**Operations Research Protocol**

*Evaluating the Improving Mother and Newborn Health initiative: Are community midwives increasing quality essential newborn and maternal care in Quetta, Gwadar, and Kech districts in Balochistan and are they doing so in a financially self-sustaining manner?*

Conducted within IMAN (*Improving Mother and Newborn Health)*

*USAID CA No. AID-OAA-A-12-00093*

Quetta, Kech, and Gwadar Districts

Balochistan Province

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# Executive Summary

Complications of pregnancy and childbirth remain the leading cause of death and disability for childbearing women in Pakistan. With a measured maternal mortality rate of 297/100,000 live births, Pakistan is one of the six countries that contribute to more than 50% of all maternal deaths worldwide. To address the issue of high maternal and infant mortality rates and to ensure skilled birth attendance, the government of Pakistan created a new cadre of community based midwives (CMW). Pakistan is also characterized by a difficult terrain and political unrest in some provinces. The Balochistan province in particular poses problems for health services delivery given its vast area (44% of Pakistan’s territory) with only 5% of the nation’s population. One expectation is that CMWs will improve access to skilled antenatal and intra-partum care for the women living in these remote areas.

Recent research shows that these CMWs have largely failed to establish midwifery practice and attract patients. A number of reasons have been identified for this failure which include, but are not limited to: 1) community, in particular women's, lack of trust in CMWs’ capacity to conduct safe births; 2) the CMW's lack of interest in pursuing midwifery practice, partly because they are unable to meet its professional demands in terms of time and resources. For example, the young CMWs cannot travel to patients’ homes without a chaperone, a woman during daytime and at least two additional men during night visits 3) the CMWs lack of business skills necessary to establish a private practice; and 4) the CMWs lack of financial resources that are essential for development of a practice infrastructure and logistics (Mumtaz et al, 2013).

To address some of these issues, the *Improving Mother and Newborn health* (IMAN) intervention will be implemented in Quetta, Gwadar, and Kech Districts of Balochistan. To enable the CWMs to establish self-sustaining private practices, they will be provided business skills. A micro-finance institute will offer small loans. CMWs will also liaise with LHWs to undertake an awareness-building campaign using cellular phone SMS technology and through existing women’s support groups. To increase access to emergency transport services, the CMWs will work with their communities to establish a revolving transport fund called the Mamta Fund.

The proposed research aims to investigate whether the CMWs in the IMAN initiative are providing the essential maternal and newborn health care to women and children living in remote Balochistan districts of Quetta, Gwadar, and Kech Districts in a financially self-sustaining manner. Specifically the research will investigate: (1) whether the IMAN initiative is having an impact on CMW service uptake; (2) whether the IMAN initiative will enable the CMWs to develop financially self-sustainable practices; and (3) what is the level of quality of care the CMWs are providing?

Data will be collected in three interlinked modules over a 42 month period. Module 1 will consist of a pre-post survey. Proportions of births attended by CMWs in the three IMAN initiative districts will be assessed at baseline (2013) and three years levels (2016) to determine if CMWs coverage of provision of essential maternity care has improved. This coverage will include intermittent preventative treatment during pregnancy, clean cord cutting, active management of third stage of labour, post-partum visit for the mother, thermal care (immediate drying and wrapping), immediate breastfeeding of newborns, and patient satisfaction levels with their maternity care provider.

Module 2 will explore if the IMAN initiative has enabled the CMWS to establish self-sustaining practices. Organizational, social, and financial challenges faced by CMWs in establishing and running their practices and attracting new clientele will also be explored in two randomly selected IMAN districts of Quetta and Gwader. A quantitative financial tool will be used to assess the direct and indirect monetary costs as well as opportunity costs and benefits. The size, sustainability and effectiveness of the Mamta fund will also be assessed.

Finally, module 3 will explore the quality of care provided by CMWs in Quetta and Gwader. In-depth interviews with CMWs, women of child-bearing age, mothers-in-law, older women and other community members will be conducted. CMW patient-provider interactions during antenatal visits and childbirth will be observed to document CMWs quality of care.

An extensive knowledge dissemination plan will facilitate uptake of research findings to both inform on-going positive developments in the IMAN initiative and contribute to the body of evidence around potential solutions to improve sustainable coverage of high impact MNCH interventions in vulnerable populations. The plan will include knowledge sharing with IMAN policymakers and planners, Government of Balochistan, MercyCorps, civil society advocacy groups, community midwives, USAID and other bilateral donors and international organizations.

