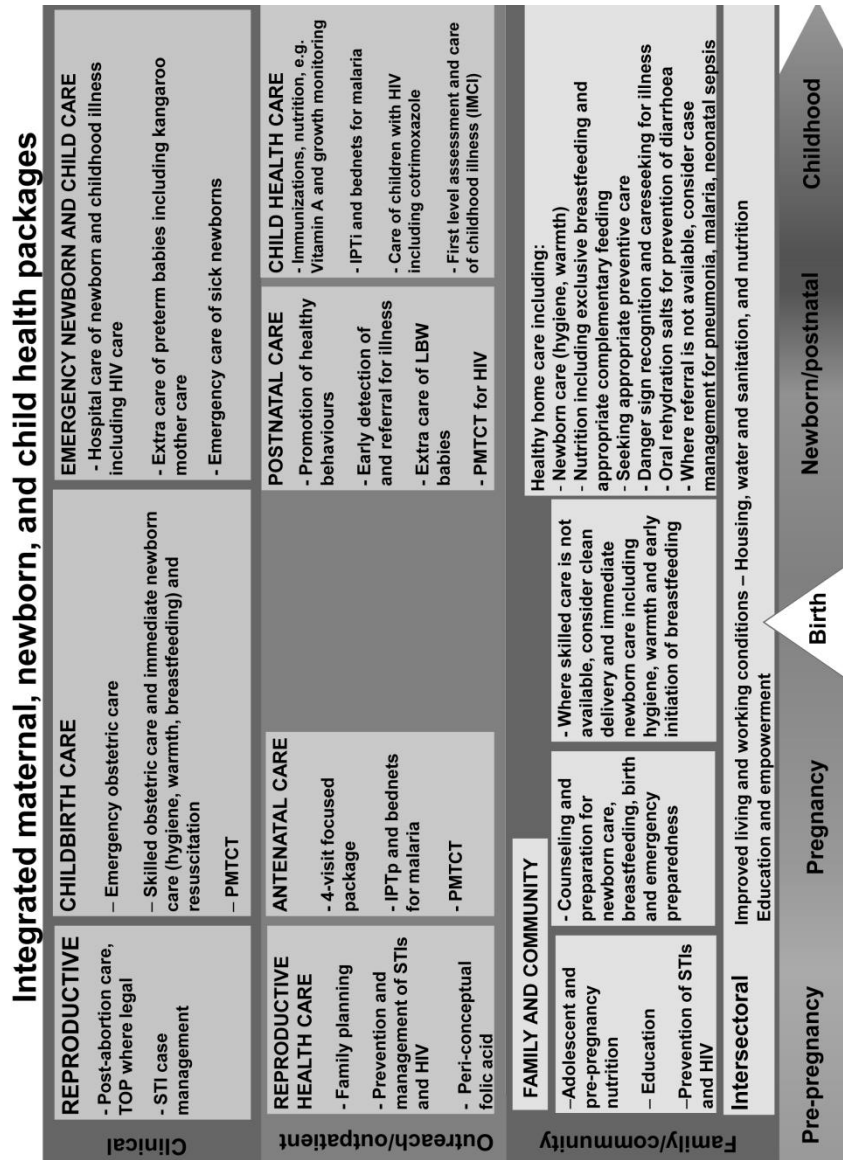
1.4 Continuum of care from pregnancy to motherhood

During the last decade, the continuum of care has been defined as a core organizing principle for reproductive, maternal, newborn and child health (RMNCH) programs that underscores the linkages between health care packages across time and through different service delivery approaches [2, 30]. It refers to the continuity of care throughout pregnancy, birth, and after delivery. It includes eight basic health packages: ANC, skilled attendant at birth and PNC as well as linkages from home to health facility; and was developed as a key program strategy for improving the health of mothers and newborns. It is defined as follows:

“The continuum of care for maternal, neonatal, and child health requires access to care provided by families and communities, by outpatient and outreach services, and by clinical services throughout the lifecycle, including adolescence, pregnancy, childbirth, the postnatal period, and childhood. Saving lives depends on high coverage and quality of integrated service-delivery packages throughout the continuum, with functional linkages between levels of care in the health system and between service-delivery packages, so that the care provided at each time and place contributes to the effectiveness of all the linked packages.” [2]

Few systematic efforts have been tried to take advantage of the possible synergies in defining key interventions that could incorporate both maternal and newborn health [31]. Bhutta argues that “substantial gains can be made for maternal and newborn outcomes by focusing on packages that relate to outcomes for both” [31]. Figure 4 demonstrates packages of interventions that might be delivered across the continuum of care.

Figure 4: Continuum of care from pregnancy to postnatal period [2, 31]



There are some advantages to separating the different phases that a pregnant woman goes through from the antenatal period to intra-partum (labour and delivery) and the postnatal period. These are mainly in relation to the rather different types of problems that might arise at each phase, e.g. the complications of early pregnancy are clearly different from those that occur during labour and delivery or after childbirth. However, such neat divisions have a significant disadvantage by obscuring the fact that pregnancy and post-pregnancy is a process, with each phase being critically influenced by what preceded it [32].

This is particularly true with regard to the artificial division that is commonly drawn between labour and delivery (intra-partum care) and the immediate PNC, (around one hour after the delivery of the placenta). This 'division' tends to make the need for immediate postnatal care invisible—i.e. the first 12 hours post-delivery, when there is a the high level of vulnerability in these first hours after birth when PPH or eclampsia might occur might become mixed up with the value and meaning of late postnatal care at around six weeks when the uterus has returned to normal and breastfeeding has become established [33]. This has negative and even fatal consequences for the way that post-pregnancy care is organized and offered to women, particularly in the developing world [32].

1.5 Content of postnatal care

The falling coverage along the continuum of care including weak linkages to clearly defined content and timing of postnatal services contributes to discontinuity between services received during pregnancy and delivery and the post delivery period [2, 9]. Low coverage in the postnatal period negatively influences other maternal, newborn, and child health (MNCH) programmes. For example, the lack of support for healthy home behaviors, such as establishing early and exclusive breastfeeding, can have ongoing effects for the infant in terms of under-nutrition. Additionally, newborns and mothers are frequently lost to follow up during the postnatal period for prevention of mother-to-child transmission (PMTCT) of HIV. Therefore attention to the postnatal period is critical for offering opportunities to deliver key preventive care services (immunization, infant feeding counselling and FP) and treatment of any ongoing morbidity for all women and their babies.

Most women require uncomplicated care during the immediate, early and late postnatal period, however there needs to be protocols and systems in place to address any deviation from unexpected recovery [7, 27]. A good quality postnatal check should therefore be a comprehensive or integrated package that covers a range of issues that affect both the mother and baby. The package of care should include physical examination of the woman to check for uterine involution; check her breasts (for signs of mastitis); extent of bleeding; plus counselling on danger signs that might occur during the postnatal period; use of FP; breast feeding and nutrition.

For the infant: physical check; information to the mother on essential newborn care; danger signs and where to seek care; and immunizations should be provided. In high HIV prevalence countries – additional counselling on HIV, re-testing the mother and testing HIV affected infants, and ensuring access to HIV services for those who need it should also be provided. Four, evidence based interventions for postnatal women include counselling and uptake of family planning; prevention and treatment of maternal anaemia; detection and management of puerperal sepsis; and to screen and initiate/continue ARV for HIV [34]. Table 3 shows suggestions for content of different PNC contacts (adapted from National PNC guidelines for Zambia) [35].

Table 3: Detailed checklist for four targeted postnatal visits

TYPE OF SERVICE	TIMING OF THE VISIT				
	First visit: Pre-discharge (or within 48 hours if delivered at home)	Second visit Within 3–7 days in MCH clinic	Third visit 4–6 weeks at MCH clinic	Fourth visit 4–6 months	
<ul style="list-style-type: none"> Assess mother and baby within one hour of delivery; Monitor mother and baby at 2, 3 and 4 hours after delivery and then every 4 hours until discharge from maternity; Do not discharge if breastfeeding has not been established and there are any concerns. Especially if the home is far away. 					
1	Services for the mother				
	Counsel on; Dangers signs in postnatal period:				
	Excessive bleeding	✓	✓	✓	
	Headaches, dizziness, swollen hands and feet	✓	✓	✓	
	Smelly vaginal discharge	✓	✓	✓	✓
	Problems urinating, leaking of urine/ faeces	✓	✓	✓	✓
	Increased pain or infection in the perineum	✓	✓	✓	
	Infection in the area of the wound (redness, swelling, pain, or pus in wound site)	✓	✓	✓	
	Swollen, red or tender breasts or nipples	✓	✓	✓	
	Counsel on:				
	Healthy timing and spacing of pregnancies	✓	✓	✓	✓
	Family planning including LAM /transition	✓	✓	✓	✓
	Maternal nutrition	✓	✓	✓	✓
	Breast care and personal hygiene	✓	✓	✓	✓
2	Take woman's:				
	Blood pressure	✓	✓	✓	✓
	Temperature	✓	✓	✓	✓
	Check for pallor	✓	✓	✓	✓

TYPE OF SERVICE		TIMING OF THE VISIT			
		First visit: Pre-discharge (or within 48 hours if delivered at home)	Second visit Within 3–7 days in MCH clinic	Third visit 4–6 weeks at MCH clinic	Fourth visit 4–6 months
3	Provide:				
	Micronutrients: Vitamin A (Visit 1) & Haematinics	✓	✓	✓	✓
	HIV test (or re-test)	✓	✓	✓	✓
	ARV prophylaxis (<i>HIV+ only</i>)	✓	✓	✓	✓
	Refer for HIV care and treatment (<i>HIV+ only</i>)	✓	✓	✓	✓
	Screen for TB	✓	✓	✓	✓
4	Examine woman:				
	Lochia loss, perineum	✓	✓	✓	
	Involution of the uterus	✓	✓	✓	
	Breasts (for engorgement /cracked nipples)	✓	✓	✓	
5	Services for the baby:				
	Check airway, observe respirations	✓	✓	✓	✓
	Assist mother with early exclusive breast-feeding	✓	✓	✓	
	Take the baby's temperature	✓	✓	✓	✓
	Examine baby (undressed)	✓	✓	✓	✓
	Detect and manage danger signs	✓	✓	✓	✓
	HIV test for infant if mother HIV positive (PCR)		✓	✓	✓
	Provide HIV prophylaxis <i>if indicated</i>	✓	✓	✓	✓
6	Counsel care giver on:				
	Essential newborn care	✓	✓		
	Danger signs and when to seek care	✓	✓	✓	✓
	Keep the baby warm/temperature control	✓	✓	✓	✓
	Provide immunization (and Vit A at 6 m)	✓	✓	✓	✓
	Growth monitoring	✓	✓	✓	✓
	Infant HIV test and prophylaxis (if indicated)	✓	✓	✓	✓
	Exclusive breast feeding for 6 months	✓	✓	✓	✓
	Complementary feeding				✓

1.6 Access to, availability and utilisation of postnatal care (PNC)

There are many reasons for delays in seeking care during the postnatal period. In places where the majority of births take place at home, PNC may be unavailable, women may not know that such services exist; they have limited access to; and subsequently make limited use of health care services for both themselves and their babies during the period following childbirth. Women may also not seek care because they do not recognize complications [7].

A major deterrent to accessing early postnatal services is the almost universally recognized period of rest for 40 days at home after childbirth. Many communities throughout Africa observe practices that keep mothers and babies indoors for the first month after birth – a period of seclusion – which means not leaving home to access health care [24]. Many perceive the postnatal period as a time of rest and for the mother to gain strength, cultivate breastfeeding and to bond with her baby. Cultures may also have traditional customs and rituals for both the mother and baby. Understanding these beliefs and practices is an important part of ensuring effective and timely care.

Some other reasons for not seeking PNC include misconceptions about the importance of PNC or lack of awareness of PNC and its benefits; cost of health services, transport costs or both; distance to health facilities and transport problems; and in some cases fear of wild animals on the way to the health facility with a young infant [36, 37]. Perceived poor quality of available health services with and poor attitude of health care providers also deter women from seeking care [38]. There is an increasing body of evidence on how poor provider attitude is a key deterrent to women accessing maternity services. This can also include neglect, verbal and physical abuse, lack of privacy and poor hygiene [37–39]. Limited health management capacity as well as referral and communication failures have also been identified at various levels. Health system bottlenecks such as insufficient workforce, infrastructure, health information system, supply chain logistics and managerial capacity affect women's access to PNC [40]. Factors that may affect health workers in providing PNC include the gap between classroom theory and practice, political awareness and involvement in policy making. In addition, lack of confidence in management and referral of women with complications and limitations in dealing with job stress have been highlighted in the past [41].

1.7 Integrating postnatal care and family planning

Globally, almost 90 million women have an unintended pregnancy each year, largely due to an unmet need for FP [42]. Unmet need for FP is defined as the percentage of women who do not want to become pregnant but are not using contraception [3, 43]. The total number of women with an unmet need for FP consists of two groups of women: (a) those with an unmet need for limiting, and (b) those with an unmet need for spacing. Unmet need for FP was added as an indicator for MDG 5B (achieve universal access to reproductive health) in 2006. Reasons for unmet need in settings where contraceptive

uptake is low include social resistance and insufficient information concerning family planning methods [44]. Other factors associated with increased chance of an additional pregnancy are similar among both HIV-negative and HIV-positive women include: number of live children, death of a child, miscarriage, partner and family pressure and social pressure [45, 46].

Serving all women in developing countries that currently have an unmet need for modern methods would prevent 54 million unintended pregnancies, including 21 million unplanned births, 26 million abortions (of which 16 million would be unsafe) and seven million miscarriages; this would also prevent 79,000 maternal deaths and 1.1 million infant deaths. In 2006 Campbell and Graham argued that between 25 percent and 40 percent of maternal deaths could be averted if all unplanned and unwanted pregnancies were prevented [45]. In SSA, the unintended pregnancy rate is estimated to be 20–40%, but only 21% of partnered women are using modern contraception and an estimated 20–35% of women have an unmet need for contraception [46]. In Kenya the unmet need for spacing fell from 20.7 % to 12.5% between 1993 and 2008/9, and from 14.6% to 13.1% for limiting.[47] In Swaziland the unmet need for in 2006/7 (the most recent DHS) was at 6.7% for spacing and 18.1% for limiting [48].

The risk of unwanted pregnancy is high during the year following the birth of a child—postnatal women are among those with greatest unmet need for FP. Following birth women experience amenorrhoea for varying lengths of time. For women who are not breastfeeding, pregnancy can potentially occur within 45 days of giving birth and before menses resumes [49]. Many women and their providers do not consider postnatal women at risk of pregnancy, and, therefore, not in need of FP if they are not menstruating or if they are breastfeeding. Birth to pregnancy intervals of less than two years are associated with the highest risk of poor maternal, perinatal, neonatal and infant health outcomes [43]. Cleland et al also argue that FP can avert over a third of maternal deaths and 10 percent of child mortality if couples space their pregnancies more than two years apart [43]. Rutstien suggests that if all couples waited 24 months to conceive again mortality in children under five years would decrease by 13% and those under 3 years by a quarter [50].

In a multi-country study, women were found to be particularly vulnerable to unintended pregnancy during the three to six months after delivery when they either reduce or stop exclusive breastfeeding, their natural fertility returns and they resume sexual activity – but often have difficulty accessing FP services [3]. In an analysis by Ross and Winfrey in 2001, data from 27 countries indicate that two thirds of women who are within a year of their last birth had an unmet need for FP and almost 40% say they planned to use a contraceptive method in the next 12 months but are yet to do so [3]. 73% of women in African countries who were within one year after birth (the “extended postnatal period”) had an unmet need for FP [3]. A 2010 analysis of DHS from 17 countries (by Borda and Winfrey) demonstrated that between 50 and 88 percent of women in the first year after childbirth would like to avoid pregnancy but were not using any contraception [51].

A study in Nigeria among postnatal women also found high levels of unmet need (59%) among women in the first year postnatal – where education and parity had apparently no significant effect on usage of FP at all [52]. Other examples of unmet need for postnatal women include: 60% in Bangladesh; 68% in Kenya and 73% in Uttar Pradesh in India [51]. Therefore providing FP during this period as part of a more comprehensive package of PNC is essential support to new mothers who wish either to have no more children or to choose the timing of their next pregnancy and enables all women to achieve their fertility intentions [3, 7]. Postnatal FP as a program strategy presents an important opportunity to reach a large number of women with information and services.

1.8 Expanding the constellation of postnatal services—the need for integrated HIV and RH services

An integrated health system is potentially more cost effective and helps to maximise the use of limited health resources and provide a more comprehensive health package of care for the users [33]. When provided together high impact maternal, newborn and child health interventions can improve efficiencies, lower costs and reduce duplication of efforts [31]. The integration of different health services has been widely promoted with the belief that both clients and providers will benefit through improvements in quality, uptake and efficiency of resources particularly in resource poor countries [53].

Some reviews have focused on the benefits of linkages of HIV and RH with a focus on FP as an entry point [54–56]. A Cochrane type review on MNCH/HIV integration in 2009 reported that integration was feasible across a variety of integration models, settings, and target populations [54]. In a synthesis of recent evidence (2013), Wilcher et al showed that FP/HIV service integration can be effective in increasing contraceptive uptake among clients with HIV who do not wish to become pregnant [56]. Evidence has also been found of the effectiveness of integrated FP/HIV service delivery models in South Africa and Kenya [57] but few studies have focused specifically on the fertility desires, contraceptive needs and FP behaviours of HIV-positive women following childbirth.

Hormonal contraception and HIV acquisition

Emerging evidence suggests that some of the more commonly used hormonal family planning methods (contraceptive pills and injectables) may increase the risk of sexual HIV acquisition and transmission [58, 59]. Although this is a priority question for public health many of the studies to date have used inconsistent approaches and the body of evidence generated is complicated and challenging to interpret [60]. Most studies grouped the different hormonal methods together for convenience [61]. One study in Uganda did not observe significant HIV acquisition or transmission with oral contraceptives or DPMA use in HIV discordant couples [62]. Hormonal contraception comprises 71% of modern methods in SSA including 8.7 million using an injectable method. With the high HIV prevalence, dual method use (contraception and condom) is recommend-

ed. In July 2014 a new statement was released following a technical meeting of the Guideline Development Group for Medical Eligibility Criteria for contraceptive use. This meeting was convened by WHO in early 2014 to review the evidence to date after a similar review conducted in 2012 [63]. The statement reads:

“It was agreed that the epidemiological data did not warrant a change to the Medical Eligibility Criteria for contraceptive use (MEC). Given the importance of this issue, women at high risk of HIV infection should be informed that progestogen-only injectables may or may not increase their risk of HIV acquisition. Women and couples at high risk of HIV acquisition considering progestogen-only injectables should also be informed about and have access to HIV preventive measures, including male and female condoms” [64].

Postnatal family planning and HIV

Although few differences have been detected in reproductive behaviors as a function of HIV sero-status, evidence suggests that substantial proportions of women living with HIV continue to have a postnatal unmet need for contraception (defined as the desired timing for her next pregnancy and use of FP)[65, 66]. Studies in Zambia and Kenya found that 39 percent and 65 percent respectively of HIV-infected women reported that they had a regular sexual partner but were not using any FP method [67]. Accessing and using PMTCT services does not necessarily appear to influence postnatal use of contraceptive methods (except for condoms) in settings of low contraceptive prevalence, scarce resources, and high HIV prevalence [68–70]. In Rwanda a high proportion of HIV-positive women reported they did not want any more children. Although over three quarters of HIV-positive women reported discussing FP with a health worker during their last less than half used a modern FP method [71].

There are limited longitudinal data on the reproductive intentions and outcomes among women on ART in Africa or elsewhere. In addition, social and cultural pressures to demonstrate fertility and the challenges of disclosing one’s HIV status when on ART can result in unplanned pregnancies [69, 72]. Myer et al also found in an analysis of 11 programs in seven African countries that the rate of new pregnancies was significantly higher among women receiving HAART compared to those not on treatment [73]. In a Zimbabwe study it was found that HAART not only altered their physical state but transformed what had been fertility desires into fertility intentions [74]. One study in Uganda established that 17% of women on ART became pregnant [75]. However other studies in Kenya, South Africa and Uganda found that ART use, coupled with improved well-being, was associated with increased fertility desires but that these women were less likely to be pregnant and or have a live birth [76, 77] .

Although the initial pregnancy brings women into contact with PMTCT programmes, little is done to assist women to discuss future fertility and space or limit future children de-

spite the unmet need [67, 78]. Many postnatal women living with HIV continue to have unintended pregnancies and become pregnant soon after giving birth despite receiving counselling on FP and are more likely to conceive again sooner and at a more frequent rate than HIV negative women [78–80]. In an ART study in Kenya, 85% of women who had become pregnant while they were breastfeeding, the pregnancies were unplanned and 80% of these were unhappy about being pregnant. In addition eight percent of the women who were pregnant at enrolment had another pregnancy and 0.5% had another two pregnancies [69]. A Cote D'Ivoire study reported 79 new pregnancies over a 24 month period among a cohort of 724 postnatal women enrolled into a PMTCT program [81]. Factors associated with incidence of pregnancy include condom use with a higher pregnancy rate compared to non-barrier method use [81].

For women living with HIV in the first year after childbirth a survey in Mombasa, Kenya showed that 42 % had an unmet need for FP [79] and among postnatal women living with HIV attending the Kenyatta National Hospital in Nairobi this was 30% [82]. Results from Uganda demonstrate that with FP services offered, HIV-positive women can become successful FP users—with around 43% FP acceptance rate [83]. Balkus and Dhont have demonstrated in two separate studies in Kenya and Rwanda that it is possible to increase uptake of postnatal contraception among women living with HIV [84, 85]. In Kenya and Zambia, no differences were observed in use of contraceptives between HIV-positive and HIV-negative women in the study communities, but HIV-positive women have more affirmative attitudes about condoms and use them significantly more frequently than do their HIV-negative counterparts [67, 86]. Another study in Uganda found that improving access to non-barrier contraceptives among HIV concordant and discordant couples already using condoms for HIV prevention increased dual method use—the selection of longer-acting injectable contraception was associated with lower pregnancy rates among HIV-positive women [87]. In South Africa, compared with uninfected women, HIV-positive women were more likely to use condoms in years 1 and 2 after delivery [78]. Older women were more likely to use condoms in the first postnatal year [73].

Many women find out their HIV status during pregnancy which makes the postnatal period an ideal time to discuss contraception based on their future fertility desires [84]. Increasing contraceptive use in women living with HIV is a key component of the World Health Organization's comprehensive PMTCT strategy [88] and can reduce the numbers of unintended pregnancies, reduce maternal morbidity and mortality and vertical transmission of HIV [67, 89, 90]. Indeed the strategic framework 2011–2015 developed by the Inter-agency Task Team for Prevention and Treatment of HIV Infection in Pregnant Women, Mothers and their Children focuses specifically on preventing HIV and unintended pregnancies [91].

Provider skills in promoting postnatal family planning for women living with HIV

Health worker behavior and practices are critical in ensuring clients who seek FP services are informed of necessary action and choices to make during the postnatal pe-

riod. In many countries sexual and reproductive health guidelines are not proactive in supporting women in general and among women living with HIV who desire children [92]. Training for other RH issues such as FP and essential maternal and newborn care during the postnatal period is rarely given to those providing HIV services [93]. There is huge demand for counselling to facilitate informed decision-making about childbearing and childrearing and the need for explicit policies for recognizing reproductive rights and choices, [65, 94] as well as providing relevant information and safety of methods of FP to both providers and clients [95].

Misconceptions about the safety of different methods for HIV-positive women are widespread among both providers and clients. Long-acting and reversible contraception (LARC) such as the IUD and implant and permanent methods (PM), such as sterilization, are generally neither recommended nor accessible to women living with HIV [95]. However a study in Rwanda, demonstrated that there was an increased uptake of implants among HIV positive postnatal women when access to LARCs was provided [85]. Often, FP and PMTCT services are organized in parallel rather than as an integrated package [93]. Service providers at clinics in South Africa, Kenya and Zambia frequently missed opportunities to counsel postnatal women living with HIV on the full range of contraceptive methods [67, 95]. Elsewhere in South Africa, a high proportion of women living with HIV were given information on postnatal FP (66%), either during ANC or after delivery, but two thirds of these did not receive any form of contraception before discharge from the maternity unit [95].

Providers admit a lack of readiness to promote dual protection; while most thought condoms were particularly appropriate for HIV positive clients, many admitted uneasiness about demonstrating condom use and discussing sexual behaviours [95]. Provider attitudes may discourage further fertility and stressing condom-based contraception poses serious challenges to a successful formulation and implementation of reproductive goals among seropositive clients [93]. In some countries even though women are counselled on condom use, compliance is poor [66, 78].

1.9 Measuring the quality of postnatal care

The definition of quality of care determines both the content and the process of care. Donabedian's conceptual model proposes three main categories from which information about the quality of services provided can be drawn [96]. The three dimensions of this approach are inputs (resources), processes (activities) and outcomes (results).

Inputs

This includes all programme efforts that facilitate the readiness of the health facility to provide services, when a client visits the facility. Inputs include physical infrastructure, finances, staffing, supplies, drugs and equipment. Availability of inputs is critical for delivery of services as per the service delivery guidelines and protocols.

Processes

Refers to all the actions that need to be conducted by staff of the health facility so that clients receive quality services. This includes technical and interpersonal dimensions and a range of elements.

Outcome

These can be seen from the perspectives of clients, providers and managers. Positive outputs from service delivery will result in better reproductive health outcomes leading to achievements of the programme goals. Outputs can be measured through client exit interviews to assess satisfaction with services received and a review of client records to assess services provided.

In order to assess the quality of PNC we reviewed both Donabedian's classification of quality of care using structure, process and outcome categories [96] and Bruce's Quality of Care (QoC) framework for FP services which outline the fundamental elements of the care giving process. These elements are judged on six key dimensions; choice of contraceptive method, information given to the client, technical competence of the health provider, interpersonal relations between the provider and client, follow up and continuity of services and the constellation of services offered [97]. In 2000 Hulton et al developed a framework for assessing quality of institutional deliveries which included 10 elements of care using two constituent parts: 1) the quality of the provision of care within an institution; and 2) the quality of care experienced by the users of the care [98]. For one study we adapted all three frameworks with specific attributes for postnatal care to each component (structure, process and outcome) that is presented in more detail in Chapter 4.3.

Table 4: Quality of care framework (adapted from Donabedian, Bruce and Hulton et al.)

STRUCTURE Data source: Facility inventory & provider knowledge	PROCESS Data source: Observations of client-provider interactions	OUTCOME Data Source: Client exit interviews and service statistics
<p>Facility inputs</p> <p><u>Appropriate availability of/ constellation of services</u></p> <ul style="list-style-type: none"> • Facility readiness • 24 hour availability • Emergency preparedness • Equipment, medicine and supplies • Infection prevention • Infrastructure • IEC materials available • Guidelines and registers <p>Technical competence</p> <ul style="list-style-type: none"> • Education and training • Supervision • Provider knowledge 	<p>Quality of care</p> <ul style="list-style-type: none"> • Quality of clinical care • Interpersonal care/rapport • History taking • Range of services offered • Maternal health care • Infant health care • Danger signs for mother and infant • FP • HIV services <p><u>Information given to client</u></p> <ul style="list-style-type: none"> • Assess client understanding • Documentation 	<p>Reduction in</p> <ul style="list-style-type: none"> • Waiting time <p>Improvement in:</p> <ul style="list-style-type: none"> • <u>Interpersonal relations</u> • Time spent with provider <p>Client understanding</p> <ul style="list-style-type: none"> • <u>Client choice</u>: RH goals FP • Knowledge • Increase in: <ul style="list-style-type: none"> • FP uptake • Satisfaction • Confidentiality/privacy • <u>Continuity of care/follow-up</u> <p>Increase service provision</p> <ul style="list-style-type: none"> • Range of services • Multiple service use • Diversification of client profile

Underlined: These are the six dimensions of improved quality of care—after Judith Bruce 1990

Although, standards for health providers are essential to help them offer women the support they need in the hours, days and weeks following childbirth, a number of obstacles are identified in operationalising quality of care interventions and specifically reproductive health services. These are related to inadequate management and leadership capacity; limited supportive supervision; lack of organizational mechanisms; inadequate financial management skills; inadequate planning and monitoring and evaluation; inadequate manpower and skills mix; lack of update training opportunities for healthcare providers that enhances knowledge and skills in healthcare delivery; poor state of the physical infrastructures of health facilities; weak maintenance plan for infrastructure or equipment; inadequate supplies of equipment, medical items and drugs; poor referral arrangements; and poor awareness of client’s needs (long waiting time, discourteous staff attitudes towards patients and lack of proper attention to patients’ complaints).

One major challenge is that there are no global indicators for the content of comprehensive or focused PNC that includes an integrated package of services for both the mother

and baby. Although international consensus on the content of and indicators for PNC is growing, the timing and content has not been tested across a range of settings. There are discussions around indicators for the newborn at the time of birth but none agreed on for the mother. Critical information on indicators of the content of services received by postnatal women is neither measured within countries' health information systems nor monitored by the DHS or Multiple Indicator Cluster Surveys (MICS). These surveys have only recently asked women about the timing of any contact with a provider in the period after birth for themselves and their babies [99].

1.10 Postnatal care in Kenya and Swaziland

The Ministries of Health in Kenya and Swaziland have acknowledged that PNC is weak and have made attempts to address this critical period specifically in narrowing the gaps in delivery of quality care. The main focus has been on ensuring PNC is described in maternal and newborn health policies, documents and developing clinical guidelines and protocols [100, 101]. In both countries women and their infants are frequently discharged within 12 hours of delivery. Neither country had registers to record any PNC until around 2004/5. The first versions became a check list of a range of tasks for the provider to complete (blood pressure, temperature, pulse, palpation of the abdomen, HIV testing, FP counselling, infant checks etc.). The Swaziland PNC register was heavily focused on PMTCT (mainly HIV testing and counselling) and the Kenya version attempted to record three recommended visits (48 hours, one-two weeks, six weeks). Providers struggled with these early versions—especially considering the number of other registers already in place (immunization, FP and HIV testing and counselling registers). This continues to be a challenge in both countries that are committed to providing integrated HIV and SRH services.

In Kenya and Swaziland policy documents recommend that women and their infants should receive a full assessment prior to discharge from hospital (or within two days if delivery takes place at home), another visit in the first one week (up to two weeks in Kenya) and a strengthened visit at 6 weeks—with another visit around 6 months if possible.

Kenya

In Kenya, high rates of communicable diseases such as HIV and malaria pose a great burden on the health system. Fertility levels have declined from 8.1 births per woman in the late 1970s to the current level of 4.6 births per woman [47]. But maternal and newborn mortality are still high—partly due to increased deaths from the HIV epidemic, deterioration of health services and widespread poverty. The maternal mortality ratio is currently 488 per 100,000 live births (up from 418 in 2003) with 14 percent of maternal deaths due to HIV. The neonatal mortality rate is 37/1000 births.

Currently over 90 percent women attend antenatal care during pregnancy (56% attend four times) and 44 percent deliver with skilled birth attendant and 47 percent of all deliv-

eries receive some sort of postnatal checkup (42% within the first two days and 5% from days 1–41) [47]. But there are no questions on the actual content of what the mother or newborn actually received during the postnatal consultation in the Kenya DHS. Births of higher order and those in rural areas are less likely to receive PNC than those of lower order and those in urban areas. Similarly, mothers in the lowest wealth quintile are twice as likely not to utilize PNC as women in the highest wealth quintile. Educated women are also more likely to receive PNC services [47]. The most important characteristics of women associated with receiving PNC are belonging to higher wealth status in households and having received previous ANC [18].

Health care financing and quality of care in Kenya

The Kenya Quality Model (KQM) was developed in 2000 by the Ministry of Health and measures the quality of health services by using a systems approach building on the work of Donabedian mentioned earlier (structure, process and outcomes) [96].

To address the challenges of accessing reproductive and maternal health services by poor women, the Kenyan Government with support from the German Development Bank (KfW) introduced an output base aid (OBA) or voucher program that targets benefits to low-income individuals in selected districts. The underlying theoretical concept of a voucher program is to subsidize costs (to reduce financial access barriers), **improve efficiency** in service delivery by linking pre-defined quality outputs to reimbursements and through **competition** with other providers or health facilities, thereby motivating improvements in access to and quality of services. [102, 103].

In OBA programs, a voucher management agency (VMA) distributes or sells vouchers at a subsidized price to clients, who purchase a voucher for a specific service. OBA programs provide incentives to clients and health providers and subsidize specific health care packages based on the provision of care with pre-defined quality standards and pre-determined outputs with the goals of improving service quality, stimulating client use of selected services, targeting services among high-priority populations (such as the poor or underserved), and containing costs[104, 105]. The structure of the Kenya OBA program is such that it identifies and invites individual or networked service providers (public, non-profit or for-profit) to assess their suitability to participate. Those agreeing to participate can only do so if they can demonstrate service provision at a specified standard of quality of care; they are then accredited to participate subject to regular review. When a client needs the services, s/he then redeems the voucher for the specified service at one of the accredited facilities. The provider is then reimbursed service cost or paid an incentive upon submission of a claim and supporting evidence to the VMA [106]. Another government policy response to improve access for poor women was the introduction of free maternity services in mid-2013.

Swaziland

The maternal mortality ratio in Swaziland is estimated to be 589 deaths per 100,000 live births—although the actual number of deaths is low—given the small size of the country which is just over one million people [48]. Majority of women attend ANC at least once (97%) and for delivery in a health facility (75%), but only a quarter attend for PNC [48]. In 2007, 22 percent of women reported they were examined within two days of delivering a live birth. Few women (2 percent) had a checkup up within 3 to 41 days of delivery. Fewer rural than urban women have a postnatal checkup (77 percent of rural and 67 percent of urban women receive no postnatal checkup). As with other health services surrounding childbirth, women who received less education and are poorer are less likely than women of higher education and wealth to receive a postnatal checkup. Health workers providing postnatal checkups are as likely to be a nurse or midwife as a doctor [48].

Quality of PNC in a high HIV environment

In 2006, integrated antenatal care and PMTCT services provided an entry point for women living with HIV to ensure antiretroviral (ARV) prophylaxis for themselves during the last trimester of pregnancy, during early labor, and for their infants after birth. While PMTCT programs in theory support the fourth prong of care and support for HIV-positive women and their families, there was limited care for women post-delivery. This misses an obvious opportunity to promote health and prolong their lives. Moreover, discussion about FP and promotion of methods during the early postnatal period was not common [67]. The reduction of unintended pregnancies is an important element of PMTCT, especially in high HIV prevalence countries. However, one of the main challenges for PMTCT programs was the follow-up of mothers and infants after delivery. Moreover, it was difficult to provide continuous support for infant feeding and FP in the postnatal period, as the vast majority of postnatal women were not necessarily linked into the ANC/MCH system. In 2005 statistics were scarce regarding what happened to HIV positive mothers and their infants between the time they are discharged and the time they return to the health facility for child health, family planning, or another pregnancy. In high HIV prevalence environments, there was a need to examine and address the content of care provided to postnatal women post-delivery, and to improve health facilities' ability to keep postnatal women linked into the health system.

Among some of the key challenges for the implementation of quality reproductive health services in both Kenya and Swaziland, is the wide disparities in health resource allocation, which results in a weak health system, lack of specific interventions and inequitable targeting of services. Inefficient provision of services and poor quality of service delivery contributes to stagnation or even negative trends in health related indicators.

1.11 Rationale and justification: Introducing a comprehensive package of PNC

The postnatal period represents a critical opportunity to safeguard the health and survival of the mother and newborn. It is when both mother and newborn experience a high level of vulnerability but also an ideal time within the continuum of care for delivering key high impact interventions to improve the health of women and newborns.

While there have been notable improvements in reduction of maternal [89, 107] and child deaths with an accelerated decline in the last decade, many countries will still not meet the MDGs four and five by 2015 unless improvements are made in postnatal care [40]. Postnatal programs are among the weakest of all reproductive and child health programs. Yet the integration of maternal and newborn health strategies in the immediate period after birth has the potential to improve the efficiency, save scarce resources and ultimately improve maternal and newborn outcomes. Few systematic efforts have been attempted to take advantage of potential synergies in defining key interventions that integrate maternal and newborn health [31]. The integration of HIV and FP services has also shown to be an effective strategy to provide women with a range of services in one consultation or visit to a health facility [54, 57, 108, 109].

The focus of the studies described here were to determine if the provision of timely and improved quality of MNH services in the much neglected postnatal period would result in increased uptake of a range of postnatal services and improve care and follow-up of postnatal women and their infants. There are a number of reasons why these studies were conducted: the Ministries of Health were interested in improving PNC, the issues were salient in both countries with different cultural contexts, and the two countries are implementing PNC with different levels of the HIV epidemic. It was anticipated that these differences would allow for interesting comparisons. Moreover there is little evidence in the literature from southern and eastern Africa on measuring the benefits of a wider package of integrated HIV and SRH services particularly HIV, FP and PNC services.

CHAPTER 2

OBJECTIVES

CHAPTER 2: OBJECTIVES

This thesis aims to describe the practice of postnatal care in sub Saharan Africa; with a focus on Kenya and Swaziland. I examine and assess whether changing the postnatal policy guidelines, which include additional visits and an expanded focus on addressing the needs of postnatal women and their newborns, improves the quality of care: Is there optimal timing and content for each contact with a health provider during the postnatal period? Such information may assist in designing more effective maternal and newborn health policies as well as provide insights into the different services that a woman might receive at each postnatal contact for herself and her newborn after childbirth.

2.1 Specific objectives

1. Evaluate interventions that may affect the quality of postnatal care to:
 - a. Assess changes in the quality of postnatal care following the introduction of a strengthened postnatal package in Kenya
 - b. Determine if the provision of timely and improved quality MNH care will increase utilization by postnatal women in a high HIV environment (Swaziland)
 - c. Assess the effect of maternal health vouchers on the quality of postnatal care.
2. Assess factors associated with uptake of FP as part of a postnatal package of care to:
 - a. Assess FP practices and pregnancy intentions among a cohort of HIV-positive and HIV-negative postnatal women in Swaziland.
3. Explore policy issues at national level on maternal and newborn care to:
 - a. Explore the policy issues of targeting population and administrative complexities of implementing a reproductive health voucher program in Kenya.

