



MASTER OF PUBLIC HEALTH

A cooperative Program of

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH
&
INDIAN INSTITUTE OF HEALTH MANAGEMENT RESEARCH

Capstone Project at Jhpiego Jaipur Organization

By

Aastha Srivastava

IIHMR/JHSPH MPH

2013-2015

MASTER OF PUBLIC HEALTH

A cooperative Program of

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH
&

INDIAN INSTITUTE OF HEALTH MANAGEMENT RESEARCH

Capstone Project

At

Jhpiego Jaipur

Bottleneck Analysis of Implementation of Safe Childbirth Checklist

in Alwar district of Rajasthan

By

Name Aastha Srivastava

Under the guidance of

Dr S D Gupta

Master of Public Health

Year 2013-1015

MASTER OF PUBLIC HEALTH

A cooperative Program of

**JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH
&
INDIAN INSTITUTE OF HEALTH MANAGEMENT RESEARCH**

TO WHOMSOEVER MAY CONCERN

This is to certify that Aastha Srivastava student of Master of Public Health Program offered by Institute of Health Management Research, Jaipur in cooperation with Johns Hopkins Bloomberg School of Public Health, Baltimore has undergone capstone training at IIPH Jaipur on the topic Bottleneck analysis of implementation of Safe Childbirth Checklist in Aswar District Of Rajasthan from 26th May 2014 to 7th Jul 2014.

The Candidate has successfully carried out the study designated to him during capstone training and his/her approach to the study has been sincere, scientific and analytical.

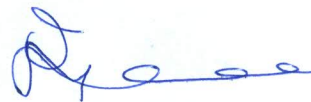
The Capstone is in fulfillment of the course requirements.

I wish him/her all success in all his/her future endeavors.



Dean, Academics and Student Affairs

IIHMR, Jaipur
Baltimore



Capstone Advisor/ Advisors

IIHMR, Jaipur / JHSPH,

CERTIFICATE BY SCHOLAR

This is to certify that the Capstone Project titled **Bottleneck Analysis of Implementation of Safe Childbirth Checklist in Alwar district of Rajasthan** and submitted by **Aastha Srivastava** Enrollment No **one** under the supervision of **Dr S D Gupta** for award of **Master of Public Health** carried out during the period from 26th May 2014 to 7th Jul 2014 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.


Signature

Abstract

WHO developed Safe Childbirth Checklist to support the delivery of essential maternal and perinatal care practices. The Checklist is a 29 item checklist addressing the major causes of deaths in low income countries, tool that reminds and help staff adherence to essential childbirth practices. Since India is a low Income country where resources and population are always critical issues in achieving health goals. Rajasthan has poor MMR and IMR, even lesser than national average for India.

The objective of the study was to identify the bottlenecks in the implementation of Safe Childbirth Checklist and bring solutions to improve the program. Literatures reviewed showed that checklist based approach reduces the chances of missing critical events. It also supported that Bottleneck Analysis helped in identifying the key points for Scale-Up of the program.

The cross sectional qualitative facility based study was conducted in 13 facilities (12 CHCs and 1 District Hospital) of Alwar. Among these facilities, 30 providers were interviewed using semi structured questionnaire which is organized to facilitate the identification of bottlenecks across the 7 Health System Building Blocks by WHO.

After data analysis, it was found that at most of the health facilities, there is lack of supervision and feedback to service providers on the checklists filled by them. Shortage of Health Staffs and skills on Partograph, Labor services are the key points under Health Workforce. Essential medical supplies are not available and coordination and responsibility among staff do not exist. After electronic entry, the facility In-charge and higher staffs do not use the data for monitoring or feedback.

For effective scale-up of the program, recruitment of new service providers, induction training to new and refresher training to old, sensitization on data demand and use, proper drug and supply management and a regular monitoring and feedback system is required.

Acknowledgment

I would like to gratefully and sincerely thank my advisor **Dr. S. D. Gupta**, Director for his guidance, understanding, patience and most importantly, his guardianship during my post graduate studies at IIHMR University, Jaipur. His mentorship was paramount in providing a well rounded experience consistent my long-term career goals.

I would like to thank **Dr. Kailash Saran**, State Program Manager, Jhpiego, Jaipur for his assistance and guidance in planning and successful completion of my Capstone. I believe that his actions provided me with the unique opportunity to gain a wider breadth. Additionally, I am very grateful for the support of Dr Subodh Program Officer Jhpiego and Dr Sagar Javeri consultant Jhpiego, with whom I worked closely in Alwar district and they have fully supported me during my field visits to different health facilities.