# 1. Background

## A. Context:

Pakistan ranks third in the world in terms of the estimated number of maternal deaths. The maternal mortality ratio is highest in Balochistan at 785 per 100,000 live births (national average 276). In Balochistan, 81 percent women deliver at home; 72 percent of them are assisted by a traditional birth attendant. Nationwide, the under-5 mortality is 94 per 1,000 live births, 57 percent of these occur during the first month of life.[[1]](#footnote-1)

To address Pakistan’s persistently high rates of maternal and neonatal mortality, and to ensure skilled birth attendance, the Government of Pakistan (GOP), through the National Maternal, Newborn and Child Health (NMNCH) Program, gave top priority to reaching pregnant women in remote communities by training a new cadre of healthcare provider – the community midwife (CMW). The CMWs are women selected from their home communities, and deployed there after completing an 18 month midwifery course developed jointly by the Ministry of Health (MoH) and UNFPA. The training involves extensive clinical practice including conducting at least 25 normal deliveries as well as primary health care training, particularly for childhood illnesses. These CMWs are registered and regulated under Pakistan Nursing Council (PNC), and are designed to work in partnership with the existing Lady Health Workers (LHWs), a cadre developed in 1994 to lead health education, mobilization, and treatment of minor ailments at the community level (1 LHW per 1,000 population). The MOH planned to support these qualified and registered CMWs in establishing their own home-based, private practices in the communities, catering to a population of approximately 5,000 individuals (total population). They were to be supervised by the District Department of Health (DOH), supervised in coordination with the LHW program, and backed by referral linkages with Emergency Obstetric and Neonatal Care (EmONC) facilities in the district.

In June 2011, however, the National (Federal) MOH was abolished, and its responsibilities devolved to the provincial DOHs, including planning and resource allocation for the provision of preventive and curative healthcare. In the aftermath of devolution, the provinces will continue to receive some financial assistance from the Planning and Development (P&D) Division of the Federal Government through 2014. However, the provinces are now primarily responsible for developing and funding their strategic plans and programs, some of which, including the NMNCH Program, ended in June 2012.

Recent research shows that these CMWs have largely failed to establish their midwifery practices. Four years after deployment of the first batch of midwives, 11.7 % of deliveries in district Jhelum and 3.4% in district Layyah were attended by a CMW. A number of reasons have been identified for this sub-optimal performance. These include:

1) The community, in particular the women, both young and old, do not trust the CMWs abilities to conduct a safe birth. This is partly because of poor CMW training and consequent lack of professional competence. The CMWs have failed to gain the community's confidence. In more remote districts where traditional birth attendants (*dais*) are still the dominant providers, the CMWs are understood to be 'doctors' who should be consulted in the event of a birth complication only. The CMWs however, fail to meet such lofty expectations.

2) The CMW's demonstrate a distinct lack of interest in pursuing midwifery practice, primarily because a) They are unable to meet the professional demands of midwifery practice in remote rural areas. Most are young women. Gender norms of rural Pakistani society preclude their travel alone to homes located at significant distances. During day time they need a chaperone, preferably an older woman and at night at least two men in addition to a woman. This greatly increases the opportunity costs of a CMW's practice.

b) A number of the trained CMW's were unclear of what a midwife was and what she did when they applied for training. Upon graduation, they realized this was not a career path they were interested in pursuing.

c) Income from patient remuneration was insufficient for establishment of self-sustaining practices.

3) The CMWs lack business skills necessary to establish private practices.

4) CMWs lack the financial resources essential for the development of practice infrastructure and logistics[[2]](#endnote-1).

To address some of these issues, USAID through Mercy Corps will implement the *Improving Mother and Newborn health* (IMAN) intervention in districts Quetta, Gwadar, and Kech in Balochistan. The IMAN initiative seeks to ***increased use of quality essential maternal and newborn care through private-sector community midwives (strategic objective)*** through increased availability of quality maternal and newborn care in communities (IR1); improved knowledge and demand for essential maternal and newborn care (IR2); improved access to emergency transport in remote communities (IR3) and; improve the policy environment for improved maternal, newborn and child healthcare based on evidence from the Operations Research (IR4).