CHAPTER 3

METHODS

CHAPTER 3: METHODS

3.1 Literature review

For the introduction section a review of published literature was conducted to identify studies reporting any process or outcome evaluations of interventions that focus on postnatal care in sub Saharan Africa (SSA). Inclusion criteria were: studies conducted in SSA published in English between 2000 and 2012 that reported original findings. These included randomized controlled trials (individual or cluster), before-and-after studies (with and without controls), cohort studies, case control studies (facility- or individual-based), descriptive case studies, situation analyses, programmatic evaluations, published and reports either in peer reviewed journals, as conference papers or presentations, or as programmatic reports and reports of technical consultations published on the Internet. Initial database searches were conducted on PubMed (MEDLINE) using the following terms: (“postnatal period”) OR (“postnatal”) AND (“sub Saharan Africa”). Followed by (“family planning”) AND (“postnatal period”) OR (“postnatal”) AND (“sub Saharan Africa”) and (“HIV”) AND (“family planning”) AND (“postnatal period”) OR (“postnatal”) AND (“sub Saharan Africa”).

3.2 Study period 2007-2012

This thesis consists of four independent but interrelated research studies based in health facilities and one policy analysis. Chapter 3 provides background information about the research settings and methods used to accomplish the studies reported in this thesis. The research activities took place between 2007 and 2012 in Kenya: Central and Eastern Province (2007/8 and 2009-2012) and Swaziland (2006/7) and 2010/2012). The studies took place over one–four years depending on the study design. The main study populations involved were postnatal women and health care providers.

3.3 Overview of study intervention description

Two of the studies discussed here were conducted as part of operations or implementation research with intervention models of comprehensive postnatal care (4.1 and 4.2). One study compares an integrated HIV and PNC model by HIV status (5.1) which is part of the Integra Initiative evaluating the benefits and costs of integrated models of HIV/SRH services. The other study (4.3) was part of a larger evaluation of the Kenyan RH voucher or OBA project being implemented by the Government of Kenya through the Ministry of Health, and compares voucher facilities which had been accredited for the previous four years with non-voucher facilities which had similar characteristics (4.3). The other paper is a policy analysis of the Kenya OBA project (6.1).

For each study that introduced a postnatal care model, the intervention included strengthening existing postnatal consultations prior to discharge from the maternity

unit, and at six weeks and introduced or strengthened an additional consultations at one/two weeks and six months to enable women to access time-relevant services for themselves and their babies. Health care providers were trained in the new/strengthened postnatal package of care and information about and encouragement to seek and receive this full package of postnatal care was made with pregnant women during the antenatal consultations to increase the continuum of essential maternal and newborn health services.

In order to build consensus on the timing and composition of the package of services for the studies, meetings were held with relevant stakeholders and the different levels of the Ministries of Health (MOH) in Kenya and Swaziland. Nine areas of intervention were identified (see list below) and the package of care introduced in table 4 [110]:

1. Adaptation/strengthening of protocols, guidelines and training materials for HIV/SRH (where necessary);
2. Develop an appropriate training, mentoring and supervisory package for on-job-training;
3. Improving provider capacity (including technical skills for providing PNC for the mother and infant, long term FP, HIV counseling and testing, HIV services, screening/management for STIs and cervical cancer);
4. Ensuring availability of the minimum levels of equipment and supplies required for providing PNC services;
5. Support supervision for provision of PNC including integrated FP/HIV services;
6. Organizational change to provide PNC services and role clarification for staff;
7. Improving the availability of IEC/BCC materials;
8. Strengthened referral system between MCH-FP clinic and HIV units; and
9. Strengthening data collection and recording systems.

Table 5 describes the components that were agreed during consensus building meetings with the ministries of health in both Kenya and Swaziland—including the pre-existing standard of care and the content of the strengthened package.

Table 5: Timing and content of postnatal intervention (standard and strengthened models)

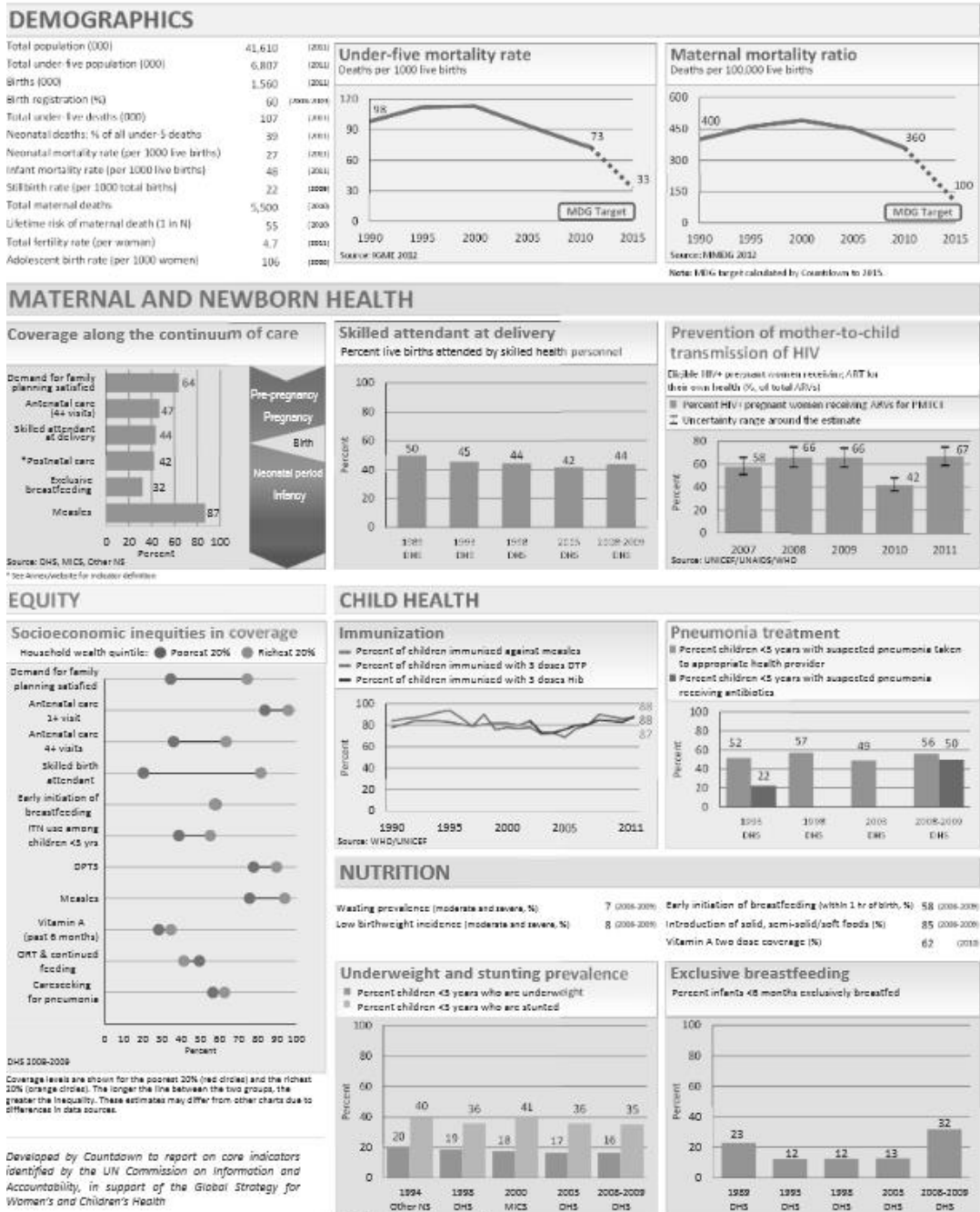
Intervention component	
Pre-existing standard PNC service	Strengthened PNC services
<p>Timing: Usually on discharge from hospital delivery if facility based delivery with 6 week check</p> <p>Content:</p> <ul style="list-style-type: none"> • Immunization, growth monitoring or child welfare, FP at six weeks (on request by mother) • Refer FP clients for STI treatment or for syndromic management • (NB: this is what should happen according to guidelines but rarely does at facility level). 	<p>Timing: Within 48 hours of delivery, plus 7 day, 6 week and 6 month visit at facility</p> <p>Content:</p> <ul style="list-style-type: none"> • Mother and baby physical examination to detect danger signs, complications and birth anomalies. • Detection and treatment of maternal anemia • Infant feeding counseling • Postnatal FP counseling and provision • Screening for cervical cancer (at 6 weeks only) • HIV counseling and (re) testing for mother and HIV exposed baby • HIV treatment and prophylaxis for mother and baby • Counseling for male circumcision to mothers of male infants (Swaziland only)
<p>HIV services:</p> <ul style="list-style-type: none"> • HIV-negative clients Health promotion risk factor exposure, risk assessment (routine) for STI/HIV • HIV-positive clients Counseling on HIV care and treatment available; management of clients with CD4 count > 350, CTX prophylaxis, referral to lab/ART for follow up blood tests. 	

3.4 Study settings

Kenya

Kenya has a population of over 40 million and is situated in East Africa, neighboring Ethiopia, Somalia, South Sudan, Tanzania, Uganda and the Indian Ocean. Around 50% of Kenya’s population is poor with widespread disparities—and barriers to accessing health care. Fertility levels have declined from 8.1 births per woman in the late 1970s to the current level of 4.6 births per woman [47]. Currently over 90% women attend ANC during pregnancy (56% attend four times), 44% deliver with skilled birth attendant and 42% receive some sort of postnatal checkup within 2 days. See Figure 5 for summary of statistics using DHS and MICS including the challenges in reaching women across the continuum of care and MDGs four and five [47, 111].

Figure 5: Maternal newborn and child health in Kenya using DHS summary data [111]



One of the papers described in this thesis—took place in Eastern Province where facilities serve a population with a relatively high modern contraceptive prevalence rate

(48%), compared to the national average of 33% and lower HIV prevalence (5%) among women aged 15- 49 years compared to the national average of 8.7%. The Kenya AIDS Indicator Survey (KAIS) in 2007 reported that the national HIV prevalence among pregnant women was 9.7 percent [112]. The other paper described in 4.3 was conducted in 8 districts (see Figure 6).

Figure 6: Map depicting study districts in Kenya



Swaziland

Swaziland is a small country in southern Africa with a population of around 1 million; and almost entirely surrounded by South Africa and adjacent to Mozambique. The studies (4.2 and 5.1) took place in facilities that serve a population with a relatively high modern method contraceptive prevalence rate (48%) compared to 36% nationally; a similar HIV prevalence among women aged 15 to 49 years (31%) compared to the national average of 26 percent and 39 percent among pregnant women compared to the

Figure 7: Swaziland



national average of 38 percent. Majority of women attend ANC at least once (97%) and deliver in a health facility (75%), but only a quarter attend for PNC [48]. Maternal mortality ratio is 589 per 100,000 live births, neonatal mortality rate is 22 deaths per 1000 live births and the infant mortality rate is at 85/1000 live births [48]. Figure 9 demonstrates key indicators compiled by the Countdown to 2015 community which uses DHS and MICS survey data over the last 20 years.

Some of the facilities from the two studies that took place in Swaziland overlap (see map below).

Figure 8: Map of Swaziland indicating health facilities included in the studies

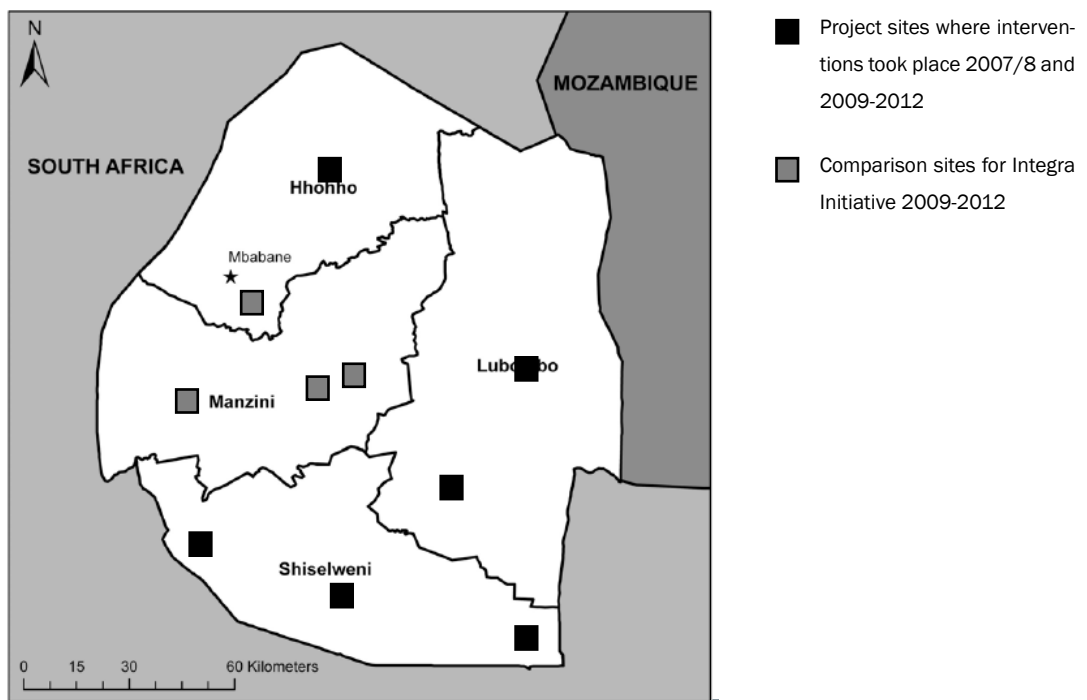
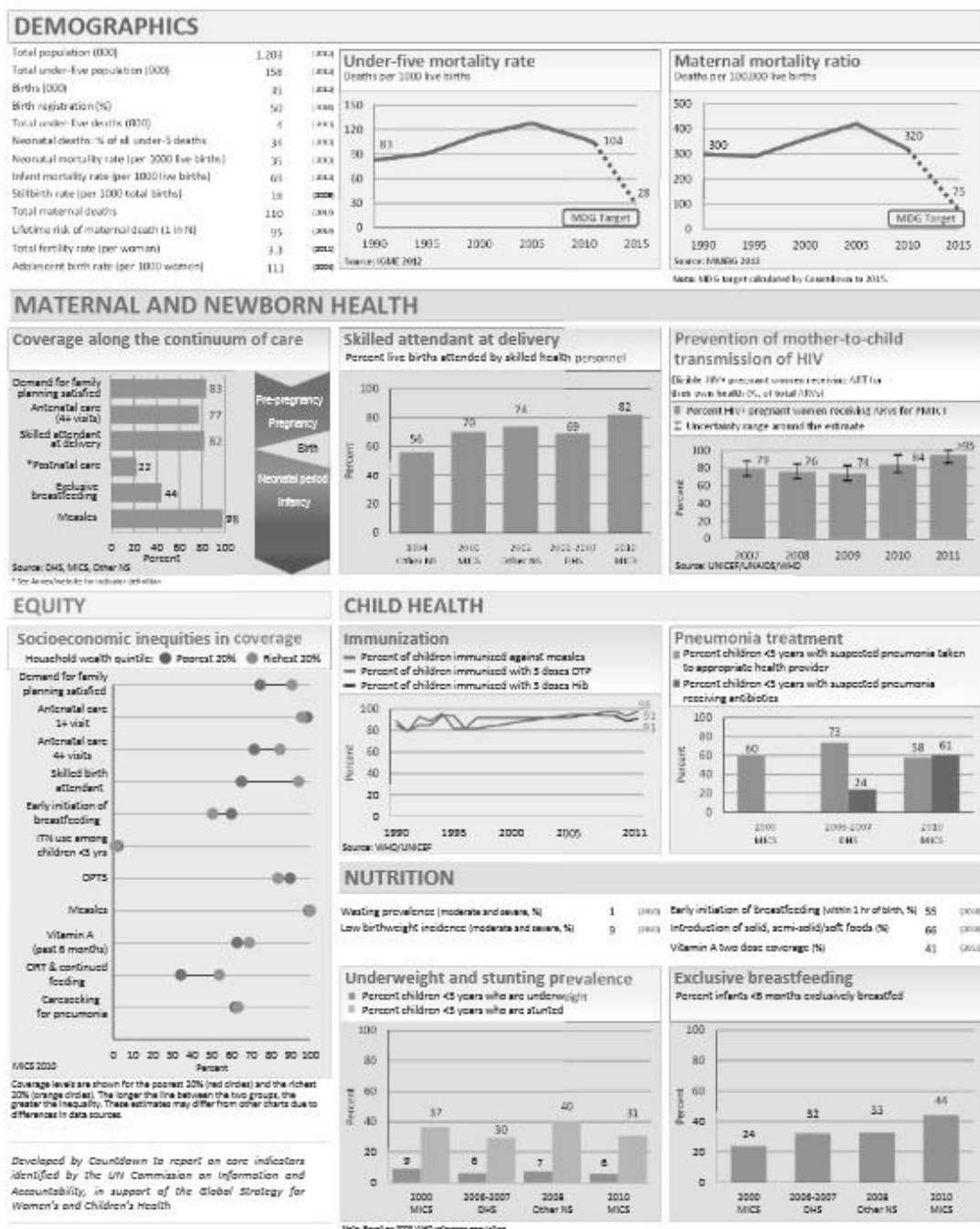


Figure 9: Maternal, newborn and child health in Swaziland [113]



3.5 Details of study interventions

For the study described in 4.1, key intervention activities commenced in October 2006 and included: 1) a series of meetings with the Kenya MOH at central, provincial and district levels to sensitize stakeholders to the project, and ensure their commitment and participation in the package design; 2) development and pre-testing an orientation training package; 3) training service providers in the strengthened services; and 4) conducting supportive supervision visits to follow up on trainees and address gaps identified.

Advocacy, sensitization and design meetings

The MOH played a critical role in the design and implementation of the intervention. Several meetings of all partners, led by the national Division of Reproductive Health (DRH), were held at the start of the project, and with the Eastern Provincial Health Management Team (PHMT) and the Embu District Health Management Team (DHMT). A joint work plan was developed and consensus reached on the timing and content of each postnatal consultation.

Design of the four-visit postnatal package of services

The number and timing of visits at 48 hours, two weeks and six weeks were based on the existing DRH program recommendations in Kenya.

Draft package of training materials

A draft package of training materials on postnatal care (including postnatal FP) was developed based on national norms and standards and the existing WHO recommendations for conducting postnatal care [6]. This was then reviewed and revised by eight provincial and district staff from the MOH and project staff. The package of materials included guidance on the technical content of each visit as well as a contraceptive technology update oriented towards the FP needs of postnatal women. The package was then pre-tested among 25 providers in the pilot MOH clinics in Embu district and changes made accordingly. The pre-test involved training a group of providers in the new training package over three days and assessing it in term of content, flow, duration and relevance. A three-day training package was therefore designed to:

- Increase providers' knowledge and practice of postnatal care;
- Increase counseling on the benefits of birth spacing to postnatal patients;
- Increase providers' knowledge on return to fertility;
- Increase providers counseling on LAM and transition to other modern methods;
- Improve counseling on other FP methods that are compatible with breastfeeding;

- Improve linkages of postnatal FP with other MCH consultations, such as immunizations, sick child visits or well-baby checks.

Training providers in providing the package

Twenty two participants from the four study sites attended a three-day workshop and included staff from the MCH-FP, ANC- PMTCT, maternity unit: postnatal ward, labor/delivery ward, and health centre in-charges as well as five staff from the provincial and district management teams.

Supportive supervision

Supportive supervision is one of the most critical elements in any training process. Two supportive supervision visits were undertaken to observe practices, support providers and collect service data to monitor implementation. The visits were used to assess knowledge, application of that knowledge and skills learned, and to resolve gaps identified during the visit. Supervisors were trained on supervision and assessment of standards.

Introduction of postnatal registers

Postnatal registers were initially developed by the MOH in 2005. These were reviewed and amended at the same time as all other MCH/FP registers and subsequently introduced to the study facilities following one-day training. The information collected in the registers included: timing of the visit; counseling topics covered; number of infants receiving immunizations; clients counseled and tested; and clients referred for other follow-up.

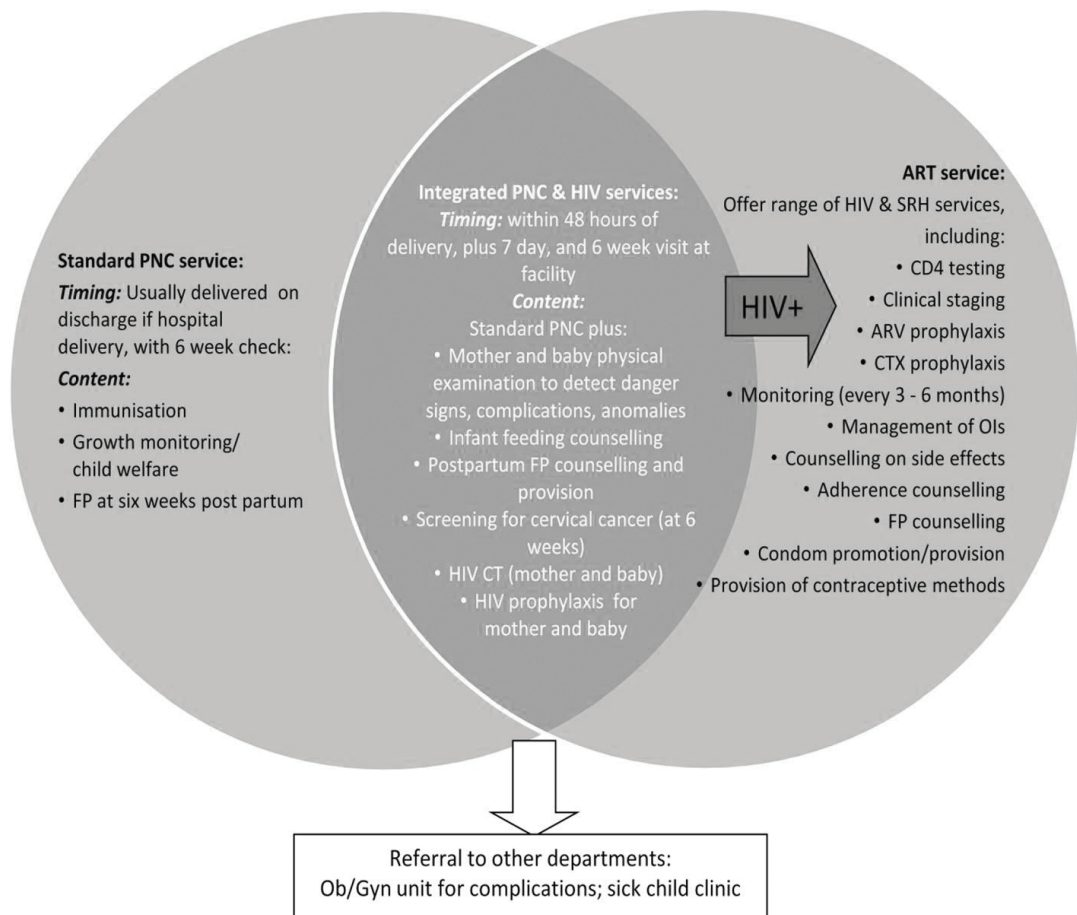
The objectives for the first Swaziland study described in 4.2 were to:

1. Document the types of service delivery modifications required to:
 - Improve care and follow up of all postnatal women and their infants;
 - Improve care and follow up of HIV-positive postnatal women and their infants;
 - Improve referrals and linkages to HIV care and treatment service;
 - Improve and sustain the continuum of care of all mothers recently delivered (linking to well-childcare and family planning; keeping HIV-negative mothers negative and HIV-positive mothers healthy); and
 - Offer HIV counseling and testing to postnatal women of unknown HIV status.
2. Measure the effect of implementing changes to the postnatal care policy guidelines on the:
 - Quality of postnatal care for all women;
 - Utilization of postnatal services by all postnatal mothers; and
 - Use of HIV care and support services by HIV-positive postnatal women and their infants.

3. On the basis of the information generated by the study:
 - Revise postnatal guidelines; and
 - Promote their utilization to expand the focus of care and encourage early attendance at the postnatal clinic for mother/baby pairs.

Figure 10 was developed as part of the Integra Initiative—a five year multi country study measuring the benefits and costs of integrated HIV and SRH services. It compares the standard postnatal check (on the left) with a comprehensive package of postnatal and HIV services introduced in both Kenya and Swaziland [110]. This study built on similar packages of PNC introduced in Kenya and Swaziland in 2007 described in Chapters 4.1 and 4.2. The focus of the package of integrated PNC includes a physical checkup for the mother and baby, counselling on danger signs for the mother and baby, HIV counselling and testing (if not tested during pregnancy, re-testing for HIV negative women and testing of HIV exposed infants) and treatment, immunization and FP (see figure 10).

Figure 10: Package of integrated PNC/HIV services introduced in Kenya and Swaziland [114]



3.6 Study design

A number of studies were undertaken to meet the stated objectives. Four studies took place in mainly public health facilities in Kenya and Swaziland using a quasi-experimental design; either a pre-posttest design and/or where the health facilities were assigned into an intervention and comparison groups: A pre-post intervention design for 4.1 and 4.2 was used to collect information from facilities to document the feasibility and acceptability of a new postnatal model and to assess any changes in provider knowledge and competence and the quality of PNC received following the introduction of the strengthened model (of PNC). Chapter 4.3 used a cross sectional post-test only comparison of quality of care in voucher and non-voucher facilities. Chapter 5.1 is cross sectional in design and facility based but focuses on the experiences of postnatal women (by HIV status) exiting the service. The data for the first three papers is described through quantitative research using health facility assessments; the fourth paper uses a cohort of postnatal women; and the final paper uses a policy analysis approach—including qualitative data from key informants from the OBA Project.

Health facility assessments

The health facility assessment (HFA) is now a recognized approach to evaluate the readiness or preparedness of a health facility to support the provision of specific services, the knowledge and ability of the providers, the overall quality of care and the experiences and satisfaction of the user. Numerous variations of HFAs are now available since their inception in the 1990s as a situation analysis approach for assessing FP programs developed by Population Council [115-117]. Systematic HFAs with specific indicators are conducted across many countries allowing for comparison include the Service Provision Assessments (SPA) [118] and Service Availability and Readiness Assessments (SARA) designed by WHO to assess and monitor health service provision at country level [119]. The author led the development of two major research protocols on the evaluation of the RH vouchers program in Kenya and the Integra Initiative in Kenya and Swaziland which describes the HFA approach in detail and were subsequently published [106, 110]. Chapter 4.1 and 4.2 are part of studies conducted in Kenya and Swaziland by the author and are based on two final reports under the Frontiers program in Reproductive Health and the Horizons Project, Population Council [120, 121].

The study tools used for the HFAs in this thesis build on the situational analysis approaches developed during the 1990s to research the supply side of FP services with four key objectives to:

- 1) Describe the potential of current policies and program standards;
- 2) Promote the delivery of quality health services to clients;
- 3) Describe and compare the current readiness of service delivery health care providers and facilities to provide quality health services to clients against the existing policies and standards;
- 4) Describe the actual quality of care received by clients; and
- 5) Evaluate the effect the provision of quality services has on client satisfaction, contraceptive use, fulfillment of RH intentions and ultimately

on fertility. Since then the tools have been adapted to undertake assessments of various combinations of integrating FP within other RH services resulting in a manual 'Assessing Integration Methodology' (AIM) handbook for measuring and assessing the integration of FP with ANC, post abortion care and PNC. This was developed in 2008 from experience gained by Population Council (including the author) in conducting HFAs [117].

Cohort

In order to assess the effect of an intervention, a longitudinal study using a cohort or panel is often used to evaluate a range of factors among a group or population who share a common characteristic or experiences within a defined period and compared with a similar group who did not experience the intervention. In the case of this thesis, a cohort of postnatal women was recruited within 10 weeks of giving birth. They were subsequently followed prospectively over two years but the paper only describes the data collected at recruitment. Detail is given in chapter 5 of the results (5.1).

Health policy analysis

Health policy analysis is a multi-disciplinary approach to public policy that examines the interface between institutions, interests and ideas in the policy process. Both retrospective and prospective assessments are useful to understand past policy challenges and successes and to plan for future policy interventions [122, 123]. Policy analysis perspectives highlight the complexity and challenges of real world policy making where actors' decision making is influenced by their values and beliefs, their relationships with other actors, the practices and power of other actors and the political context [124]. Walt and Gilson also maintain that policy analysis is central to health reforms [124]. Gilson and Raphaely observed in 2008 that there were few explicit conceptual frameworks to support researchers and policy makers to analyze the political dimensions of public policies, little detail on research design and methodology, and a focus on single case studies on particular issues [123, 125]. The framework used in 6.1 is adapted from Walt and Gilson and emphasizes the need to take into account the actors, the process and the context in which particular policy decisions are made [124].

One approach to find out how different actors have influenced (or might influence) policy and programs is a stakeholder analysis. This provides a framework to systematically gather and analyze qualitative information to understand whose interests should be taken into account in order to assess the effect of a particular policy and how to overcome any challenges. The stakeholders or "interested parties" are often grouped into the following categories: international, public, national political, private/ commercial, nongovernmental organizations, civil society, labour, and users or consumers [126].

3.7 Sampling procedures

Details on the research methods are shown below; the sampling strategy and sample size calculations for each method are summarized in table 6.

Table 6: Sampling strategy and sample size calculations for each research component at facility level

Study	Sampling strategy	Key criteria used in sample size calculation	Kenya	Swaziland
Sampling of facilities				
Chapter 4.1	Convenience	High client load; minimum of 2 MCH-FP providers. PMTCT, ANC, FP and infant feeding counselling	One hospital and four health centres	Not applicable
Chapter 4.2	Convenience	Providing PMTCT services	Not applicable	3 maternity unit and 4 public health units
Chapter 4.3	Random from total voucher facility list and pairwise matching with control facilities	High client load maternity unit and MCH services available	21 voucher facilities and 20 non voucher facilities	Not applicable
Chapter 5.1	Theoretical sampling to point of saturation	High client load; minimum of 2 MCH-FP providers. Range of SRH services available	Not applicable	8 facilities 4 intervention and 4 comparison
Facility inventory				
All	Convenience/theoretical	High client load; minimum of 2 MCH-FP providers	One per facility	One per facility
Client exit interviews linked to observations of client provider interactions				
Chapter 4.1-3	Consecutive sampling and saturation	Quality of care composite scores	Six within 48 hours of childbirth, 6 at one week and 6 at 6 weeks per facility	Minimum 6 within 48 hours postnatal, 6 at one week and 6 at 6 weeks per facility
Provider interviews				
Chapter 4.1-3	Convenience	Providers working in maternity and MCH	3 or more per facility	3 or more per facility
Cohort of postnatal women				
Chapter 5.1	Consecutive sample of female clients (recruited if within 12 weeks postnatal in PNC wards or MCH clinics)	Kenya: 80% power to detect a 5% increase in condom use, among all women in PNC Swaziland: to detect a 7% increase in condom use among PNC clients.	Intervention group: recruited 815, Comparison: recruited 878	Recruitment: 886 women 386 women living with HIV and 483 women HIV negative

3.8 Data collection

Health facility assessment data collection

Health facility assessments (Chapters 4.1, 4.2 and 4.3)

HFAs were conducted to assess quality of care in the study facilities. HFA components comprise a facility inventory, interviews with health care providers, observations of client-provider interactions (CPIs), client exit interviews and review of service statistics. All tools were pre-tested among a small group of facilities with similar characteristics as the study population to identify potentially negative consequences and modified accordingly. Data collection procedures for each component of these assessments are as follows:

i. Facility inventory (Chapters 4.1, 4.2 and 4.3)

An inventory was conducted of available resources required to deliver postnatal care, and included the facility infrastructure, services provided, staffing numbers, skills mix and training undertaken within the previous 12 months; availability of essential equipment, commodities and drugs; forms and registers (client cards and notes), guidelines and IEC materials. Researchers requested the head of the facility to guide them around to observe and record the relevant information on a checklist.

ii. Interviews with healthcare providers (Chapters 4.2 and 4.3)

Structured interviews with health care providers were conducted to determine their knowledge and skills for family planning, postnatal care, HIV counseling and testing and other STI/HIV services; their understanding of organizational structure and related activities; their perceptions of barriers and operational challenges to FP/PNC clients' acceptance of HIV counseling and testing; and their attitudes towards policy and procedural changes needed for provision of the package of care.

iii. Observations of client-provider interactions (CPIs) (Chapters 4.1, 4.2 and 4.3)

This was the main component for each study described and entails a structured non-participatory observation of health consultations, encompassing both the counseling process (how clients are treated and whether they actively participate) and the technical content of a consultation (provision of essential information and its technical accuracy). Observing client provider interactions (CPI) may bias in a positive direction the results obtained on quality of care. However the data collection teams spent more than one day at each site, so that the presence of the research team became more familiar and the behavior of the providers subsequently became more normative.

To assess the quality of care at each facility, all providers participating in the facility evaluation and who deliver MNH/FP services were asked permission to observe their consultations. Providers were recruited following sensitization meetings held with the district health management teams (or equivalent) and facility in charges. Researchers held

group meetings with the management and healthcare providers in each participating facility to introduce the purpose and methods of the study and to request their participation. Observations of CPIs were conducted either pre-discharge from the maternity unit and up to ten weeks after childbirth in the MCH clinic. After obtaining informed consent from the client, a structured non-participatory observation of the CPI was undertaken to determine the quality of care provided.

Women attending postnatal consultations were recruited if they met the following eligibility criteria: were accessing postnatal care for themselves (and/or their babies) post-delivery, one-week or six- ten week postnatal consultation times; were aged over 18 years (the small proportion of clients that are less than 18 years did not justify the difficulties in obtaining parental/guardian permission); were aged below 45 years (the small proportion of women giving birth/ accessing FP above this age were excluded); gave their informed consent for their consultation to be observed and the key actions taken recorded, and agreed to also be interviewed on exiting the consultation. All women satisfying these inclusion criteria were recruited until the required sample sizes were reached.

To measure the magnitude of changes in the quality of services provided, composite summary scores were developed for a series of key indicators by aggregating the mean scores of key items being assessed for each individual client-provider interaction being observed. This scoring system categorizes whether an accepted standard of quality has been met or not. For each study group, a mean score per group is calculated for each indicator and for the composite summary score to enable statistical comparisons to be made between experimental and comparison groups and over time. Examples of the types of individual items and key indicators that were used in Chapters 4.1-3 are given in Table 7.

Table 7: Examples of groups of key actions/indicators to make composite scores of quality of care

Quality of:	Observed provider actions:
a. Client-provider rapport (0-7)	Client greeted warmly, Discussed medical conditions, Asked if client understood information, Encouraged client to ask questions, Used client's name, Help in decision-making, Consultation time > 15 minutes
b. FP method counseling (0-6)	Discuss reproductive intentions, discuss previous use of FP, Discuss 2 or more methods, provide choice regarding preferred method, discuss how chosen method works, explain (dis)/ advantages of chosen method
c. PNC counseling on danger signs since childbirth (0-10)	Ask about: bleeding since birth, color/smell of vaginal discharge, condition of perineum/CS scar, fever, headache or blurred vision, swelling in face, hands or feet, signs of thrombophlebitis, tiredness or breathlessness, convulsions or fits
d. HIV counseling for unknown or negative status (0-5)	Discuss HIV sero-status, discuss HIV testing with client, discuss interpretation of results, explain about the window period, advises where client can get tested

The proportion of women receiving an acceptable quality of service was calculated in addition to the mean scores. This is because the mean score may be artificially high if a small proportion of clients receive excellent services. The methodology to calculate the proportion of women receiving an acceptable quality is similar to the Lot Quality Assurance Sampling (LQAS) approach that has been used in Kenya and elsewhere for assessing quality. LQAS follows the principle that an entire group (lot) of services is deemed poor quality if a certain proportion within a small sample does not reach a minimum standard. LQAS applies cumulative probabilities calculated with a binomial formula to select small sample sizes and decision criteria for judging a group of providers. In consultations with the Kenya and Swaziland MOHs the minimum standard for quality MNH and FP services was reviewed and adapted by building on existing guidelines and protocols and previous studies.

iv. Client exit interviews (Chapter 4.2 and 4.3)

Exit interviews were held with each client who was observed (see above) to ascertain their perceptions of and satisfaction with the postnatal service received, as well as their SRH and HIV-related behaviors, family planning uptake and fertility intentions.

v. Review of service statistics (Chapter 4.2)

This includes monitoring data collected routinely from facility based registers measuring utilization of PNC, FP and PMTCT services over the project period.

Data collection for Chapter 5

Cohort recruitment (5.1)

This was a consecutive sample of female clients aged 18 years and over attending one of the study facilities for postnatal care and willing to give their informed consent to be interviewed. Various indicators were monitored in these populations, including: condom and contraceptive use, fertility intentions, use of PNC and FP services, HIV status, unintended pregnancy, and SRH behaviors. The minimum sample size was based on 80% power to detect an increase in reported condom use (a key indicator/outcome that required the largest sample) from 13% to 20% in Swaziland, based on estimates from the 2006–2007 Swaziland Demographic and Health Survey (SDHS). The other outcome to be measured from these data is unintended pregnancies; since this required a smaller sample size it is covered within the condom use sample.

Data collection for Chapter 6

Policy analysis (6.1)

Policy analysis of the OBA /Voucher program in Kenya was conducted by using the policy analysis framework developed by Walt and Gilson [124] which emphasizes the need to take account of who (actors) and how (process) decisions are made, what (content) decisions are made and under what conditions (context). Moreover, we examined the role of the different actors and their influence through a stakeholder analysis to understand the programmatic lessons for potential scale up of the Voucher project.

Two sets of data were used. First, a document review was conducted of all available project and evaluation reports, publications and other relevant documents on the voucher project. From this we generated evidence on the dynamics of how the voucher project was implemented, activities conducted and the different decisions made over the project period. Documentary materials included seven design reports and contractual documents, five annual and midterm review reports, eight advisory and 20 reports of steering committee meetings as well as four mission reports from the project back-stopping team.

The second set of data was collected through qualitative in-depth interviews (IDIs) as part of the overall evaluation activities of the Kenya Voucher program [110]. The overall aim of this qualitative component was to gain a deeper understanding of the perceptions of the various actors at different levels working in the program. IDIs were carried out with individuals working within the voucher project and project facilities as well as individuals from communities surrounding the voucher facilities. These interviews took place alongside quantitative surveys (such as the HFAs described above) to gain a deeper understanding of how the OBA/Voucher project was functioning. The IDIs addressed the following broad themes: attitudes towards vouchers and voucher claim process; communication/interaction with voucher management agency; All participants in the IDIs were asked to give consent and assured of confidentiality prior to interview.

This paper draws from IDIs conducted across the five program sites: Kitui, Kiambu and Kisumu districts as well as Korogocho and Viwandani slums in Nairobi. Ten IDIs were conducted with health facility in-charges and 18 with service providers from the voucher accredited facilities, medical and public health officers, local leaders and field managers.