Finally and most importantly, I would like to thank my mentor **Dr. Suresh Joshi** for providing me the opportunity to be his mentee. I am so deeply grateful for his help, professionalism, valuable guidance and support throughout my Master in Public Health Program at IIHMR.

In the end, I sincerely would like to express my special expression to all the faculties who taught us during the program for enriching us and whose teachings I finally can incorporate in the report. This accomplishment would not have been possible without them. Thank you

Table of Contents

Introduction.....	1
Literature Review	4
Studies related to Use of Checklist as a tool to improve the efficiency of Health Workers.....	4
Studies related to Use of Checklist as a tool for Safe Childbirth	7
Material & Methodology.....	7
Study Criteria.....	8
Data collection method	9
Result	10
1) Essential medical products and technology	10
2) Health Information system.....	13
3) Leadership and Governance	15
4) Health service delivery.....	16
5) Health Workforce	20
6) Health financing.....	21
Annexure -1 Bottlenecks Analysis in Implementation of Safe Childbirth Checklist in Alwar district, Rajasthan.....	25
BIBLOGRAPHY	34

List Of figures

Graph 1: Pareto Chart of Essential Medical Products and Technology.....	11
Graph 2- Percentage Completeness of Safe Childbirth Checklist.....	13
Graph 3 – Technical Competency of Service Providers.....	16
Graph 4 – Technical Competency of Service Providers regarding Vital Statistics of Mother & Child.....	17
Graph 5 – Technical Competency of Service Providers on Danger signs for Baby in SCC.....	18

List of Tables

Table 1: Essential medical products and technology.....	10
Table 2: Leadership and Governance	15
Table 3 – Bottlenecks distributed among Health System Building Blocks.....	22
Table 4 – Health System Building Blocks wise Bottlenecks and Suggestions for them.....	23

List of Abbreviations

AMTSL: Active Management of Third Stage of Labor

ANM: Auxiliary Nurse Midwife

BP: Blood Pressure

CHC: Community Health Centre

DH: District Hospital

FHR: Fetal Heart Rate

FHS: Fetal Heart Sound

ICCM: integrated Community Case Management

ICU: Intensive Care Unit

IMR: Infant Mortality Rate

LHV: Lady Health Visitor

MOiC: Medical Officer In-Charge

MMR: Maternal Mortality Ratio

SCC: Safe Childbirth Checklist

WHO: World Health Organization

Introduction

The risk of maternal and perinatal complication is well understood, mostly the maternal and perinatal mortality burden is clustered around the time of birth i.e. delivery, with the majority deaths in the first 24 hour after child is born.

In 2010, 0.3 million women died during pregnancy and childbirth, some 2.6 million stillbirths occurred worldwide, and nearly 3 million newborns died within their first month of life. The majority of these deaths occurred in low-resource settings and most could have been prevented. In response to this unacceptable situation, WHO has developed the **Pilot Edition of the Safe Childbirth Checklist**, to support the delivery of essential maternal and perinatal care practices.¹

In India, women are encouraged and incentivized to deliver at public health facilities. However, in practice a poor quality care is observed in public health facilities. The progress is seen towards achieving Millennium Development Goals however India needs to focus and target on major causes of maternal and newborn deaths. Though minimum standards for healthcare practice at public health facilities have been established but well recognized gaps in newborn and maternal care practices still exist.

The objective of the WHO checklist - based quality improvement program is to assist health-care workers in reducing the number of adverse events that occur around the time of childbirth and to reduce maternal and newborn morbidity and mortality. It has synthesized core sets of best practices into practical recommendations to be used by health care workers at the time of

¹Spector JM, Agrawal P, Kodkany B, et al. Improving quality of care for maternal and newborn health: Prospective pilot study of the WHO safe childbirth checklist program. *PLoS One*. 2012;7(5):e35151

delivery. WHO has developed the checklist based quality improvement program to enhance frontline health care worker capacity to deliver high quality care.²

WHO Safe Childbirth Checklist is a 29 items checklist addressing the major causes of maternal death (namely, haemorrhage, sepsis, obstructed labour and hypertensive disorders), intrapartum-related stillbirths (namely, inadequate intrapartum care), and neonatal deaths (namely birth asphyxia, infection and low birth weight, complications related to prematurity) in low-income countries, tool that reminds and help staff adherence to essential childbirth practice.¹ Each action is important and critical, if missed can lead to complication or death. Each safety check has been developed according to evidence based recommendation and it is expected that each action listed will reduce the likelihood of avoidable harm and that adherence to them is unlikely to introduce adverse events or unnecessary cost. “The ultimate goal of the Safe Childbirth Checklist is to help ensure that health-care workers consistently follow a core set of safety steps and thereby minimize the most common and avoidable risks endangering patients' lives and well-being.”