The proposed research aims to investigate whether the CMWs enrolled in the IMAN initiative have increased coverage of essential maternal and newborn health care to women and children living in remote Balochistan districts of Quetta, Gwadar, and Kech Districts in a financially self-sustaining manner.

## B. Problem Statement:

One of Pakistan’s potentially greatest resources to address maternal and neonatal mortality remains dormant across Pakistan, because they have not been fully supported (technically, financially, and structurally) to begin operating in home-based clinics and have not fully generated community ownership. Further, CMWs tend to work in isolation of, and sometimes in direct competition with, the LHWs.

## C. Significance of the problem:

The Balochistan DOH requires urgent technical assistance to develop and test a model that utilizes this resource (before the CMW cadre dies out), and to incorporate lessons learned into a budgeted five-year strategic plan for the NMNCH program, which must then be endorsed by the provincial P&D Department and the provincial Finance Department. The Government of Balochistan, other provincial governments in Pakistan, UN agencies, international NGOs, and the donor community (including USAID) are keen to understand whether or not the new cadre of CMWs can be part of the solution to addressing Pakistan’s high maternal and neonatal mortality rates. Specifically, these actors are interested to identify and document a successful model that has been able to equip CMWs to be quality providers of essential maternal and newborn care in a financially sustainable manner. This is the ideal time to study and document an innovative CMW model as provincial governments in Pakistan (including the government of Balochistan) are still developing their strategies post devolution.

# 2. Proposed Solution to the Problem

## A. The proposed SCLAE solution/intervention:

In response to the identified challenge, IMAN will deploy 90 private-sector CMWs in the three Balochistan districts who will be responsible 5000 population each. To enable the CWMs to establish self-sustaining home-based private practices, they will be provided small loans, standard equipment and business skills training. Tameer Bank will offer small loans in installments to the CMWs through mobile phones using Telenor’s Easy paisa service. To increase demand for skilled birth attendance, the CMWs will liaise with local lady health workers (LHWs) to undertake an awareness-building campaign using cellular phone SMS technology and through existing women’s support groups. To increase access to emergency obstetric care, the CMW's with communities to develop a revolving transport fund called the Mamta fund. Mercy Corps will also collaborate with the Pakistan Department of Health to develop a five year MNCH plan.

While IMAN’s program package includes multiple components, the project’s emphasis with respect to innovation and learning is connecting CMWs to microfinance services to establish home-based practices. Through partnering with Tameer Bank, CMWs will access small loans which they will repay through EasyPaisa on their cell phones. Based on Mercy Corps’ experience setting up private-sector CMWs with Afghan refugees in peri-urban slums of Quetta, it is anticipated that the CMWs will be able to repay their loan, replenish medicines and supplies, and make a reasonable profit to become financially sustainable.

## B. Justification for the proposed SCALE solution:

IMAN is directly in line with USAID/Pakistan’s Strategic Objective to improve MCH in Pakistan and complements USAID’s new Maternal and Child Health (MCH) Program in Sindh and, eventually, Punjab. Through close coordination between IMAN and the larger MCH Program, these initiatives can offer mutually reinforcing lessons, particularly about the role of the CMW (in different service delivery, social, and geographic contexts) and innovations to tap the private sector for improved health outcomes. This program was discussed with USAID’s Nora Madrigal (Health Development Officer) and Aaron Schubert (Deputy Director Health Office) during proposal development, and with Kate Crawford (Director of Health Office) and Anna McCrerey (Maternal and Child Health Team Leader) during the strategic workplan process.

IMAN is well positioned to directly influence the MNCH sector in Balochistan, as it was designed jointly with the Balochistan Department of Health (DoH) and upon their request. The DoH is keen to test this model to determine whether CMWs can become self-sustaining private providers in Balochistan and increase coverage of high impact MNCH services. Successful components of the program identified through the Operations Research, will be taken up by the DoH through the 5 year MNCH strategy developed under this initiative. This is an ideal time to document and test these innovations, as the DoH is just now preparing its strategic plans and policies within the newly devolved context.

This program builds on a growing pool of evidence in Pakistan from the donor community (DFID, AusAID USAID), implementers (including TRF (Technical Resource Facility), the Aga Khan Foundation, JSI, and Jhpiego) and the UN who have implemented and evaluated CMW programs. Through participation in the Research Advisory Committee (discussed in Section V. Stakeholder Participation), Mercy Corps will ensure its program builds on the growing evidence within this sector. In particular, Mercy Corps will ensure that lessons learned from the CSHGP-funded project implemented by AKF in Chitral (scheduled to end in 2013), feeds into the design and learning agenda of IMAN.