3.9 Data management and analysis

This depended on the study design and resources; detailed information of each study is described in chapters in the results sections. However all quantitative paper questionnaires were double entered using Epi Info and later converted to SPSS (for the earlier studies conducted (4.1 and 4.2) and STATA 11.0 and 10.0 for the later studies (4.3 and 5.1) for analysis. For the studies focusing on quality of care, data were drawn from the client provider interaction tool and mean scores computed for each indicator and then aggregated across all indicators to give a composite score. Mean scores were also computed for data drawn from provider interviews and facility inventories.

In Chapter 4.3 for each component of QoC: structure, process and outcome, summary scores were calculated as the additive sum of items representing specific aspects of each attribute (as defined above) and these were used to demonstrate the overall quality score. Two-tailed unpaired t-tests with unequal variance were also used to evaluate group differences in mean process quality scores comparing intervention and comparison groups. A P-value of less than or equal to 0.05 was used as the threshold for significance. Pearson's chi-square tests were used to evaluate differences in proportions for various patient-reported outcome measures which included waiting time to see provider, time spent with provider and patient reported satisfaction.

To assess measures of effect, a linear regression model was used for individual and summative process quality score outcomes. We controlled for clustering at facility level since observations were done at that level. We also assessed the effect of the program using other covariates such as comparisons of quality scores between public and private provider with the reference point being public providers. An additional estimation was done adding facility level covariates, by comparing scores between higher and lower level facilities. Facility level is defined by the lowest level comprising dispensaries, nursing homes, and clinics, the second level health centers, and the third level hospitals and sub-district hospitals. In all instances we report coefficients with their 95% CI and the p values for the coefficients for all the three models.

For the cohort study data (Chapter 5.1) in Swaziland, teams of trained research assistants conducted the interviews using hand held personal digital assistants (PDAs) loaded with the questionnaire translated from English to SiSwati [110]. The data was then imported into Microsoft Access and then into STATA 10.0 for analysis. All statistical tests were two tailed, and interpreted at a 5% confidence level. Measures of effect were assessed using multivariate fixed effects logistic regression model accounting for

clustering at facility level and the results presented as adjusted odds ratios or incidence rate ratios. For the Swaziland cohort data two methods of analysis were used. First FP practices and service use by HIV-positive women was compared according to the time when they learnt their status in order to determine whether knowledge of living with HIV was an influence. Secondly service use by all women was compared with women's HIV status. In both approaches descriptive statistics were conducted using chi square test for categorical variables; Fischer's exact test was used for small cell sizes (<5) and T-test was used to compare means across two groups.

For the policy analysis component for Chapter 6.1, qualitative interviews were transcribed and translated into English and stored and managed using QSR Nvivo8 Software (© QSR International Pty 2007, Australia). The analysis entailed categorization of approaches based on inductive and deductive approaches by which a priori themes were used as a starting point. Subsequently the framework was improved as more data were examined.

3.10 Research ethics

The study protocols were submitted, reviewed and ethical clearance granted by both Population Council International Review Board (IRB) and the relevant country ethical review boards. Kenya Medical Research Institute (KEMRI) Ethical Review Board and the Division of Reproductive Health (DRH), Ministry of Health and Population Council IRB gave approval for chapter 4.1. For Chapter 4.2 approval was provided by the Swaziland Ministry of Health and Social Welfare who requested the study. Chapter 5.1 describing data from the Integra Initiative, ethical approval for the study was obtained from the Ethical Committee at LSHTM (approval number: 5436), from the Population Council IRB (protocol 444), from the Swaziland Scientific and Ethics Committee (approval numbers MH/599B and MH/599C). For Chapters 4.3 and 6.1 ethical approval for the larger RH Vouchers evaluation (Evaluation of voucher-and-accreditation interventions for improving business models applied to reproductive health service delivery platforms) was obtained from Population Council's IRB (protocol 470) and KEMRI (non SSC 174).

For all tools researchers were trained on conduct of ethical procedures and were monitored during data collection. Informed consent was obtained separately for each study participant for each component. Where adolescents aged 15 to 17 years are sampled, they were only interviewed once parental consent was obtained. All participants were given detailed information about each study including: aims/methods of study; institutional affiliations of the research; anticipated benefits, risks/discomfort it may cause (expected to be minimal) and follow-up of the study; the time the questionnaire or interview was to take; the fact that they may choose not to answer any questions and that they had the right to abstain from participating in the study, or to withdraw from it at any time, without reprisal; measures were taken to ensure confidentiality and anonymity of information provided; the conduct of interviews in places of the participant's choosing and which maximized audio privacy; contact details of the study coordinator for any

questions or concerns. All data was stored in password protected computer files. Hard copies of questionnaires were stored securely in a locked cabinet, in accordance with the Population Council policy and the Kenya and Swaziland Data Protection Policies.

2.11 Data dissemination

The following papers have been published and form the basis of this thesis

1. **Warren, C.**, Mwangi, A., Oweya E., Kamunya, R., and Koskei, N. “*Safeguarding maternal and newborn health: improving the quality of postnatal care in Kenya*” International Journal for Quality in Health Care 2009, pp. 1-7.
2. Mazia, G., Narayanan, I., **Warren, C.**, Mahdi, M., Chibuye, P., Walligo A., Mabuza, P., Shongwe, R., Hainsworth, M. (2009) “*Integrating quality postnatal care into PMTCT in Swaziland*” Global Public Health. URL: <http://dx.doi.org/10.1080/17441690902769669>
3. **Warren, C E.**, Abuya, T., Njuki, R., Obare, F., Kanya, L., Termmerman, M. and Ben Bellows. “*A cross sectional comparison of postnatal care quality in facilities participating in the maternal health voucher programs versus similar control facilities in Kenya* ” submitted to BMC Pregnancy and Childbirth in May 2014, revised and re-submitted January 2015;
4. **Warren, C E.**, Abuya, T. and Askew. I. “*Family planning practices and pregnancy intentions among HIV-positive and HIV-negative postnatal women in Swaziland: a cross sectional survey*” BMC Pregnancy and Childbirth 2013, 13:150. URL <http://www.biomedcentral.com/1471-2393/13/150>
5. Abuya, T., Njuki, R., **Warren, C E.**, Okal, J., Obare, F., Kanya, L., Askew, I. and Ben Bellows “*A Policy Analysis of the implementation of a reproductive health vouchers program in Kenya*” BMC Public Health 2012, 12:540. URL <http://www.biomedcentral.com/1471-2458/12/540>

CHAPTER 4

HEALTH FACILITY ASSESSMENTS

CHAPTER 4: HEALTH FACILITY ASSESSMENTS

4.1 Safeguarding maternal and newborn health: improving the quality of post-natal care in Kenya

Warren, C., Mwangi, A., Oweya E., Kamunya, R., and Koskei, N. “*Safeguarding maternal and newborn health: improving the quality of postnatal care in Kenya*” International Journal for Quality in Health Care 2009, pp. 1-7.

Safeguarding maternal and newborn health: improving the quality of postnatal care in Kenya

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Abstract

Objective. To assess changes in the quality of care following the introduction of a new postnatal package.

Design. Using a pre-test, post test design to observe client–provider interactions with women 0–6 weeks postpartum.

Setting. Four health facilities in a rural district, eastern Kenya.

Participants. Health providers and postpartum women.

Intervention. Introduction of comprehensive postnatal package of care, with three targeted assessments within 48 h of birth, 1–2 weeks and 6 weeks, to providers working in maternity and maternal and child health clinics.

Main outcome measure. Improved quality of postnatal counselling.

Results. Increased mean scores for counselling on danger signs in the newborn (0.24–1.39) and infant feeding (1.33–2.19) were noted. The total quality of care index for the newborn increased overall but remained lower than desired (from 3.37 to 6.45 out of 11). Essential maternal care index improved (3.4–8.72 out of 23). More women accepted a family planning method at 6 weeks (35–63%).

Conclusions. The introduction of new comprehensive postnatal care package improved performance of providers in counselling in maternal and newborn complications, infant feeding and family planning. Additional studies looking at the postpartum family planning needs for women living with HIV would also be useful. However, providers would benefit from additional clinical skills for managing maternal and newborn complications during the critical period following childbirth.

Keywords: comprehensive postnatal care, maternal, newborn, Kenya

Introduction

The postnatal period is neglected throughout Africa. The quality of care for those who seek services is often poor and many women and their infants are not encouraged to seek care until 6 weeks after delivery. Lack of a defined postnatal care package contributes to the discontinuity between maternal and child health programs [1].

Although there have been improvements in the quality of care during pregnancy and childbirth, there is limited uptake of early postnatal services for mother and newborn and acceptance and use of postpartum family planning methods in many countries. The greatest gap in the continuum of care occurs during the first crucial week after childbirth when

both maternal and newborn deaths are most likely [2, 3]. In Africa alone at least 125 000 women and 870 000 newborns die in the first week after birth every year [4]. For many women in eastern and southern Africa, the postnatal period is a time of increased susceptibility to HIV and STIs [5, 6]. Although HIV infection in the mother will influence the baby's survival, practically all neonatal deaths in the first month of life are due to non-HIV causes (e.g. asphyxia, sepsis and prematurity), highlighting the need to address the quality of basic maternal and newborn care.

Evidence suggests that there are some 'crucial' moments when contact with the formal health system during the postpartum period by skilled attendants could be instrumental in identifying and responding to needs and complications after

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childbirth: the first few hours after birth (whether at home or in a health facility), between 3 and 7 days and at 6 weeks [7, 8]. Better understanding of complications such as haemorrhage in the early postpartum period, which is greater than 30% in Africa and Asia [9], has shown the importance of early and universal postpartum care [10].

The family planning needs of women during the first year postpartum are also not well addressed [11, 12]. In Kenya, 68% of women have an unmet need by 12 months [13, 14]. Postpartum women need information and services, provided at appropriate times, to address this unmet need. Providing a continuity of care from antenatal services, including prevention of mother-to-child transmission (PMTCT) of HIV, delivery and postpartum care can ensure that women's health and fertility intentions are more likely to be effectively met [15].

To improve the quality of postnatal care, the Ministry of Health (MOH) in Kenya increased both the recommended timing and content of postnatal services a woman and her infant should receive to at least three assessments within the first 6 weeks after childbirth (within 48 h, 1–2 weeks and at 6 weeks). The study assessed whether the introduction of postnatal package of care contributes to improved counselling on essential maternal and newborn health and family planning.

Methods

Intervention description

The new Kenya comprehensive postnatal care package and job aid (checklist to aid providers) were developed by the Division of Reproductive Health (DRH), MOH, ACCESS-FP/Jhpiego and FRONTIERS/Population Council. These tools aim to increase provider awareness of the need to focus on providing the continuum of care from pregnancy to labour and childbirth and through to the postnatal period to ensure both mother and newborn survive. Table 1 summarizes the content of the postnatal care package which incorporates relevant maternal and newborn healthcare services in the postnatal period as well as postpartum family planning.

To introduce the postnatal care package, a 3 day training took place for staff and their supervisors from the maternal and child health clinics and maternity units from four health facilities in one district. Initially, 24 providers from the selected facilities were oriented in the postnatal care package, as well as in the use of a new postnatal register recently released by the MOH. Subsequently, the MOH requested a further 52 providers to be trained from other health facilities in the district. Regular supportive supervision visits were made to the four health facilities to assess knowledge, application of that knowledge and skills learned, and to resolve gaps identified during the visit.

Study design

A pre–post intervention cross-sectional design was used to assess any changes in the quality of counselling for postnatal

care before (September 2006) and after (July 2007) the introduction of the new postnatal care package. The four health facilities in Embu district, Eastern Province, Kenya were purposefully selected according to specific criteria which included the provision of: focused antenatal care, PMTCT, family planning and counselling and support for infant feeding.

Direct observation of client–provider interactions were used to measure quality of postnatal care. The 48 h and 2 weeks consultations were not routine prior to the intervention and so none was observed pre-intervention. The 6-week routine consultations were observed both before and after the intervention. Observations of the cross-sectional client–provider interactions were carried out concurrently in maternity and maternal and child health/family planning units during the same time period with cross-sectional samples of women for each category at 48 h (post-intervention only: $n = 29$), 1–2 weeks (post-intervention only: $n = 64$) and 6 weeks (pre-intervention: $n = 86$ and post-intervention: $n = 70$). All women attending for postnatal services during the data collection period were approached and requested for permission to observe their consultation. Data collectors were qualified midwives from outside the study district, trained for 5 days and included role playing to internalize the data collection instruments. Supervisors checked all completed instruments for data quality and accuracy prior to data entry and analysis.

Data were entered using Epidata and exported to SPSS for analysis. The indicator/summary scores were obtained as the additive sum of items/variables representing specific aspects of postnatal care (e.g. essential newborn care and essential maternal care including return to fertility and family planning) observed during consultations with the clients. Distinct variables and indicator scores were tested using Wilcoxon–Mann–Witney test to determine the significance of differences between the pre- and post-intervention results at 6 weeks; this was after confirming that the normality assumption of the two-independent samples *t*-test failed. A *P*-value of less than or equal to 0.05 was used as the threshold for significance. This method was used to demonstrate overall improvements in quality of care rather than individual aspects of care.

Results

The quality of care was assessed on the basis of counselling for essential newborn and maternal health. Tables 2 and 3 outline the detail of the key indicators used for compiling the composite scores for newborn and maternal care, respectively.

Newborn care

The four key indicators making up essential newborn care include asking about danger signs in the newborn, counselling on danger signs in the newborn specific to the early

Table 1 Timing and content of the new postnatal-family planning package of care in Kenya

Timing of assessment or visit	Services for the mother	Services for the baby
Assessment 1: pre-discharge (or within 48 h if delivered at home)	<p>Focused physical examination</p> <p>Counselling and support on: exclusive breastfeeding and lactational amenorrhoea method (LAM); healthy timing and spacing of pregnancies (HTSP) and family planning; maternal danger signs and management of complications.</p> <p>HIV and syphilis tests as indicated</p> <p>Refer to HIV management units for follow up as indicated</p> <p>Appointment for next visit</p>	<p>Exclusive breastfeeding</p> <p>Essential newborn care</p> <p>Newborn physical exam</p> <p>Newborn danger signs and management of complications</p> <p>Nevirapine as indicated</p> <p>Appointment for next visit</p>
Assessment 2: 2 weeks at MCH clinic	<p>Physical check</p> <p>Maternal danger signs and management of complications</p> <p>Counselling on: HTSP messages; return to sexual activity; return to fertility; LAM and family planning counselling and services</p> <p>Appointment for next visit</p>	<p>Essential baby care</p> <p>Baby danger signs and management of complications</p> <p>Immunization</p> <p>EBF</p> <p>Physical examination</p> <p>Appointment for next visit</p> <p>Essential baby care</p>
Assessment 3: 6 weeks at MCH clinic	<p>Focused physical examination</p> <p>Maternal danger signs and management of complications</p> <p>LAM users—supportive counselling including transition HTSP messages</p> <p>Return to fertility and sexual activity</p> <p>Family planning counselling and services (refer women for methods not available at Health Centres)</p> <p>Dual method use</p> <p>Return visit</p>	<p>Danger signs and management of illnesses</p> <p>Immunization</p> <p>Physical examination</p> <p>EBF</p> <p>Cotrimoxazole at 4 week as indicated</p> <p>Appointment for next visit</p>

postnatal period, immunizations received by infant and counselling on infant feeding (Table 2).

During the 48 h consultations, providers were more likely to ask mothers if their newborns had problems in feeding or if the baby felt too hot or too cold than at 2 or 6 weeks. At the 2 weeks consultation, around half of the providers asked about the three dangers signs. During the 6 weeks consultations although significant improvements were noted post-intervention, less than half of the providers asked if the infant had problems in breathing or had a fever or not. Mothers were most frequently counselled on feeding difficulties and temperature control within 48 h of birth and the 2 weeks consultation. Comparisons between the pre- and post-intervention groups at the 6 weeks consultation showed significant increases after the intervention for counselling on the three key indicators.

During all consultations on the postnatal ward, newborns were observed receiving Polio 0 vaccine and BCG, although fewer were observed receiving BCG and Polio at 2 weeks.

These were mothers who had not delivered in a facility and were making their first visit following childbirth. After the intervention, providers at the 6 weeks consultation were much more likely to administer Polio 1 and HBV/DPT/Pentavalent.

In all consultations within 48 h, providers gave advice to mothers on infant feeding and frequently encouraged a discussion on how they were managing the feeding. In subsequent consultations, advice on breastfeeding and re-emphasis on exclusive breastfeeding remained high across the time period. Even though the overall scores almost doubled for the quality of newborn healthcare observed during the client-provider interactions at 6 weeks (Table 4), the post-intervention scores remained lower than desired.

Maternal care

After the intervention providers were expected to ask post-partum women if they have experienced any problems since

Table 2 Provider interaction with mother on newborn care

Provider observed asking about newborn danger signs	48 h After delivery	2 Weeks after delivery	6 Weeks after delivery		Percentage point difference (%)	P-value ^a
	Post-intervention (n = 29) (%)	Post-intervention (n = 64) (%)	Pre-intervention (n = 86) (%)	Post-intervention (n = 70) (%)		
Difficulty breathing	38	45	17	41	+24	0.001**
Poor or no feeding	79	58	20	23	+3	0.723
Baby feels too hot or cold	62	44	19	47	+28	0.000**
Provider counsels on						
Breathing difficulty	45	41	5	39	+34	0.000**
Feeding difficulties	62	56	12	50	+38	0.000**
Temperature control	62	58	8	50	+42	0.000**
Advises on infant feeding	100	97	59	97	+38	0.000**
Re-emphasize exclusive breastfeeding	100	92	51	75	+24	0.006**
Encourage mother to discuss management	82	56	32	56	+24	0.003**
Provider administers						
Polio	100	36	68	94	+26	0.0003**
HBV/DPT	—	—	58	88	+30	0.0002**
BCG	100	38	11	08	3	0.6138

^aP-value is derived from a Wilcoxon–Mann–Whiney test.

**P < 0.01 between pre- and post-intervention at 6 weeks.

birth, and to counsel women on potential signs of complications. These included bleeding since birth, colour/smell of vaginal discharge, condition of perineum/caesarean section scar, signs of thrombophlebitis. For the majority of consultations within 48 h and 2 weeks of delivery, women were asked about any bleeding since birth, the colour and smell of their lochia, although few asked about the condition of the perineum or signs of thrombosis (Table 3).

Most providers were observed counselling or giving messages to the mother at 48 h on the possible danger signs: excessive bleeding, foul smelling vaginal discharge and poor healing of perineum. During the consultations on the postnatal ward, all women had their blood pressure taken, four-fifths their temperature taken, but only one-third had their pulse measured. All postpartum women were palpated for uterine involution and virtually all were given a full physical examination.

In less than one-fifth of the consultations within 48 h were risk factors on prevention of sexually transmitted infections including HIV and condom use discussed, although providers did discuss the importance of partners counselling and testing for HIV during most of the consultations. At the 2 weeks consultations, providers were not likely to counsel on sexually transmitted infections/HIV risks, but some improvements were observed following the intervention at the 6 weeks consultations (Table 3).

Among women counselled on family planning, two or more methods were discussed in three quarters of the 48 h consultations and in two-thirds of the 2 and 6 weeks consultations. The majority of women (n = 64) chose a family planning method (83%) during the 2 week consultation. There was a significant increase from 35% (n = 86) to 63% (n = 70) where women were observed choosing a family planning method at 6 weeks. After the intervention, the lower level of family planning uptake during the 6 week visit than the 2 week visit (63 vs. 84%) is probably because many women attending the 6 weeks consultation had already received a family planning method before leaving the health facility after birth or during the 2 weeks visit. At the 2 weeks consultations, only 16% of the women observed were not using any form of family planning. Two-thirds of those practicing family planning at 2 weeks were using the lactational amenorrhea method (LAM), although few (4%) used a condom as well as LAM. Other methods used at 2 weeks included implants (4%), vasectomy (2%) and condoms (4%).

Table 4 compares the mean summary of quality of care for mothers and infants observed at 6 weeks both before and after the intervention. Overall, the total quality of care score doubled. The improvements in all aspects of quality of care are highly encouraging, but given the poor level of care found during the pre-intervention assessments the composite score after the intervention still falls short of the level desired.

Table 3 Maternal indices in postnatal clinic

Maternal indices	48 h After delivery		2 Weeks after delivery		6 Weeks after delivery		P-value ^a
	Post-intervention (n = 29) (%)	Pre-intervention (n = 64) (%)	Post-intervention (n = 86) (%)	Pre-intervention (n = 70) (%)	Post-intervention (n = 86) (%)	Pre-intervention (n = 70) (%)	
Provider asks about							
Bleeding since birth	76	61	92	42	70	39	0.001**
Colour/smell of vaginal discharge	93	72	49	7	49	41	0.001**
Condition of perineum	24	36	24	1	32	21	0.000**
Fever	38	33	67	35	52	20	0.000**
Provider carries out examination							
Observe general appearance	97	92	75	35	52	52	0.001**
Take temperature	79	49	79	7	49	49	0.000**
Take pulse	34	24	34	1	32	32	0.000**
Take blood pressure	100	83	100	34	75	75	0.000**
Check eyelids and palms for pallor	41	67	41	35	52	17	0.033*
Examine breasts/nipples	97	75	97	34	52	52	0.022*
Palpate abdomen for uterine involution	100	75	100	35	52	52	0.033*
Provider counsels on							
Return to sexual activity	69	50	69	16	45	45	0.000**
Return to fertility	83	49	83	32	67	67	0.000**
Family planning	86	83	86	12	40	40	0.000**
Healthy timing and spacing of pregnancies	86	-	86	7	40	40	0.000**
STI symptoms/signs	-	13	-	02	07	07	0.1369
Effects of STI/HIV in PP period	-	17	-	06	15	15	0.0643*
Presence of STI/HIV symptoms	-	10	-	02	03	03	0.8096
STI/HIV risk factors	21	14	21	07	18	18	0.0405**
Any signs of STI/HIV risk factors	17	10	17	05	04	04	0.9344
STI/HIV prevention	17	21	17	07	24	24	0.0035**
Use of condoms	21	14	21	08	18	18	0.0743*
Partner testing	79	37	79	13	26	26	0.0451**

^aP-value derived from a Wilcoxon–Mann–Whitney test.
 *P < 0.05 between pre- and post-intervention at 6 weeks only.
 **P < 0.01 between pre- and post-intervention at 6 weeks only.

Table 4 Comparison of mean summary quality of care scores for maternal and infant health observed during the 6 weeks consultations

Summary indices	Pre-intervention (<i>n</i> = 86) Mean score	Post-intervention (<i>n</i> = 70) Mean score
<i>Maternal health</i>		
Asking about danger signs since childbirth (0–4)**	0.34	1.11
Physical examination conducted (0–7)**	1.88	3.79
Counselling on HIV/STIs* (0–8)	0.51	1.15
Family planning (0–4)**	0.53	1.7
Total quality of care index for postpartum woman (0–23)**	3.26	8.27
<i>Infant health</i>		
Counselling on possible danger signs (0–3)**	0.24	1.39
Counselling on infant feeding (0–3)**	1.33	2.19
Immunizations received (0–2)**	1.25	1.76
Total quality of care index for newborn (0–11)**	3.37	6.45

Wilcoxon–Mann–Witney test used.

**P* < 0.05 between pre- and post-intervention at 6 weeks.

***P* < 0.01 between pre- and post-intervention at 6 weeks.

Discussion

This study sought to assess the quality of counselling following the introduction of an improved postnatal package that included postpartum family planning. The package incorporated essential maternal and newborn care in the first days after childbirth and at the same time provided opportunities to inform and provide appropriate family planning advice and methods (according to the breastfeeding status and time postpartum) at several points in time within 48 h, 1–2 weeks and at 6 weeks.

The comprehensive postnatal package was effective in improving the performance of most providers in the key component services of the postnatal care package, especially in terms of postpartum family planning. Significant improvements were noted in counselling for family planning and return to fertility at 6 weeks; an increase in the use of LAM immediately post-delivery and at 6 weeks; and use of the intra-uterine device at 6 weeks postpartum. The overall scores for quality of care remained relatively low but this was probably because the quality of care scores identified before the intervention was introduced were lower than had been anticipated. This conforms to study findings in Lesotho [15] and Swaziland [16]. Although all providers observed during this study provided services to postpartum women within their facilities, a number had not been trained in the formal Kenya family planning/reproductive health training program, indicating a nationwide gap that needs addressing. The weaker aspects of comprehensive postnatal care need increased attention. It is recommended that a strategy to roll out the package is implemented in line with the National Reproductive Health Policy (2007).

The void of comparable relevant data for programmes reveals the lack of systemic implementation of a postnatal package. Globally, there are no consistently measured

indicators of effectiveness for postnatal care [4, 12]. Apart from measuring the number of births that take place at home, the postnatal indicators in demographic health surveys give no information on the content or quality of a postnatal care visit. There have been no major studies, such as the multi-country studies carried out for focused antenatal care or the use of magnesium sulphate for management of severe pre-eclampsia and eclampsia, to identify the optimum timing and delivery of integrated postnatal services that include all aspects of essential maternal and newborn care and family planning [4].

In Kenya, to raise the standard of care still further, the postnatal care training package would benefit from having a stronger clinical skills component for managing maternal and newborn complications. The process of expanding postnatal care availability will require further consultation with and inclusion of key actors, which provides the opportunity for engaging with the pre-service training institutions and professional bodies to ensure institutionalization and standardization of targeted postnatal care. Linkages with PMTCT services, community strategies, as well as using focused antenatal care as the platform for strengthening the continuum of care are essential next steps [17]. In fact, the second prong of PMTCT (prevention of unintended pregnancies) is often ignored; therefore this comprehensive package goes some way to address the family planning needs of postpartum women living with HIV. Nevertheless, additional studies looking at the postpartum family planning needs for women living with HIV would be useful.

When addressing the gaps in quality of postnatal service provision, it is important to strengthen community linkages to continue the momentum towards creating awareness about the new postnatal consultations and services; the need to co-opt critical actors, such as male partners and mothers in law, community leaders and health committees,

community midwives, and community health workers [18] is also crucial.

Although the health facilities are typical of those found across Kenya, this study had some limitations. The contraceptive prevalence rate in Eastern Province is ~51% (with use of modern methods at 38%), which is higher than the national rate of 39% (modern methods 32%) [13]. The client–provider observations of postnatal care–family planning services for 48 h were only recorded at the maternity unit for the post-intervention group. Observations of services for the 2, 6 weeks and 6 months visits included clients that delivered at home who might have different needs or characteristics to women who delivered at the hospital.

The introduction of new comprehensive postnatal care package improved performance of providers in counselling in maternal and newborn complications, infant feeding and family planning. However because this is a generally neglected area, providers would benefit from additional clinical skills for managing maternal and newborn complications during the critical period following childbirth.

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4.2 Integrating quality postnatal care into PMTCT in Swaziland

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Integrating quality postnatal care into PMTCT in Swaziland

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Swaziland's prevention of mother-to-child transmission (PMTCT) programme is linked to maternal and newborn health (MNH) services, but is mainly focussed on HIV/AIDS. Existing MNH services are inadequate, especially postnatal care (PNC) of mothers and babies, with delayed postnatal visits occurring at 4–6 weeks after delivery. Fifty-seven percent of staff in seven Swazi health facilities were trained in promoting and providing early PNC. A final evaluation showed a 20-fold increase in the number of visits coming for an early postnatal visit (within the first three days after birth). A direct observation of the client–provider interaction showed a significant increase in the competence of the health workers related to postnatal examinations, and care of mothers and babies ($p < 0.05$ – < 0.01). The percentage of women breastfeeding within one hour of delivery increased by 41% in HIV-positive mothers and 52% in HIV-negative mothers. Cotrimoxazole prophylaxis for HIV-exposed infants increased by 24%. Although, health workers were observed providing counselling, maternal recall of messages was deficient, suggesting the need for additional strategies for promoting healthy behaviours. High-quality integrated PMTCT programmes and MNH postnatal services are feasible and acceptable, and can result in promoting early postnatal visits and improved care of both HIV-positive and HIV-negative mothers and their babies.

Keywords: integrated PMTCT and MNH care; postnatal; Swaziland

Introduction

Swaziland is a land-locked country located in Southern Africa between Mozambique and South Africa. With an area of 17,363 sq km, the country is divided into four administrative regions (Hhohho, Manzini, Lubombo, and Shiselweni), mostly comprised of mountains and hills, and has a total population of about 1,200,000.

The country has one of the highest rates of HIV infection in the world. Pregnant women and their children are most vulnerable to the pandemic. An estimated 39% of pregnant women are HIV-positive, giving birth to 17,000 HIV-exposed infants each year (Swaziland DHS 2007).

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Since 2003, the Ministry of Health and Social Welfare (MOHSW), in partnership with the Elizabeth Glaser Paediatric AIDS Foundation (EGPAF), has made significant progress in scaling up national programmes for the prevention of mother-to-child transmission (PMTCT) of HIV. Because 97% of all pregnant women in the country seek antenatal care (ANC) at least once, integrated ANC and PMTCT services provide an entry point for HIV testing and promotion of prophylaxis with antiretrovirals (ARV) for seropositive women during the last trimester of pregnancy and early labour, as well as for their infants after birth.

However, one of the main challenges for PMTCT programmes is follow-up, care and support of mothers and infants after delivery, which is the fourth prong of the World Health Organisation (WHO) PMTCT strategy (UNICEF, 2009).

In most countries, PMTCT programmes are linked with existing maternal and newborn services. However, they tend to remain vertical, focussing on HIV and AIDS. In many developing countries, routine maternal and newborn health (MNH) services are inadequate, especially those related to the postnatal care (PNC) of mothers and babies.

Very little attention has been given to the postnatal period, especially the first few days, which is the most vulnerable time for mothers and infants. Seventy-five percent of newborn deaths occur in the first week after birth, with 50% occurring in the first 24 hours (Lawn *et al.* 2005). After the first week, deaths are far fewer and more evenly spread in the last three weeks. Therefore, while it would be ideal to have an additional visit in the second week, in view of all the constraints, the priority should be on the first week, mainly on the first 2–3 days after birth. Moreover, there is new evidence suggesting that the biggest impact on neonatal mortality is achieved when the newborn is evaluated within the first two days after birth (Baqui and Wall, e-mail to author, 4 November 2008). Over 60% of maternal deaths also happen within 48 hours of childbirth (Lewis 2004). The estimated neonatal mortality rate and maternal mortality ratio in 2000 in Swaziland were 38/1000 live births (UNICEF 2008) and 370/100,000 live births (WHO 2007), respectively. In Swaziland, puerperal women and their babies are discharged early, usually within 12 hours of delivery. In other countries in the region, mothers and their babies may go home even earlier (some within two hours) and may also not be properly evaluated and counselled at the time of discharge. In addition, the conventional recommendation in these countries for the first postnatal visit is at 4–6 weeks, by which time the vulnerable neonatal period of four weeks with its high mortality is over, and most of postpartum maternal deaths have already taken place.

Recognising the need to improve the care and follow-up of all mothers and infants in the postnatal period, the Swaziland MOHSW, with support from the Horizons Programme of Population Council, Elizabeth Glaser Pediatric AIDS Foundation (EGPAF), the United States Agency for International Development with the Institutionalising Basic Support for Child Survival Project (USAID/BASICS) and the Swaziland Central Statistics Office (CSO), carried out an operations research project to reposition PNC within the context of a high-HIV environment. The objectives of the study were to determine if provision of timely and improved quality reproductive MNH services in the much neglected postnatal period would result in increased utilisation of postnatal services, and improve the care and follow-up of HIV-positive postpartum women and their infants.

Methods

Study design

The operations research used a quasi-experimental pre–post-test design to evaluate the effectiveness of the new PNC services. Since the postnatal visit within one week after delivery did not exist anywhere in the country at the pre-intervention phase, conclusions following the introduction of the new timing of PNC could be drawn using this methodology. The study population comprised of pregnant and newly delivered postpartum women attending ANC and postnatal clinics at selected health facilities. The pre- and post-intervention assessments were cross sectional, and quantitative data were collected from seven purposefully selected sites that were the only sites providing comprehensive PMTCT services supported by MOHSW and EGPAF in 2006. These services included all the components of the four prongs of PMTCT including the diagnosis in HIV-exposed infants (at the time of the study it was serologic at 18 months, currently it includes DNA polymerase chain reaction (PCR)). The sites included three hospitals: Raleigh Fitkin Memorial (RFM) Hospital, Mankayane Government Hospital and Mbabane Government Hospital and four Public Health/Maternal and Child Health (MCH) Units: the King Sobhuza II, and the RFM, Mbabane and Mankayane Clinics. Over 50% of the total population of the country (about 550,000) resides in the areas covered by these facilities (Swaziland High Commission of Ottawa, n.d.).

The intervention was a pilot project based on the request of the MOHSW to focus initially on facilities due to the fact that 75% of deliveries in Swaziland are facility based (Swaziland DHS 2007). Of those deliveries, 88% take place in the above mentioned sites (estimated 12,000 per year). Thus, the study sample was drawn from a large proportion of pregnant and postpartum women in Swaziland. Based on existing country data, 39% of these women were estimated to be HIV-positive (Swaziland DHS 2007). The MOHSW wanted to ascertain that the follow-up of HIV-positive women and their exposed babies after delivery was effective, and to ensure that these were linked to improved quality MNH services existing in these facilities.

To guide the design of the intervention, the MOHSW facilitated field visits by partners to identify current practices at health facilities including the organisational set up of MNH, PMTCT, and family planning services. Discussions with health managers and partners took place to identify key issues related to PNC. Health providers were consulted in order to understand their views about revising the postnatal visit. At pilot study sites, discussions took place with community groups – such as community health workers (rural health motivators) and pregnant and postpartum women – about the acceptability of and potential obstacles to early postnatal visits. The proposal was developed in consensus with the MOHSW and USAID/RHAP (Regional HIV and AIDS Programme) and granted ethical approval by the appropriate section in the MOHSW and the Population Council ethical review process.

Data collection

Baseline data were collected in February and March 2006, and endline data, in May 2007. The following different approaches were used: (a) interviews with

postpartum women and health providers; (b) direct observation of client–provider interactions in antenatal clinics, maternity wards and postnatal clinics; and (c) facility assessments with emphasis on existing resources, gaps and potential organisational changes required to provide appropriate care at postnatal visits.

With the assistance of the MOHSW, 20 data collectors, including nurses, midwives and research assistants were recruited and trained over a period of one week. The research tools were pre-tested, and appropriate changes were incorporated. The client questionnaire was also translated into Siswati. Informed consent was obtained from all respondents, who were assured that the information would be confidential. Supervisors checked all completed questionnaires for data quality and accuracy.

Data collection tools

Table 1 summarises the data collection instruments, and sample sizes used for the baseline and endline evaluations.

Sample size

In the absence of relevant data, the sample size was determined using monitoring data collected at the selected sites. The key indicators for determining sample size were: (a) number of women scheduling for first ANC visit; and (b) child immunisations at six weeks.

Data entry

Data were entered using Epi Info 6.04 and later converted to SPSS 12.0 for analysis. Pearson's Chi square tests were used to determine the significance of differences between the pre- and post-intervention results. A *p*-value of less than 0.05 was used as the threshold for significance.

Table 1. Summary of instruments used and sample sizes for baseline and end line.

Name of instrument	Required minimum sample size	Baseline	End line
Postnatal clinic exit interview (1–10 weeks after delivery)	300	356	346
HIV-positive	120 (30 from each site)	114	136
HIV-negative	180 (45 from each site)	162	191
Unknown status ^a		73	19
Postnatal ward client exit interview (within 24 hours)	60 (20 from each site)	–	94
Provider interview	50 (12 from each site)	54	35
Postnatal clinic observation	48 (12 from each site)	57	117
Maternity ward observation	60 (20 from each site)	61	62
Facility evaluation tool (three public health units, one maternal and child health clinic, and three maternities)	7	7	7

^aPostpartum women were interviewed as they left the facility.

Composite scores

In a number of instances, data were drawn from the client–provider observation tool, and mean scores were computed for each indicator and then aggregated across all indicators to give the composite score for quality of MNH care.

Likewise, data were also drawn from the provider interview, and mean scores were computed to give a composite score for knowledge. This method was used to demonstrate overall improvements in care and knowledge rather than focussing on individual elements.

Socio-demographics and characteristics of the facilities*Providers*

Of a total sample of 54 providers, the majority were female at baseline and endline (94 and 93%), and consisted mostly of registered nurse midwives (59 and 87% at baseline and endline, respectively). Others were nurses with varying levels of training. Fifty percentage of providers at baseline and 57% at endline had worked at their facility between one and three years.

Clients

Table 2 shows the demographic information of clients interviewed at the postnatal clinic at both baseline and endline by HIV status. In both the baseline and endline, and in both the HIV-positive and HIV-negative groups, 60–68% of women were 20–29 years of age. Significantly fewer women were cohabiting and significantly more women had completed secondary education or above.

Facilities

Prior to the intervention, the study sought to assess the availability and functioning of the basic infrastructure necessary for offering quality services even though the MOHSW could not improve some items (such as number of consulting rooms and some equipment) within the intervention period. An inventory checklist was used to generate a mean preparedness score for each facility to see how well equipped they were to provide ANC and PNC. Table 3 shows the availability of the key components.

All pilot facilities generally had the capacity to provide PNC. In general, rooms, equipment, medicines and supplies were available. The pre-intervention system did not encourage early PNC because it was only available separately for family planning (for women) and immunisations (for infants, six weeks after delivery). ANC services constituted a poor model for PNC due to the long hours pregnant women would spend at the facility as they went through multiple contacts.

Intervention

USAID/BASICS provided technical assistance to the MOHSW for implementing the intervention that was designed to provide improved quality PNC. This included

Table 2. Percentage distribution of postnatal mothers interviewed attending postnatal care at the time of the survey by demographic characteristics and HIV status.

	HIV-positive postnatal mothers			HIV-negative postnatal mothers		
	Baseline (<i>N</i> = 114)	End-line (<i>N</i> = 136)	<i>p</i> -Value	Baseline (<i>N</i> = 162)	End line (<i>N</i> = 191)	<i>p</i> -Value
Age						
15–19 years	16%	10%	0.138	21%	21%	0.913
20–24 years	32%	35%	0.727	37%	36%	0.860
25–29 years	32%	33%	0.801	21%	24%	0.565
30 years and older	20%	23%	0.618	21%	19%	0.617
Marital status						
Married	39%	43%	0.296	46%	51%	0.293
Cohabiting	22%	13%	0.047*	17%	11%	0.089
Single/other	41%	44%	0.647	37%	38%	0.899
Education						
Primary or lower	39%	30%	0.123	37%	27%*	0.037*
Incomplete secondary	46%	49%	0.647	36%	36%	0.969
Completed secondary or above	15%	21%	0.194	27%	38%*	0.036*

**p* < 0.05.

the integration of selected aspects of basic care for mothers and babies with HIV and AIDS services.