The aim of the checklist-based approach is to help translate known best practices found in existing evidence-based guidance into practice at the bedside. The Safe Childbirth Checklist was developed from October 2008 to June 2010 through the following systematic process:

(1) comprehensive review of the major causes of perinatal morbidity and mortality and review of perinatal death audits to determine primary avoidable factors in facility-based childbirth-associated mortality, as well as existing WHO evidence-based recommendations that targeted these major causes of morbidity and mortality; (2) formal consultation with key stakeholders

2SAFE CHILDBIRTH CHECKLIST PROGRAMME - background_document.pdf.http://who.int/patientsafety/implementation/checklists/background_document.pdf.

Accessed 7/10/2014, 2014

including international content experts, policy-makers, frontline health workers, and other maternal-newborn health advocates, for consensus on the selection of items and draft Checklist points; (3) production and iterative refinement of Checklist content through ongoing consultation with stakeholders and experts; and (4) field testing for usability by collaborators working in high-priority settings (18 sites in five WHO regions participated). (5) A pilot study to evaluate the Checklist programme's impact on process measures was conducted over a period of six months in a tertiary facility in India, which produced promising results.²

Millennium Development Goals are to be achieved by 2015. India has to achieve the target of 109 MMR, and 28 IMR, while it has achieved 212 MMR and 53 IMR in 2009³. For Rajasthan, IMR was 57 and MMR was 264 in 2011-2012. Rajasthan has higher IMR and MMR compared to national average⁴. Thus more efforts are needed by Rajasthan Government to be at par with national average in terms of health indicators.

Jhpiego, a non-profit organization affiliated with the John Hopkins University, USA, is providing assistance to the Rajasthan government to bring down the infant mortality rate (IMR) and maternal mortality ratio (MMR) and to improve the quality of medical services. Since the government is providing best resources, the aim of the organization is to guide the medical staff so that they could make optimum use of state government resources for better health care services.

3MMR_release_070711.pdf.http://censusindia.gov.in/vital_statistics/SRS_Bulletins/MMR_release_070711.pdf. Accessed 7/10/2014, 2014

4Rajasthan_Bulletin 2011-12 - Rajasthan_Bulletin 2011-12.pdf.http://www.censusindia.gov.in/vital_statistics/AHSBulletins/files2012/Rajasthan_Bulletin2011-12.pdf. Accessed 7/10/2014, 2014

Therefore the objective of the study conducted is to identify the bottlenecks in the implementation of safe childbirth checklist. The study will help in identifying the gaps in the implementation of the program and bring solution to improve the program and its effectiveness.

The gaps identified will help us analyze the health system bottlenecks and challenges preventing the scale up of high-impact, cost-effective interventions for newborns, identifying potential solutions, including innovative strategies to overcome the barriers, bottlenecks and challenges identified. The tool is organized to facilitate the identification of bottlenecks across the 7 WHO Health System Building Blocks 1.Leadership and governance 2.Health financing 3.Health work force 4.Essential medical products and technologies 5.Health services 6.Health information systems 7.Community ownership and partnership⁵

Literature Review

Huge literature dealing with issues related to safe childbirth and use of checklist by service providers is present. If we observe closely, we can divide the literature into the following broad categories:

Studies related to Use of Checklist as a tool to improve the efficiency of Health Workers

When doctors, nurses and other hospital operating room staff follow a written safety checklist to respond when a patient experiences cardiac arrest, severe allergic reaction, bleeding followed by an irregular heartbeat or other crisis during surgery, they are nearly 75 percent less likely to miss a critical clinical step, according to a new study (randomized controlled trial) funded by the U.S. Department of Health and Human Services' Agency for Healthcare Research and Quality

⁵Every-newborn-tools.pdf. <http://www.mhtf.org/wp-content/uploads/sites/17/2013/09/Every-Newborn-tools.pdf>. Accessed 7/13/2014, 2014

(AHRQ). Under above mentioned randomized controlled trial, investigators simulated multiple operating room crises and assessed the ability of 17 operating room teams from three Boston area hospitals—one teaching hospital and two community hospitals—to adhere to life-saving steps for each simulated crisis.