## C. Conceptual Framework



# 3. Study Objectives and Research Questions

## Study objectives

*Empirical objectives:* The fundamental objectives of the research are:

1. To develop evidence that the IMAN initative has led to increased coverage of high quality maternal and neonatal health care by trained, private-sector community midwives in remote, sparsely populated, insecure districts of Balochistan.

*2.*  To explore whether CMWs access to business skills training, small loans, and infrastructural support enabled them to develop financially sustainable private midwifery and neonatal practices. To enhance empirical understanding of the process through these interventions led to financial sustainability of the practices.

3. To map the quality of care CMWs provide, both from evidence-based best practice perspective and women’s perceptions.

*Knowledge transfer objective* is tofacilitate uptake of the research findings to

*1.* To support MercyCorps in the implementation of IMAN by providing on-going, contextually relevant information on program outputs.

2. To contribute to the evidence-base of innovative maternal and neonatal health care provision by community-based health care providers.

3. To inform positive developments in maternal health policy, service design and care delivery in Balochistan, Pakistan more generally and elsewhere.

## Research Questions

1. Is the IMAN initiative having an impact on CMW service uptake? Has the initiative increased coverage of the full scope of skilled maternity and newborn care for women living in the interventions districts?

2. Have the CMWs become self-sustaining, quality private providers?

(a) Have the financial resources provided been helpful in allowing the CMWs to become self-sustaining? Are the loans being used as intended? How exactly are the loans enabling CMWs to establish their practices?

(b) Has the business skills training enabled the CMWs to establish viable practices and provide high quality care?

(c) What are the barriers hindering CMWs from becoming self-sustaining private health care providers.

5. What is the quality of care the CMWs provide, both from perspectives of evidence-based best practice and women receiving services?

# 4. Study Location and Population

*Implementation Districts:* IMAN’s target districts were selected jointly with the Balochistan DoH. The majority of the population lives in remote, rural hamlets. Literacy rates are low (Quetta 57 percent; Gwadar 25 percent and Kech 28 percent) and more than 60% lives on less than $2 per day. Poor quality of public health services combined with restricted mobility of women, leads women to deliver at home (81%) mostly with unskilled providers. Almost all households have radios and mobile phones yet this technology has not been tapped for health promotion. According to DEWS-WHO, mobile coverage is 100% for Quetta, 95% for Gwader, and 80% for Kech. The total population of the three districts is 2.6 million (indirect beneficiaries), out of which Mercy Corps’ 90 CMWs will directly serve a population of around 450,000 (direct beneficiaries). District populations were calculated using the provincial DoH estimates, and the direct beneficiaries are based on the assumption that each CMW will serve a population of 5,000 (as per the government’s policy). When the CMWs are recruited in March and April 2013, Mercy Corps will update their beneficiary table based on the exact catchment areas of the CMWs.

*Other activities in the targeted districts:* In Quetta, *Medecins Sans Frontieres*(MSF) is operating a Maternal and Child Health (MCH) Center in *Kuchlak*, and a Children’s Hospital in the city. The Balochistan Rural Support Program (BRSP) is working on awareness-raising and demand creation for MCH services in Quetta city. *TaraqeeFoundation* is running a for-profit MCHCenter in urban slums established though assistance provided by Mercy Corps. Save the Children is working on child nutrition. The Family Planning Association of Pakistan (FPAP) operates a for-profit hospital established through KfW*(Reconstruction Credit Institute)*support, providing reproductive health services .In Kech, FPAP is operating a small health center offering RH services.

*Study location:* Module 1 (household baseline and follow-up survey) will be conducted in all 3 districts. The other two modules, however (Module 2 and Module 3) will only be conducted in Quetta and Gwadar due to security concerns for qualitative data collection in Kech.

# 5. Design and Methods

## A. Overall OR Study

A mixed methods approach using both quantitative and qualitative methods will be used. Data will be collected in three overlapping modules over a 42 month period.

1. Module 1 will address research objective 1 and will consist of a baseline and end-line survey.
2. Module 2 will address research objectives 2 using a quantitative financial tool.
3. Module 3 will address research objective 3 by assessing the quality of CMW services using a range of quantitative and qualitative inquiry methods.