The intervention package was developed based on discussions with the MOHSW, site visits to the selected hospitals and clinics, EGPAF project reports and the baseline assessment. Health workers had previously received training on some elements of maternal health and family planning. Thus, based on gaps identified in the baseline assessment and due to constraints on time and budget, the package focussed on selected elements of PNC for women and essential newborn care. These included:

Table 3. Summary of health facilities' preparedness at baseline using the facility evaluation tool – distribution of the average score indices for training, services offered, equipment and drugs available.

Indices for key areas	Average score (<i>N</i> = 7)	Average score (<i>N</i> = 3)	Average score (<i>N</i> = 4)
(1) In-service staff training (0–23)	19.14	18.67	19.50
(2) Services offered (0–13)	10.14	7.33	12.25
(3) Equipment available (0–10)	9.14	8.67	9.50
(4) Drugs/vaccinations (0–21)	14.29	11.33	16.50

1. Immediate care after birth (within the first six hours after delivery).
2. Assessment and examination at least once a day during stay in the facility.
3. Assessment, care and counselling at discharge from the facility including provision of a specific appointment for first postnatal visit.
4. Postnatal visits:
 - a. Timing: The recommendations of the MOHSW included a first visit at one week and a second visit at 4–6 weeks. Advocacy was carried out to promote visits within the first three days of delivery and subsequent visits based on the requirements of the mother and baby, with a final visit between four and six weeks.
 - b. Content:
 - i. Selected aspects of maternal health and family planning, and essential newborn care (Narayanan *et al.* 2004a).
 - ii. Counselling on key aspects of preventive care at home, identification of danger signs and appropriate care seeking for the mother and the baby. In this preliminary phase counselling was carried out verbally without the support of visual aids such as counselling cards.
 - iii. Review of selected elements related to HIV and AIDS.

The implementation of the intervention package focussed on three key strategies: (a) capacity building of trainers, supervisors and health providers; (b) activities to facilitate organisational changes; and (c) supportive supervision, and monitoring and evaluation.

In order to maintain continuity and quality, the approach used for capacity building was a modified cascade method. Selected members of the trainers-of-trainers group continued to be involved in the capacity building of health workers in subsequent workshops together with the USAID/BASICS trainers to avoid some of the challenges of the cascade system. Due to the short duration of the intervention, while selected elements of service delivery such as some aspects of ANC, labour and delivery, family planning, PMTCT and HIV and AIDS care and treatment were included, the focus on this phase of the intervention was on components of essential newborn care as they were the newest elements.

Table 4 shows the characteristics of the participants and the timings for the trainings. In addition to those providers from project pilot sites, the MOHSW invited selected health care providers from non-intervention sites to participate in the training in order to facilitate the expansion of the intervention at a later stage. An initial link with the community was established through orientation of the national trainers of the Rural Health Motivators, where their potential role in PNC was discussed. Similarly, advocacy was carried out to integrate these activities with improved child survival and paediatric HIV services. However, in this preliminary phase, based on the request of the MOHSW, activities were focussed at facility level where three quarters of the deliveries were taking place.

The organisational changes facilitated during the intervention were: (a) assigning a room where the mother and the baby could be evaluated and cared for together including provision of immunisations for the baby and family planning for the woman; (b) provision of basic equipment and supplies needed for the postnatal services; (c) improvement of client flow by shortening waiting time as a result of

Table 4. Participants and timing of PNC training.

Level	Participants	Dates of training	Number
Central level	<ul style="list-style-type: none"> • Reproductive health programme manager 	July 2006	24
MOHSW core group of trainers or supervisors from central and regional level	<ul style="list-style-type: none"> • PMTCT focal person • MOHSW focal person for adolescent health • community health supervisors • Health promotion unit: Health education coordinator • Regional health focal persons • Regional matrons • Clinic supervisors • <i>Intervention sites</i>: Senior staff (matrons/sisters in charge) • <i>Academic institutions</i>: School of Midwifery, University of Swaziland, Nazarene Nursing School, Good Shepherd Nursing School 		
Pilot sites	<ul style="list-style-type: none"> • midwives, nurses, nursing assistants and community health nurses (attached to the clinics and trainers of community health workers in their area) 	August–September 2006; 81 October 2006; January 2007	
Pilot sites	<ul style="list-style-type: none"> • Physicians 	September 2006	15
Regional	<ul style="list-style-type: none"> • RHM trainers (all regions) 	March 2007	12

providing various services in one place by a single health worker who attended to both mother and baby at the same time; and to some extent; (d) appropriate allocation and limited rotation of the trained staff. Advocacy meetings with authorities from the MOHSW took place to request equipment and supplies, and to limit staff rotation, which happened very often.

Monitoring and evaluation consisted of two major processes. The first included a baseline and endline evaluation noted under data collection; the second approach, facilitated by USAID/BASICS, was an ongoing monitoring of quality of care as a part of monthly supportive supervisory visits by national supervisors. The health providers were evaluated for their competence using pre-defined checklists of key tasks such as implementation of the pre-discharge package, counselling and content of the postnatal consultations. Gaps identified were strengthened by appropriate on the job mentoring. Relevant data from the clinics and hospital registers were also collected. Inputs were given to add necessary information to the MCH card and the registers which had incomplete data on PNC. However, this could be done only to a limited extent as tools had a strong bias towards documenting care related to PMTCT.

Results

As the data base was very large, this report focusses on the most representative results. These are based on the tools that evaluated knowledge and attitudes of mothers and providers (through interviews), utilisation of services by clients (hospital and clinic registers) and competencies and skills of providers (client-provider interaction observations with predefined supervisory checklists).

Capacity building

A total of 132 health providers (57% of the sites' staff) were trained in the postnatal package. One hundred percent of the providers trained were providing maternal and child health (MCH) services. Training of the sites' remaining staff was not possible due to other conflicting activities resulting in the postponement of training programmes. Nine workers were brought in by the MOHSW from non-intervention sites to facilitate later expansion of the intervention. Among the personnel that were not trained, 77% reported that information was shared with them by their trained colleagues.

Providers' knowledge on PNC was evaluated using a multiple choice questionnaire as part of pre- and post-tests during the training sessions. The test results obtained showed that providers' scores improved by 16% after training. Participants expressed satisfaction with the content, methods, and facilitators and commented that their expectations were met by the training.

Organisational changes

The staff organised physical space at hospitals and clinics to provide discharge and PNC, respectively. The staff repeatedly highlighted the lack of equipment as a barrier to initiate the new postnatal package of services. Although, there was a system in place to procure equipment, it was perceived as such a lengthy procedure that health care providers rarely put in a formal request through it. However, with advocacy and repeated mentoring during supervisory visits, the staff began to perceive that most of the equipment required such as sphygmomanometers, weighing scales, and thermometers and furniture such as examination tables, was available at MCH clinics and warehouses and only required internal re-allocation/procurement.

Attendance at postnatal clinics

As shown in Figure 1, data collected from the postnatal registers during supervision indicated that postnatal visits within three days increased 20-fold and visits between four and seven days increased six-fold. Visits between two and six weeks after delivery increased four-fold; many of these were probably due to repeat visits, which cannot be corroborated since the clinic register design did not permit this differentiation. Anecdotally, women mentioned to providers that they felt that there was an improvement in the quality of care, which they greatly appreciated.

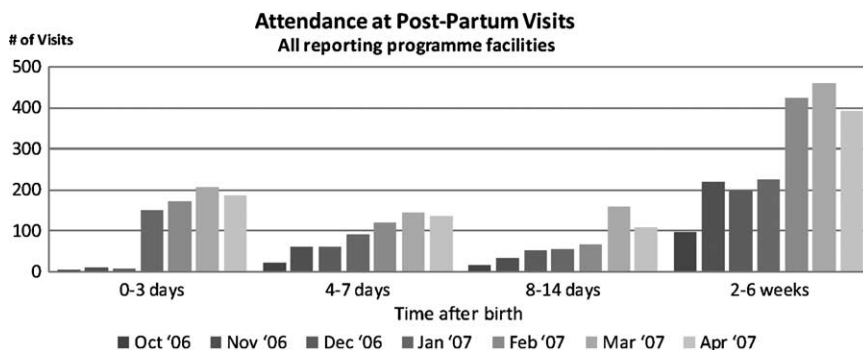


Figure 1. Attendance at post-partum visits.

Improvement in providers' knowledge

Essential maternal and newborn care

The results from health provider interviews demonstrated significant improvement in their knowledge of care and counselling related to the health of mothers and babies during their stay in the hospital and at discharge. There were significant increases (from 28 to 80% ($p < 0.01$)) among health providers who said they observed the breastfeeding technique before discharge, as well as those who said that they made sure that there was proper attachment of the baby at the breast (from 22 to 51% ($p < 0.01$)).

There was an improvement in providers' knowledge on some aspects of essential newborn care. For example, knowledge of the steps to maintain the baby's temperature at birth increased significantly, as shown in Figure 2. In addition, more providers said they would advise women on delaying the first bath. This increased from 22% at baseline to 49% ($p < 0.01$). Increase in knowledge of other elements of essential newborn care was not statistically significant (i.e., cord care 48–54%, eye prophylaxis 19–31%). Providers' knowledge of newborn danger signs also improved, from an average composite score of 1.78 at baseline, to 3.03 at endline (scale 0–5, $p < 0.01$).

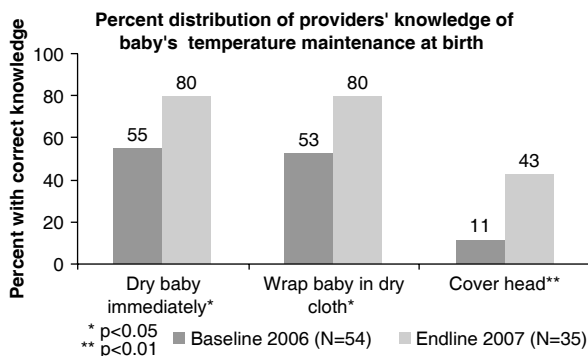


Figure 2. Percentage distribution of providers' knowledge of the baby's temperature maintenance at birth.

HIV and AIDS prevention, care and treatment

There were improvements in the providers' knowledge related to counselling of HIV-positive postpartum women on, for instance, regular monitoring of CD4 counts (from 41 to 74%, $p < 0.01$), follow-up in the early postpartum period for herself (from 2 to 49%, $p < 0.01$) and for the baby (from 24 to 51%, $p < 0.01$), and initiation of cotrimoxazole prophylaxis for the infant at 4–6 weeks of age (from 19 to 43%, $p < 0.05$).

Improvement in providers' competencies and skills*Antenatal visits*

Client–provider interactions were observed at antenatal visits in order to assess whether health providers were giving sufficient information to prepare pregnant women for the delivery and the postnatal period. Advice on infant feeding in the first antenatal visit increased significantly, from 35 to 63% ($p < 0.05$). There was a significant increase in pregnant women who were observed being advised to come for an early postnatal check up after childbirth (from 22 to 81% $p < 0.01$).

Postnatal care (PNC)

Among the interactions observed between the health providers and mothers who recently delivered, a number of positive trends were demonstrated. In almost all of the sessions (93%), women were assured of privacy, and in 68% of sessions they were greeted courteously. In 54% of consultations, women were specifically assured of confidentiality. During the majority of the observations, mothers were asked how they felt (96%) and were encouraged to ask questions (68%). The health care provider responded immediately to the problems of mothers and babies (68 and 64%, respectively).

As seen in Table 5, there was a significant improvement in the providers' assessment of the postpartum woman during consultations. Direct observation indicated that basic elements of the physical examination were carried out by a significantly higher proportion of providers at the endline.

Prior to the intervention, examination of the newborn was not carried out and was therefore, not assessed at baseline. At the endline, 97% of providers examined the infant, including weighing the infant (95%), measuring temperature (46%), assessing the cord (85%) and checking eyes for signs of infection (72%). Around two-thirds (67%) of providers were observed examining the newborn specifically for danger signs.

Provider performance was also monitored through the use of monthly post-training follow-up and supervisory visits. As shown in Figure 3, during these visits checklists that included sets of predefined tasks for each of the priority areas were used for evaluation. For each type of activity during the consultation, the health provider was expected to perform a predetermined number of tasks. The mean number of these tasks refers to the average number of actions performed correctly over the total number expected to be carried out. The results indicated that the health providers performed consistently well in the implementation of key activities related to the PNC of mothers and infants.

Table 5. Observations of providers care to postpartum clients – percentage of evaluated providers performing the task correctly (using the client–provider interaction observation checklists).

	Baseline (<i>N</i> = 50)	End line (<i>N</i> = 117)
Examination of the mother		
Blood pressure taken*	22%	78%
Temperature taken*	8%	30%
Palpation of uterus*	8%	77%
Breast examination*	12%	78%
Family planning		
Provider asks preferred method*	32%	82%
Client receives preferred method*	28%	70%
Counselling on maternal danger signs		
Broken perineal scar/tear*	25%	40%
Foul smelling vaginal discharge*	2%	53%
Excessive bleeding*	6%	54%
Counselling on newborn danger signs		
Red/pus around umbilicus*	2%	64%
Feeding difficulties*	10%	74%
Fever*	10%	78%
Hypothermia*	2%	48%
Breathing difficulty*	2%	53%
Counselling on STI/HIV		
Presence of STI/HIV*	2%	17%
Effect of STI/HIV in postpartum period*	6%	25%
Use of condom*	16%	46%
Information on PMTCT*	20%	54%
Counselling and testing partner*	14%	70%
Verification of care for STI/HIV		
Client on ART*	4%	15%
Newborn received nevirapine*	8%	32%
Mother received NVP in labour*	12%	32%
Mother CD4 tested since birth*	4%	26%

**p* < 0.01.

During these visits, the providers' knowledge and skills were reinforced on site by the supervisory team particularly where gaps were identified. It was also noted that trained staff shared information with other staff who had not received the formal training. Supervisors also included them in their on the job mentoring and capacity building.

Direct observation of client–provider interactions showed that health workers were more actively counselling mothers on different topics both at discharge and in the postnatal clinics. The proportion of health workers counselling and providing preferred family planning methods increased significantly, as shown in Table 5.

There was a significant increase in health workers counselling mothers about danger signs in themselves and in their babies. Table 5 shows the detailed indicators

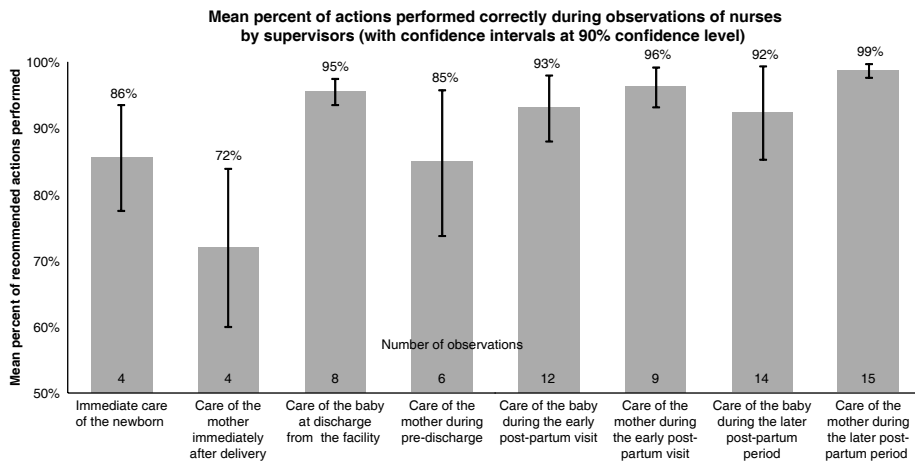


Figure 3. Mean percentage of actions performed correctly during supervisory visits (with confidence intervals at 90% confidence level).

for counselling on specific components of maternal danger signs. The table shows that there were also significant increases in the proportion of providers counselling for individual danger signs in the newborn.

Counselling on exclusive breastfeeding improved significantly (from 18 to 79%, $p < 0.01$). Provider performance regarding advice for other components of essential newborn care, such as temperature maintenance (46%) and cord care (62%), were only measured at the at endline assessment. Almost all women (93%) were counselled at discharge from the facility to return for the early postnatal consultation at the clinic and a specific appointment was given in 82% of cases.

HIV and AIDS

As shown in Table 5, there were notable increases in counselling and verification of care and treatment for HIV and AIDS during the postnatal clinic visit.

The proportions shown in the table regarding the use of prophylactic nevirapine (NVP) do not represent the total national coverage. They only show the proportion where providers verified that HIV-positive women received NVP during labour and discussed/counselled them on cotrimoxazole prophylaxis for themselves and their infants. The national NVP prophylaxis coverage during the study was 84–89%.

The proportion of HIV-exposed babies on cotrimoxazole prophylaxis in Table 5 is very low, probably because the analysed sample consisted mostly of women less than six weeks postpartum and therefore, the infants were not eligible to start prophylaxis yet.

Mother's knowledge and practices

There was a significant increase in the proportion of mothers who breastfed their babies within one hour of birth, both among HIV-positive and HIV-negative women (Figure 4). Among HIV-negative women, there was also a statistically significant

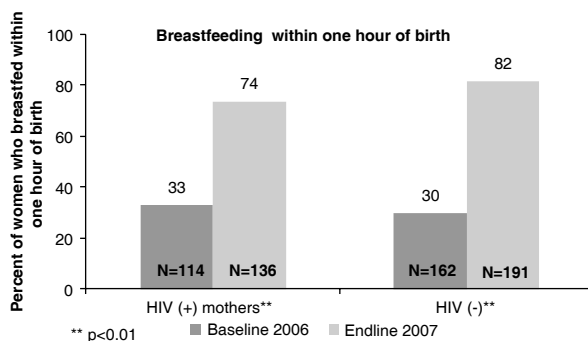


Figure 4. Proportion of postpartum women who breastfed within one hour of birth.

increase in the proportion practicing exclusive breastfeeding (from 49 to 65%, $p < 0.01$) and a decrease in the proportion giving replacement feeding to their infants (from 22 to 7%, $p < 0.01$). There was a reduction in the proportion of HIV-positive women that were giving mixed feeds, from 17–6% ($p < 0.01$). A significant increase (from 1 to 37%, $p < 0.01$) was found among the women who could recall that the health care provider in the antenatal clinic advised them to come back for an early postnatal visit.

Interestingly, even though there was an observed increase in counselling by providers, recall by mothers on having received information on basic care and danger signs for themselves and their infants showed no significant improvement. For example, at baseline the percentage of mothers who recalled being advised by health providers on hypothermia as a danger sign in the baby was 4% and it was almost unchanged at endline (7%). Similar results were obtained regarding receipt of advice on exclusive breastfeeding on demand (69% at baseline and 70% at endline).

HIV and AIDS

There was a statistically significant increase in the proportion of postpartum women (from 88 to 98% ($p < 0.01$)) and their partners (from 28 to 56% ($p < 0.01$)) getting tested for HIV. In addition, as seen in Figure 5, there was a significant increase in the proportion of HIV-positive mothers and their exposed infants who had started cotrimoxazole prophylaxis as recommended ($p < 0.01$).

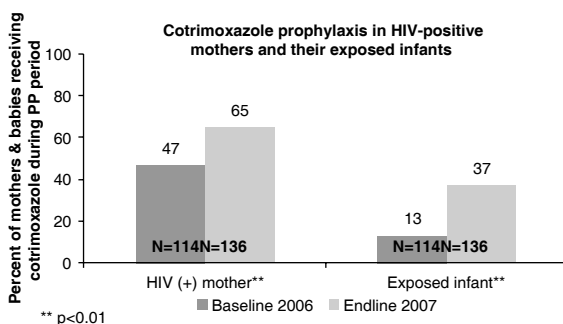


Figure 5. Use of cotrimoxazole prophylaxis for HIV in the postnatal period.

Discussion

Reduction in the large number of maternal and neonatal deaths in the first few days of delivery can be accomplished by proper care at birth, careful evaluation during the stay in the facility, assessment and counselling at discharge and early follow-up visits. There is recent evidence being reviewed for publication suggesting that an evaluation of newborns within two days after birth has significant impact on mortality (Baqui and Wall, e-mail to author, 4 November 2008).

The critical early postnatal period, with its large number of deaths, presents a number of challenges. Typically in Swaziland, as in most developing countries, postnatal visits take place late, at 4–6 weeks after birth. This has been influenced by two major factors. One is the set of existing cultural practices, which keep the mother and her infant in seclusion in their homes during this period. Even in the case of facility births, mothers and babies are discharged early and spend the subsequent period at home; the early discharge of mothers and babies is further compounded by the fact that they are not assessed adequately and counselled appropriately at this time. The other influencing factor has been that in the past, mothers have actually been called for the postnatal check-up only between four and six weeks. This visit in most cases tended to focus on advice for family planning and on immunisations for the infant.

This study has shown that by improving the quality of services in the facility, a careful assessment and counselling at discharge with provision of a specific appointment for an early visit resulted in a 20-fold increase in attendance at the postnatal clinic within the first three days. It has also shown that at the postnatal visit it is feasible for the mother and the newborn to be evaluated and cared for by the same provider at the same encounter within 72 hours, and once again at six weeks. It is possible that an even earlier first evaluation at two days and an additional visit at the end of the first week would be valuable.

The emphasis on careful evaluation of mothers and babies by a health provider before discharge presents an excellent opportunity to identify and address problems, counsel on essential care, and specifically provide the first follow-up appointment for the early visit. The first postnatal consultation also provides a valuable opportunity to assess and strengthen infant feeding, identify and address danger signs, reassure and counsel the mother on essential preventive care for herself and the baby, and promote appropriate care seeking for subsequent problems. As shown in the study, it also presents an opportunity to promote family planning and care and follow-up for both HIV-positive and HIV-negative (or unknown status) postpartum women and their infants.

While formal capacity building through a conventional workshop and on the job training are useful, as shown in this study and in earlier experiences in a Senegal USAID/BASICS newborn health programme (Ndoye *et al.* 2004), the follow-up, supportive supervision, and mentoring are essential. Use of predefined checklists clearly outlining all critical steps and activities related to specific tasks has been found to be extremely useful. Such checklists have also been found to be useful as learning guides (Ndoye *et al.* 2004).

Improved quality of care and support had a benefit on some of the maternal behaviours, such as breastfeeding. Breastfeeding is culturally a part of Swazi life, but the HIV epidemic has created confusion, particularly as feeding recommendations

have changed over the last decade. Although, replacement feeding is indicated in appropriate cases, very often in many of the countries in this region, it is not acceptable, feasible, affordable, sustainable and safe (AFASS). The highest risk of mother-to-child transmission of the HIV virus during breastfeeding is related to mixed feeding practices. The level of mixed feeding was significantly reduced by appropriate counselling in this study. Ideally, such counselling, including discussions on infant feeding options for the HIV-positive mother, should be an essential topic for discussion during the entire ANC period. The mother is then likely to be more prepared at the time of delivery to avoid unnecessary delays in making a suitable choice, and commencing breastfeeding early where relevant. Early initiation of breastfeeding is a very important strategy, as recent studies have shown that 16% of neonatal deaths could be saved if all infants were breastfed from day one and 22% could be prevented if breastfeeding started within the first hour (Edmond *et al.* 2006). A similar study in rural Ghana clearly showed an association between early breastfeeding and the reduction of newborn mortality from sepsis, which is the leading cause of death in the newborn period (Edmond *et al.* 2007).

One of the most challenging findings in this study was that postpartum women were not always able to recall receiving information given to them during the postnatal consultations. Despite the fact that there was a significant increase in health provider counselling on key messages related to essential care and danger signs in the postnatal period, there were many instances in which women could not repeat the information provided at the consultations. This finding has not been uncommon in other programmes. Findings from USAID/BASICS' earlier work in Senegal (Ndoye *et al.* 2004), showed that mothers' recall could be improved by mobilising additional less skilled staff such as the *matrones* and other community health workers such as the *relais* to reinforce messages, using visual aids such as counselling cards and other tools. It is also possible that mothers may relate more readily to less skilled workers and community health agents, with whom they may feel more comfortable to ask questions and discuss some of their concerns. Additional support to interpersonal communications through mass media was also found to be beneficial. It is also important to improve the counselling skills of all categories of health workers; merely informing mothers and families may not be enough, and time needs to be spent on negotiating the desired healthy behaviours both at the facility and community levels.

For the reasons already outlined above, this study focussed on facility-based activities. However, there is need to address the above issues at the community level for both home deliveries and for mothers discharged after facility births. Besides appropriate care at delivery, the mother and baby should be carefully assessed by the birth attendant before he or she leaves the home. This should be followed by at least one early assessment (within 48–72 hours) ideally by a skilled health provider, or at least by a trained community health worker/volunteer. Follow-up visits should be instituted as required. Thus, the capacity of community health workers, such as the Swaziland Rural Health Motivators, should be strengthened to enable them to provide suitable services in the postnatal period. These could include counselling during home visits focussing on preventive home care, identification of danger signs and appropriate care seeking. Community mobilisation strategies (Osrin *et al.* 2004) and linking of community and facility-based activities can go a long way in promoting healthy behaviours. There used to be a functioning network of about 2000

traditional birth attendants (TBA) in Swaziland trained by the MOHSW a decade ago. Results of that intervention were not available for review. A recent meta-analysis has shown that training TBA does not have an impact on maternal mortality, but some improvement in newborn outcomes was demonstrated (Sibley and Sipe 2004). Therefore, further evaluation is required to determine the types of community-based interventions that will be most appropriate for the country. Following this study and based on advocacy from implementing partners, the MOHSW has accepted including community-based activities in the follow-up programmes.

This study has highlighted the benefits and feasibility of integrating PMTCT programmes with *improved quality* MNH services. Improvements in HIV/PMTCT services during ANC have been documented by the MOHSW and can be attributed mainly to the existing national PMTCT programme. However, some aspects of care and treatment after delivery improved as a result of the integration of PMTCT and routine MNH services during the postnatal period. For instance, during the study, nearly all postpartum women reported knowing their HIV status and a significant proportion of their partners were tested. There was also a significant improvement in the uptake of cotrimoxazole by HIV-positive mothers and their exposed infants. Services should be further extended to have an integrated programme with quality child survival interventions and paediatric HIV services as a part of family centred care.

Even as evidence shows that maternal deaths related to HIV are rising (Gray and McIntyre 2005, McIntyre 2005), in most countries the main causes of maternal deaths in the early postpartum period are still postpartum haemorrhage, sepsis and eclampsia, all of which remain grossly unaddressed. The neonatal period is unique in that, although, HIV infection in the mother will impact the health of the baby, practically all deaths in this period are due to non-HIV causes, and include sepsis, asphyxia and complications of prematurity. In this context, it becomes critical that the investment made in PMTCT programmes to prevent transmission of the virus to the baby should not be lost by a high proportion of babies dying of other far more common causes in the critical newborn period (Narayanan *et al.* 2004b).

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4.3 A cross sectional comparison of postnatal care quality in facilities participating in the maternal health voucher programs versus similar control facilities in Kenya

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A Cross Sectional Comparison of Postnatal Care Quality in Facilities Participating in the Maternal Health Voucher Program versus Control Facilities in Kenya

Short title: Vouchers and quality of postnatal care in Kenya

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Abstract

Background: Many women and newborns die in the first week after childbirth. Health service fees constitute substantial barriers to women seeking care during and after delivery. In an effort to reduce inequities in health, the Kenya government introduced the output-based approach (OBA) or voucher program in 2006 to increase the purchasing power of poor women to obtain quality maternal and newborn health services including postnatal care (PNC) by accrediting health facilities in three districts and two informal settlements in Nairobi. OBA and results-based finance (RBF) initiatives attempt to improve service delivery through a combination of demand and supply incentives and subsidies. OBA programs typically purchase services on behalf of the poor and marginalized, whereas many RBF schemes offer incentives to providers to improve a range of supply-side indicators for structural and process quality.

Methods: Cross sectional data collected in 2010 are used to compare the quality of PNC in voucher health facilities (n=21) accredited in 2006 with similar non-voucher health facilities (n=20). Data were analyzed using Stata 11.0. Summary scores of quality were calculated as the additive sum of items representing specific aspects of each attribute (structure, process and outcome) and used to demonstrate the overall quality score. Measures of effect were assessed using a linear regression model accounting for clustering at facility level.

Results: The overall quality of PNC is poor across voucher and non-voucher facilities. However, many facilities demonstrated a 'readiness' to provide PNC in the structural attributes (infrastructure, equipment, supplies, staffing and training) as indicated by high scores (83/111), with public voucher facilities scoring higher than non-voucher public facilities. There were no significant differences between voucher and non-voucher facilities on the average process scores for PNC consultations 14.2/55 in voucher facilities versus 16.4/55 in non-voucher facilities coefficient: -1.70 (-4.9, 1.5), $p=0.294$. In terms of outcome, more newborns were seen within 48

hours (83.5% versus 72.1%: $p=0.001$) and received BCG (82.5% versus 76.5%: $p<0.001$) in voucher facilities than those attending non-voucher facilities.

Conclusions: Four years after accreditation of facilities in Kenya, the most significant outcomes include more newborns attend voucher facilities receiving a 48-hour postnatal check and BCG than those attending non-voucher facilities. However, the overall scores for the quality of PNC in all facilities were low even where a “Safe Motherhood” voucher exists. We recommended that the Kenya Voucher program review the reimbursement package for PNC services to improve the quality of care during this critical period. We also recommend that the program draw lessons from supply side results-based finance (RBF) initiatives to systematically improve quality of care across facilities.

Key words: postnatal care, voucher, quality of care, structure, process and outcome

Background

It is estimated that 60 percent of the 270,000 maternal deaths each year occur within the first 48 hours after delivery and two thirds of the three million newborn deaths occur in the first week [1, 2]. Early treatment in the postnatal period could save more lives and support the adoption of healthy behaviours [3]. However, this period is largely neglected and women and their infants rarely receive optimal postnatal care (PNC) [4].

Poverty and inequity are two of the main underlying causes of maternal and newborn deaths in low and middle income countries [5]. Formal and informal fees in the provision of healthcare services during pregnancy, childbirth, and the immediate postnatal period constitute a substantial financial barrier to poor women [6-8]. To address these challenges, governments and donors have been prompted to find innovative ways of increasing access to maternal and newborn health (MNH) services through subsidised consumer led demand for quality services [9-12]. These innovative approaches include vouchers and strategies that incorporate supply and demand components like the output-based approach (OBA) and have demonstrated increases in service utilisation among the target population [6, 11, 13, 14].

A primary objective of OBA or voucher programs is to increase utilization by improving the purchasing power of high priority populations such as the poor and under-served women. A secondary objective of voucher programs is to improve quality through reimbursements to providers for verified service delivery. The service reimbursement links pre-defined quality or quantity indicators to financial reimbursements and through competition with other providers or health facilities (public or private), thereby motivating improvements in equitable access to and quality of health services including PNC [13, 15]. Other results-based or performance-based

financing strategies focus on incentives for quality improvements that may not accelerate uptake of services among the poor and marginalized [16, 17].

In Kenya the maternal mortality ratio and newborn mortality rate are 488/100,000 live births and 31/1000 live births respectively [18]. Over 90% of women attend antenatal care (ANC) at least once; 44% give birth with a skilled attendant and 47% receive PNC [18]. Of these 42% women said they received a health check within the first two days, although there were no data on the content of the PNC received. Births of higher order and those in rural areas are less likely to receive PNC than those of lower order and those in urban areas. Generally the most important characteristics of women associated with receiving PNC include higher wealth status and having received ANC[18, 19]. Results from the 2010 Kenya service provision assessment (SPA) indicate that only 59 percent of facilities (up from 34% in the 2004 SPA) offer PNC services (compared to 74 percent offering ANC services). Although it is mentioned that targeted PNC has increased emphasis on the first 48 hours after birth and includes check-ups up to one year, there is no specific module for PNC in the SPA apart from some information in the ANC module [20].

Financing strategy to improve quality of maternal and newborn health services in Kenya

In 2006, the OBA Voucher project in Kenya introduced a safe motherhood (SM) voucher to reduce maternal and neonatal mortality. The OBA is intended to increase the quality and improve access to appropriate MNH services for the poor through subsidized service purchase contracts with public and private providers [21-23]. The Ministry of Health (MoH) oversees the implementation of the voucher project, which is supported by both the German Development

Bank (KfW) and the Government of Kenya [11, 13]. The day-to-day management of voucher distribution, health facility claims, and reimbursement is conducted by the Voucher Management Agency (VMA), a contracted third party private agency [13]. Criteria for accrediting public, private, and faith based facilities were developed by the voucher project, adapted from existing national standards and guidelines and reviewed annually [21, 22].

Accredited health facilities are reimbursed for services rendered to each voucher holder. The only input provided by the OBA program for participating facilities is training for the voucher reimbursement process with the VMA. In theory, health managers then use the disbursed funds to improve their facilities to have a competitive edge to encourage uptake of services (by both voucher holders and the general population) through procurement of additional equipment, medicines and supplies, building extensions, improving existing buildings, water source, electricity and other services and updating health care providers in essential obstetric and newborn skills [24].

Those benefiting from the voucher are economically disadvantaged women of reproductive age from Kisumu, Kitui and Kiambu counties and in two informal settlements in Nairobi County (Korogocho and Viwandani). Community based distributors who are appointed by the VMA sell the SM vouchers at a subsidized cost of Kshs 200 (equivalent to US\$2.50). The distributors use a poverty grading tool to identify poor women who may qualify for the SM voucher. The tool consists of eight items on household assets and amenities, expenditure or income and access to health services that are unique to each county. Any woman scoring 8-16 points qualifies for the

voucher. The design of the overall Kenya OBA voucher program is described in detail elsewhere [21, 23].

The SM voucher subsidises four antenatal visits, labour and delivery, including complications and caesarean section and PNC up to six weeks [25]. There is a voucher for each of the four ANC visits and one for facility based childbirth; however, it appears that there is no specific voucher or reimbursement for PNC as it is considered part of the delivery care package. The voucher program offers two other vouchers: one to increase access to long acting and permanent family planning methods and the other for access to gender based violence recovery services, but these are not discussed in this paper [11, 26].

Although evidence suggests that voucher programs (including the Kenya program) have the potential to both increase utilization of reproductive health services [6, 10, 14] and to improve quality of care (QoC) [25, 27-29], none have specifically looked at the effect of SM vouchers on the quality of postnatal care. This paper attempts to fill that gap by comparing health facilities enrolled in the Kenya OBA program for four years between 2006 and 2010 with a comparable cross-section of facilities with no contract for voucher clients (“non-voucher facilities”). The study hypothesized that the quality of PNC services in voucher facilities will be equal to or greater than the quality of the same services in non-voucher facilities.

Methods

This paper uses data from a larger quasi-experimental design aimed at evaluating the impact of the Kenyan OBA voucher scheme on increasing access to, and quality of, selected reproductive health (RH) services by comparing voucher-accredited health facilities with non-voucher facilities in counties with similar characteristics at two time points. The study methodology for the Kenya OBA voucher program evaluation is described in detail elsewhere [30]. We use cross sectional data collected in 2010 to compare quality of postnatal care from health facilities that had been accredited by the Voucher Program since 2006 with similar non-voucher health facilities. These are referred to as Phase I facilities participating since the program's inception in 2006 and had participated in the program for at least four years at the time of the first round of data collection in 2010. We compare key outcomes of quality of PNC with similar non-voucher facilities.

This design was chosen as there was no random assignment of health facilities to intervention (voucher) or comparison (non-voucher) sites [30]. This was because the voucher sites were identified by the MoH and KfW based on service gaps and the need to increase coverage and availability of services to low income populations and populations in remote settings. Facilities in the targeted counties were approached to participate and were contracted if they met the accreditation criteria. Population Council in conjunction with MoH selected similar neighbouring counties and identified similar non-voucher facilities to maximize the likelihood of the populations having similar social, cultural, economic characteristics, and having similar reproductive health and healthcare seeking behaviours among women aged 15 to 45 years as the comparison group [30]. The comparison facilities had similar characteristics to the voucher

facilities in terms of type of practice, professional skills mix, profile of clientele, location, fees charged and services provided including the level (hospital, nursing home or health centre) and type of ownership (public, private, faith based or non-governmental organisation)[30].

Study procedures.

This paper uses quantitative data drawn from health facility assessments (HFA) conducted in 41 health facilities (20 public, 21 private-for-profit or faith-based). The twenty-one voucher facilities were randomly selected from 56 accredited health facilities across the three counties (Kiambu, Kisumu, Kitui) compared with 20 facilities from three non-voucher counties (Nyandarua, Uasin Gichu and Makueni). The health facility assessments used the following study tools:

Facility inventories: includes a checklist to observe availability of infrastructure, equipment, commodities, medicines, supplies, number of staff, provider training and services provided (n=41).

Interviews with 163 maternal health care providers: All MNH providers working in the facilities during the data collection period were approached and permission requested to interview them. Based on normal staffing levels, we expected that four to eight providers would be eligible to participate in the hospitals and between two and four at health centres. This was expected to give around 80 providers in each group (Total 160). A total of 90 providers from voucher facilities and 73 in non-voucher facilities were interviewed. Providers were asked questions on technical competence, knowledge, skills and time-utilization during the postnatal period.

Observations of 794 client-provider interactions (CPIs): The CPI encompasses both the process (how clients are treated and whether they actively participate) and the content (what they are told, technical competence, accuracy of information, provision of essential information) of a consultation. Trained research assistants with a clinical background observed postnatal consultations using a checklist to assess the process of PNC clinical consultation. Subsequent sessions for which consent had been received were observed for 18 PNC clients in each facility (a total of 360 expected). A total of 499 PNC consultations were observed in voucher facilities and 295 in non-voucher facilities. Fewer clients in non-voucher facilities attended during the data collection period.

Exit interviews with 728 postnatal clients: Research assistants interviewed women as they exited from the PNC consultation. The focus was on information and counselling received, fertility desires and uptake of postpartum family planning. A total of 484 exit interviews were conducted in voucher facilities and 244 in non-voucher facilities.