In half of the crisis scenarios, operating room teams were provided with evidence-based, written checklists. In the other half of crisis scenarios, the teams worked from memory alone. When a checklist was used during a surgical crisis, teams were able to reduce the chances of missing a life-saving step, such as calling for help within 1 minute of a patient experiencing abnormal heart rhythm, by nearly 75 percent.

Hospital staff who participated in the study said the checklists were easy to use, helped them feel more prepared, and that they would use the checklists during actual surgical emergencies. In addition, 97 percent of participants said they would want checklists to be used for them if a crisis occurred during their own surgery.

Labor room and Neonatal ICU in public health facilities are the similar settings as compared to Surgery or Operation Theatre. Thus similar checklist can be implemented in public health facilities to cover the Missing of Critical Steps during any operation or surgery.⁶

Implementation of the checklist was associated with concomitant reductions in the rates of death and complications among patients at least 16 years of age who were undergoing noncardiac surgery in a diverse group of hospitals.⁷

6Arriaga AF, Bader AM, Wong JM, et al. Simulation-based trial of surgical-crisis checklists. *N Engl J Med*. 2013;368(3):246-253

7Thomassen O, Brattebo G, Softeland E, Lossius HM, Heltn e JK. The effect of a simple checklist on frequent pre-induction deficiencies. *Acta Anaesthesiol Scand*. 2010;54(10):1179-1184

It is possible to develop, introduce, and use a pre-induction checklist even in a hectic and stressful clinical environment. The checklist identified and reduced a surprisingly large number of missing items required in a standard induction protocol.⁸

Studies related to Use of Checklist as a tool for Safe Childbirth

Spector, Agrawal, et. al. through the Checklist based interventions into clinical practice have shown to reduce deaths and complications in field of medicine and surgery. Most maternal and newborn deaths and many stillbirths are avoidable. In 2008, World Health Organization (WHO) established a checklist-based childbirth safety program with a goal of determining whether a simple, low cost, scalable intervention could be devised. The team conducted a prospective, pre-post intervention study observing childbirth practices of health workers at a sub-district level hospital in Karnataka, India with a sample size of 499 birth events during baseline period and 795 birth events after introduction of checklist program.

The intervention had two primary mechanisms of effect:

(1) As checklist instrument that enforced for health workers, a core set of essential practices that must be completed at each and every birth; (2) as a reminder to complete these practices at the most crucial period - at bedside. The implementation of the safe childbirth checklist led to improved quality of care delivered by health workers attending to institutional deliveries.

8A surgical safety checklist to reduce morbidity... [N engl J med. 2009] - PubMed -

NCBI: <http://www.ncbi.nlm.nih.gov/pubmed/19144931?dopt=Abstract&holding=f1000,f1000m,isrcn>. Accessed 7/13/2014, 2014

Studies related to Use of Bottle Neck Analysis for Scale Up of Program

The author presented an overview of challenges and lessons learned through bottle neck analysis across the six sub-Saharan Africa countries which were part of the Catalytic Initiative (CI/IHSS) - Ethiopia, Ghana, Malawi, Mali, Mozambique, and Niger⁹. Drawing from review and analysis of over 50 programme documents, as well as correspondence with a range of programme key informants, the author highlighted important multi-country experience on the common challenges to implement intervention packages for child survival, in particular the delivery approach of integrated Community Case Management (iCCM). Such challenges included: 1) the deployment, supervision, motivation and retention of community health workers as the backbone of iCCM; 2) maintaining reliable supply chains; 3) demand side barriers to utilization; 4) weak monitoring and evaluation systems, and 5) the need for supportive government policies and engagement to achieve sustainable progress. The author concluded by demonstrating the importance of bottleneck analysis that will be critical for informing iCCM progress moving forward, as well as contributing to the growing body of knowledge on implementation of iCCM programmes.¹⁰

Material & Methodology

Research Question: What are the bottlenecks identified in the implementation of Safe Childbirth Checklist program in Alwar District of Rajasthan?

Study design: A cross section qualitative facility based study was conducted to identify bottlenecks in the implementation of Safe Childbirth Checklist.