**Figure 1: Diagramatic representation of Research Design**

Integration, synthesis,

knowledge translation

***Module 1***

Measure utilization and coverage of CMW Services

***Module 3***

Evaluate the quality of care provided by CMWS

***Module 2***

Assess the financial sustainability of CMWs

Services

## B. Methods and Measurement of Variables

***Research Products***

Policy recommendations

Service design & delivery recommendations

for CMWs practice(inputs to clinic establishment and function)

Academic contributions (theoretical, substantive)

Practice of health professionals (inputs to curriculum, in-service training)

Contributions and challenges to wider societal discourse & public debate

**5.1 Module 1:**

Module I will consist of a pre-post design consisting of a baseline and end-line KPC survey. A set of indicators will be measured before program initiation and after 36 months, which we assume is sufficiently long for program effects to become apparent. Comparing the two sets of before- and after-indicators will enable us to assess if the IMAN initiative has changed the CMW rate of provision of the full scope of maternity and newborn care for women living in the intervention districts. The CMWs will act as their own historical controls.

***5.1.1 Setting and Population*:** The study will be conducted in the three IMAN intervention districts. The target populations will be married women aged 15-49. In the baseline survey, the study population will include women who have given birth in the three years prior to the survey. In the end-line survey, the study population will consist of women who gave birth between August 2013-May 2016.

***5.1.2******Sample size and sampling*:**  Sample size was calculated using the statistical package PASS 2012[[3]](#endnote-2) program and is based on CMW coverage rates in districts Layyah, Punjab. We assume Layyah CMW coverage rates of 3% are baseline coverage rates in all the study selected districts, and this will increase by 8% points by the end of the project. In order to detect this difference with 87% power and 0.05 significance level, we estimate a minimal sample size of 660 women will be necessary. Since cluster sampling will be done, this sample size takes into account a design factor of 1.3.

A cluster in this research will consist of an IMAN CMW's catchment area. To interview 660 women, we estimate a total of 33 primary sampling units will be required, 11 in each district. The sampling frame will be drawn up using a three stage cluster sample design (see fig 2). In the first stage, two tehsils will be randomly selected in all study districts. In Quetta District, which only has two tehsils, both will be selected. In the second stage, 5 and 6 union councils will be randomly selected in the 2 selected tehsils respectively (total 33 unions councils). In the third stage, one CMW cluster will be randomly selected from each selected union council (total 33 CMW clusters). Within each selected cluster, 20 women who gave birth in the three years prior to the survey will be interviewed. [[4]](#endnote-3) The first house to be contacted will be randomly selected from the LHWs registers. Every second house will be visited. We estimate that we need to *contact* at least 124 households per cluster who gave birth in the 3 years prior to the survey. This is based on a demographic assumption that 60% of households will have a woman aged 15-49, 30% of whom gave birth in the last three years1 and a participation refusal rate of 15% (all conservative estimates) (DHS 2007).

***5.1.3 Data Collection:*** Data will be collected using modified MCHIP survey questionnaires. The tool will contain measure of the full range of essential maternal and neonatal health care CMWs are supposed to provide -ANC care, skilled birth attendance, maternal TT Vaccination, postnatal care, modern contraceptive use, cord care, thermal control, early initiation of breastfeeding and exclusive breastfeeding. Additional questions will allow us to capture socially excluded groups and women's satisfaction with CMW care. Information will also be collected around the financial costs of seeking CMW care, other social and geographic barriers to seeking her care and the degree and ease of access to Mamta funds. If the woman cannot be interviewed at the time of contact, a mutually agreed upon time and place will be scheduled for another visit and interview. Women will be interviewed by female enumerators. It is anticipated that most interviews will last approximately 45 to 60 minutes.

***5.1.4 Data analysis***: Data will be analyzed using Stata 12.0, using the program’s ‘svy’ set of commands that take into account the design effect of clustering and stratification.[[5]](#endnote-4) Univariate and bivariate analyses will be done to assess the proportions of births that were provided a full range of essential maternal and newborn care by the CMWs at baseline and endline. Logistic regression models will then be developed to estimate the odds of attendance by a CMW at the end of the intervention compared to baseline, controlled for potential confounders. Are women more or less likely to use a CMW at the end of the IMAN intervention compared to baseline? How satisfied are women with the care provided by IMAN CMW’s compared to CMWs? Is there any variability in birth outcomes between end-line and baseline?