Ethics

Ethical approval for the evaluation was granted by Population Council's Institutional Review Board (IRB) No. 470 and Kenya Medical Research Institute (KEMRI) SCC 174. All women attending PNC services during the data collection period were asked permission to observe their consultation and to be interviewed afterwards. Informed consent was obtained prior to all interviews that were conducted in settings that ensured privacy and confidentiality. Participants were informed they could withdraw from the research at any time. Data collectors were trained on ethical conduct.

Quality of Care (QoC) framework and development of scores

A definition of and framework for QoC was adapted from Donabedian and Bruce using three overall elements of quality categorized into structure, process and outcome [31, 32]. The QoC elements were assessed using data from health facility inventories, provider interviews, client – provider interactions, and client exit interviews (Box 1). Total scores were developed for the essential components required to provide quality care. For example we defined the minimum list of equipment required to provide postnatal care services, based on MoH guidelines [33, 34] and in consultation with MoH providers, which includes seven items: a working blood pressure machine, stethoscope, spotlight or flashlight or examination light, an examination couch, baby weighing scales, adult weighing scales and an autoclave or other sterilizer.

To develop an overall quality score, a composite scoring system was generated by combining several indicators into a single score [35]. There are two methods of generating composite quality score (CQS). The “Opportunity Model” is based on the percentage of functions (“quality indicators”) actually performed relative to the total number of targeted ones [36]. The objective is to calculate how many of the targeted functions are actually achieved. For instance, if a total of 125 functions, out of a targeted total of 250 functions, were performed on 10 clients, then the CQS should equal 0.5 ($=125/250$). Typically equal weighting is assumed for each function, which helps to derive an aggregate CQS covering all underlying functions. The second method is the “Grading Model”, which is based on a pre-defined criteria system. For example, in Zambia, a national assessment of the quality of ANC classified all the health facilities into three grades of “optimum”, “adequate”, or “inadequate”, using a set of criteria covering access to care,

responsiveness and appropriateness, continuity of care, patient safety, as well as effectiveness and efficiency [37]. We use the Opportunity Model due to ease of interpretation. This model gives detailed scores for each function, group of functions, and the aggregate level. Thus, it allows for easier comparison both within (e.g., among indicators or groups of indicators) and across groups of interests (e.g., among facilities, sub counties), whereas for the Grading Model it would be difficult to differentiate two groups that are both given the same grade.

<<<Insert Box 1 here>>>

To measure the readiness of a facility to be able to provide quality PNC, the attributes (infrastructure, equipment, commodities, drugs and supplies required for anyone to provide comprehensive PNC) are added with equal weights to create a summative structural score with a maximum of 107 points. The facility inventory study tool recorded these as well as human resource elements such as: staffing numbers and the appropriate constellation of services available. An additional summative score of 32 for provider knowledge and training on maternal, newborn healthcare and postpartum FP (including receipt of technical updates) was incorporated into the structure score - making a total of 139. This data was drawn from the health provider interviews.

<< Insert Table 1 here>>

The process attributes of quality, based on national and international standards [33, 38, 39] were analysed using data from observations of client – provider interactions during the postnatal consultations. Using the same methodology described above, summary process attributes on

technical competence with equal weights (total score of 47 elements) were derived from the observation checklist of the client-provider interaction. They include how the provider performed in history taking, physical examination of mother and baby, counselling on: maternal and newborn danger signs; return to fertility and healthy timing and spacing of pregnancies; infant feeding; risk assessment and management of STI/HIV; and documentation. Interpersonal relations (score between 0-8) including privacy and confidentiality during consultation, and rapport between client and provider were also captured (Table 1).

Outcome attributes focus on the postnatal clients' experiences and perceptions of QoC, including waiting times, perceived respect, clients' understanding and knowledge; whether they asked questions during the consultation, ability to ask questions, range of services received and mechanisms to encourage follow up appointments (Table 1).

Data analysis

Quantitative data were double entered using Epidata and exported to Stata 11 for analysis. For each component of QoC: structure, process and outcome, summary scores were calculated as the additive sum of items representing specific aspects of each attribute (as defined above) and these were used to demonstrate the overall quality score. Two-tailed unpaired t-tests with unequal variance were also used to evaluate group differences in the average process scores comparing intervention and comparison groups. A p-value of less than or equal to 0.05 was used as the threshold for significance. Pearson's chi-square tests were used to evaluate differences in

proportions for various patient-reported outcome measures which included waiting time to see provider, time spent with provider, and patient reported satisfaction.

To assess measures of effect, a linear regression model was used for individual and summative process quality score outcomes. We controlled for clustering at facility level, type of provider as defined by public or private provider and level of care (hospitals and sub district hospitals versus dispensaries, nursing homes and clinics). In all instances we report coefficients with their 95% confidence intervals (CI) and the p values for the coefficients for all three models.

Results

Characteristics of women attending postnatal care

The average ages (25.6 years) of postnatal women observed and interviewed were similar at voucher (n= 451) and non-voucher facilities (n= 237). There were no significant differences [p=0.327] in education between the two groups; most women reported completing primary (51.9%) or secondary school (31.6%). Around 82.2 percent of women attending voucher facilities were married compared to 87.0 percent of women at non-voucher facilities [p=0.078] (Data not shown). There were no significant differences between the poorest women (bottom two quintiles) attending voucher facilities and non-voucher facilities (32.6% versus 39.3%; p=0.077). However, significantly more women attending voucher facilities than women attending non-voucher facilities said they would find it very difficult (31.3% vs. 9.5%) or difficult (50.1% vs. 45.7%) to pay a health bill of more than 1000 Kshs (US\$12) [p<0.001] (data not shown in tables). Fifty seven percent of clients attending voucher facilities used a SM voucher. The two

main reasons why women attended for PNC services were for PNC for themselves and immunisations for their babies. Significantly more women at voucher facilities attended for infant immunisations than woman at non-voucher facilities (64.4% versus 60.7%; $p<0.001$) and fewer for PNC services (19.5% versus 25.6%; $p<0.001$) (data not shown).

Characteristics of health facilities

The types and levels of facilities assessed are described in Table 2. The different staffing cadres in the two groups of facilities were similar apart from the fact that more medical doctors were available in the voucher facilities. The postnatal consultations were mainly carried out by two different cadres of nurses. There were no significant differences ($p=0.503$) in registered nurse/midwives conducting the PNC consultations at voucher facilities (68.0%) and non-voucher facilities (61.3%) but significantly fewer enrolled nurse/midwives conducted the PNC consultations at voucher facilities (23.1% versus 30.6% $p=0.021$) (data not shown).

<<<Insert Table 2 here>>>

Structural attributes of quality: supplies and commodities

Overall the availability of infrastructure, staffing, equipment, FP commodities, medicines and supplies across all facilities had no significant differences (Table 3). Of the 111 features assessed, voucher facilities had 69.4% of all infrastructural features compared to 68.8% in the non-voucher facilities. An additional analysis using linear regression model shows non-significant scores with voucher facilities scoring 2.4 points more compared to non-voucher

facilities (coefficient 2.49: 95% CI (-5.29, 10.28); p=0.520). Voucher accredited public health facilities had higher mean scores than non-voucher public health facilities: 91.7 versus 83.2; p=0.091, with the regression model indicating a significant difference of a 9.24 point score higher than private facilities (coefficient 9.24: 95% CI (1.3, 17.2); p= 0.024. This is illustrated in figure 1.

<< Insert Figure 1 here>>

Structural attributes of quality: provider knowledge and reports on information they provide to postnatal women

Providers said they received training on relevant MNH care with no difference between facility groups (Table 3). There were also minimal overall differences between health care providers’ knowledge on aspects of postnatal care in voucher and non-voucher facilities. While assessing reported provider practices, significantly more providers at voucher sites (than at non-voucher facilities) reported that they counsel women on the importance of early initiation of breastfeeding (54.0% vs. 38.4%: p = 0.048) during postnatal consultations (data not shown). There were very few differences between providers’ reports on what maternal danger signs they advise postnatal women on in the voucher and non-voucher sites, apart from significantly more voucher facility providers reported they counsel women on signs of severe pre-eclampsia (44.2% versus 26.0: p = 0.017) in the immediate postnatal period (first 2-3 days after birth). Conversely, more providers at non-voucher facilities reported giving information on FP to postnatal women (83.6% vs. 67%: p = 0.017) (data not shown).

<< Insert Table 3 here>>

Process attributes of care: technical aspects

Data shows that the overall composite scores derived from the observations of PNC consultations for the process attributes of postnatal care were generally low for both groups of facilities. There were lower scores in voucher facilities; 14.2 out of the 55 elements assessed compared to 16.4/55 in non-voucher facilities $p=0.0001$ (Table 4). Regression analysis indicates that voucher facilities scored 1.7 percentage points lower than non-voucher facilities but these were not statistically significant: Coefficient -1.70 (95%CI) (-4.9, 1.5), $p=0.294$ (Table 5). There were also no significant differences between public sector facilities versus private facilities and hospitals versus lower level facilities such as health centres and dispensaries.

<< Insert Table 4 here >>

For individual elements assessed in Table 4, non-voucher facilities appeared to have higher scores in history taking practices, fertility advice, infant feeding advice and infant danger signs discussed, although these scores were not statistically significant when controlled for clustering. However public sector facilities did have 0.54 points higher scores for STI/HIV risk assessment compared to private facilities; coeff. 0.27 (95%CI) (0.06, 0.48) $p=0.01$ (Table 5).

<< Insert Table 5 here >>

Process attributes - interpersonal skills

There were significant differences in the average scores observed for building rapport, with the providers observed at voucher facilities scoring significantly lower than non-voucher facilities

(mean score 4.1 versus 4.4 out of 7: $p=0.006$). However, there were individual variations on the seven aspects of building rapport. For example, in voucher facilities more providers were observed using the client's name but fewer were observed greeting the women or ensuring privacy or confidentiality (data not shown in tables). While comparing performance of public and private providers, those working in public facilities scored 0.96 points lower than private providers in building rapport during PNC consultations: coeff. -0.96 (95%CI) (-1.61, 0.32) $p=0.004$ (Table 5).

Outcome attributes

Table 6 demonstrates some significant differences in the waiting time among women from voucher and non-voucher facilities but not time spent with the provider. Women attending PNC at voucher facilities were more likely to have delivered their babies in a health facility compared to women at non-voucher facilities (88.7% versus 77.8%; $p=0.001$) (data not shown in tables). More women (not significant) and newborns (significant $p<0.001$) at voucher facilities were seen within 48 hours of childbirth (Table 6). Only 16 percent of woman interviewed at voucher facilities and 17.7 percent of women at non-voucher facilities were interviewed leaving the maternity unit indicating a high proportion of women returning to access care within 48 hours of birth. Similar proportions of women received the FP methods that they preferred and most commonly received injectables and progestin only pills.

Significantly more newborns of women at voucher facilities were immunised with BCG than at non-voucher facilities (82.5% versus 76.5%; $p<0.001$) (data not shown in tables). Around 87

percent of women said they were satisfied with the treatment they received on the day of interview. Voucher holders had used their vouchers to access ANC (74.8%) and delivery services (87.0%), but fewer than half used the voucher for PNC (48.5%).

<< Insert Table 6 here >>

Discussion

The analysis presented here aims to understand the influence of maternal health vouchers on the quality of postnatal care by comparing public, private and faith-based health facilities which had been enrolled in the Kenya OBA program for four years (from 2006 - 2010) with a group of facilities with similar characteristics and no access to vouchers. We used a QoC framework adapted from Donabedian and Bruce that groups elements or attributes into structures, processes and outcomes of postnatal care [31, 32]. Key indicators of interest include the readiness of facilities to be able to provide postnatal care (structures) and the provision of maternal, infant counselling and care provided during postnatal consultation (processes) and women's views on the care they received postnatally (outcomes).

Guidelines for PNC in Kenya are described in national documents from 2004, a specific PNC register was disseminated and distributed during 2005 and in 2007 an orientation package for target PNC was developed and distributed [33, 38]. Moreover, 59 percent of Kenya health facilities reported providing PNC in 2010 [20] and accreditation criteria for facilities would have included the provision of PNC. However, the data shows that both voucher and non-voucher facilities scored below the expected scores on the overall quality of PNC services offered.

Structure

In OBA programs it is often assumed that the minimum quality standards used for accreditation of voucher facilities, and the expected competition between health facilities created, encourages providers to improve the QoC. The voucher accredited public health facilities do appear to score higher on the structural attributes than non-voucher public health facilities and all private facilities. In another component of the study, the evaluation team interviewed health facility managers to ascertain how the money reimbursed to voucher facilities for services rendered was spent [40]. The majority used funds on making structural improvements such as renovating maternity units, laboratory or operating theatres and purchasing drugs, equipment or supplies. Moreover, public health facilities were required to follow strict MOH procedures for use of disbursed funds and had to request formally to county managers before any expenditure could be made. Public facilities were also not able to spend money on the recruitment of additional staff or skills training [40, 41]. This might explain why the public voucher facilities had higher structural scores, but lower process scores given this constraint [13, 40]. Providers' knowledge and practice also showed mixed results; more voucher providers reported they counsel women on the importance of breast-feeding; but more non-voucher providers said they counsel women on family planning. This is unexpected considering one of the other vouchers is for family planning.

This so far addresses the 'structural attributes' for QoC. Although these high scores for structural attributes can be counted as synonymous with the availability or readiness to be able to provide services and or commodities the clinical or process attributes, have yet to be felt in the provision (and receipt) of comprehensive PNC [31]. A 2010 mission to review and design an extension of

the OBA program also concluded that QoC had not yet changed significantly by virtue of the reimbursement funds alone [41].

Process

Regarding the process attributes of care, all facilities had composite scores of less than a third of the maximum score, falling well below the standards on provision of PNC based on the national guidelines [33, 42]. Although voucher facilities scored significantly less than non-voucher facilities, there were no overall significant differences either between public sector facilities versus private facilities or hospitals versus lower level facilities. At individual attribute level non-voucher facilities performed better in history taking and counseling on fertility and infant care but these were not significant when controlled for clustering. Public facilities scored higher on counseling for HIV/STI risk assessment and family planning than private facilities, but private facilities had higher scores for building rapport.

There are several reasons that may explain the overall low performance of clinical care (or process attributes) at both voucher and non-voucher sites. Although there were indications that providers reported receiving clinical updates on a range of maternal and newborn care, it is possible that the providers were unable to translate this knowledge into practice in general [43]. Secondly, even though women are entitled to PNC services with the SM voucher, providers often only immunize the infant, rather than provide a comprehensive package of care for both mother and infant. Linked to this is the difficulty of conducting a check-up for the mother in a busy immunization clinic where there is no privacy or examination couch. Thirdly, women may not be aware of the availability of a comprehensive package of PNC. Over 60 percent of women came

for PNC to have their infant immunized. Elsewhere in the Kenya voucher evaluation we found communities to have some misunderstanding around what services the vouchers actually cover [24]. Finally although there are separate vouchers for each of the four ANC visits and childbirth, there is apparently no specific paper voucher for PNC so facilities cannot claim for this service separately. This service is seen as an extension of the delivery voucher (if women give birth in a facility) but women are only encouraged to come back at six weeks for their baby's immunization[44].

If voucher facilities are not reimbursed for providing PNC services, this may hinder the motivation for providers to offer any PNC for the mother and the baby especially in the private facilities who do not receive updates from MoH. However, there are clearly defined guidelines and standards on the content and timing of care for the mother and infant from immediately after birth, at one/two weeks and up to six weeks after birth. Many providers, specifically those from private facilities, appear to be unaware of the national postnatal guidelines and this contributes to discontinuity of services received during pregnancy and delivery [3, 45].

Outcomes

More than four fifths of all women were seen within 48 hours and significantly more newborns at voucher facilities received care in the first 48 hours and received BCG vaccination than those at non-voucher facilities. Evidence suggests that if newborns are seen within the first two days of birth by a provider they have a greater chance of survival [46]. Overall, the postnatal women seemed satisfied with the care they received, the waiting time to see a provider, and the time

spent with the provider regardless of the type of facility. Clinical competence is less easily judged by clients and often clients evaluate providers more on the amount of time they spend with them and their caring attitude than their technical skills [31]. Although the output attributes based on clients' experience may not necessarily translate into adequate clinical care, such information presents an opportunity for the health system to understand women's perceptions of quality PNC and what motivates them to seek services.

A comprehensive PNC package should include routine visits in the first few days after birth, when risks are high for both mother and baby and to promote healthy behaviours (e.g. exclusive breast feeding), to identify complications, and facilitate referral[3]. The Kenya Ministry of Health recommends one visit within 48 hours of delivery, another within one week, a third between 4 - 6 weeks and a fourth at 6 months [38]. Postnatal registers have been in existence in Kenya since 2005; however, few facilities routinely record or collect this information or report through the government's health information system. An attempt to deduce potential increased workload associated with increased users in the voucher facilities and its effect on QoC was not possible as there were gaps in the existing records. However, the VMA of the OBA program is currently in the process of changing from paper vouchers to a 'smart card' that may capture all the services offered to and received by voucher clients, including PNC services.

A review of literature on quality of private and public health care in low and middle income countries indicate that raising the QoC in a health system is a long-term effort and requires attention to various aspects, including the incentive structure and training of providers [47].

Supervision and clinical audit with feedback, especially if combined with training, have been found to be effective to help improve quality [48]. The OBA project itself did not provide any technical training and expected health facilities to improve their own staff skills through technical updates. It appears that this did not happen sufficiently even though providers had received some related maternal and infant care training within the last 24 months.

In order for postnatal women to receive adequate clinical care and diagnose and treat any complications early, an evidence-based schedule of visits is critical. While Kenya has detailed the timing and content of the postnatal visits in policy guidelines, it appears that there is a policy –care provision gap: many health care providers do not perceive this period as important- although four fifths of the women interviewed sought care within 48 hours of birth. It may be that a community based approach is required to ensure that women discharged after deliveries receive adequate information, support and follow up. Providers should receive more training updates specifically aimed at the postnatal period and any training that takes place should be followed up with support supervision. Moreover policy guidelines should be made more available in private and faith-based facilities.

In other results-based financing initiatives, supply side incentives are used to reward improvements in structural and process indicators of quality. These programs develop a verification mechanism that routinely confirms service delivery and measures quality indicators at contracted facilities. Most OBA voucher programs have not had an explicit financial incentive

for quality improvements and it would be worthwhile for the Kenya program to consider such an approach [16].

There are limitations to this analysis that should be kept in mind. The cross sectional design coupled with a non-random selection of facilities limits any tests for causality. However, control facilities were matched based on administrative type, similar characteristics in terms of infrastructure, staffing and services provided and a qualitative assessment of each local healthcare market and access to healthcare. Ideally, the voucher and non-voucher facilities would be alike in every way except for the OBA voucher contract. It is possible that because facilities differed in ownership status there were other differing factors such as financing and catchment size that could affect QoC outcomes. Secondly although the comparison sites were carefully selected – support provided by other partners for MNH care may also have confounded the results. Nevertheless we did control for clustering at facility level, provider type and level of care. Thirdly, the study population of postnatal women attending a health facility is not representative of the general postnatal population in Kenya, as only 44 percent of newly delivered women attend for PNC [18]. However the findings do reflect the services received by recently delivered women in most health facilities in Kenya.

Conclusion

Public voucher facilities had higher structural scores than public non-voucher facilities indicating readiness to provide care, but this did not result in higher scores in the provision of PNC. However, two key outcomes should be noted: significantly more newborns from voucher

facilities received a postnatal check within 48 hours and a BCG vaccination than those attending non-voucher facilities. Overall quality of PNC scores across all facilities were low indicating that the postnatal period continues to receive limited attention from both women and providers even where a “Safe Motherhood” voucher exists. It is recommended that the voucher program include reimbursement for PNC services to address this critical period after birth. It also recommended that the voucher program explore the use of incentives for quality improvement targets in each service subsidized by the program.

List of Abbreviations

ANC- Antenatal care	MNH- Maternal and Newborn Health
CPI- Client provider interaction	MOH- Ministry of Health
HFA- Health facility assessment	PNC- Postnatal Care
IRB- Institutional Review Board	OBA- Output based Aid
KEMRI- Kenya Medical Research Institute	SM- Safe Motherhood
KfW- German Development Bank	VMA- Voucher Management Agency

Competing interests

There are no competing interests

Authors' contributions

CEW was responsible for drafting the manuscript and in development of QoC framework. CEW and TA were involved in analysis of data. CEW and BB were substantially involved in conceptualizing the study design. TA, LK, FO, RN, MT and BB in reviewing the manuscript for intellectual content. All authors read and approved the final manuscript.

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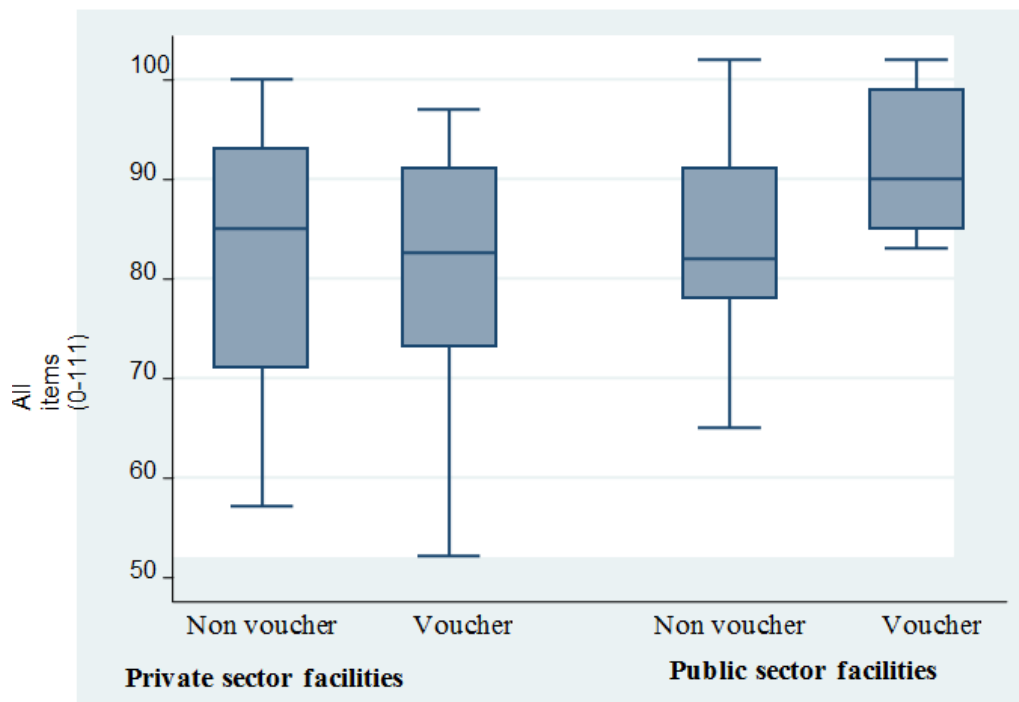
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Box 1: Quality of Care Framework

STRUCTURE	PROCESS	OUTCOME
<p>Data source: Facility inventory and provider knowledge</p>	<p>Data source: Observations of client – provider interactions</p>	<p>Data Source: Client exit interviews and service statistics</p>
<p>Facility inputs</p> <p><u>Appropriate availability of services</u></p> <ul style="list-style-type: none"> • Facility readiness • 24 hour availability • Emergency preparedness • Equipment, medicine and supplies • Infection prevention • Infrastructure • IEC materials available • Guidelines and registers <p><u>Technical Competence</u></p> <ul style="list-style-type: none"> • Education and Training • Supervision • Provider knowledge 	<p>QoC</p> <ul style="list-style-type: none"> • Quality of clinical care • Interpersonal care/rapport • History taking • Range of services offered • Maternal health care • Infant health care • Danger signs for mother and infant • Family planning • HIV services <p><u>Information given to client</u></p> <ul style="list-style-type: none"> • Assess client understanding • Documentation 	<p>Reduction in</p> <ul style="list-style-type: none"> • Waiting time <p>Improvement in:</p> <ul style="list-style-type: none"> • <u>Interpersonal relations</u> • Time spent with provider <p>Client understanding</p> <ul style="list-style-type: none"> • <u>Client choice</u>: RH goals family planning • Knowledge • Increase in: • FP uptake • Satisfaction • Confidentiality/privacy • <u>Continuity of care/followup</u> <p>Increase service provision</p> <ul style="list-style-type: none"> • Range of services • Multiple service use • Diversification of client profile

Figure 1: Readiness score for structural attributes available (0-107): infrastructure, equipment, medicines commodities and supplies



Legend: Box plot showing summary scores for structural aspects of care (equipment, supplies, staffing, training) for private and public sector health facilities.

Table 1: Attributes of care: structure, process and outcome

Attributes of quality	Elements assessed
Structure attributes: Infrastructure equipment and supplies (0-107)	
FP commodities available (score from 0 -11)	Combined pill, Progestin only pill, Emergency Contraceptives, Injectables, IUCD, implants, male and female condoms, male and female sterilization, fertility based methods.
Testing reagents available (0-12)	Reagents for HIV (Elisa HIV-1 and Elisa HIV-2) Rapid reagents for HIV testing, Reagents for anaemia test, TB, urinary tract infections, malaria, cervical cancer screening and pregnancy test
General supplies (0-6)	Disposable needles and syringes, Insecticide treated nets, specimen bottles/pots for urine, sputum and blood, slides for malaria parasites
Essential vaccines (0-6)	Tetanus Toxoid, BCG, Measles, Polio, Hepatitis B, Pentavalent
ARV Drugs (0-7)	Nevirapine tabs and syrup, Zidovudine (ZDV, AZT),AZT syrup, Stavudine, Zidovudine + Lamivudine (Combivir), Miconazole or clotrimazole pessaries,
STI and RH drugs (0-10)	Ciprofloxacin oral, Erythromycin oral, Tetracycline oral, Benzathine Penicillin, Contrimoxazole tabs and syrup, Metronidazole tablets, Metronidazole IV, Gentamicin IV, Amoxycillin
Infection control supplies (0-9)	Sterile and clean latex gloves, clean non-latex gloves, decontamination solution, waste receptacle with and without lid and plastic liner, container for used sharps, single use hand drying towels or a functioning electric hand dryer, running water
FP equipment/supplies (0-18)	speculum (small/medium/ large), tenacula, troca, surgical scissors, kidney dishes, sponge holding forceps, mosquito forceps – curved and straight, surgical blade: size 15/11, draping towels, betadine, gauze, elastoplast
Delivery supplies/kits (0-5)	Delivery kit, Suture kit, Minilap BTL kit, Foetal scope, MVA kit
General equipment (0-7)	A working blood pressure machine, stethoscope, spotlight or flashlight or examination light, examination couch, functional weighing scales for babies and adults, autoclave/ sterilizer
Emergency equipment (0-5)	Oxygen, Adult and newborn resuscitation set Magnesium Sulphate, Calcium gluconate.
General infrastructure /utilities (0-11)	Waiting area is shaded and with seats, Waiting area for new admissions, Heater for delivery room and nursery, Functioning delivery bed, Postnatal ward, Private space for FP, ANC and PNC examination, 24 hour supply of clean water and power to ensure fridge remains functional, Reliable lighting, Client toilets, Clean water for drinking with clean cups/glasses.
Structure attributes: Provider knowledge and training (0-32)	
Updates in last 24 months (0-7)	Family planning, contraceptive technology updates, targeted postnatal care, PMTCT, screening for cervical cancer, EONC.
Knowledge of postnatal care (0-5)	Routine health care for mother and baby, return to fertility, family planning counselling, infant feeding, immunizations
Knowledge of maternal danger signs (0-7)	Foul smelling vaginal discharge, heavy vaginal bleeding, severe lower abdominal pain, fever with or without chills, swollen hands, face, legs, severe headache and/or blurred vision. excessive tiredness or breathlessness,
Knowledge of basic preventive newborn care(0-7)	Early initiation of and exclusive breastfeeding for 6 months, early detection of problems / danger signs, clean delivery practices, warmth, cord, eye care.
Knowledge of danger signs in newborn (0-6)	Poor or no breastfeeding /feeding, difficulty breathing, hypothermia or hyperthermia, septic spots /boils on body, restlessness or irritability, jaundice.

Process attributes: Provider technical skills (0-47)	
History taking (0-7)	Date of delivery, if resumed menses, about HIV status, about medication currently taken, place of delivery, mode of delivery, if currently breast feeding.
Physical examination (0-7)	Took client's temperature and blood pressure , check for pallor (anaemia), examine breasts and nipples, palpate the client's abdomen for uterine involution, checked perineum and discharge / lochia, checked extent of PV bleeding.
Danger signs advice given (0-3)	Excessive vaginal bleeding, fever with or without chills, broken scars(Perineum/Caesarean).
Fertility advice given (0-5)	Discuss return to fertility, discuss healthy timing and spacing of pregnancies, discuss the health benefits for mother and baby when birth spacing resume sexual activity and discussion of any method.
STI/HIV risk assessment (0-3)	STI with the client, HIV/AIDS with the client, STI and/or HIV risk factors with the client.
STI/HIV risk factors (0-4)	Multiple partners, STIs increase risk of HIV, unprotected sexual intercourse, not knowing partner's status.
STI management (0-3)	Give information on symptoms of an STI, screen for STI, advise to seek medical treatment if they notice STI symptoms.
Infant feeding advice (0-3)	Discussed infant feeding, encourage discussing how mother was managing with breastfeeding, Re-emphasize exclusive feeding (either breast or replacement).
Infant examination (0-4)	Examine baby(undressed), check temperature, check baby's respirations, baby weighing.
Infant danger signs discussed (0-4)	Feeding difficulties - not sucking or sucking poorly, breathing difficulties, body feels hot or too cold, jaundice.
Documentation (0-4)	Provider looked at client's health card before beginning the consultation/ while collecting information/examining the client, has a post-partum register, recorded information in register/ tally sheet wrote on the client's card.
Process attributes: Provider interpersonal skills(0-7)	
Rapport (0-7)	Greets client, used clients name, introduces herself, tells client what will be done, Encourages client to ask question, ensured privacy, assures confidentiality, courteous to client throughout.
Outcome attributes: Client experiences	
Family planning uptake within 0-10 weeks	Proportion of clients receiving preferred methods.
Waiting time (average)	Wait before seeing provider.
Time spent with the provider	Length of consultation.
Baby or mother seen by provider	within 48 hours, between 3-7 days, between 1-2 weeks' between 3-6 weeks, more than 6 weeks.
Satisfaction	Satisfied, somewhat satisfied or not satisfied at all with services received.

Table 2: Characteristics of study facilities

Key Features	Voucher facilities	Non-voucher facilities	Total	P value
Facility type	n=21 (%)	n=20 (%)	n=41 (%)	
Hospital	15 (71.4)	12 (60.0)	27(65.8)	0.162
Health centre	4 (19.0)	8(40.0)	12 (29.2)	
Nursing home	2 (9.5)	0 (0.0)	2 (4.8)	
Sector				
Public	7(33.3)	13 (65.0)	20(48.7)	0.043
Private (NGO/Faith based)	13 (66.7)	7(35.0)	21(51.2)	
Number of providers available and working in MCH/FP, Maternity unit, ART				
Specialist doctors	36	45	81	Not significant
Medical officers	45	16	61	
Clinical officers	46	50	96	
Registered nurses/midwives	204	146	350	
Enrolled nurses/midwives	118	103	221	
Laboratory technologist /technicians	11	24	35	
Pharmacists/technicians	4	16	20	
Nutritionists	20	16	36	
associated medical staff	9	2	11	
Lay counsellors	41	10	116	
Administrative staff	12	21	33	

Table 3: Basic infrastructure and provider training: structural attributes

Mean score of facilities with the following equipment /supplies (SD)*:	Voucher facilities (n=21)		Non-voucher facilities (n=20)		Total (n=41)		P value
	n	SD	n	SD	n	SD	
FP commodities (0-11)	7.7	(2.6)	8.2	(2.5)	8.1	(2.6)	0.590
Testing reagents (0-12)	10.0	(1.9)	9.9	(2.1)	9.5	(2.1)	0.814
General supplies (0-6)	5.2	(0.8)	5.6	(0.6)	5.5	(0.8)	0.179
Essential vaccines (0-6)	5.2	(0.7)	4.8	(1.4)	5.0	(0.9)	0.122
ARV Drugs (0-7)	6.1	(1.3)	5.5	(2.5)	5.9	(1.8)	0.300
STI and RH drugs (0-10)	4.2	(3.7)	4.6	(3.5)	5.3	(3.6)	0.719
Infection control supplies (0-9)	7.2	(1.3)	7.1	(1.3)	6.7	(1.4)	0.655
FP supplies (0-18)	14.8	(3.9)	14.6	(3.5)	14.2	(3.6)	0.891
Delivery supplies and kits (0-5)	3.4	(1.2)	3.5	(1.1)	3.2	(1.1)	0.935
General equipment (0-6)	5.9	(0.3)	5.7	(0.6)	5.7	(0.5)	0.323
Emergency equipment and drugs (0-4)	3.0	(1.1)	3.3	(0.8)	3.0	(0.9)	0.329
General infrastructure (0-11)	10.1	(1.1)	9.8	(1.3)	9.5	(1.5)	0.305
Total 0-111 (SD)	83.3	(13.4)	82.6	(12.1)	82.9	(12.6)	0.855
Provider training and updates							
% of providers receiving training in the last 24 months on:	90		73		163		P value
	n	%	n	%	n	%	
Family planning	26	(28.9)	19	(26.0)	45	(27.6)	0.684
Contraceptive technology update	27	(30.0)	22	(30.1)	49	30.1	0.985
Targeted PNC	21	(23.3)	9	(12.3)	30	(18.4)	0.078
PMTCT	37	(41.1)	30	(41.1)	67	(41.1)	0.998
Screening for cervical cancer	28	(31.1)	12	(16.4)	40	(24.5)	0.030
Newborn care	24	(26.7)	18	(24.7)	42	(25.8)	0.771
Essential obstetric care	22	(24.4)	21	(28.8)	43	(26.4)	0.562

*SD-Standard deviation

Table 4: Observed provider practices (process attributes)

Provider practices during postnatal care consultations (observed from client provider interactions)				
Mean scores for various constructs (SD)	Voucher consultations (n=479) SD	Non-voucher consultations (n=241) SD	Total (n=720) SD	p values
Maternal care				
History taking practices (0-7)	2.2 (1.7)	2.7 (1.8)	2.4 (1.7)	0.0008
Physical examination of the mother (0-7)	1.1 (1.8)	1.3 (1.9)	1.2 (1.8)	0.214
Advice on danger signs for the mother (0-3)	0.2 (0.5)	0.2 (0.5)	0.2 (0.5)	0.372
fertility advice (0-5)	1.4 (0.8)	1.7 (1.1)	1.5 (0.9)	0.001
STI/HIV risk assessment (0-3)	0.2 (0.6)	0.3 (0.6)	0.2 (0.6)	0.034
STI/HIV risk factors (0-4)	0.1 (0.6)	0.2 (0.5)	0.2 (0.6)	0.779
STI management (0-3)	0.02 (0.2)	0.02 (0.1)	0.1 (0.2)	0.812
Total for maternal care (0-32)	4.6 (4.3)	5.8 (4.4)	5.0 (4.4)	0.0004
Infant care				
Infant feeding advice (0-3)	1.4 (1.3)	1.9 (1.3)	1.5 (1.3)	<0.001
Infant examination (0-4)	1.0 (0.9)	0.9 (0.8)	0.9 (0.9)	0.275
Infant danger signs discussed (0-4)	0.2 (0.7)	0.4 (0.9)	0.3 (0.8)	0.004
Total for infant care (0-11)	2.6 (2.1)	3.2 (2.1)	2.8 (2.1)	0.002
Documentation				
Total for documentation (0-4)	2.9 (1.1)	2.9 (1.3)	2.9 (1.2)	0.796
Inter personal skills				
Total creation of rapport (0- 8)	4.1(1.4)	4.4 (2.0)	4.2 (1.6)	0.006
Total for process score (0-55)	14.2 (6.8)	16.4 (7.5)	14.9 (7.1)	0.0001

Table 5: Linear regression outputs for observed practices during postnatal care consultations

Constructs	Coefficients for various construct scores (95%CI)					
	Group (ref: voucher facilities)	P value	Sector (ref: public sector)	P value	Level of care: (ref: hospital)	p value
Maternal care						
History taking practices (0-7)	-0.25 (-0.97, 0.45);	0.464	0.60 (-0.13,1.32)	0.103	-0.40 (-1.0,0.21)	0.191
Physical examination of the mother (0-7)	-0.10 (-0.82,0.61)	0.772	0.29 (-0.44,1.0)	0.427	0.16 (-0.49, 0.82)	0.618
Advice on danger signs for the mother (0-3)	-0.018 (-0.22,0.18)	0.857	0.081 (-0.14,0.31)	0.479	0.078 (-0.09,0.25)	0.369
fertility advice (0-5)	-0.25 (-0.69,0.17)	0.239	0.54 (0.16,0.92)	0.006	0.11 (-0.24,0.47)	0.529
STI/HIV risk assessment (0-3)	-0.02 (-0.20,0.24)	0.844	0.27 (0.06,0.48)	0.011	0.12 (-0.04,0.29)	0.152
STI/HIV risk factors (0-4)	0.03 (-0.19,0.25)	0.783	0.16 (-0.09,0.42)	0.200	0.09 (-0.10,0.28)	0.346
STI management (0-3)	0.013 (-0.02,0.56)	0.520	0.036 (-0.009,0.083)	0.115	0.023 (-0.009,0.055)	0.156
Total maternal care (0-32)	-0.61 (-2.6,2.37)	0.535	2.00 (-0.019, 4.02)	0.052	0.18 (-1.45,1.83)	0.817
Infant care						
Infant feeding advice (0-3)	-0.40 (-0.97,0.15)	0.152	0.40 (-0.17,0.99)	0.167	0.31 (-0.31,0.94)	0.315
Infant examination (0-4)	0.027 (-0.27,0.32)	0.854	-0.16 (-0.51,0.17)	0.327	-0.003 (-0.31,0.30)	0.980
Infant danger signs discussed (0-4)	-0.12 (-0.38,0.13)	0.324	0.20 (-0.004,0.42)	0.055	0.10 (-0.12,0.53)	0.210
Total for infant care (0-11)	-0.51 (-1.29,0.27)	0.198	0.44 (-0.40,1.3)	0.296	0.42 (-0.52,1.33)	0.365
Documentation (0-4)	0.04 (-0.48,0.56)	0.877	0.048 (-0.41,0.51)	0.836	-0.01 (-0.58,0.55)	0.963
Inter personal skills						
Total creation of rapport (0- 8)	-0.62 (-1.43,0.18)	0.128	-0.96 (-1.61,0.32)	0.004	-0.50 (-1.22,0.21)	0.162
Total for process score (0-55)	-1.70 (-4.9,1.5)	0.294	1.53 (-1.4,4.5)	0.304	0.085 (-2.8,3.0)	0.954

Table 6: Key outcome measures of quality of postnatal care (from exit interviews)

% of clients who	Voucher clients	Non-voucher clients	Total	p values
	n (%)	n (%)	n (%)	
Saw the provider within:	468	244	712	
within half hour of arriving at facility	315 (67.3)	160 (65.6)	475 (66.7)	0.081
30 minutes-1 hour	37 (7.9)	13 (5.3)	50 (7.0)	
1-2 hours	22 (4.7)	6 (2.5)	28 (3.9)	
above 2 hours	94 (20.1)	65 (26.6)	159 (22.2)	
Took the following time with provider	468	244	712	
1-5 minutes	67 (14.3)	28 (11.8)	95(13.3)	0.674
6-10 minutes	103 (22.1)	61 (25.0)	164(23.0)	
11-15 minutes	68 (14.5)	37 (15.1)	105(14.7)	
16-30 minutes	68 (14.5)	40 (16.3)	108 (15.2)	
over half hour-3 hours	162 (34.6)	78 (31.9)	240 (33.7)	
% of postnatal women who had undergone a first	259	146	335	
checkup:				
Within 48 hours	218 (84.2)	117 (80.1)	335(82.7)	0.314
Between 3 to 7 days	5 (1.9)	2 (1.3)	7(1.7)	
Between 1 to 2 weeks	29 (11.2)	18 (12.3)	47(11.6)	
Between 3 to 6 weeks	6 (2.3)	9 (6.2)	15(3.7)	
more than 6 weeks	1 (0.4)	0 (0.0)	1(0.3)	
Received preferred family planning method	23 (48.9)	17(56.7)	40(51.9)	0.508
% of infants who had undergone a first	426	229	655	
checkup:				
Within 48 hours	356 (83.5)	165 (72.1)	521(79.5)	0.001
Between 3 to 7 days	13 (3.1)	10 (4.4)	23(3.5)	
Between 1 to 2 weeks	43 (10.4)	34 (14.8)	77(11.8)	
Between 3 to 6 weeks	12 (2.8)	20 (8.7)	32(4.8)	
More than 6 weeks	2 (0.4)	0 (0.0)	2(0.3)	
% reporting that they	450	242	692	
Satisfied with services	399 (88.7)	208 (85.9)	607 (87.7)	0.152
Somewhat satisfied with services	34 9 (7.5)	28 (11.5)	62 (8.9)	
Not satisfied at all	17 (3.7)	6 (2.5)	23 (3.3)	

CHAPTER 5

COHORT

CHAPTER 5: COHORT

5.1 Family planning practices and pregnancy intentions among HIV-positive and HIV-negative postnatal women in Swaziland: a cross sectional survey

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RESEARCH ARTICLE

Open Access

Family planning practices and pregnancy intentions among HIV-positive and HIV-negative postpartum women in Swaziland: a cross sectional survey

Charlotte E Warren*, Timothy Abuya, Ian Askew and On behalf of the Integra Initiative

Abstract

Background: In settings where sexually transmitted infection (STI) and HIV prevalence is high, the postpartum period is a time of increased biological susceptibility to pregnancy related sepsis. Enabling women living with HIV to avoid unintended pregnancies during the postpartum period can reduce vertical transmission and maternal mortality associated with HIV infection. We describe family planning (FP) practices and fertility desires of HIV-positive and HIV-negative postpartum women in Swaziland.