⁹Scale-up_of_Integrated_Community_Case_Management_Catalytic_Initiative-2012.pdf.http://www.unicef.org/health/files/Scale-up_of_Integrated_Community_Case_Management_Catalytic_Initiative-2012.pdf. Accessed 7/13/2014, 2014

¹⁰Every-newborn-tools.pdf.<http://www.mhtf.org/wp-content/uploads/sites/17/2013/09/Every-Newborn-tools.pdf>. Accessed 7/13/2014, 2014

Study area: The study was conducted in Alwar district of Rajasthan.

Study period: The study was conducted from June 2014 to August 2014

Study Setting: Public Health Facility based study was conducted in Alwar District at District Hospital and Community Health Centers (CHC).

Study Population: Service providers (staff at labor room trained in safe child birth checklist) in Government health facilities in Alwar District.

Sample Size

Since the pilot phase of Safe Childbirth Checklist was implemented in the Alwar district of Rajasthan, so the public health facilities of Alwar district are the universe population. Alwar district has 1 district hospital and 29 Community Health Centers where the Safe Childbirth Checklist has been implemented. Indicator identified for selecting the sample health facilities was Delivery Load per health facility per month.

As per the delivery load per month per health facility, the facilities were classified into three categories: High Load, Medium Load, Low Load delivery facilities. Four facilities from each category were selected with addition to district hospital. Thus a total of 13 facilities (12 CHCs and 1 District Hospital) were visited during the study.

Service providers: 30 providers were picked from selected facilities. The selection criteria for the service providers were that they have received the training on the safe child birth checklist. Then by simple random sampling method 30 providers were picked from the facilities for interview.

Study Criteria

Inclusion criteria: Service Providers who have received training on Safe Childbirth Checklist and voluntarily gave consent for the study.

Exclusion criteria: Service Providers who were not available at the time of data collection.

Study tool:

A semi-structured questionnaire was used for data collection. It was based on the bottle neck analysis tool on the basis of the building blocks of Health system by WHO. The tool was pretested in field to find out the reliability of the tool.

The questionnaire was divided into six major sections (**see Annexure-1**):

1. Essential medical products and technology
2. Leadership and Governance
3. Health information system
4. Health service delivery
5. Health Workforce
6. Health finance

Questionnaire was finalized in consultation with senior program advisor at JHPIEGO Jaipur. It was then submitted for IRB Approval at Institutional Review Board (IORG#: IORG0007355), IIHMR Jaipur and got approved under S.No.– 2014/6.

Data collection method:

The data collection started after identifying the health facilities and providers to be interviewed. Semi-structured questionnaires were administered with each respondent after getting the informed consent with them. Average time taken for the interview was from 15 to 20 minutes. The availability of equipments were asked from them and then cross checked by direct physical observations. Many questions related to Procedures followed for safe child birth were also asked which were verified by direct observation during delivery conducted during that time at few health facilities. Filled check lists were also checked for the last month till that day of the month when visit was done. The real time process of filling checklist by providers, from admission of the patient till delivery and discharge was also observed. Questionnaire was translated into Hindi as providers were not comfortable with English and then Responses by providers then back translated into English.

A schedule of data collection and interview was prepared according to the availability of the selected health provider availability with the concern of Medical officer incharge of the Community health center (CHC) and Principal medical officer of the district Hospital.