***5.1.5 Personnel:***A core team of 8 data collectors (7 women and 1 man). We need to hire and train more women than men because female interviewers will the primary data collectors. The male data collector will interview the husbands or other men if the women are unable to answer all our questions. All enumerators will be trained in the technical details of survey data collection and in cultural sensitivities of the local context (how to approach people, their mannerisms and language, that their personal attire should align with the local cultural expectations and not be offensive). The research manager will oversee the entire survey, ensuring correct coverage and quality of the data. A quality monitoring check list will be used to ensure the quality of data collected. The PI will review the work on a daily basis and monitor data quality weekly. Completed questionnaires will be edited and entered into Stata 12.0 using a double-entry system.

**5.2 Module 2:**

Module 2 will address research objective 2. It will explore the financial sustainability of the IMAN CMWs midwifery practice. Specifically we will assess if the IMAN initiative of providing the CMWs with business skills training and micro-credit loans has enabled the CMWS to establish self-sustaining practices. A quantitative financial tool will be used to assess the direct and indirect monetary costs as well as opportunity costs and benefits. These costs include financial requirement of establishing practices and maintaining equipment. In addition, we will evaluate the temporal and monetary costs of organizing chaperones (i.e. depending on female family members to accompany young CMWs to deliveries during the day and two or more male chaperones for night deliveries) and private transportation fees. A very important contribution of the CMWs will be the establishment and maintenance of the Mamta Fund which will pay for emergency transportation services, such as an ambulances, which is essential for effectively managing complications during delivery. Specifically, we will explore is a Mamta fund has being established, what are its mechanisms for collection and disbursal of funds, who has access to these funds, are there any people excluded from the fund and how is sustainability of the fund being ensured.

***5.2.1 Data Collection and study population:*** Data for financial sustainability of CMW practices will be collected using a pre-tested financial tool. 20 IMAN CMWs (10 in each district Quetta and Gwader), randomly selected from the IMAN-CMW list developed in Module 1, will constitute our study population. They will be interviewed in-depth and asked to fill a pre-tested questionnaire at three intervals of time; baseline, 16-month mark and 36-month mark. Direct or indirect costs shall be calculated on market rates. Data for establishment, sustainability and availability of Mamta Fund will be collected using focus group discussions community members in our IMAN study clusters. Six FGD will be done at baseline, 16-month mark and 36-month mark (18 in total over the 42-month period). Each focus group discussion will be conducted with 6-10 participants in each, separately for women and men.[[6]](#endnote-5) Representation of all socio-economic groups will be ensured. Program Records will also be used.

***5.2.2 Personnel:*** A woman trained in financial analysis (Masters Economics) will collect and analyze the financial data. The qualitative data will be collected by a team of one experienced Anthropologist (Master’s degree holder, woman) and two research assistants (Anthropologist – Master’s degree holder, one man).

***5.2.3*** ***Data analysis*** Since the interviews and focus groups data will be collected in Balochi and Pushto, data will be translated and transcribed by native speakers. A database of the transcribed interviews and focus group discussions will be created in Atlas-ti, a qualitative data analysis software program.[[7]](#endnote-6) Using a social constructivist, interpretative approach[[8]](#endnote-7), data will be coded and broad themes identified. Initial coding will be guided by the stated research objectives and later by additional concepts as they emerge. Data analysis will be an on-going and iterative process through all phases of data collection, as early identification will allow a fuller probing of unanticipated concepts and variables in upcoming interviews and focus group discussions.[[9]](#endnote-8) Interpretive accuracy will be assessed by triangulation of findings across the four phases, peer debriefing within the research team and other colleagues and respondent validation.

***5.3*  Module 3**

Module 3 will address research objective 3. It will assess the quality of CMW services by (1) mapping CMW care against clinical evidence-based best practices and (2) women’s experiences of maternity and newborn care, specifically skilled attendance at birth in both normal and emergency obstetrical scenarios. Their perspectives of what constitutes high quality CMW care will be mapped.

***5.3.1 Methods****:* Drawing upon the Hulton, Mathews & Stones (2000) framework for assessing quality of maternal health services in developing countries,[[10]](#endnote-9) CMW quality of care assessment will include an assessment of their practice's physical and instrumental infrastructure and their knowledge and skills to attend a normal birth, identify birth complications and provide essential newborn care. The quality of their referral links, information management systems and the use of appropriate technologies in caring for women and newborns will also be assessed.