Methods: Data are drawn from a baseline survey of a four-year multi country prospective cohort study under the Integra Initiative, which is measuring the benefits and costs of providing integrated HIV and sexual and reproductive health (SRH) services in Kenya and Swaziland. We compare data from 386 HIV-positive women and 483 HIV-negative women recruited in Swaziland between February and August 2010. Data was collected on hand-held personal digital assistants (PDAs) covering fertility desires, mistimed or unwanted pregnancies and contraceptive use prior to their most recent pregnancy. Data were analysed using Stata 10.0. Descriptive statistics were conducted using the chi square test for categorical variables. Measures of effect were assessed using multivariate fixed effects logistic regression model accounting for clustering at facility level and the results are presented as adjusted odds ratios.

Results: Majority (69.2%) of postpartum women reported that their most recent pregnancy was unintended with no differences between HIV-positive and HIV-negative women: OR: 0.96 (95% CI) (0.70, 1.32). Although, there were significant differences between HIV-positive and HIV-negative women who reported that their previous pregnancy was unwanted, (20.7% vs. 13.5%, $p = 0.004$), when adjusted this was not significant OR: 1.43 (0.92, 1.91). 47.2% of HIV-positive women said it was mistimed compared to 52.5%, OR: 0.79 (0.59, 1.06). 37.9% of all women said they do not want another child. Younger women were more likely to have unwanted pregnancies: OR: 1.12 (1.07, 1.12), while they were less likely to have mistimed births; OR: 0.82 (0.70, 0.97). Those with tertiary education were less likely to have unwanted or mistimed pregnancies OR: 0.30 (0.11, 0.86). Half of HIV-positive women and more than a third of HIV-negative women reported that they had been using a FP method when they became pregnant with no differences between the groups: OR: 1.61 (0.82, 3.41). Only short-acting methods were available to these women before the most recent pregnancy; and available during the postpartum visit. One fifth of all women received an FP method during the current visit. Among the four fifths who did not receive a method 17.3% reported they were already using a method or were breastfeeding. HIV-positive women were more likely to have already started a method than HIV-negative women (20% vs. 15%, $p = 0.089$).

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Conclusion: There are few differences overall between the experiences of both HIV-positive and negative women in terms of FP experiences, unintended pregnancy and services received during the early postpartum period in Swaziland. Women attending postpartum facilities are receiving satisfactory care. Access to a wider range of effective methods is urgently needed if high levels of unintended pregnancy are to be reduced among HIV-positive and HIV-negative women living in Swaziland.

Keywords: Pregnancy, Fertility desires, Postpartum care, Family planning, HIV

Background

In virtually all Sub-Saharan African (SSA) countries, women have limited access to and use of health care services during the postnatal period [1]. A lack of clearly defined guidelines and standards in many countries, including the content and timing of postnatal care (PNC) for the mother and the baby up to six weeks after birth, contributes to a discontinuity with the services received during pregnancy and delivery [2,3]. In addition, postnatal guidelines do not cover women delivered by caesarean section, low-birth-weight or preterm babies, twins, new mothers and babies with certain health problems, adolescents and women living with human immunodeficiency virus (HIV) [3]. These gaps can limit linkages to other key services for new mothers, including family planning (FP) and HIV care services for women living with HIV [4].

HIV infection has become an important contributing cause of maternal mortality in Africa [5,6]. In settings where the prevalence of sexually transmitted infections (STIs), and HIV, is high, postnatal period is also a time of increased biological susceptibility to pregnancy-related sepsis [7] and the leading cause of maternal mortality. Women living with HIV are at 1.5 to 2 times greater risk of dying during pregnancy or childbirth than HIV-negative women [5,8] and are more likely to suffer from complications such as postpartum haemorrhage, puerperal sepsis and complications of caesarean section [9,10].

Globally, almost 90 million women have an unintended pregnancy each year, largely due to an unmet need for FP [11]. Providing FP to women in developing countries who have an unmet need for modern methods would prevent 54 million unintended pregnancies, including 21 million unplanned births, 26 million induced abortions (of which 16 million would be unsafe) and seven million miscarriages; this would also prevent 79,000 maternal deaths and 1.1 million infant deaths [11]. In SSA, the unintended pregnancy rate is estimated to be 20–40%, but only 21% of partnered women are using modern contraception and an estimated 20–35% of women have an unmet need for contraception [12]. Women are vulnerable to unintended pregnancy during the three to six months after delivery when they either reduce or stop exclusive breastfeeding and their natural fertility returns [13]. It is estimated that 73% of

women within one year after birth (the “extended postnatal period”) have an unmet need for FP [13].

Enabling women living with HIV to avoid unintended pregnancies during the postpartum period can reduce vertical transmission of HIV and maternal mortality associated with HIV infection [14]. For this reason, a key component of the World Health Organization’s (WHO) comprehensive strategy 2011–2015 for prevention of mother-to-child transmission (PMTCT) is to increase contraceptive use among HIV-positive women who wish to use it [15]. More recently there is emerging evidence of access to and use of FP by women living with HIV [16–19]. Of importance is evidence suggesting that in settings of low contraceptive prevalence, and high HIV prevalence, women living with HIV in most parts of SSA may have shorter birth spacing intervals than HIV-negative women [20,21], implying limited access to FP services following childbirth. However, there is limited evidence on fertility desires, contraceptive needs and FP practices of HIV-positive women during the postnatal period. This paper addresses these gaps by comparing fertility desires, family planning practices and receipt of PNC services among HIV-positive and HIV-negative post partum women in Swaziland.

Methods

Data for these analyses are drawn from a baseline study of a four-year multi-country study - the Integra Initiative: which is measuring the benefits and costs of providing integrated HIV and sexual and reproductive health services in Kenya and Swaziland [22]. The study methodology and intervention is described in detail elsewhere [23]. Respondents were recruited between February and August 2010 as part of a prospective cohort study designed to measure the effect of timing and content of an integrated HIV and PNC/FP services model. This model developed explicit linkages with FP services and relevant HIV/AIDS services, for the mother and her baby. The intervention focussed on strengthening existing postpartum consultations during pre-discharge, one week, and six-week, additional consultations were introduced at six months to enable women to access time-relevant services for themselves and their babies. Moreover, information about and encouragement to receive this full package of postpartum services was made

during antenatal-care consultations to increase continuum of care of essential services. The services included repeat HIV testing for mother, HIV testing for infant and referral to HIV services for HIV positive mothers and infants, as well as referrals for clients requiring additional services.

To assess the impact of service integration, the cohort of women were recruited from health facilities where they had attended for postnatal services and followed over a two year period. However this paper compares the fertility desires, family planning practices, information and services received during postnatal visits including breastfeeding, family planning counselling and uptake among HIV-positive and HIV-negative women using only the cross sectional baseline data.

Ten facilities were purposively selected, based on a minimum number of postpartum women attending per month (to be able to achieve the necessary sample sizes) and the availability of HIV, PMTCT, postpartum, FP and immunisation services at these facilities. Samples of women who were at least 18 years old, lived in the facility's catchment area, had given birth within the previous 0–10 weeks and were receiving PNC for themselves and/or their babies were recruited for interview irrespective of their HIV status. All women attending on the days of data collection were approached for interview consecutively until the requisite sample size was reached. The desired sample size of 989 was calculated to test the larger study hypothesis that exposure to the PNC model of intervention would lead to an increase in condom use by at least 7 percent among sexually active women over two years.

A total of 886 women reported that they had been tested for their HIV status. Of these, 503 women reported being HIV-negative and 344 reported being HIV-positive; 29 women did not want to disclose their HIV status and 9 had tested but had not received their results. In addition to using self-reported status of HIV, we sought to validate these reports by examining responses to other questions to identify the services that the women had received during their previous antenatal or current postnatal visits. This process indicated that 42 women who self-reported as being HIV-negative had received HIV related services, suggesting that they were HIV-positive. This paper compares data from the subset of 386 women self-reporting as HIV-positive or assumed to be HIV-positive because of their use of HIV services, with the subset of 483 women self-reporting as HIV-negative and who had not used any HIV services. For the combined sample size of 869 women, the proportion of 44% considered to be HIV-positive mirrors the national HIV prevalence rate.

Each eligible respondent, willing to be interviewed, gave their informed consent prior to being interviewed. Teams of trained research assistants conducted the interviews using hand-held personal digital assistants (PDAs) loaded with the questionnaire translated from English into

siSwati. The closed-ended questions on fertility desires focussed on the number of children born, whether the woman would like to have another child or not, their desired number of children and when they would like to have their next child. Mistimed or unwanted pregnancies were determined by asking whether, during the last pregnancy, the respondent wanted to be pregnant then, wanted to wait until later or did not want any more children.

Women were asked whether they were using any form of contraceptive method prior to their most recent pregnancy and if so which one(s). In addition, they were asked whether they had received any methods during the current visit, their preferred methods and the provider's actions around FP counselling and service delivery. Women were also asked about their use of postpartum and postnatal services and previous use of STI/HIV services, including their knowledge of STI/HIV counselling and testing services and whether the provider offered counselling and testing for HIV during the current visit, whether the women accepted the test and if not why. Subsequently they were asked if they had been tested before and whether they had received the test results and were willing to disclose their status. The interviewers reiterated that providing this information was entirely optional and their response would be kept strictly confidential as no names or other identifiers were recorded on the data collection instrument; respondents were told that not disclosing their status was not a criterion for exclusion from the study and would not affect their ability to access services at the facility.

Statistical analysis

Data recorded on the PDAs were imported into Microsoft Access and then into Stata 10.0 for analysis. All statistical tests were two-tailed, and interpreted at a 5% confidence level. Two methods of analysis were used. First, FP practices and service use by HIV-positive women was compared according to the time when they learnt their status in order to determine whether knowledge of being HIV-positive was an influence. Secondly, service use by all women was compared by the women's HIV status. In both approaches, descriptive statistics were conducted using the chi square test for categorical variables; Fisher's exact test was used for small cell sizes (<5) and a *T*-test was used to compare means across two groups.

Measures of effect were assessed using multivariate fixed effects logistic regression model accounting for clustering at facility level and the results were presented as adjusted odds ratios or incidence rate ratios (IRR). The basic model is given by Equation (1) where π_{ij} is the probability of experiencing the outcome for individual *i* identified from facility *j*; X_{ij} is the vector of covariates; β is the associated vector of fixed parameters; and μ_j are the

unobserved characteristics of individual identified from the same facilities.

$$\text{logit}(\pi_{ij}) = X_{ij}\beta + \mu_j \quad (1)$$

The key outcome variables were previous fertility preferences (unwanted or mistimed births), use of FP when previous pregnancies was unwanted, future fertility intentions, and receipt of FP during current visit. The independent variable of interest was HIV status and was dichotomized into two categories (1 = HIV-positive and 0 = HIV-negative). The model controlled for education, marital status, age and whether they knew their HIV status before or after index pregnancy.

Ethical issues

Researchers were trained on conduct of ethical procedures and monitored during fieldwork. We obtained informed consent for each study participant. All participants were given detailed information about the study including: aims, methods of study; institutional affiliations of the research; anticipated benefits, risks/discomfort and follow-up of the study; the length of the interview; the choice of not answering any questions and the right to abstain from participating in the study, or to withdraw from it at any time, without reprisal; measures were taken to ensure confidentiality and anonymity of information provided; the conduct of interviews in places of the participant's choosing to maximize audio privacy; contact details of the study coordinator for any questions or concerns.

The study was approved by the Scientific Ethics Committee of the Swaziland Ministry of Health (MOH) (approval number MH/599C), the Ethics Review Committee of the London School of Hygiene & Tropical Medicine (LSHTM) (approval number 5426) and the Population Council institutional review board (IRB approval number 444). The Integra Initiative is registered on the Clinical Trials registration site: ClinicalTrials.gov Identifier: NCT01694862.

Results

Characteristics of women attending postnatal services

Table 1 describes the characteristics of women by HIV status whose ages ranged from 18 to 45 years and who attended for postnatal services for themselves or their infant on the day of interview. The parity among HIV-positive women was significantly higher than HIV-negative women when adjusted for age [$p < 0.001$]. This is also reflected by their age distribution with HIV-positive women being significantly older than HIV-negative women by two years [$p < 0.001$]. Desired family size was identical for HIV-positive and negative women, although there were differences between HIV-positive women in regard to when they found out their HIV status; women who knew their status before the most recent pregnancy

desired 3.3 children compared to 2.5 for women finding out during the last pregnancy [$p = 0.010$].

Almost all women (99.4%) had attended ANC services for the most recent pregnancy. However, HIV-positive women were significantly more likely to have attended for ANC services during the first trimester (1–3 months) of pregnancy [$p = 0.002$], especially those who knew their status before this pregnancy. Similarly high proportions (about 86%) of HIV-positive and HIV-negative women had given birth in a health facility.

Fertility preferences

Over two thirds of the women interviewed reported that their pregnancy had been unintended, that is, either unwanted or mistimed i.e. occurred earlier than desired, with similar proportions among HIV-positive and HIV-negative women with no significant differences between the two groups (Table 2).

There were significant differences between HIV-positive and HIV-negative women regarding the nature of their unintended pregnancy (Table 2), although more women living with HIV reported that it had been unwanted, when adjusted, the differences were not significant (Table 3). Fewer HIV-positive women reported a mistimed pregnancy [$p = 0.005$]. However, when adjusted for clustering and other variables, the likelihood of a mistimed birth reduces with increasing age: OR: 0.94, 95% CI (0.95, 0.96), [$p = 0.009$]. Women who were single and in relationship were to times likely to have a mistimed birth: OR: 2.05 (1.43, 2.81); [$p < 0.001$].

Younger women were more likely to have unwanted pregnancy; OR: 1.12, (1.07, 1.12); [$p = 0.042$], this was also the case for single or divorced women and single women in relationship: OR; 13.23 (2.67, 71.12), [$p = 0.003$] and OR; (1.76 (1.12, 2.76), [$p = 0.001$] respectively. Women who were either single and in a relationship or single living with a partner were three or two times likely to have an unintended pregnancy; OR: 3.51, (2.47, 4.98); [$p < 0.001$] and OR: 1.76, (1.12, 2.71), [$p = 0.034$]. Women with tertiary education were less likely to have an unwanted or mistimed births OR: 0.33 (0.11, 0.86), [$p < 0.001$] (Table 3).

One third of all women who had indicated an unwanted pregnancy reported that they had been using a FP method when they became pregnant; moreover, this proportion was not significantly different both at descriptive and when adjusted: 62.5% among HIV-positive and 47.7% among HIV-negative women [$p = 0.074$]. The majority of these women had used a short term method (condom, hormonal pill or injectable). For those reporting an unwanted pregnancy, HIV-positive women were more likely than HIV-negative women to be using male condoms and less likely to be using hormonal pills. More than half [59.2%] of all women who indicated a mistimed pregnancy

Table 1 Socio-demographics profile of postpartum women

	HIV-positive	HIV-negative	All women	P value*
Age (years)	386 (%)	483 (%)	869 (%)	
18-25	175 (45.3)	315 (65.2)	490 (56.4)	
26-30	129 (33.4)	91 (18.8)	220 (25.3)	
31-35	61 (15.8)	41 (8.5)	102 (11.7)	<0.001
36-45	21 (5.4)	36 (7.5)	57 (6.6)	
Pregnancies				
Average number of pregnancies (SD)	2.9 (1.5)	2.4 (1.6)	2.6 (1.6)	<0.001
Average number of desired children (SD)	2.6 (1.4)	2.6 (1.2)	2.6 (1.3)	0.845
Marital status				
Single divorced	4 (1.0)	4 (0.8)	8 (0.9)	
Single in relationship	160 (41.5)	245 (50.7)	405 (46.6)	
Single living with partner	47 (12.2)	42 (8.7)	89 (10.2)	0.042
Married	175 (45.3)	192 (39.8)	367 (42.2)	
Education				
None	25 (6.5)	16 (3.3)	41 (4.7)	
Primary	126 (32.6)	115 (23.8)	241 (27.7)	
Secondary	224 (58.0)	327 (67.7)	551 (63.4)	0.001
Tertiary	11 (2.8)	25 (5.2)	36 (4.1)	
Religion				
None	18 (4.7)	20 (4.1)	38 (4.4)	
Christian	325 (84.2)	408 (84.5)	733 (84.3)	0.929
Traditional	43 (11.1)	55 (11.4)	98 (11.3)	
When started antenatal care	362	432	794	
1 to 3 months	87 (24.0)	67 (15.5)	154 (19.4)	0.002
4 to 6 months	248 (68.5)	325 (75.2)	573 (72.2)	0.035
7 to 9 months	27 (7.5)	40 (9.3)	67 (8.4)	0.363
Place of index pregnancy delivery	386	483	869	
Health facility	331 (85.8)	424 (87.8)	720 (86.8)	
Home	46 (11.9)	54 (11.2)	95 (11.5)	
TBA/Relative	2 (0.5)	2 (0.4)	4 (0.5)	0.407
On the way	7 (1.8)	3 (0.6)	9 (1.2)	

Across all tables*P values compares HIV + and HIV-negative women.

reported they were using a short term FP method when they became pregnant with 65.1% of HIV-positive women stating this compared to 36.9% of HIV-negative women. However there were no significant differences by HIV status on type of FP method used. Over a third of all women stated they did not want another child with no differences by HIV status.

Information and services for maternal and child health during postnatal visit

Over 40% of all women with no differences by HIV status reported receiving information from health service providers on the importance of waiting for at least two years before thinking about another pregnancy during

the current visit. But fewer reported receiving information on when to expect return of menses, return of fertility or advice on when to commence sexual activity following childbirth (Table 4). There were no significant differences in information received by HIV status. The majority of HIV-positive women (89.4%) said they received information on infant feeding and were more likely than HIV-negative women (84.5%) to receive this information, especially those who knew their HIV status prior to the most recent pregnancy (95.1%). Less than a fifth of all women interviewed received any information on which danger signs they should look for in the newborn or very young infant. Examples of these signs include difficulty breathing, difficulty feeding, high or

Table 2 Fertility preferences and pre-pregnancy use of FP methods among postpartum women

	HIV-positive	HIV-negative	Total	P value*
Previous fertility preferences	386 (%)	483 (%)	869 (%)	
Unwanted or mistimed births	262 (67.9)	339 (70.2)	601 (69.2)	0.464
- Unwanted	80 (20.7)	65 (13.5)	145 (16.7)	0.004
- Mistimed	182 (47.2)	274 (56.7)	456 (52.5)	0.005
Used FP when last pregnancy was	80	65	145	
Unwanted	50 (62.5)	31 (47.7)	81 (55.9)	0.074
FP method used when woman became pregnant and did not want pregnancy**	50	31	81	
Hormonal pills and condoms	1 (2.0)	0 (0.0)	1 (1.2)	0.428
Hormonal pills only	4 (8.0)	10 (32.3)	14 (17.3)	0.005
Injectables and condoms	1 (2.0)	1 (3.2)	2 (2.5)	0.730
Injectables only	13 (26.0)	9 (29.0)	22 (27.2)	0.766
Implant only	0 (0.0)	1 (3.2)	1 (1.2)	0.201
IUCD only	0 (0.0)	1 (3.2)	1 (1.2)	0.201
Male condoms only	34 (68.0)	10 (32.3)	44 (54.3)	0.003
Withdrawal only	0 (0.0)	1 (3.2)	1 (1.2)	0.201
Used FP when last pregnancy was	182	274	601	
Mistimed	82 (45.1)	101 (36.9)	183 (30.4)	0.08
FP used when woman became pregnant with mistimed pregnancy	82	101	183	
Hormonal pills only	14 (17.1)	21 (20.8)	35 (19.1)	0.525
Injectable and condoms	2 (2.4)	0 (0.0)	2 (1.1)	0.115
Injectables only	29 (35.4)	35 (34.7)	64 (34.9)	0.920
Male condoms only	42 (51.2)	42 (41.5)	84 (45.9)	0.268
Emergency pills	0 (0.0)	1 (1.0)	1 (0.6)	0.366
Withdrawal and condoms	2 (2.4)	3 (2.9)	5 (2.7)	0.266
Future fertility intentions	386	483	869	
Does not want another child	154 (39.9)	175 (36.2)	329 (37.9)	0.268
Length of time to next child	15	42	57	
Wants another child within two to three years	1 (6.7)	2 (4.8)	3 (5.3)	0.777
Wants another child after three years	14 (93.3)	40 (95.2)	54 (94.7)	0.777

*** Multiple responses for types of methods used when pregnant.

low temperature, jaundice and abnormal crying. There were no significant differences between HIV-positive and HIV-negative women for these indicators.

Breastfeeding and use of FP

The vast majority of recently delivered women (90.9%) said they were exclusively breastfeeding their infants after childbirth, with significantly higher proportions of HIV-negative women (93.4%) than HIV-positive women (87.8%) (Table 3). However, HIV-positive women who knew their status before this pregnancy were more likely to breastfeed their babies and less likely to give replacement feeds than women who discovered they were HIV-positive during their pregnancy.

Among these women, 20.2% of HIV-positive and 18.8% of HIV-negative women had resumed sex since

childbirth (Table 4), with approximately eight percent of all women having had sex within the first four weeks, with no difference by HIV status (data not in table). Two thirds of sexually active postpartum women were exclusively breastfeeding (and not using FP) less than one third were both breastfeeding and using FP. Among those not breastfeeding, five women were using FP; another five were neither using FP nor breastfeeding and so theoretically at risk of an unintended pregnancy because of an unmet need for contraception.

Family planning counselling and uptake

The majority of all women reported having discussed FP with the provider during their visit; this proportion was significantly higher for HIV-positive women (76%) than for HIV-negative women (66%). Approximately one-fifth

Table 3 Relationship between pregnancy intentions, pre-pregnancy use of FP methods and socio-demographics

	Unwanted pregnancy	Mistimed birth	Unwanted or mistimed birth	Use of FP when last pregnancy was unwanted	Use of FP when last pregnancy was mistimed
HIV status (HIV positive = 1)	1.43 (0.92, 1.91)	0.79 (0.59, 1.06)	0.96 (0.70,1.32)	1.61 (0.82,3.41)	1.32 (0.91,2.02)
Age (range 18–45 years)	1.12** (1.07,1.12)	0.82** (0.70,0.97)	1.23* (1.02,1.47)	1.16* (1.04,1.12)	1.02 (0.91,1.13)
Period of knowing HIV status (before index pregnancy =1)	1.34 (0.72,2.81)	0.81 (0.66,1.00)	0.86 (0.69,1.04)	0.57 (0.13,1.72)	0.65 (0.21,1.72)
Education					
Primary level	0.95 (0.42,1.90)	0.84 (0.42,1.70)	0.64 (0.28,1.46)	2.42 (0.6,10.7)	0.83 (0.26,2.17)
Secondary level	0.65 (0.34,1.32)	0.91 (0.46,1.77)	0.58 (0.26,1.30)	1.94 (0.56,8.11)	1.23 (0.52,3.21)
Tertiary	0.23 (0.04,1.04)	0.69 (0.27, 1.79)	0.30* (0.11,0.86)	NA	1.92 (0.23,2.13)
Marital status					
Single divorced	13.23* (2.67,71.12)	0.45 (0.08,2.35)	5.22 (0.62,43.3)	0.87 (0.12,5.91)	NA
Single in relationship	1.76* (1.12, 2.71)	2.06** (1.51,2.82)	3.51** (2.47, 4.98)	1.73 (0.72,4.31)	0.61 (0.31,0.91)
Single living with partner	1.23 (0.61, 2.41)	1.53 (0.94,2.50)	1.69* (1.02,2.82)	0.94 (0.23,3.81)	1.08 (0.51,2.06)

*p < 0.05; **p < 0.01.

of women reported receiving a FP method during the current visit; there were no significant differences between HIV-positive and HIV-negative women. The most frequently received method was the hormonal injectable (62.0%), followed by the hormonal pill (23.5%), and male or female condoms (11.5%); three women received a long-acting or permanent method. Significantly more HIV-positive than HIV-negative women received condoms and significantly fewer received contraceptive pills. Although not significant, more HIV-positive women were using a condom with another contraceptive method compared to HIV-negative women (15.9% versus 8.3%).

Among the four-fifths of women who did not receive a method during their postnatal consultation, 17.3% reported that they were already using a short term method. HIV-positive (20%) women were more likely to have already started using a method than HIV-negative women (15%), although this difference was not statistically significant. Most women (54%) not already using a method or not starting a method reported that they did not feel ready to start at this point in time. Seven percent of women reported wanting to start a method but had experienced a health system related barrier, such as their choice of method not being available, a lack of supplies or equipment, the provider being “too busy”, or being referred elsewhere for FP, and so are considered to have an unmet need.

Discussion

Our findings show that HIV-positive women were on average older, more likely to have a higher parity and less education than HIV-negative women, an observation consistent with findings from other studies in SSA [20,21,24]. Two thirds of this sample of recently delivered women in Swaziland reported that their most recent pregnancy was unintended, a high level even for a country of southern Africa where high levels of unintended pregnancy occur [6].

A higher proportion of women reported that the pregnancy was mistimed rather than unwanted; the proportion reporting that the pregnancy had been unwanted was significantly higher among HIV-positive than HIV-negative women. As most HIV-positive women had already achieved their desired family size, this finding is not surprising but reflects a substantial unmet need for effective contraception for women wanting no more children.

However, more than half of all postpartum women said that they had been using a short term FP method when they became pregnant, and this proportion was significantly higher (around three fifths) among HIV-positive women. Moreover, two-thirds of HIV-positive women experiencing an unwanted pregnancy and half of those experiencing a mistimed pregnancy were using the condom. Reliance on condoms for dual protection to prevent both unintended pregnancy and HIV transmission or re-infection does not, therefore, appear to be an effective strategy, a finding supported by other studies [25].

Use of FP method prior to the previous pregnancy and the FP method available to the women on the day of interview are similar. The majority of methods available to this group of women are short term methods: hormonal pills, injectables and condoms even though a sizable number report not wanting any more children. Among women reporting that the last pregnancy was unwanted, it is not known whether their use of a short-acting, less effective method was because of preference for such methods or because of the limited availability of longer-acting, more effective methods. Methods such as the implant, intra-uterine device and sterilization are not readily available in Swaziland’s public health facilities [26], indeed, hormonal implants were only introduced in late 2010 (personal communication 2011 with Head of Sexual and Reproductive Health Unit ,Ministry of Health). The intra-uterine device is only available if

Table 4 Postpartum and postnatal service use among postpartum women by HIV status

Providers gave information on:	HIV-positive 213 (%)	HIV-negative 304 (%)	Total 517 (%)	P value*
Waiting before getting pregnant	92 (43.2)	127 (41.8)	219 (42.4)	0.748
	383	482	865	
Return to menstruation	71 (18.4)	81 (16.8)	152 (17.5)	0.506
	386	483	869	
Return to sexual activity	52 (13.4)	54 (11.8)	106 (12.2)	0.305
Infant feeding practices	345 (89.4)	408 (84.5)	753 (86.7)	0.035
	385	478	863	
Return to fertility	75 (19.5)	79 (16.5)	154 (17.8)	0.260
	386	479	862	
Danger signs in babies	59 (15.4)	92 (19.2)	151 (17.5)	0.145
	360	429	789	
FP after birth	273 (75.8)	281 (65.5)	554 (70.2)	0.002
Infant feeding practices	386	483	869	
Exclusive breast feeding	339 (87.8)	451 (93.4)	790 (90.9)	
Replacement feeding	46 (11.9)	8 (1.7)	54 (6.2)	<0.001
Mixed feeding	1 (0.3)	24 (6.2)	25 (2.9)	
Resumed sexual activity	78(20.2)	91(18.8)	169(19.5)	0.613
% sexually active	78	91	169	
Breastfeeding and not using FP ***	49 (62.8)	62 (68.1)	111 (65.6)	0.468
Breastfeeding and using a FP method	24 (30.7)	24 (26.4)	48 (28.4)	0.528
Not breastfeeding and not using FP	4 (5.1)	1 (1.1)	5 (2.9)	0.123
Percent of women who	386	483	869	
Received FP method during visit	69 (17.9)	97 (20.1)	166 (19.1)	0.411
Methods received during current visit†	69	97	166	
Hormonal pills only	10 (14.5)	29 (29.9)	39 (23.5)	0.021
Injectables only	45 (65.2)	58(59.8)	103 (62.0)	0.478
Male condoms only	11(15.9)	6 (6.1)	17 (10.2)	0.041
Female condoms	5 (7.2)	3 (3.1)	8 (4.8)	0.218
Condoms with another method	11 (15.9)	8 (8.3)	19 (11.5)	0.125
Intra uterine device	1 (1.5)	0 (0.0)	1 (0.6)	0.234
Female sterilization	0 (0.0)	1 (1.0)	1 (0.6)	0.398
Implants only	0(0.0)	1 (1.0)	1 (0.6)	0.398
Reasons for not receiving method	316	385	701	
Already using FP	63 (19.9)	58 (15.1)	121 (17.3)	0.089
Not ready for a method	166 (52.5)	213 (55.3)	379 (54.1)	0.460
Health system factors	16 (5.1)	34 (8.8)	50 (7.1)	0.054
Personal factors	9 (2.8)	7 (1.8)	16 (2.3)	0.364
Others	62 (19.6)	73 (19.0)	135 (15.5)	0.826

*** Breastfeeding cases include only those that are exclusively breastfeeding while FP users is derived from those already in a method and those who received a method during the current visit.

† Multiple responses.

there is a skilled provider within the facility (often only one individual) and sterilization through referral to a higher level facility.

Service providers frequently miss opportunities to counsel all women, including those living with HIV, on the full range of contraceptive methods [20]. Some

studies have demonstrated that long acting methods are not necessarily recommended by providers or accessible to women living with HIV due to limited knowledge of the health care workers providing HIV services knowledge and counselling skills; lack of commodities operational guidelines and poorly integrated reproductive health/FP and HIV services [27]. Nevertheless, a study in Rwanda demonstrated an increase in use of implants among HIV-positive women (who had recently given birth) when access was improved [28,29], suggesting that this intervention is both feasible and acceptable.

Although a substantial proportion of women received information from health care providers on delaying their next pregnancy for at least two years and on FP, few received information on when to expect return to fertility and menses. At the time of interview many reported using a contraceptive method prior to the postnatal visit, received an FP method in the current visit or reported exclusively breastfeeding and so do not, according to some definitions, have an unmet need for FP. However if women are not clear when their fertility is likely to return these women will be potentially at risk in a few months time.

A few women had resumed sexual activity following childbirth but were not exclusively breastfeeding and so natural fertility is likely to return soon. In addition a proportion of non breastfeeding women were also not using any contraception. The likelihood of becoming pregnant again in the next three to six months is high as found in other studies [13]. This demonstrates that women receive information on FP but are only receiving short term methods even though majority do not want any more children.

One key limitation of this study is the fact that the study population of postpartum women attending a health facility is not representative of the general postpartum population in Swaziland, as only 25% of newly delivered women attend for PNC [26]. However the findings do reflect the services received by recently delivered women in most public health facilities in Swaziland. Another limitation is that HIV status was self-reported by the interviewees and validated through referencing other questions on use of HIV services and not through the maternal card or through health facility records. The proportion of women determined to be HIV-positive (44.4%) reflects the HIV prevalence among pregnant women in the country, which was 42 percent in 2008 [26], thus suggesting that this measure is probably valid.

Conclusion

There are few differences overall between the experiences of both HIV-positive and HIV-negative women in terms of use of FP experiences, of unintended pregnancy and services received during the postpartum period. However, key differences do exist. HIV-positive women appear more

likely to have an unwanted pregnancy and less likely to have a mistimed pregnancy than HIV-negative women. HIV-positive women were also more likely to have used condoms prior to the unwanted pregnancy. The women were in the first few weeks after delivery, and therefore due to the high proportion of women who are breastfeeding and not sexually active indicates that these women are indeed protected against another pregnancy immediately. This indicates that women in the period following childbirth in Swaziland are receiving satisfactory care. However, the main weakness is the lack of access or availability of long acting and permanent methods, given the high proportion of women having unintended pregnancies and not wanting any more children.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

CW as involved in the design of the project, conceptualising the study and drafting the initial draft. TA was involved in analysis of the data, drafting the manuscript and revising all the changes. IA was involved in the project design, conceptualising the study and review the manuscript for intellectual content. All authors read and approved the final manuscript.

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CHAPTER 6

HEALTH POLICY ANALYSIS

CHAPTER 6: HEALTH POLICY ANALYSIS

6.1 A policy analysis of the implementation of a reproductive health vouchers program in Kenya

Abuya, T., Njuki, R., **Warren, C E.**, Okal, J., Obare, F., Kanya, L., Askew, I. and Ben Bellows “A *policy analysis of the implementation of a reproductive health vouchers program in Kenya*” BMC Public Health 2012, 12:540. URL <http://www.biomedcentral.com/1471-2458/12/540>

RESEARCH ARTICLE

Open Access

A Policy Analysis of the implementation of a Reproductive Health Vouchers Program in Kenya

Timothy Abuya*, Rebecca Njuki, Charlotte E Warren, Jerry Okal, Francis Obare, Lucy Kanya, Ian Askew and Ben Bellows

Abstract

Background: Innovative financing strategies such as those that integrate supply and demand elements like the output-based approach (OBA) have been implemented to reduce financial barriers to maternal health services. The Kenyan government with support from the German Development Bank (KfW) implemented an OBA voucher program to subsidize priority reproductive health services. Little evidence exists on the experience of implementing such programs in different settings. We describe the implementation process of the Kenyan OBA program and draw implications for scale up.

Methods: Policy analysis using document review and qualitative data from 10 in-depth interviews with facility in-charges and 18 with service providers from the contracted facilities, local administration, health and field managers in Kitui, Kiambu and Kisumu districts as well as Korogocho and Viwandani slums in Nairobi.

Results: The OBA implementation process was designed in phases providing an opportunity for learning and adapting the lessons to local settings; the design consisted of five components: a defined benefit package, contracting and quality assurance; marketing and distribution of vouchers and claims processing and reimbursement. Key implementation challenges included limited feedback to providers on the outcomes of quality assurance and accreditation and budgetary constraints that limited effective marketing leading to inadequate information to clients on the benefit package. Claims processing and reimbursement was sophisticated but required adherence to time consuming procedures and in some cases private providers complained of low reimbursement rates for services provided.

Conclusions: OBA voucher schemes can be implemented successfully in similar settings. For effective scale up, strong partnership will be required between the public and private entities. The government's role is key and should include provision of adequate funding, stewardship and looking for opportunities to utilize existing platforms to scale up such strategies.

Keywords: Output-based approach, Reproductive health, Vouchers, Maternal health, Safe motherhood, Family planning, Policy analysis

Background

The direct costs of maternal health care are prohibitive to many women in low income countries. Fear of high costs and potential catastrophic expenditure that push a household further into poverty causes many women and their families to risk giving birth at home or delay seeking care. In these settings between one and five percent of total annual household expenditure is spent on maternal health care, rising to between five and 34 percent in case of

obstetric complications [1]. Innovative approaches have been implemented to reduce the financial barriers to maternal health services in low income countries [2]. These approaches include demand-side consumer-led initiatives like cash transfers and tax rebates as well as supply-side provider-led initiatives like referral vouchers and strategies that integrate supply and demand elements like the output-based approach (OBA) [3].