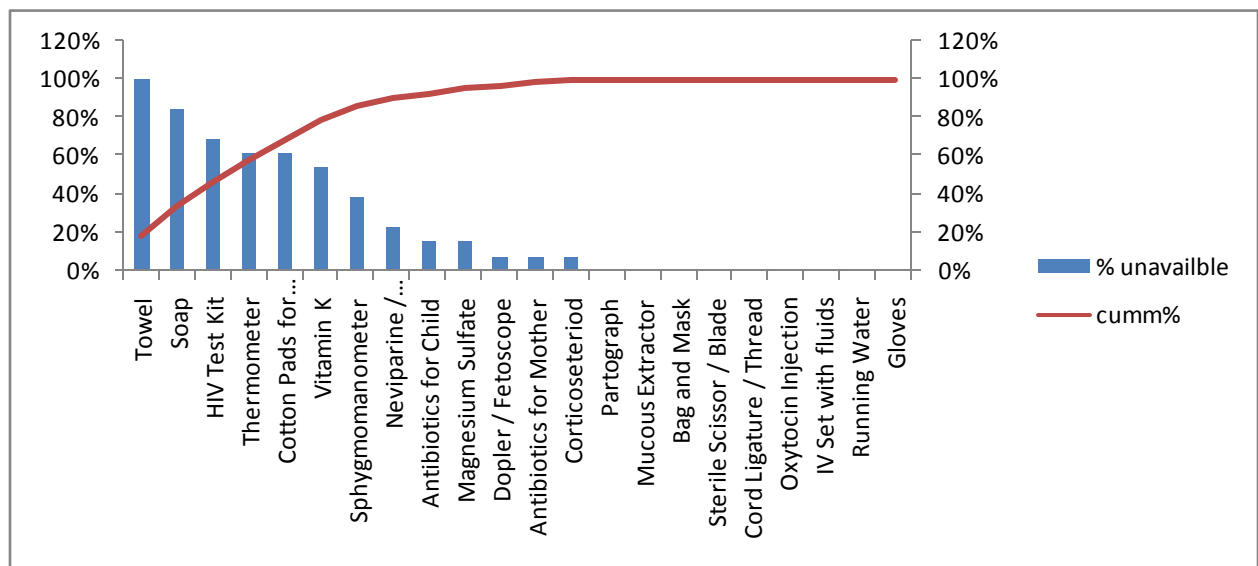
Result

Based on the observation and interview done, the following result is drawn which is analyzed with respect to building blocks of health care defined by WHO.

1) Table 1: Essential medical products and technology

Equipments	available	not available	%		cumulative %
Towel	0	13	100%	13	18%
Soap	2	11	85%	24	34%
HIV Test Kit	4	9	69%	33	46%
Thermometer	5	8	62%	41	58%
Cotton Pads for Mother	5	8	62%	49	69%
Vitamin K	6	7	54%	56	79%
Sphygmomanometer	8	5	38%	61	86%
Neviparine / Zidovudine	10	3	23%	64	90%
Antibiotics for Child	11	2	15%	66	93%
Magnesium Sulfate	11	2	15%	68	96%
Doppler / Fetoscope	12	1	8%	69	97%
Antibiotics for Mother	12	1	8%	70	99%
Corticosteroids	12	1	8%	71	100%
Partograph	13	0	0%	71	100%
Mucous Extractor	13	0	0%	71	100%
Bag and Mask	13	0	0%	71	100%
Sterile Scissor / Blade	13	0	0%	71	100%
Cord Ligature / Thread	13	0	0%	71	100%
Oxytocin Injection	13	0	0%	71	100%
IV Set with fluids	13	0	0%	71	100%
Running Water	13	0	0%	71	100%
Gloves	13	0	0%	71	100%

Graph 1: Pareto Chart of Essential Medical Products and Technology



On analyzing the Pareto chart for the equipment list essential for safe childbirth checklist tool, it was observed that 80 percent of unavailable or non functional equipments and materials for the safe childbirth checklist tool are Towel, Soap , HIV test Kit, Thermometer, Cotton pads, Vitamin K and Sphygmomanometer. Therefore priority focus should be given to these equipment lists coming under 80 percent of essential area of Pareto chart as they contribute to almost 80% of the unavailability and are crucial for improvement. As body temperature and blood pressure can be only measured with the help of thermometer and sphygmomanometer for essential vital reading of mother and child and help in governing the condition of both mother and child, tracking the risk and danger. Towel and Soap are essential for maintaining hygiene process during the delivery; it reduces the risk of infection to mother, child and the service provider itself. HIV kit should be kept in the Labor Room for the pregnant women coming directly in active stages of Labor so that the HIV test could be done in emergency when the laboratory of the hospital is not open. Vitamin K was injected to Newborns and should be counted among the essential dose that need to be given the children

just born and best to be given within four hour of delivery. In many health facilities like Naraynpur CHC, the service providers were not aware of quantity of Vit. K to be given and process to inject to the new borne. The confusion of the dose has arisen due to the difference in the concentration of the vitamin K vial. Previously the supply was with higher concentration and new supply was with less concentrated solution. Previously it was given by diluting it with 10 micro lt of solution but new supply does not need any dilution. But the staff was still following the previous method by diluting and then injecting the vitamin K. This was a wrong method. There was no supervision from higher officials to check the usage and supply of the vitamin K stock. At facility level, there is no defined official who can technically advice them about the concentration and method of injecting the vitamin K.