Women’s experiences of maternity care will include an assessment of their impression of the adequacy of CMWs human and physical resources, their trust in her competency to provide safe birth attendance, identify birth complications (or potential for complications), manage an emergency (both maternal and newborn) and provide the necessary referral services. The respect they are accorded, their sense of dignity, equity, and the emotional support they receive from the CMW will also be assessed.

***5.3.2 Data collection:*** Specifically, the following will be done:

1. Observation and documentation of 12 CMW birth facilities, both physical (e.g., whether the design of the labour room respects women’s privacy) and instrumental (e.g., Availability of instruments, their quality, availability of essential drugs and supplies) using a structured checklist.[[11]](#endnote-10)

2. Observation of 25 moment-in-time CMW-patient interactions. This will include an observation of at least 5 births overall. The points of observation will include, but not be limited to, the provider’s language and behavior toward the patient and her family, time spent with each patient and whether her concerns are addressed. Any complications or adverse outcomes will be explored in depth, which will include interviewing the woman, her family and the CMW.

3. Exit interviews with ten women who delivered in CMW practices (5 routine deliveries and 5 who required emergency obstetric care; 10 interviews total).

4. In-depth interviews with 20 CMWS and 5 referral physicians, both in the public and private sector.

***5.3.2 Personnel.*** The research team for Modules 3 will be comprised of an experienced Anthropologist (Master’s degree holder, woman) and one research assistants (Anthropologist – Master’s degree holder).

***5.3.3 Data analysis.*** Data will be analyzed as described above in 5.2.3

**Table 1: Variables Measured for Different Initiative Levels**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Data Collection Method** | **CMW** | **Mother** | **Child** | **Other Health Service Providers?** | **Policy-Makers/Program**  **Managers** | **Community** |
| **Module 1: Baseline and end-line surveys** |  | Coverage/receipt of CMW services  -Quality of CMW services received (i.e. what interventions and education did the mother receive?) | Coverage/receipt of CMS services  -Quality of CMW services received (which interventions were received; how many visits took place?) |  |  |  |
| **Module 2:**  **(Financial quantitative tool)** | Direct and indirect costs of a self-sustaining practice.  Opportunity costs of CMW practice |  |  |  |  | Size, sustainability and effectiveness of the Mamta Fund |
| **Module 3 Quality of CMW care**  **(Observations, in-depth**  **interviews)** | Documentation of physical and instrumental  Infrastructure  Quality of CMW-patient interaction  (CMW behaviour, language, time spent)  Handling birth complications from clinical evidence-based best practices perspective | Assessment of CMW quality of care received in terms of respect accorded, sense of dignity, equity, and emotional support  Reasons for choosing CMW | Assessment of CMW quality of care received in terms of knowledge of newborn care | Physicians, LHW perspectives of CMW competency  Their trust and respect for CMWs' care  Provision of referral back up to CMWs' practice | CMWs program expectations  Barriers faced at policy level to implementing IMAN initiative |  |

## C. Ethical Considerations

Maintaining privacy and confidentiality of all the study participants is an important ethical issue. This will be addressed by only collecting the necessary information.[[12]](#endnote-11) Only the researchers and project manager will have access to the list of participants’ names and associated codes. The hardcopies of the survey questionnaires, the qualitative data transcripts and the consent forms will be kept in a locked cabinet in Dr. Mumtaz’s office at the University of Alberta for five years. Ethical approval will be obtained from the University of Alberta Health Research Ethics Board and Pakistan Bioethics Board[[13]](#endnote-12)

## D. Strengths and Limitations of the Study

A key strength of our study is the use of use of multiple mixed methods research. Both quantitative and qualitative research methods will be used. Another strength is the research team's mixed methods expertise and extensive experience conducting research on the Pakistani CMW program in remote, rural areas.

A limitation of Module 1 is that we are using pre-post survey methods to assess if the IMAN initiative has had an impact on provision of CMW care. A key drawback of this method is that it will not allow us to conclude, validly and without bias, if any changes in CMW coverage can be ***attributed to the IMAN initiative*** . It can only suggest that the intervention produced the measured outcome. It cannot rule out the possibility that other forces, such as background secular changes, may have led to differentials in outcome (Rossi 2004). For example, if the security situation in Balochistan deteriorates and CMWs are unable to provide care, this can potentially be measured as a failure of the IMAN initiative.