In principle, OBA improves efficiency in service delivery through competition, targets essential health services to specific population groups such as low income

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populations, pregnant women, children or the elderly, and acts as a means to change behavior [4,5]. OBA aims to cushion households from the catastrophic household expenditure associated with relatively high-cost interventions such as emergency obstetric care. The key elements include redeemable vouchers, health funds or insurance schemes that are intended to subsidize the target health services so that the out-of-pocket cost of medical care at the point of delivery becomes lower than the market price [5]. Demand side approaches seek to widen financial access and contribute to meeting Millennium Development Goal (MDG-5) which calls for significant reductions in maternal mortality [6].

To address the challenges of accessing reproductive health (RH) services, the Kenyan government with support from the German Development Bank (KfW) developed an OBA voucher program to subsidize selected RH services. Although a previous description has been documented [7], it focused on the initial phase of the program (2006–2008) and did not provide rigorous analysis of the implementation experiences. This paper explores how to work with the private and public sector using a voucher model, policy issues of targeting/benefiting populations and administrative complexities of implementing such a program [8]. We review the implementation experiences of the OBA program in Kenya with an aim of identifying lessons that can be used to provide policy directions in the implementation of similar programs in different settings and to scale. To do this we trace the implementation process of the Kenyan OBA program since inception (2006–2010) using policy analysis tools.

Methods

There is an increasing recognition of the role of policy analysis in public health evaluation [9]. In addition, health system interventions have unpredictable paths of implementation and that interpretative, time-dependent decisions by different actors underpin the subsequent implementation process. We utilize the policy analysis framework, which emphasizes the need to take account of *who* (actors) and *how* (process) decisions are made, *what* (content) decisions are made and under *what* conditions (context) [10]. In addition, we examine the role of actors and their influence as a central theme through a stakeholder analysis [11,12] to draw out programmatic lessons for scale up.

This paper draws from two sets of data. First, a document review was conducted of available project and evaluation reports, publications and other relevant documents on the voucher project. From this we generated evidence on the dynamics of implementation, activities conducted and the decisions made over time. Documentary materials included seven design reports and

contractual documents, five annual and midterm review reports, eight advisory and 20 steering committee minutes including four back-stopping mission reports.

The second set of data was qualitative interviews collected as part of the evaluation activities of the OBA programme in Kenya [13]. The overall aim of the qualitative component was to gain a deeper understanding of the perceptions of the actors on the programme. This paper draws from in-depth interviews (IDIs) conducted across five program sites: Kitui, Kiambu and Kisumu districts as well as Korogocho and Viwandani slums in Nairobi. Ten IDIs were conducted with health facility in-charges and 18 with service providers from the contracted facilities, District Medical Officers, Public Health Officers, local leaders and field managers.

In each site, a team of trained researchers conducted interviews with a standardized guide. Discussions with contracted providers, facility in-charges and field managers focused on their perceptions of programme design including accreditation, reimbursements, referral mechanisms, voucher distribution and perceived barriers to programme implementation. Interviews with local leaders examined access to reproductive health services and general community perceptions about the services, awareness of the programme, perceived impact and barriers to use of the vouchers at the community level.

Where consent was given qualitative interviews were recorded translated into English, transcribed and typed into Microsoft Word software. Debriefing sessions were held by the research team after each interview to provide an overview of issues raised. Informal analysis was conducted and summaries of the collected data made after each session for clarification or follow up. The data were stored and managed using QSR Nvivo8 Software (© QSR international Pty 2007, Australia).

Analysis of qualitative data entailed categorisation of issues based on inductive and deductive approaches by which *a priori* themes were used as a starting point. Later the thematic framework was improved as more data were examined [14]. Regular consultations were held with other members of the research team to enhance reflexivity. The analysis was also enriched by useful insights from members of the research team especially CW who was involved in the inception phase of the pilot program. Their views were useful in the interpretation on the role of actors and their influence on the implementation experiences.

Themes generated were further compared against analysis charts, which were developed based on the policy analysis framework [10]. Analysis charts were compared within and across sites to look for similarities and differences of key issues around implementation processes. Final analysis was organised around a description of the implementation process, role of actors, and power

dynamics. A range of analyses examined experience within and across sites, with a view to identify complex interactions between key explanatory factors that account for the implementation practices at both national and district levels. We further drew from a complementary body of work on how to investigate power [15] to generate evidence on the importance of power dynamics on implementation of programs.

Ethical approvals were granted from Population Council Institutional Review Board and the Kenya Medical Research Institute (KEMRI) Ethics and Research Committee. Written informed consent were obtained from all the interviewees. To protect the identity of participants at the point of data collection and reporting is an important ethical procedure. However, a dilemma recognised in this study is lack of complete anonymity of data especially during reporting given the small number of actors being interviewed. Attempts were made to minimise these problems and strike a balance between the value of providing information on implementation experiences and anonymising participants. Interviewees were also given the options of not using voice recorders during interviews and to omit their quotes in reports and papers. Another measure used to maintain anonymity in reporting was the use of broad actor groups to indicate the perspective of the information without linking to a particular actor. This was important as certain information was considered sensitive but necessary to illustrate challenges of implementation.

Results

Program inception

The overarching goal of the OBA program is to improve access to RH services, decrease maternal and child deaths and increase acceptance of the long term family planning (FP) services. Document review suggested that this was to be achieved through provision of safe motherhood (SM), FP and gender-based violence recovery services (GBVRS) vouchers. The SM and FP vouchers targeted poor women while the GBVRS was to cater for all survivors regardless of socio-economic status. It was envisaged that the OBA would provide crucial experiences in targeting, accreditation, claims, reimbursement and quality for the then proposed National Social Health Insurance Fund. The program was designed in 2006 in view of Kenya's poor maternal mortality indicators.

The planning process took several years from conception to program launch. Initial consultations were done late 2003 culminating in the creation of a technical support mission in early 2004 bringing together partners from government, donors, non-governmental organizations (NGOs) and faith-based organizations (FBOs) in a workshop where the voucher concept was introduced and discussed [16]. The results of the 2004 technical

mission were presented in a feasibility report to the donors and the executing agency, the then National Coordinating Agency for Population and Development (NCAPD) renamed as the National Council for Population and Development in 2012. This included recommendations for the design, cost, and organizational structure of the program, investments in information systems, financial systems, capacity development and marketing strategies [17]. Following this, in early 2005, an agreement was reached between the governments of Kenya and Germany through the German Development Bank to fund RH services in Kenya through a voucher program with an estimated budget of 6.5 million Euros. These funds supported a pilot implementation ("Phase 1") carried out over three years (2006–2008).

Organizational arrangements and role of actors

The voucher program was established under the Ministry of Planning through NCAPD, mandated to oversee the implementation (Figure 1). NCAPD chaired essential organs of implementation and was instrumental in making decisions on design and management including contracting the voucher management agency. NCAPD being the executing agency was a powerful actor drawing their influence from their mandate (Table 1). The executive team was chaired by an enthusiastic team leader who was viewed as the champion of the OBA concept in Kenya and was responsible for popularising it within government circles. Qualitative interviews showed that this provided an opportunity for effective leadership and an avenue for donors and other government agencies to support the concept leading to effective implementation in the initial phases. Table 2 summarizes the role of actors involved and their influence during the implementation period.

The operation of the program was realized through two committees representing distinct interest groups. The committees carried out their activities within the NCAPD mandate. The first committee was the advisory board with an oversight role and its members drawn from NGOs, Ministry of Health (MoH), the German Society for International Cooperation (then GTZ, now GIZ), FBOs, and the private doctors' association. The board held regular meetings to receive quarterly reports from the steering committee and make decisions on program functioning. It was chaired by the executive team of NCAPD and was highly influential in the planning, design, and implementation process at all levels. The second committee was the OBA Steering Committee (OSC) comprising representatives from NCAPD, MoH Department of Reproductive Health (DRH), KfW and the technical backstopping team. They met quarterly and defined operational procedures and organized meeting schedules. Although the committee reported to the

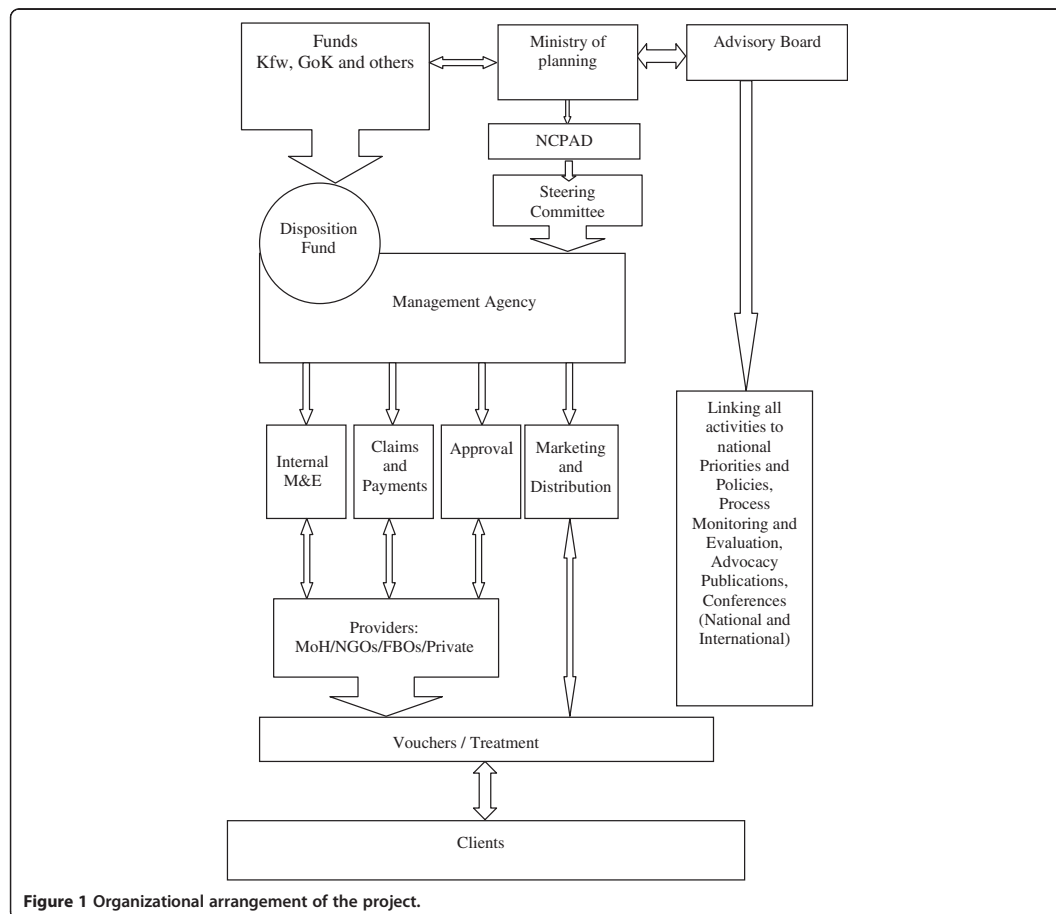


Figure 1 Organizational arrangement of the project.

advisory committee, their terms of reference provided them with ability to give direction on the program and make recommendations to the advisory committee on changes to be made.

The overall implementation process was managed by the voucher management agency (VMA)—a consortium of PricewaterhouseCoopers (PwC) and Population Council selected through a competitive selection process in October 2005. The Population Council’s role was limited and had little input in the project beyond the first year. Although Population Council contributed to the design phase, its role in the program can be viewed as a missed opportunity as their potential (given its expertise in reproductive health) was not utilized maximally leading to the council’s middle support for the program (Table 1).

The VMA reported directly to NCPAD through the Steering Committee. It was involved in the adaptation of the program to local settings. Although the VMA was

criticized for not having public health expertise being a financial audit firm, their strength lay in its own internal management system that facilitated the implementation process including an internal monitoring and evaluation department, and claims processing section. They maintained direct contractual arrangements with the providers. The VMA can be viewed to have less “power” in relation to the NCPAD but in essence it had extensive influence amongst service providers, distributors and clients as indicated in Table 1. The VMA played a significant role during the initial phases of the program helping to generate evidence for scale up. The VMA, however, being the main implementer was not represented in the steering committee giving them little opportunity to directly discuss implementation issues and get resolutions to program-related problems in a timely manner.

Other actors include the MoH/DRH, which was less influential in the initial phase although the RH service

Table 1 Force field map illustrating level of power and influence by actors involved

Level of power	Proponents				Opponents		
	High support	Middle	Low	Non mobilised	Low	Middle	High opposition
High	NCAPD						
	Advisory board						
	Steering Committee						
Medium	Price water house Coopers(PwC) - VMA	MoH-DRH					
		NHIF					
		IGES					
		Voucher distributors					
		Service Providers					
		Nairobi Women's hospital					
Low		Marie Stopes	Microd Consult	Kalzmat Security			
		Population Council	Low Scanad	Kenya Medical educational Trust			

delivery was in their docket. This may have resulted in missed opportunities as they did not provide the needed RH technical expertise leading to their middle position they occupied in terms of supporting the program (Table 1). The VMA also contracted Lowe Scanad, a local marketing firm to design a marketing strategy to create demand. In addition, a marketing consultant was hired for independent evaluation of the effectiveness of the voucher marketing and distribution functions. However, these actors contributed minimally over the program period resulting in low influence towards program implementation and are represented as actors with low support or were not well mobilized for effective implementation in Table 1.

The National Hospital Insurance Fund (NHIF) was given a contract to accredit voucher service providers (VSPs). This was made for technical as well as strategic reasons to gather political support from the government. It was selected to ensure continuity with the program in its capacity as the agency that conducts Standards and Quality Assurance of health service providers in the country. NHIF's interests were in building more evidence on the potential for expanding universal access for medical insurance coverage. However, initial progress of the quality assurance process was not comprehensive enough; in particular, a lack of periodic system of monitoring quality led to an inability to ensure quality structures were put in place, which may have implied that NHIF lacked the resources and will to conduct quality assurance assessments.

Analyzing the content and design of the program

Document review indicated that when the program was initiated it offered limited number of services but additional services were included once the concept of OBA was well understood amongst key actors. For example, the initial benefit package did not include antenatal care (ANC) services since its uptake was generally high but it was introduced later after extensive deliberations. The SM voucher thus covered ANC care, labor and delivery, caesarean section, postnatal care up to six weeks, as well as complications of pregnancy and childbirth at a subsidized price of \$ 2.5^a to poor women (Table 3). Providers were reimbursed \$ 44 for SM vouchers redeemed and an average of \$ 225 for caesarian section deliveries. The FP voucher covered: intra uterine contraceptive devices (IUCD), implants, and surgical contraception (tubal ligation and vasectomy) at a cost of \$ 1.25 with a reimbursement to providers of about \$ 12 for non surgical procedures and \$34 for surgical procedures. The GBVRS voucher was initially supposed to operate along the same lines as SM and FP, with specified limits for counseling and medical treatment by specific accredited service providers. However, due to the unpredictability of the event and the stigma it carries it was decided that the vouchers would only be available at the health facilities for free and be reimbursed at full cost of service.

Contracting and quality assurance

Accreditation process was characterized by the development of criteria that was developed by Population Council and DRH. The criteria for accrediting FP and SM services

Table 2 Actors' interests, position and influences on implementation process

Category of Actors	Roles in the program	Interest	Level of power	Position
The Project Executing Agency-NCAPD	The MoH was engaged in conceiving and planning the introduction NSHIF. For this reason, the MoH's capacities to introduce new concepts and approaches into the service delivery system were stretched to the limit. Ministry of Planning and National Development offered to step in as the temporary host with the Programme Executing Agency being the NCAPD	High	High	Supportive
Advisory board	Provided support and advice on the medical, administrative, economic, and ethical matters. Promoted and maintained communication with the steering committee. Endorsed the VMA's quarterly progress report and plans. Oversaw the OBA program implementation and link program to policy and political stream	High	High	Supportive
Steering committee	Reviewed and approved draft contracts for distributors and providers, including the fee schedule; all planned activities, quarterly budgets and operational plans, evaluation and audit reports. Monitoring and coordination of the program on behalf of GOK; provided backstopping where necessary and made decisions regarding the implementation, adaptation and improvement of the program	High	High	Supportive
MoH-DRH	Overall policy guidance with less involvement in the implementation	High	Medium	Supportive
Pricewaterhousecoopers Water House (PwC) VMA	Contracted to train VSP; developed and implemented a marketing and distribution strategy for the vouchers, Collection and processing of claims; paid for the services according to the terms of the contracts	High	Medium	Supportive
NHIF	Selected as the government agency mandated to conduct quality assurance. Accreditation and quality assurance	High	Medium	Middle support
Microd Consult	Selected after tendering to support NCPAD to develop a monitoring and evaluation framework but did not to play an active role	Low	Low	Middle support
Lowe Scanad	Marketing the program in various project sites	Low	Low	Middle support
International actors				
Marketing Consultant	Provided independent evaluation of the effectiveness of the marketing and distribution functions	Medium	Medium	Middle support
KfW	Provided funding and were instrumental in designing the concept	High	High	Supportive

Table 2 Actors' interests, position and influences on implementation process (Continued)

Institut für Gesundheits- und Sozialforschung (IGES)	Selected as consultants to the programme during its starting phase and to periodically provide professional inputs on the concept, overall programme management, medical aspects associated with the different services covered by the vouchers, marketing and reimbursement systems. Mediating different stakeholders. Contracted to offer back stopping services since it was the only one with knowledge on the voucher program	High	Medium	Supportive
Local actors				
Voucher distributors	Marketing of the vouchers, interviewing clients to ensure target beneficiaries obtain the voucher	High	Medium	Supportive
Service providers	Providing services to voucher clients, prepare the requisite documentation on services provided for claims processing and report to VMA any irregularities noted on vouchers presented by clients	High	Medium	Supportive
Nairobi Women's Hospital	Identified based on being the only facility that provided gender-based violence recovery services	High	Medium	Supportive
Kalzmat Security Print Ltd	Printing vouchers	Middle	Low	Immobilised
Marie Stopes	Developed and provision of a participatory poverty grading tool that was used to identify eligible clients for the voucher system	High	Low	Supportive
Kenya Medical and Educational Trust	Involved in initial design phases but not in implementation	Low	Low	Immobilised
Population Council	Involved in development of the accreditation criteria and standards for voucher package and the quality assurance manual	High	Low	Supportive
African Population and Health Research Center	Involved in initial design phases but not in implementation	Low	Low	Immobilized
Community level actors				
Beneficiaries	Responsible for seeking the vouchers and using them to access services at the accredited VSP's. Required to provide accurate and true information to the voucher distributor which is used to determine their eligibility	High	Low	Supportive

were adapted from the existing national standards. There were no criteria that could be drawn for GBVRS; these were developed based on experience and local circumstances. NHIF was involved in selecting the VSPs and accredit them in consultation with the Technical Committee on Accreditation and Quality Assurance.

Data from the qualitative interviews show that accreditation of health facilities was adapted to local settings. During phase two some facilities were contracted even though they did not meet minimum standards with the aim of supporting competition and patient choice, and with the understanding that their service quality would improve over time: *"I think it's the situation of the facility since it's too interior and we also needed support since we are getting mothers delivering mostly with the Traditional Birth Attendants because they cannot afford delivering in the hospitals. And we also needed to improve the services in the facility"* (Clinical Officer-

Dispensary). The aim was to nurture capacity and experience among providers. This was hoped that it would yield benefits beyond the scope of the voucher program. However, this resulted in limited services as some of the providers were unable to offer the full benefit package.

NHIF accredited a total of 54 VSPs to offer RH services during phase one. However, it was evident that there were differences between the VMA and NHIF regarding the process and timing of quality assurance mechanisms. While the VMA perceived that it is sufficient to examine service quality once a year, NHIF was convinced that the increasing number of voucher clients required frequent monitoring and training of hospital staff. Although quality assurance inspection by the NHIF was planned to be done every six months, this was not adequately implemented. In August 2008, the technical committee was reconstituted under the leadership of the Head of Division of

Table 3 Key design features

Key features	Characteristics
1. Benefit package	
<i>Safe motherhood (SM)</i>	
Management of labour and complications	<ul style="list-style-type: none"> ✓ Delivery- vacuum extraction and caesarean care ✓ Emergency obstetric care; manage all stages of labour ✓ Refer for emergency obstetric care services ✓ Management of postpartum hemorrhage, eclampsia but not abortion related issues ✓ Management of retained placenta, prolonged labour/obstructed, ruptured uterus. ✓ Four ANC visits
Post natal care	<ul style="list-style-type: none"> ✓ Within six hours of delivery examination of clients for danger signs ✓ Referral for postpartum hemorrhage, third degree tear ✓ Newborn care and referral for sick new born ✓ Post operative care for Caesarean section ✓ Review mother and counsel on infant feeding practices ✓ Contraception and PMTCT services
Long term Family planning methods	<ul style="list-style-type: none"> ✓ Long-term contraception methods but at present underutilized-implants, IUCD, male and female voluntary surgical contraception
Gender based violence	<ul style="list-style-type: none"> ✓ Medical examination and treatment and management of injuries ✓ Hospitalization and accommodation ✓ Laboratory testing and X-rays including (HIV/AIDS, High Vaginal Swab, Hepatitis, Pregnancy, Syphilis, Urinalysis, Haemogram, Liver Function ✓ Access to pregnancy prevention medication & antiretroviral drugs ✓ Professional counselling
2. Quality Assurance	
Infrastructure and basic services	<ul style="list-style-type: none"> ✓ Facilities with basic equipment and infrastructure and staff according to the level of care ✓ Provision of basic emergency and comprehensive obstetric care
Monitoring quality	<ul style="list-style-type: none"> ✓ Documentation of treatment given including filling in the partograph, patient file notes and register ✓ Documentation to facilitate reimbursements and claims ✓ Analysis of claims data regularly every three months
3. Selection of facilities and accreditation process	
Selection of providers	<ul style="list-style-type: none"> ✓ Mapping of facilities in selected districts based on level of care and service given (basic and comprehensive obstetric care) and licensed service providers ✓ Selection made by an assessor using set criteria
Contracting providers and distributors	<ul style="list-style-type: none"> ✓ Contractual agreements with selected VSPs and distributors
4. Marketing and distribution	
Distribution process	<ul style="list-style-type: none"> ✓ Two mechanisms used; direct approach distribution where vouchers are sold to clients in their homes; use of specific locations- where clients will go to specific points to access the vouchers such as preferred fixed selling points such as pharmacies.
Marketing strategy	<ul style="list-style-type: none"> ✓ Designed to use local media, radio shows, vans buses, fliers and posters and marketed as VOCHA brand
5. Claims and reimbursement process	
Claims processing	<ul style="list-style-type: none"> ✓ Time line pegged at a month from presenting claim with proper documentation
Reimbursement	<ul style="list-style-type: none"> ✓ Reimbursement fee set based on a market analysis of what different facilities charged and negotiated
6. Management system	
	<ul style="list-style-type: none"> ✓ System of managing program with clearly defined roles

Family Health to undertake a review on the quality assurance status on the accredited VSPs. It was also evident from technical committee findings that the accreditation process was not well synchronized and lacked feedback mechanism to the providers. Overall the review of quality assurance procedures reveal that basic RH policies, guidelines and standards were generally not well implemented while the VSPs had very little or no access to refresher trainings and RH skills update from MoH.

Marketing and distribution of vouchers

The Kenya voucher program was designed to utilise the existing local administrative structures, community and opinion leaders to popularise it. This was envisaged to play a vital role in creating awareness among the target community. However, community level discussions showed that the process was not effectively implemented. There was evidence that in some sites, the administrative offices provided venues for fixed distribution points for voucher sales. The distribution process utilised a poverty grading tool for both SM and FP services except the gender violence recovery services, which were made available in health facilities for all who needed it. The marketing strategy was generally not intense during the initial implementation period despite contracting a marketing firm. Qualitative interviews show promotional activities were targeted in specific locations and the information was limited to less remote settings leading to poor uptake of vouchers. Initial plans were to use multiple marketing campaign strategies such as local radio advertisement, road shows, and educational strategies. Use of radio broadcast turned out to work well in

Kisumu, but none was available in the Nairobi slum area. In Kiambu, the response to radio spots was received with an overwhelming majority and many people from as far as Nairobi were attracted to participate without necessarily being eligible. This high demand led to a discontinuation of the radio spots. On the other hand, it was noted that the role of the marketing agency was potentially limited by budgetary constraints, time and complex marketing strategies required. The role of the agency was thus reduced to undertaking a one-off activity with limited interactions across sites resulting in their low influence suggesting lost opportunity to maximise their potential.

Voucher distribution was based on two approaches. One was a fixed point distribution linked to the commissioned agents who received 25% commission per voucher. This approach was not well executed leading to malpractices such as disregarding adherence to the poverty grading tool. In addition in some instances distributors attempted to sell vouchers to clients who were in extreme need such as in hospitals to women in early labour or in other instances selling to those who did not come from the target community or avoiding sparsely populated rural areas. Following this experience a decision was reached to hire full-time trained distributors on a monthly stipend. Utilising this approach had the unintended benefit of accommodating some women who could not afford to pay up front for vouchers as distributors were more likely to let women to pay in installments. In general though, there was a perception that there was need to further improve the distribution process. Figure 2 shows the arrangement behind the voucher distribution process.

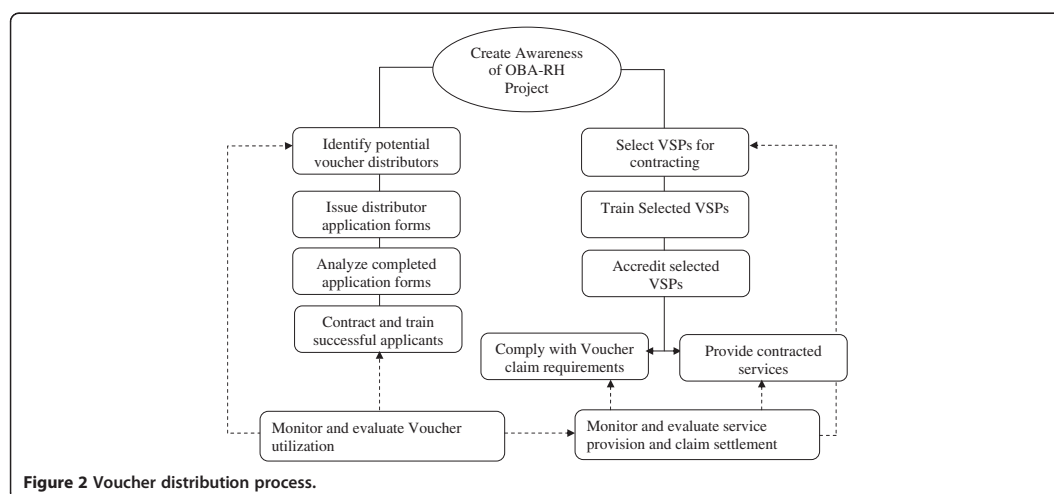


Figure 2 Voucher distribution process.

Claims processing and reimbursement

The claims process was one aspect that was elaborate and required adherence to procedure. Both interviews and documentary review showed that once clients visited an accredited facility with a voucher for services under the benefits package, the VSPs provided the service and then filed the necessary documentation for reimbursement. These documents include: the original voucher, duly completed service claim form, discharge summary or medical report, a copy of the patient's or guardian's identification card, and the original invoice and statement of account on the invoices being submitted to VMA. Submitted claims were first verified and then sent through the approval process. As soon as payments were ready they were wired into the VSP's bank accounts and an advice sent to the VSP, advising on the particular payments effected and invoices included in the payment.

The program design provided for a reimbursement procedure that could process claims within 30 days through a computer system. However, this was not the case in practice as the process was perceived to be slow and cumbersome and did not account to actual payments made.: *"I think the process of reimbursement takes too long. There's a time you claim and the time you are receiving this money it takes quite a while and you see when we send these claims; when they are reimbursing us they should also send a copy of what they have paid and what they have not paid explaining why what was not paid The last time I called there I was told there is a problem with the claim processing system; we should wait"* (Provider). Although sometimes the delay was occasioned by challenges of the claims system within the VMA, some facilities also violated the guidelines stipulated by attending to clients for conditions not included in the benefit package resulting in a claim rejection. In other cases claims were rejected because claim forms were signed by hospital staff on behalf of the clients, providers tampered with the voucher details or submitted incomplete, inconsistent or delayed documentation.

The VMA set ceilings for the reimbursement of various services based on an earlier study. The actual reimbursement rates were negotiated with each service provider based on the respective cost situation. Additional expenses from medical complications were covered by the VMA as long as they were deemed valid and documented well. In spite of this there were complaints around the ceiling set as providers in some private facilities suggested the amount was too little "I also feel the amount of money they are giving us is not enough. For example if we have ANC; if our clients come here, the cash patients or non-OBA patient; they are usually 3 or 4 visits. For 3 visits, that is KES 900 and also the first

visit when you come, we charge KES 400. Then there is the ANC profile done during the first ANC visit; our profile costs KES 1000. When you add this all up it is giving you around KES 2300 for a cash patient of which the OBA are giving us only KES 1000. When it comes to normal delivery, our normal delivery ranges from five to around eight or ten thousand but the OBA they are giving us four thousand. If it's above four thousand, that is a complication. Come to Caesarean, our Caesarean ranges from about twenty-one to around thirty [thousand]. They are only giving us twenty thousand (Private provider).

In some places, this resulted to voucher clients getting less attention than non-voucher clients who can pay higher prices. Moreover some private establishments were reluctant to participate although they were better located to serve target clients. Others who were accredited pulled out as a result of being overwhelmed by the demand created by voucher clients. Although, some providers felt obliged to treat all clients equally and not to discriminate against voucher clients, taking into account their capacity constraints, they could only do so by limiting access for voucher clients. This contradicted a major principle of the voucher systems that is client's free choice among all accredited service providers.

Apart from processing claims and accessing the funds, providers working in public facilities reported challenges in utilizing the reimbursements from voucher clients. The bureaucratic barriers in the public health system meant that most public health facilities could not benefit from the proceeds of voucher clients. To address this there were long deliberations and consultations with the MoH and it was agreed that money generated from the OBA would be used by the public service providers to improve care (such as purchase of supplies, laboratory consumables, improve sanitary conditions) but not to hire additional staff on a permanent basis. Hiring staff on a temporarily basis was accepted. The general view among providers was that funds generated from voucher service delivery were to be exclusively used for improvement of quality service in reproductive health services; however, bureaucratic requirements limited its use; *"I am telling you now this money we are not able to use it as the OBA money. It is consolidated as the hospital money so trying to push it back to the facility like now the maternity it is a struggle. So we tried from the Ministry whether it can be banked as the OBA money and they refused. We cannot do that. It is against government policy. So if all this money was to be banked separately then we could be able to access the money 100% but now we are not able. Because now once the committee sits down to budget whatever we have collected it is included. And then the facility receives it as what they have budgeted for that facility, . . . although matron tries to insist*

that they should increase the allocation to the department” (Provider).

Overall, providers experienced challenges such as lack of awareness among clients and providers in the reimbursable services, delays in payment, lack of information on those claims that were rejected and inadequate communication on the procedures as one provider was quoted: “feedback is not good at all , ... Like for example I told you we had a meeting in May and it’s just last month we received one payment. We don’t know for which batch the payment is because there was no advice slip that was sent. From then we have not received any other and yet we are still seeing these patients. They have not communicated back. We send a letter to them, nothing was said. We send another letter and it has not been replied” (Provider).

Implementation process

The implementation process was designed in phases as shown in Figure 3. The phased implementation provided an opportunity for learning and adapting the program to local settings and making necessary changes. One important contextual event in Kenya that helped to drive the voucher agenda forward was the fact that parliament was considering adopting legislation to create a National Social Health Insurance Fund. The voucher concept was viewed by some Kenyan policymakers as a useful model to prepare for the envisaged national social health insurance fund.

Phase one was implemented between October 2005 and October 2008. The first nine months were characterized by planning and setting up of the program. The project was launched officially in the first pilot district in

Kisumu in mid 2006 after a four month delay of project funds. This also delayed contracts for marketing, VSP accreditation and quality assurance. The project began with eight accredited health facilities in Kisumu district. By the end of 2006 facilities in two other pilot districts: Kiambu, Kitui and the slum areas in Nairobi were included. The second and third years (2007 and 2008) focused on fine tuning the program.

Phase II was preceded by several discussions leading to bilateral talks between the Kenya and German Governments in February 2007 and an allocation of about 10 million Euros. To facilitate smooth transition, scale up and institutionalization and sustainability of the project from NCAPD to the MoH, in May 2007, the steering committee agreed that the MoH would attach some of their staff to the project after the midterm review. Although a transition program was drawn after the midterm review, the realization of this phase took longer than anticipated. This was reflected by a period in 2008 where there were no activities undertaken during the transition period (refer to patterned phase of Figure 3). This was attributed to the long process which included a commissioned study to review the institutional framework and give recommendations on the possible transfer of the program from the NCAPD under the Ministry of State for Planning, National Development and Vision 2030 to the planning and finance department in the Ministry of Health.

The study recommendations noted the undergoing changes in the health sector and the future of the NHIF and the envisioned national social insurance fund were yet to be clearly defined. Thus it was recommended that the program activities be maintained under the

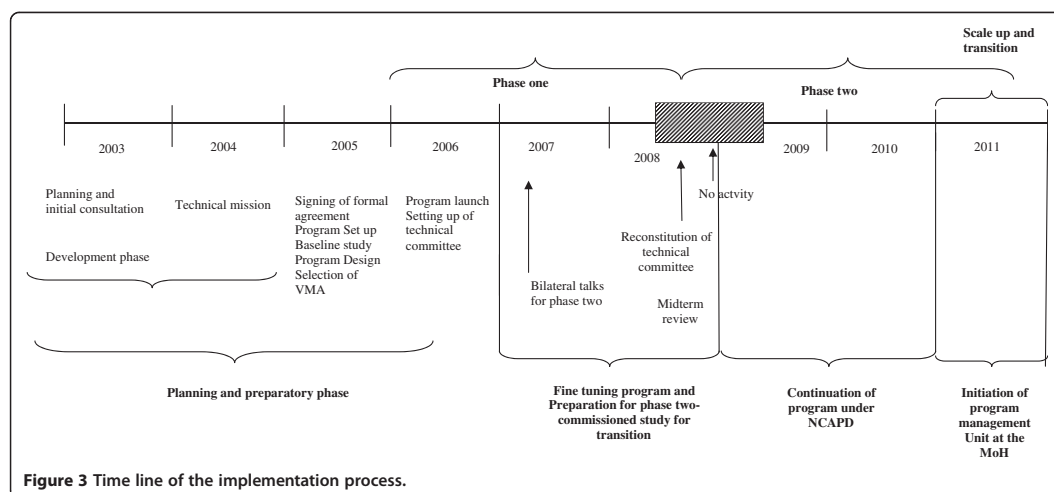


Figure 3 Time line of the implementation process.

management of NCAPD. A study was proposed to refine the technical design of phase II. The second phase was set to start in November 2008 and run to October 2011.

Later in 2008 a discussion paper was presented in a workshop proposing to include the OBA concept as a government mechanism. This provided a boost to the OBA concept within government leading to process of identifying it as flagship program for the vision 2030[18]. During phase two, there were delays for a year in contracting the technical team, finally, a consulting firm (EPOS) was contracted to support the transition of the program to the MoH. This culminated to the development of a program management unit within the MoH to support the scale up.

Program modifications

A number of changes were made by the Advisory Board over the implementation period most of which were based on ongoing learning. Firstly, there were transient contextual features. For example FP commodity stock outs, notably implants, resulted in low uptake and under utilization of long term FP services. Based on these experiences, the steering committee decided to use the process monitoring funds to support the DRH to ensure that no stock outs of implants were experienced over the implementation period. Secondly, during phase one, the government announced waivers for deliveries and maternity fees in government facilities—the announcement was made during an electioneering period. However, this did not affect the design directly, but necessitated more public information in the project sites. Thirdly, flexibility of the voucher programs meant mid-stream changes were possible. Through the support of German Government, a 6 million Euros food aid component was introduced. The food aid component was intended to meet the food requirements of the SM voucher clients and malnourished clients in need of gender based violence services. The World Food Program was contracted by KfW to implement the food aid component in liaison with the VSPs. The component was to run for 3 years. The rollout of the food aid component commenced in Nairobi and Kiambu district in July and August 2009 followed by Kitui and Kisumu districts in the subsequent months. In each of the sites, the proprietors of the health facilities and their staff were sensitized and trained on the food aid component before they were given the food for distribution. However, qualitative interviews suggest that this was misinterpreted in Kisumu, where beneficiaries of food supplements were associated with people living with HIV which generated stigma affecting uptake of FP vouchers.

There were changes in voucher distribution systems as lessons were learned. The VMA managed to regularly monitor the claims and delinked voucher distribution

from VSP to avoid situations where providers and distributors could file claims for ghost clients. In some cases distributors sold vouchers at higher prices. The VMA responded by putting up posters on the prices of vouchers on market days. It was reported in some sites that wealthy patients bought the vouchers potentially crowding out the ability of the intended beneficiaries to access the voucher. In other places, some patients and VSPs copied the vouchers and there were incidents where providers refused to see voucher clients or charged extra amounts. The VMA conducted regular exit interviews and careful review of claims to control irregular behaviour and potential fraud.

In addition to changing management practices to deter fraud, the program added a family planning method in the first postnatal visit on the SM package and refined the scope of services for gender-based violence survivors. In addition, changes were made to the SM voucher, allowing an expectant mother to have several consultations -in line with standard 4 ANC visits- in the course of pregnancy and admissions during the last trimester (e.g. false labour). Prior to this change, providers had used copied vouchers to make a claim.

Discussion

A systematic review on outcomes of RH voucher programs show that such strategies increase utilization of RH services, improve quality of care and population health outcomes. However, there is limited evidence on program effectiveness and cost-effectiveness as well as the analysis of implementation process of such programs to draw out lesson for scale up [19]. This paper attempts to fill this gap by providing systematic assessment of implementation process to provide lessons on how such programs can be implemented and scaled up.

Before illustrating lessons learnt for scale up, a number of limitations are worth highlighting. First, the analysis of implementation experiences is based on interviews and retrospective documentary analysis. Although the approach triangulated ideas from multiple sources, we were not able to corroborate all the views in reports. Finally, some members of the research team were involved in the inception phase of the voucher program and some element of reflexivity may have affected the research agenda including tools development and data analysis.