Procurement of checklist tool

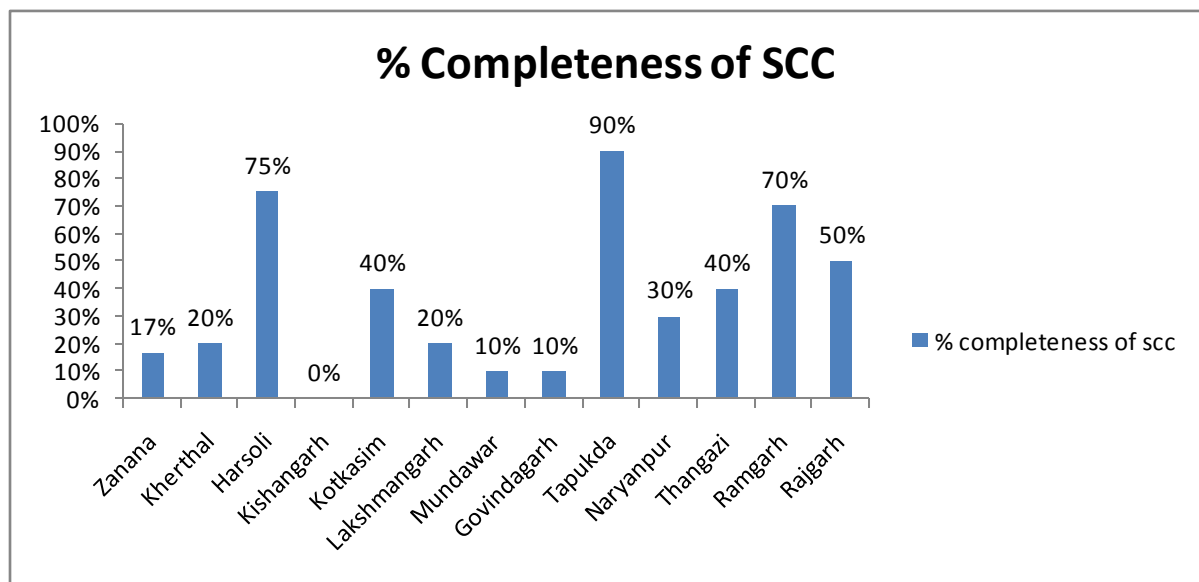
On discussion with facility service providers during data collection, it was found that there was no proper procurement system regarding the Safe Childbirth Checklist maintained in any of the health facility. It was being directly supervised by the JHPEIGO officials when they visit the facility during monitoring and handholding. There was no procedure to decide number of checklist to be procured or stock to be maintained. It was when the checklist went out of stock, JHPEIGO officials were informed to make the availability of the checklist. At few places, responsible person for the indenting safe child birth check list was labour room incharge as the checklist was kept in the labour room only in district hospital; while at most places, the indenting was done by registration counter incharge as it was kept there. Only in district hospital, the checklist was properly placed in labor room from where the filling can be done from admission process followed till discharge. Whereas at other facilities it was not at proper place (at registration counter) as its filling starts from labour room and checklist is

not filled during the admission process. Therefore there was a lack of systematic procurement process and placement of safe childbirth checklist.

2) Health Information system

Completeness of Safe Childbirth Checklist is an important indicators for the correct procedure followed for safe child birth during delivery.

Graph 2- Percentage Completeness of Safe Childbirth Checklist



It can be clearly deduced from the graph that none of the facility had 100 percent completely filled checklist. Tapukda's performance was better than other Community health Centers (CHC) with 90 percent of completeness. Ramgarh and Harsoli were on average performance with 70 and 75 percent respectively filled. Other all facilities are in poor performance level as most of them were less than 50 percent completed. Kishangarh was the worst CHC that had none of the checklist complete.

All the checklists filled for the deliveries conducted at facility were submitted to the computer operator for online data entry and reporting to higher level. At some CHCs, checklists were submitted patient wise where as in some CHCs, the submission of checklists were not as per any schedule and were submitted to operator on weekly or fortnightly basis. As per the knowledge of staff, the only purpose of these checklists was to enter data online and do reporting. They had never received any feedback on the checklist filled from higher officials whether they were correctly filled or not and what were their lacking and how they could improve the use of safe childbirth checklist.