# 5. Study Implementation

## A. Stakeholders/Partners Engagement Plan

The key stakeholders of this research are the

1) The Balochistan Department of Health including the Balochistan Maternal and Neonatal Child Health program. The Balochistan government has given top priority to the provision of the full range of essential maternal and neonatal care to pregnant women living in remote rural areas. They have recruited, trained and deployed the CMWs.

2) Mercycorps as the key implementers of the IMAN project

3) USAID as the IMAN funding body and implementing partners

As indicated above, the key objective of our knowledge sharing plan is to support MercyCorps and the government of Balochistan in the implementation of IMAN initiative by providing on-going, contextually relevant information on program outputs. To facilitate exchange of knowledge, we will develop a Research Advisory Committee (RAC), which will have at least one representative from the three stakeholders listed above. Members of RAC will be involved right from the onset of the research. Their involvement will be continuous and active. We envision this involvement to include (1) ensuring the research design meets MercyCorps and GOB policy, program and information needs (2) input in development of data-collection tools (3) data collection support, particularly around security issues in Balochistan and (4) validation of research findings. While RAC's involvement will consist of informal meetings on an as-needed basis, we will have four formal knowledge-exchange meetings. Details of these meetings are outlined in table 2 below. The research findings will also be presented at conferences and published in peer-reviewed journals.

**Table 2: Knowledge sharing plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Purpose** | **Stakeholder group** | **Method** | **Timing** | **Rationale** |
| 1. KD1  Share baseline KPC survey findings  Share baseline CMW financial status findings | 1) GOB  2)MercyCorps  3) USAID and implementing partners | Workshop  Written report | 4-month mark  (Nov 2013) | To inform stakeholders of baseline status of CMW rates of care and the financial status of their practices |
| 2. KD2  Share second CMW financial assessment findings | 1) GOB  2)MercyCorps  3) USAID and implementing partners | Workshop  Written report | 19 -month mark  (Nov 2014) | To update stakeholders of any changes in the financial sustainability status of the CMWs about 12-months after receiving business skills training and loans. |
| 3. KD3  Share CMW quality of care findings | 1) GOB  2)MercyCorps  3) USAID and implementing partners | Workshop  Written report | 31-month mark | To show stakeholders the quality of care provided by CMWs after 2 years of IMAN inputs |
| 4. KD4  Share end-line KPC survey findings  Share end-of -project financial sustainability status of IMAN CMWs practices. | 1) GOB  2)MercyCorps  3) USAID and implementing partners  4) Other donors  5) Other provincial MNCH project policy-makers and planners. | Workshop  Written report | 42-month mark  (Oct 2016) | To share the impact of IMAN Initiative. |

## B. Timeline for OR Study

(see Annex 2)

## C. Research team:

The project will be implemented and managed by

1. **Dr. Zubia Mumtaz,** MBBS, MPH, PhD (Public Health Medicine) (PI)**,** Alberta Heritage Foundation for Medical Research Population Health Investigator and Assistant Professor, School of Public Health, University of Alberta, Canada. She specializes in women's reproductive health with a particular focus on women’s access to reproductive health services and inequities in reproductive health policy, design and delivery of services. Dr. Mumtaz has 15 years of Anthropological and Epidemiological research experience and extensive first hand data collection experience in remote, rural and insecure environments in Pakistan. The present proposal extends one stream of her currently ongoing research project in partnership with the Punjab MCH program (funded by RAF) that is exploring if CMWs in Punjab are providing care to the poor and socially excluded women. As the PI, Dr. Mumtaz will be responsible for the conceptual guidance of the research, including development of research tools, overall project management, ensuring data quality, data analysis and report writing. She will be responsible for ensuring the research complies with all health and ethical requirements. She will be responsible for all correspondence, record keeping, reports and financial monitoring.

2. **Afshan Bhatti,** MscAnthropology and MBA is the Research Manager and Anthropologist coordinating University of Alberta’s research projects in Pakistan. Ms. Bhatti has 10-years of extensive first hand ethnographic and survey data collection experience in remote, rural environments. The proposed research extends her past successful management of many of Dr. Mumtaz’s research projects in Pakistan. Ms. Bhatti will manage the proposed project and supervise data collection.

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