This study has identified a number of lessons from the implementation of a RH voucher program, drawing from three main areas: strategic management; implementation process and how design elements may have influenced implementation process and policy implications for scale up.

In terms of strategic management, three key lessons can be identified. First, use of an advisory board and a steering committee helped to institutionalize accountability,

generated checks and balances, and allowed adaptation of program elements to local settings to improve implementation. The use of strategies such as pegging subsequent implementation activities on the success of the activities allowed for reflections of lessons learnt and provided an opportunity for modifications. This improved both implementation process and outputs. Although strategic decisions made during the deliberations of the regular committee meetings were communicated to the VMA, future management ought to consider including the VMA in the steering committee, perhaps as an observer, for timely implementation of the decisions made.

Secondly, in the early program, the NCAPD team leader was part of the steering committee that was influential, respected and enjoyed wide support from both government and donor community. In the second phase, the Director of Public Health and Sanitation had a critical role in decision-making on routine operational issues. Going forward, the program will be strengthened by further development of systems that are insulated from the routine turnover of key leaders. This institutionalization is underway with the development of a program management unit within the Ministry of Health.

Thirdly, strategic partnership between the private and public sector when well managed can help improve public health goods as was demonstrated by the involvement of PwC as the VMA. Contracting out is one feature that has been widely documented to facilitate effective delivery of health services but there is limited evidence of how this works in RH voucher programs [8]. This study shows that clear contractual arrangements need to be put in place to facilitate implementation of OBA programs.

The Kenyan experience has provided some insights on the dynamics of implementation of OBA programs. Detailed planning beforehand and use of feedback mechanisms allow for adjustment during the program. Good planning allows adequate time to account for unexpected challenges and having mechanisms to counter such situations through effective management strategies. This also allows smooth transition from the pilot phase to scale up. A similar assessment of the Bangladesh voucher program noted that careful planning was necessary before implementation to ensure that adequate administrative and financial resources are mobilized [5].

Implementation process will need to continue to optimize organizational learning and flexibility as experience is gained over time. This flexibility may be difficult in bureaucratic contexts, however, utilizing a private-public partnership as was the case for PwC may help to improve efficiency especially in service contracting and claims processing. Such arrangements need to

ensure the objectives of the private sector and the public sector service delivery are aligned to produce high quality performance.

In terms of design changes as the program scales, there is a continual need to communicate the benefits package effectively to voucher service providers, including reminders of what information is reimbursable. This may necessitate periodic marketing using different media when the program goes to scale. Going forward, public sector facility autonomy could more clearly established. Policymakers should give the facility-level managers greater discretion on use of these reimbursement funds to improve quality of care for RH services or share across the facility. Another potential challenge that needs routine review at the planning and operational levels is the targeting the poor. The Kenyan experience illustrates that VMA can use local knowledge in addition to the poverty grading tool may improve targeting. However, further work needs to be done to provide evidence on targeting mechanisms.

The second aspect of design is the claims processing. For an effective system, an operational management information system ought to be considered to improve the voucher tracking system from point of service through claims review and reimbursement and allow for flexible addition of new information technology modules or services in the future. This would help improve payment speed and reduce fraud and error. The timely processing and disbursement of vouchers and incentive payments is likely to increase private sector participation and improve population-level access to maternal services.

Conclusions

For effective scale up of RH voucher programs, such schemes will require an effective partnership between the public and private entities guided by clearly defined rules of engagement. The government should provide adequate funding, play a stewardship role and look for opportunities to utilize existing platforms to scale up such strategies. Active, cost-effective engagement with service providers in updating them and educating them on the process is likely to be a role that government should emphasize for effective participation generating wide buy-in. This paper has illustrated that RH voucher schemes can be implemented successfully as pilot program and has a potential for scaling up with stronger partnership between the public and private sectors.

Endnote

^a1\$ = KES 89.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

TA was involved in the document review, analysis of data and was responsible for drafting the manuscript. CW, JO, RN, FO, and LK were involved in reviewing the manuscript for intellectual content. BB and IA were substantially involved in conceptualizing the study and revising the manuscript for intellectual content. All authors read and approved the final manuscript.

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CHAPTER 7

DISCUSSION AND RECOMMENDATIONS

CHAPTER 7: DISCUSSION AND RECOMMENDATIONS

This thesis aimed to describe how postnatal care is provided in Kenya and Swaziland following the introduction of an expanded bundle of postnatal services or package of care—both in timing and content of postnatal consultations for both mother and baby; and within a medium and high HIV environment.

In this chapter I will discuss the project findings in relation to other studies in the field, the emerging recommendations, and suggested areas for future research. The studies presented in the thesis are discussed in relation to the objectives on the quality of PNC; factors associated with uptake of FP as part of a postnatal package of care; and policy issues at national levels on maternal and newborn care. Table 8 summarizes the papers that make up the results section of this thesis.

Table 8: Summary of studies and reviews conducted to address the objectives

Study name	Country	Location	Study design	Thesis chapter
Safe guarding MNH: improving the quality of PNC	Kenya	Embu, Eastern Province	Before and after quasi experimental design	4.1
Integrating quality PNC into PMTCT	Swaziland	Hohoho and Manzini Regions	Before and after quasi experimental design	4.2
Comparison of Voucher facilities with non-voucher facilities	Kenya	Kisumu, Kiambu, Kitui districts compared with Uasin Gishu, Nyandarua and Makeni Districts	Cross sectional post-test design with control	4.3
FP practices and pregnancy intentions	Swaziland	Hohoho, Manzini, Shiselweni and Lubombo Regions	Cross sectional	5.1
Policy analysis of RH Voucher program	Kenya	Policy level	Policy analysis	6.1

In measuring the quality of care in the studies described in this thesis we used a framework adapted from Donabedian, Bruce and Hulton which is described in the methodology section [96, 98, 127]. Bruce argues that quality can be seen from the structure of the program, the service-giving process, and the outcome of care. The outcome of care in FP consultation consists of knowledge, behavior, and service satisfaction [127, 128]. To define the quality of PNC we developed checklists based on international and national guidelines on what health providers were supposed to do for a postnatal client

and her newborn baby—and adapted previous questionnaires/checklists previously validated by Population Council elsewhere to observe the client provider interactions during a postnatal consultation [117]. Bruce adapted Donabedian’s approach to evaluate the quality of FP and Hulton’s approach was targeted at obstetric care. By combining and adapting all three frameworks we were able to ensure that all dimensions for assessing PNC were covered and included both the quality of the provider’s services and the user’s experience.

Following the baseline assessments, training plans were developed which included supervision and monitoring of the key skills taught. Supervision and clinical audit with feedback, especially if combined with training, have been found to be effective to help improve quality [129, 130]. Structural and process indicators provide important interim measures of quality and system performance. Quality improvement is an iterative process to deliver effective care within a complex health system and is by no means straightforward [131]. Even when providers receive training and supervision—it takes time for the knowledge to be assimilated and acted upon. A review of literature on quality of private and public health care in low and middle income countries indicate that raising the quality of care in a health system is a long-term effort and requires attention to various aspects, including the incentive structure and training of providers [131].

Taking the results from the five papers together, and from my experience of living, working and conducting these and other implementation research studies in east and southern Africa over 12 years, eight recommendations for improving postnatal care have emerged.

Recommendations

1. Evidence suggests that packages of postnatal interventions provided in a comprehensive manner lead to improved performance and quality of care (4.1 and 4.2).

When MNCH interventions are packaged and provided through different service delivery models tailored to suit a country’s health system cost effectiveness is enhanced and use of human resources potentially maximized [2]. A ‘strengthened’ postnatal bundle or package of services combining essential maternal and newborn care was introduced into a small sample of maternity wards (Kenya and Swaziland); health centres (Kenya) and public health units (Swaziland) between 2006 and 2008. The pre-post study designs focused on the feasibility and acceptability and quality to providers and clients following the introduction of two additional postnatal contacts with health care providers in the immediate (within 48 hours), early (within one-two week) and strengthening the late (8–42 days) postnatal period.

The package of postnatal care includes five key ‘services’ and provides opportunities for health care providers to: 1) Counsel women on preventive care and promote appropriate care seeking for herself and her baby; 2) Inform and provide appropriate FP counseling

(depending on their breastfeeding status and time since childbirth) and methods; 3) Ensure infant receives immunisations (and tetanus toxoid for mother if required); 4) Counsel and provide HIV services (and/or referral) including testing infants of women living with HIV; and 5) Assess and strengthen infant feeding practices—by encouraging the mother to both demonstrate breastfeeding her baby and asking how she is managing both breastfeeding and caring for the new baby.

Our papers show that all aspects of the bundle of postnatal services showed improvements in quality of care. The earlier studies conducted in Kenya and Swaziland (4.1 and 4.2) demonstrated high quality of care during observed consultations within 48 hours and one/two weeks and significant improvements among the providers observed before and after the intervention at six weeks asking about both newborn and maternal danger signs. All infants in the Kenya study received their BCG and birth Polio before leaving the maternity unit; 88 percent of infants observed attending the six week check received DPT/Hepatitis B and Hib (Pentavalent) and 94 percent received polio 1 immunizations. This is comparable to the 2008/9 Kenya DHS data which shows BCG and Polio 0 at 96.1 percent and 96.8 for DPT/Hepatitis B and Hib and 97.4 percent for polio 1 [47]. Data from Chapter 4.3 demonstrated that more newborns attending voucher facilities received BCG than those attending non-voucher facilities.

We also saw significant increases in relation to the promotion of early and exclusive breastfeeding. More providers in Kenya were observed re-emphasizing exclusive breastfeeding (an increase from 51% to 75%; $p=0.006$) at the 6 week check. In Swaziland we saw a significant increase (more than doubled) in the early initiation of breastfeeding (within one hour of birth) among both HIV-positive and HIV-negative and a significant increase in the proportion of HIV-negative postnatal women interviewed at the postnatal clinic (between one and eight weeks after childbirth) who said they were practicing exclusive breastfeeding at the time of interview from 49–65 percent. Although not significant there was also an increase among HIV-positive women who said they were exclusively breastfeeding (60–69%). Data from the Swaziland cohort study (5.1) conducted in 2010 shows an even higher proportion of women living with HIV who reported they were exclusively breastfeeding (87.8%) than the endline results collected during the earlier Swaziland study (4.2) in 2007(69%).

This improvement in early initiation and continuation of exclusive breastfeeding is particularly pertinent as studies have shown that more newborn lives could be saved if infants were breastfed on day one and within the first hour of birth [132, 133]. Sub optimum breastfeeding practices can contribute to around 1.4 million deaths and a 10 percent disease burden in children under five years of age [31]. However up until the mid to late 2000s there was confusion among women and providers alike on breastfeeding recommendations for women living with HIV. This was because of misunderstandings and misconceptions on the safety of breastfeeding infants of HIV-infected mothers created by the HIV epidemic in the 1990s and early 2000s due to the mixed messages in international and national guidelines. In fact these misconceptions continue to exist in Ken-

ya and Swaziland [134]. The World Health Organization recommends that HIV-infected women practice exclusive breastfeeding (EBF) for the first 6 months postnatal to reduce HIV transmission [135]. Many national recommendations now state early and exclusive breastfeeding for both HIV-positive (and access to ARVs) and HIV-negative women [136] including Kenya and Swaziland [137]. More women in Swaziland exclusively breastfeed for 6 months (44%) than in Kenya (32%)—but both countries have seen an increase in the last decade (see figures 6 and 9) [111, 113].

Although we saw significant improvements in quality of care—in both 4.1 and 4.2, the endline results were not as high as expected, or near WHO or national standard levels [7, 138]. For example in Chapter 4.1 although the post intervention composite score for PNC (maternal and infant) at six weeks more than doubled, the score was only around 30% of the maximum quality score possible. This is likely due to the low knowledge and practice of health care workers at baseline. It was also discovered during baseline data collection in Kenya that the quality of ANC was also low. The changes introduced in both countries required further institutionalization to reach an acceptable standard in line with national MNH or RH strategies [100] and within a continuum of care strategy [2, 31]. The void of comparable relevant data for programs reveals the lack of systematic provision of services in first few weeks of the postnatal period [139].

Recently in 2014 Salam et al reviewed childbirth and postnatal interventions that have a beneficial impact on maternal and newborn outcomes. Besides the focus on the known aspects of ensuring competency to conduct neonatal resuscitation, essential newborn care and extra care for the low birth weight baby, interventions specific to the postnatal period include early and continuing breastfeeding (with support and advice) counseling and support for family planning, detection and treatment of maternal anemia, detection and management of puerperal sepsis and early postnatal visits [141].

Table 9 summarizes the what, when, where and who for PNC building on work undertaken by the author and others during a review of postnatal care in SSA in 2006 (which are still pertinent today) [24] as well as additional findings from the studies described in this thesis.

Table 9: Comprehensive postnatal care

WHAT is routine PNC?

Preventive care practices and routine assessments to identify and manage or refer complications for both mother and infant including:

Essential routine PNC for all mothers:

- Assess and check for bleeding, check temperature;
- Support breastfeeding, checking the breasts to prevent mastitis;
- Manage anaemia, promote nutrition and insecticide treated bed nets, vitamin A supplementation
- Complete tetanus toxoid, if required;
- Provide counselling and a range of options for family planning;
- Refer for complications such as bleeding, infections, or postnatal depression; and
- Counsel on danger signs and home care

Essential routine PNC for all newborns

- Assess for danger signs, measure and record weight, and check temperature and feeding;
- Support optimal feeding practices, particularly exclusive breastfeeding;
- Promote hygiene and good skin, eye, and cord care;
- If prophylactic eye care is local policy is effective until 12 hours after birth;
- Identify superficial skin infections, such as pus draining from umbilicus, redness extending from umbilicus to skin, more than 10 skin pustules, and swelling, redness, and hardness of skin, and treat or refer if the baby also has danger signs;
- Ensure warmth by delaying the baby's first bath till 24 hours, skin-to-skin care, and hat on baby;
- Encourage and facilitate birth registration;
- Refer for routine immunisations; and
- Counsel on danger signs and home care

Extra care for low birth weight (LBW) or small babies and other vulnerable babies, such as those born to HIV- infected mothers (two or three extra visits)

The majority of newborn deaths occur in LBW and preterm babies. One third could be saved with simple care:

- Identify the small baby;
- Assess for danger signs and manage or refer as appropriate;
- Provide extra support for breastfeeding, including expressing milk and cup feeding, if needed;
- Pay extra attention to warmth promotion, such as skin-to-skin care or Kangaroo Mother Care
- Ensure early identification and rapid referral of babies who are unable to breastfeed or accept expressed breast milk;
- Provide extra care for babies whose mothers are HIV-positive, particularly for feeding support;

Early identification and referral /management of emergencies for mother and baby

Appropriate detection, management, or referrals are necessary in the event of life-threatening complications.

Danger signs for the mother

- Excessive bleeding;
- Foul smelling vaginal discharge and severe abdominal pain;
- Fever with or without chills;
- Excessive tiredness or breathlessness;
- Severe headaches or blurred vision with swollen hands, face and legs; and
- Painful, engorged breasts or sore, cracked, bleeding nipples.

Danger signs for the baby

- Convulsions;
- Movement only when stimulated or no movement, even when stimulated;
- Not feeding well;
- Fast breathing (more than 60 breaths per minute), grunting or severe chest in-drawing;
- Change in body temperature : Fever (above 38 °C) or Low body temperature (below 35.5 °C);
- Very small baby (less than 1500 grams or born more than two months early); and
- Bleeding

WHEN and how many postnatal visits should occur

To reduce risk of maternal and newborn mortality and morbidity and promote healthy behaviours:

- First contact: If the mother is in a facility, she and her baby should be assessed within one hour of birth and again before discharge;
- Encourage women to stay for 24 hours, especially after a complicated birth;
- If birth occurs at home, the first visit should target the crucial first 24 hours after birth;
- Follow up contacts are recommended at least at 2–3 days, 6–7 days, and at 6 weeks; and
- Extra contacts for babies needing extra care (LBW or those affected by HIV) should have two or three additional visits.

WHERE should PNC be provided and WHO can provide it

Possible strategies for delivery of PNC and many of the routine tasks can be delegated, although supervision and linkages are crucial:

- **At a facility:** This is more likely if the mother gives birth in the health facility, but even then women and babies do not necessarily receive an effective PNC contact before discharge from the health facility, and even if mothers initially come to facilities for birth, they may not return in the first few days after discharge from a facility;
 - **Through outreach services:** A skilled provider can visit the home to offer PNC to the mother and baby;
 - **Home visits** from a CHW: Where health systems are not as strong and human resources are limited, certain tasks can be delegated to CHWs, linking to facilities for referral as required; and
 - **Combination of care in the facility and at home:** PNC may be provided in the health facility following childbirth, at the home during the first crucial two to three days, with subsequent visits to the facility after six to seven days and six weeks, when the mother is better able to leave her home.
-

2. Train and supervise providers in comprehensive PNC package of care, including re-organization of health facilities to accommodate women and newborns accessing care together as well as sustained support to ensure that new ideas are ‘internalized’ into health facilities’ working culture.

Postnatal care requires coordinated care for both mother and baby wherever services are offered and referral linkages to both maternal and child health services. In many instances the same health worker is providing care for the mother and the baby, yet protocols and standards combining maternal and newborn care have yet to reach the peripheral health facilities, or a child health worker is assessing a newborn but has not been trained to do so [24].

Training and supervision were one of the key components of the interventions in studies 4.1 and 4.2. However this alone will not make a difference. The interventions conducted during these studies include nine system areas that need to be addressed; the development or adaptation of guidelines and training materials, as well as ensuring the infrastructure, equipment, commodities, supplies and informational materials are in place or available. Neither country had national guidelines on PNC let alone specific detailed training materials and job aids for the front line health providers. In Kenya even though postnatal registers were developed and distributed in 2005—few facilities were actively using them. The challenge following any training is whether health providers are able to make the changes they have learnt, have the tools to do the work, and managers that are supportive. This is especially the case if the way the health facility is laid out or the way the clients ‘flow’ through the facility needs to be changed. In many places (including Kenya and Swaziland) there is a tendency to allocate ‘tasks’ to staff rather than providing holistic women—baby centered care; this results in women having to see many providers and spend long hours at the facility. By integrating maternal and infant services in the postnatal visits it is possible to reduce the number of contacts to two at most.

One approach to overcome the challenge of providers not using their newly learnt skills on return to their facility is the mentorship approach [140]. Skilled service providers are selected (criteria are developed for selection) to undergo a mentorship training program and to subsequently build the capacity of their peers within their own facilities. The trainees or mentees are then tested/skills observed by an external assessor prior to receiving a certificate of competence. The Integra Initiative used this methodology and mentees reported improved knowledge, skills, self-confidence, and team work in delivering integrated SRH and HIV services. They also associated mentoring with an increase in the range of services available and the number of clients seeking those services. Successful mentorship was conditional upon facility management support, sufficient supplies and commodities, a positive work environment, and mentors selection [140].

Human resource constraints in a number of east and southern African countries can mean that quality maternal health services are challenging to implement. In an analytical study of integration of HIV and FP health services in five African countries affected

by the HIV epidemic (Kenya, Namibia, Rwanda, Tanzania and Uganda) using data from service provision assessments (SPAs), it was found that in Kenya, 67.9 percent of health care workers providing HIV-related services also counseled HIV-positive women on FP. This was compared to 93.6 percent in Namibia and 90.5 percent in Rwanda [141]. Unfortunately there is no data on PNC in the SPAs. In the same analysis although service delivery units providing PMTCT reported providing counseling for FP and provision of contraceptive method, there were no guidelines for providing FP counseling for women living with HIV available [141].

3. Opportunities that can be used as platforms to improve comprehensive PNC include using immunization of the infant as an entry point to encourage uptake of postnatal FP.

Evidence suggests that a postnatal visit within two days of birth by a health provider can result in a 30 percent to 60 percent reduction in neonatal mortality. Although the evidence is less clear for maternal outcomes (due to challenges with measuring maternal mortality [99, 142]. WHO guidelines recommend an integrated package of care for both mother and her newborn up till six weeks[7, 27]. Increased knowledge and awareness among health providers of health care needs, as part of general systems strengthening, is required to improve facility based postnatal care [9]. Providers do not always provide a comprehensive package of postnatal care. This may be due to several reasons: first women are only seeking immunization for their infants; second the infrastructure in the immunization room does not allow for individual examination of the mother (or infant); third, if the mother and provider know each other from previous visits and /or antenatal clinic, components such as testing for HIV and other STIs may already have taken place in the last few weeks/months; fourth women in the early postnatal period are focused on their new babies and not interested in return to fertility or contraception; fifth if the provider has a long queue of clients, she will not feel able to spend so much time with each mother and baby and finally women may not be aware of the range of services they are entitled to[4, 143].

However the high rates of immunization uptake in Kenya (over 85%) [47, 85] and Swaziland (over 90%) [48] provides opportunities to integrate other services for both mother and baby including postnatal FP and HIV services. Many women give infant immunization the main reason for attending PNC (see 4.1–3) By using the immunization session as an entry point; it is possible to cover all five components of the package mentioned above. In order to make this possible, organizational change and changes to the client flow are required. This includes making sure women are seen in privacy (both audio and visual) with the correct equipment (screens or separate rooms, examination couches, cots for the baby during mothers examination among others).

Majority of the cohort of women described in Chapter (5.1) attending for postnatal care said their main reason for coming to the clinic was to get their infant immunized (data not shown). However this study highlights that a number of women reported that their

index pregnancy had been unintended (either unwanted or mistimed) and that many of these women reported they were actually using a contraceptive method when they became pregnant—with HIV-positive women relying more on the male condom which has been noted elsewhere [73].

This demonstrates the missed opportunities during women's contact with health services prior to women's index pregnancies. If women had been properly counseled on how to use contraception and especially when they attended the facilities for child welfare clinic (average number of children was 2 per women) they might have avoided an unwanted pregnancy [46, 78, 85]. Lopez et al describe how when specialized PNC (including counseling on family planning) led to a decreased incidence of repeat pregnancy by 18 months—compared to normal PNC [144].

4. Alternative financing mechanisms such as OBA do provide an opportunity to strengthen the health system and increase uptake of delivery services by poor women, but the focus should now be on investing in human resources to provide comprehensive PNC (4.3/6.1).

The OBA implementation process was designed in phases providing an opportunity for learning and adapting the lessons to local settings; the design consisted of five components: a defined benefit package, contracting and quality assurance; marketing and distribution of vouchers and claims processing and reimbursement. Key implementation challenges included limited feedback to providers on the outcomes of quality assurance and accreditation and budgetary constraints that limited effective marketing leading to inadequate information to clients on the benefit package. Few opportunities for health care providers to attend training or skills updates on maternal health services including PNC.

Vouchers have been demonstrated to increase access to ANC and delivery services for poor women [145–149], but no studies have looked at the effect of vouchers on the quality of PNC where maternal health vouchers are available. In a population based survey conducted at the same time from the catchment area for the study facilities, to measure the community level impact of vouchers on service use, we did find that significantly more women from communities exposed to the voucher programs (73.2 percent) obtained PNC services than those women not exposed at all (67.6 percent) [145].

A primary objective of OBA or voucher programs is to improve efficiency in service delivery by linking pre-defined quality to financial reimbursements to motivate providers/health facilities for the services they provide [150]. In our study public voucher facilities demonstrated that they had high mean scores of the availability of structural components (based on the Donabedian approach and described in 4.3) than either non-voucher facilities or private facilities which included equipment and supplies but also staffing and some training. Although high scores for structural attributes can be counted as synonymous with the availability or readiness to provide services, the clinical processes

have yet to be felt in the provision or receipt of services. This is demonstrated by the low performance in quality of postnatal care provided at both voucher and non-voucher sites. Reasons given in the paper are varied but include the lack of guidelines available, lack for available space, lack of importance given to PNC and facilities not reimbursed for providing PNC.

It is important to now focus on and support the workforce providing the services. One of the ‘failings’ of OBA programs is the assumption that the ‘trickledown’ effect will actually reach the front line workers. In other countries such as Bangladesh and Cambodia, health care providers receive enumeration for the services rendered to voucher clients. In Kenya the facility receives the money—and the facility management or district management committee decides on how it is spent. Front line providers are unlikely to do perceived ‘extra work’ for no compensation. The potential for facilities to support their staff through additional training is there, but investments in human resources has yet to be seen as important [151]. Other results based or performance based financing strategies focus on incentives for quality improvements—while these may not accelerate the uptake of services among the poor and marginalized (which is the focus of OBA programs) [152, 153] the potential to merge best practices of both results based financing and OBA should be investigated. Nevertheless we did see improvements in key outcomes: more newborns attending voucher facilities were seen within 48 hours and received a BCG than newborns attending non-voucher facilities.

Government commitment and stewardship is essential (as described in 6.1), as are effective partnerships between the public and private sector to sustain commitment to the postnatal period. It is important to build on opportunities to utilize existing platforms to scale up effective practices. Alternative financing mechanisms such as the OBA program in Kenya offer opportunities to strengthen or improve the structural components of health facilities through use of reimbursed funds for procurement of equipment, medicines and supplies [145, 154].

5. Link community based health workers with facility based or more skilled workers to work as a team to operationalize, improve, and sustain linkages between homes and hospitals.

Improvement in PNC depends on the capacity and accessibility of the local health systems, the level of decentralized decision making and common cultural practices regarding seclusion that may reduce care seeking. Approaches for scaling up PNC include different possibilities for women giving birth at home and giving birth in a health facility. Given that over half of women and newborns remain at home during and immediately after birth, integrating care for both the mother and newborn both within and outside the formal health system is critical. A combination of facility based and community based provision of care by different cadres of health worker (skilled providers and community health workers (CHWs)) is a promising approach to reach more women. Substantial gains in MNH outcomes can be made by focusing on the delivery of integrated maternal

and newborn package of care [2, 30, 31]. Four possible approaches have been identified based on the place of birth and place of providers for PNC including the acceptability of the different approaches by both mother and health system (see Table 10) [24].

With a supportive policy environment these strategies can be implemented and integrated within the continuum of care, linking with other services at facility, home and community levels. The most common model of PNC in SSA is to ask women to attend a facility to receive PNC. But in SSA less than half of new mothers attend for PNC (47 percent in Kenya and 25 percent in Swaziland). Evidence does suggest that if women receive good ANC and deliver in a health facility they are more likely to attend for PNC [155, 156]. We also found that women who delivered in the voucher health facilities were more likely to attend for PNC than those who delivered in non-voucher facilities (See chapter 4.3). The most recent recommendations issued by WHO indicate that women should stay at least 24 hours in the facility after giving birth [27]. This allows health providers to observe the mother and newborn to make sure neither have any complications and the newborn is feeding well. If specific risks are identified (low birth weight) the mother and baby should be kept for another two days. Before discharge mothers should be advised to come back if they notice any danger signs and also given a date to return after one week for a checkup. However in many settings once the woman has gone home she is unlikely to return within the first week when the risk of death is highest. Therefore timely home visits should be arranged—or a combined approach as suggested in Table 10.

Another approach includes home visits by skilled attendants within the first few days after birth. The provider can examine both the mother and newborn and offer the same counseling and services described above. In Kenya skilled community midwives have successfully provided PNC and FP to women in their own homes [157]. In general, however, there are insufficient skilled providers to undertake home visits in the postnatal period. Women and newborns who attend PNC have a better chance of survival [142].

Table 10: Postnatal care strategies; feasibility and challenges to implementation [24]

Possible strategies	Mother friendly	Provider friendly	Challenges for implementation
1. Mother and baby go to facility for PNC	0	000	Requires mother to come to the facility within a very short time following birth. More likely following facility birth
2. Skilled provider visits home to provide PNC for mother and baby	000	0	Conditional on sufficient human resources which is challenging and not highest priority for skilled attendants in settings where skilled attendance at birth is low. May be possible where rural health facilities are quiet during afternoons.
3. CHW visits home to see mother and baby	000	0	Requires training for CHWs and management and support supervision and logistic support
4. Combination: Facility birth and first PNC in the facility, then home visit by CHW within first week and then subsequently at facility	00	00	Requires a team approach with facility and CHWs, sufficient HR, good referral system and an efficient and tracking system so that mother and baby are not lost to follow up

Since the postnatal period is often characterised by seclusion for the mother and baby, visits by CHWs offer an opportunity to screen the mother and baby using specific health messages. Some tasks can be delegated to a lower skilled cadre where appropriate. With proper training and support CHWs can increase healthy behaviours, such as exclusive breastfeeding, ensuring warmth and hygienic practices; provide information and services on birth spacing and FP; identify danger signs in mother and baby and promote immunization. The most useful approach is to develop a team approach whereby CHWs are linked to health facilities. For example if a women gives birth in a facility and then goes home, the CHW can visit her and her baby at home on the second day and possibly seventh day and then the mother returns to the facility after one week.

6. Incorporate community based awareness-raising interventions among women and families about the importance of seeking PNC, especially in the immediate and early postnatal period.

Community involvement is crucial for shortening delays in seeking care after birth as family members are critical in the decision making process on whether to seek care or not. Many societies in SSA acknowledge that mothers-in-law play a very influential role in supporting their son's wives during pregnancy and childbirth and in rearing the infant. Although the studies described in this thesis took place in the health facilities, when counseling is done well, women who feel supported, will recognise the danger signs and return promptly if any complications occur. Ways to involve a wider group of community

members include: recruiting the support and cooperation of religious figures who are often prominent figures in community health; Recognising the influence of traditional birth attendants and other community health promoters and providers and inviting them to join the 'community health team' to educate parents and grandparents on positive practices [24, 155]. We suggest that by building a community MNH team of community midwives, community health workers and others who routinely visit women and their infants at home will reduce both morbidity and mortality.

7. Comprehensive postnatal package of care for women living with HIV that address their sexual and reproductive health needs, meets their fertility desires and ensures healthy motherhood.

The findings of the studies described in this thesis have implications on the challenges of implementing a comprehensive package of PNC in Kenya and Swaziland and the SSA region as a whole [7, 156]. In particular, the studies assessed factors associated with the range of contact services accessed including FP counseling and receipt of commodities, counseling on danger signs for mother and newborn; testing for HIV and services for the mother and newborn following the introduction of specific interventions.

The studies described here demonstrate that it is possible for women and their newborns to access a comprehensive package of care and an increase in women seeking care within the early postnatal period. Chapter 4.1 and 4.2 showed increases in both the quality and the constellation of services women and their babies received. Key outcomes in Chapter 4.3 show higher uptake of early postnatal visits and BCG for newborns attending voucher facilities. In Chapter 5.1 we see that there are few differences between HIV-positive and HIV-negative women in the type of care they received in the postnatal clinics and the quality remained high. Other studies have demonstrated that it is possible for women living with HIV to receive both short and long term methods of FP during the postnatal period [71, 84, 85]. However, in other studies even where women received information on family planning, few actually went home with a method [65, 70]. Moreover there is concern that only short methods continue to be the only option for women who know they do not want any more children and are at risk of unintended pregnancy—as evidenced by the high rate of unintended pregnancy described in Chapter 5.1 [158].

The huge excess of pregnancy-related mortality in HIV-infected women is unlikely to be due to a higher risk of direct obstetric complications. Reducing this mortality will require increasing policy makers' commitment to non-obstetric interventions involving access to ART in both pregnant and non-pregnant women [11, 13, 159, 160]. Where PMTCT guidelines exist, women may be followed up after childbirth to ensure continuation of HIV services, but it is unclear what happens to women who are HIV negative and/or have obstetric problems. For too long this disassociation is indicative of a larger damaging separation of maternal and infant health concerns from vertically oriented HIV programs and policies [160]. The immediate postnatal period is often a time of uncertainty for

program planners, who question whether PNC is the responsibility of those looking after the mother through a maternal health program or those caring for the newborn through a child survival program. There is rarely a systematic ‘handover’ between those who care for the mother and those who care for the baby and child at policy level let alone any collaboration or coordination for women and infants affected by HIV; thus, a ‘disconnect’ occurs within the continuum of care.

8. Overcome challenges of measuring postnatal care.

WHO has led technical working groups to discuss the evidence around postpartum and postnatal care in 1998, 2003, 2010 and released guidance on the same [6, 7, 138]. The most recent set of evidence was reviewed in September 2012 and the new guidelines released in early 2014. Often the care provided within the first few days after birth is combined with care provided at six weeks, thus confusing or masking issues that arise in the immediate postnatal period. Although numerous studies have been conducted on the quality of ANC there are very few on PNC and when they exist are more likely to be discussing the care of the newborn rather than the mother.

In the DHSs and MICs household surveys, the women are interviewed and asked to recall the content of the ANC visit. However the DHS only started to record any kind of PNC around 2003 on the timing of the first ‘check’ after delivery for women delivering at home—with the assumption that women delivering in a health facility would have received some postnatal care. In the more recent years some countries have now incorporated a PNC module into their DHS and MICS on the first contact with health care providers for all women and newborns.

Newborn care indicators have been agreed upon and are currently being introduced to DHS and MICS surveys but these are in the very first few hours of birth (immediate drying, delayed bathing, and cutting the cord with a clean instrument); in addition to these three there is consensus to test two additional indicators on immediate skin-to-skin care and applications to the umbilical cord [99]. However there is still no international indicator for measuring the quality and content of PNC visits or assessments for women, whether they saw a provider or what services they receive. At many levels the perceived complex methodological issues around measuring converge, and prevent widespread use of any comprehensive indicators [99].

The postnatal package for mothers and babies should include routine visits in the first few days after birth, when risks are high, to promote healthy behaviors, to identify complications and to facilitate referral [2]. Evidence suggests that a postnatal home visit by a trained provider within two days of birth can result in a 30% to 60% reduction in neonatal deaths. The evidence is less clear for maternal outcomes—mostly due to challenges in measuring maternal mortality [99]. If women had access to improved quality of care during the first week after childbirth fewer women and their newborns would die or suffer morbidity and disability [24]. In addition if both the postnatal woman and her

newborn are seen together chances of survival improve especially in the first few days of childbirth.

Suggestions on how to improve PNC in the region and include: developing an evidenced based PNC package; strengthening health facilities capacity to provide PNC, including enhancing supervision, management and accountability; building and reinforcing links between facilities and communities through CHWs; raising awareness on the importance of early postnatal care by empowering family and community members; and improving available information to guide programmatic decision making, including promoting global indicators for both timing and content of PNC which can be incorporated into future DHS and MICS.

9. Recommendations for future research.

- ***Conduct further implementation research to assess optimum timing and content of a focused postnatal package including who can provide care in various settings.***

In the late 1990s a multi-centre randomized controlled trial (RCT) was conducted that compared the standard model of ANC with a new model that emphasized actions known to be effective in improving maternal or neonatal outcomes and had fewer clinic visits [161]. The results demonstrated that in fact for most normal pregnancies focused ANC (a minimum of four targeted visits) was adequate. A similar randomized implementation research study could be conducted in a range of countries to understand what the most appropriate constellation of services and timing of PNC “the content at contact” will contribute to the reduction of maternal and infant morbidity and mortality. However given that conducting an RCT in a real world setting is problematic, a more realist review of what content makes the most difference to women’s and their newborns survival would be more appropriate. Therefore a quasi-experimental implementation research which controls for potential confounding factors is suggested.

- ***Where is the best care provided? Where do women and families want to receive PNC? Can services be provided in facilities and communities and linked? How to locate pregnant women and new mothers who do not access ANC or delivery in health facilities? How can referral systems be strengthened?***

In addition to a multi centered research study described above, implementation research—which involves women, communities and health providers can be conducted to find out the most appropriate package and delivery of services. This is likely to be context specific but if the research takes place in a number of places common themes can be synthesized and disseminated globally. Comparing the feasibility of strategies outlined in Table 10—especially the team approach combining CHW and facility based PNC with the current facility based only would go some way to identify new ways of where the best care is provided.

- ***Develop key global indicators for postnatal women that can be measured in household surveys.***

Work is already underway reviewing the global indicators for newborns but there is still limited comparable data on indicators for postnatal women which should be included in the DHS and MICS PNC modules. In addition to the timing of postnatal care—the content of postnatal care should be measured—and would include the proportion of women who were examined (abdomen, perineum), temperature taken, counseled on danger signs.

Limitations

Although the research reached its aims there are some limitations. The ability to generalize study findings to other settings may be limited. In particular, study findings may not be broadly applied evenly across study sites given the differences between countries. Our sample may also not have been representative. For example only 25% of postnatal women in Swaziland and 44% of postnatal women in Kenya attend health facilities for PNC, so the findings may not be representative of all postnatal women. Nevertheless the findings are pertinent among those who do attend postnatal clinics. Data were derived from mainly public health facilities—and implemented in a real world setting which means it was also difficult to control for the wide variety of factors that might impact on any of the interventions (4.1, 4.2 and 5.1). Chapter 4.3 was also conducted in private and faith based facilities which may also have influenced the findings. Another limitation is due to recall of women’s experience and understanding of some of the information provided during the consultations. However even with these limitations, we were able to generate data documenting detailed information on knowledge of PNC, health seeking behaviors and experiences of postnatal women and their providers in two different countries.

Limitations for the policy review (6.1) include the fact that the implementation experiences were based on interviews and retrospective documentary analysis and we were not able to corroborate all the views in reports even though we triangulated ideas from multiple sources. Additionally some members of the research team were involved in the voucher programs inception phase and some element of reflexivity may have affected the research agenda.

Although in-depth interviews with providers and programmers were included in the policy review, the lack of qualitative data in the other papers limited the depth of understanding of both the provider and women’s experiences. All papers would have benefited from a mixed methods approach to triangulate the quantitative data. However within the two larger more recent projects (RH Vouchers evaluation and Integra Initiative) a number of other papers have been published (where the author is PI) which describe women’s and providers’ experiences in detail [140, 143, 162, 163].

Conclusion

There is a global need to recognize that women, babies and families deserve the highest quality of health care along the continuum of care. This thesis aimed to provide insight into the situation of postnatal care in Kenya and Swaziland. The picture that emerges highlights that although postnatal care is generally weak and fragmented, it is feasible and acceptable to both providers and clients when supported, to improve the timing, content and quality of postnatal care. The bundling of interventions together for maternal, newborn and child health care suggests a way forward, but gaps still remain. Alternative financing mechanisms such as OBA do provide a platform to strengthen the health system through maternal health services but additional focus is required on strengthening both the continuum of care and investing in human resources for health. Mothers and babies should receive early and routine visits to promote healthy behaviors, identify complications and facilitate referral [17, 30]. Women and newborns will continue to die in the first few days after birth until we see widespread provision and uptake of a comprehensive package [5, 39].

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