At district hospital Alwar and Kherthal CHC, most of the checklists were not correctly and properly filled, vitals of women and child were not mentioned. The service providers filling the checklists have written the normal values of Temperature and BP without measuring BP or taking temperature of mother and new born. At Kotkasim CHC, Laxmangarh CHC and Mundawar CHC, mostly the checklists were properly filled but the vital readings at the time of discharge of women were not noted down. At Narayanpur CHC, Rajgarh CHC and Ramgarh CHC, Partograph were not at all filled and if filled were not correctly done. At Govindgarh CHC, checklists were not even attached with the admission ticket of the pregnant women. Staff at Thanagazi CHC said that due to lack of time and high workload they were unable to fill checklists for each pregnant woman. Only at Tapukda CHC, the service providers have correctly and properly filled checklists and while Partograph was correctly filled at Harsoli CHC.

At most of the health facilities, Partograph were not filled and if filled was incorrectly filled except Tapukda CHC.

3) Leadership and Governance

Leadership and governance was lacking in all the health facilities. May be it's at district hospital or any Community Health Centers at the Block.

Table 2: Leadership and Governance

Indicators	Number of Health Facilities
Policy on Safe Childbirth Checklist at health facility	13
Target given to health workers on filling of Checklists	0
Appointment of Official responsible for verification of quality of checklists	0
Frequency of verifications by Officials	0
Feedback given to health workers on checklist filled by them	0
Last visit done by senior health officials to monitor the SCC	0
Actions taken by higher officials based on SCC filled by service provider	0

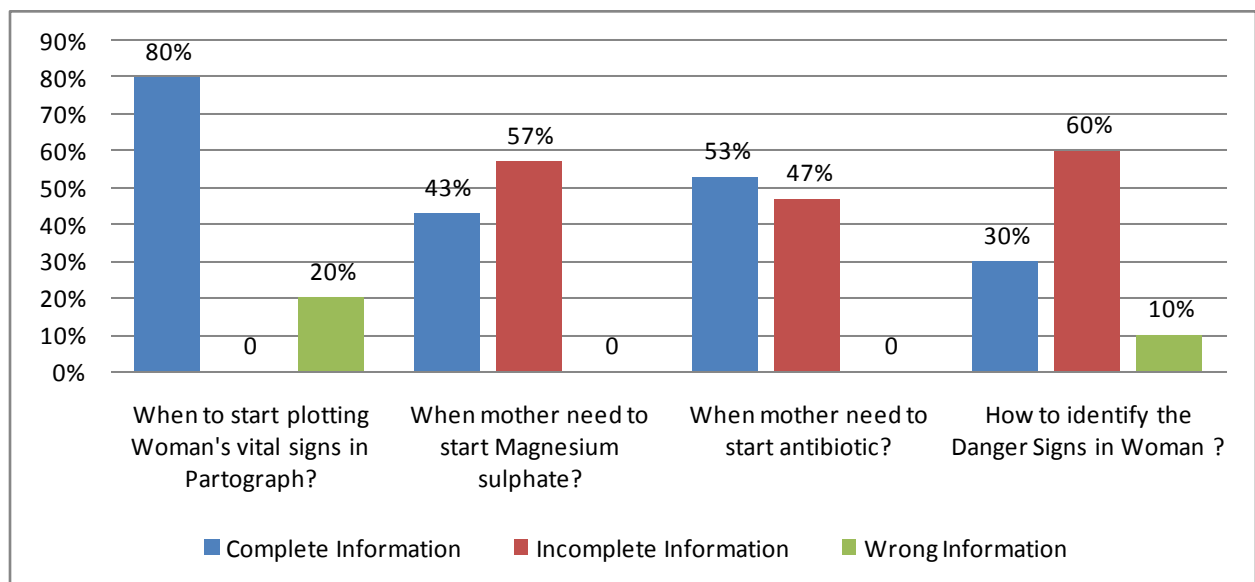
All the facilities had policy on safe childbirth checklist. But there was no one to supervise the implementation of the program within the facility. No target was given for the staff to fill the checklists against the deliveries conducted by them. None of the higher level officials have come to supervise or made visit to check the program implementation to know the lacking and take action to improve the program implementation. Staff was also not motivated as they were given no feedback on their work, therefore no one was there to correct them or take action for the incorrect procedure. Thus, it led to complete failure of supervision and governance of the safe child birth checklist program implementation.

4) Health service delivery

Technical Competence of the Staff

Technical competence is also an important factor for the proper implementation of the program. Based on the staff knowledge about the safe child birth practice and checklist guidelines one can assess their competence level.

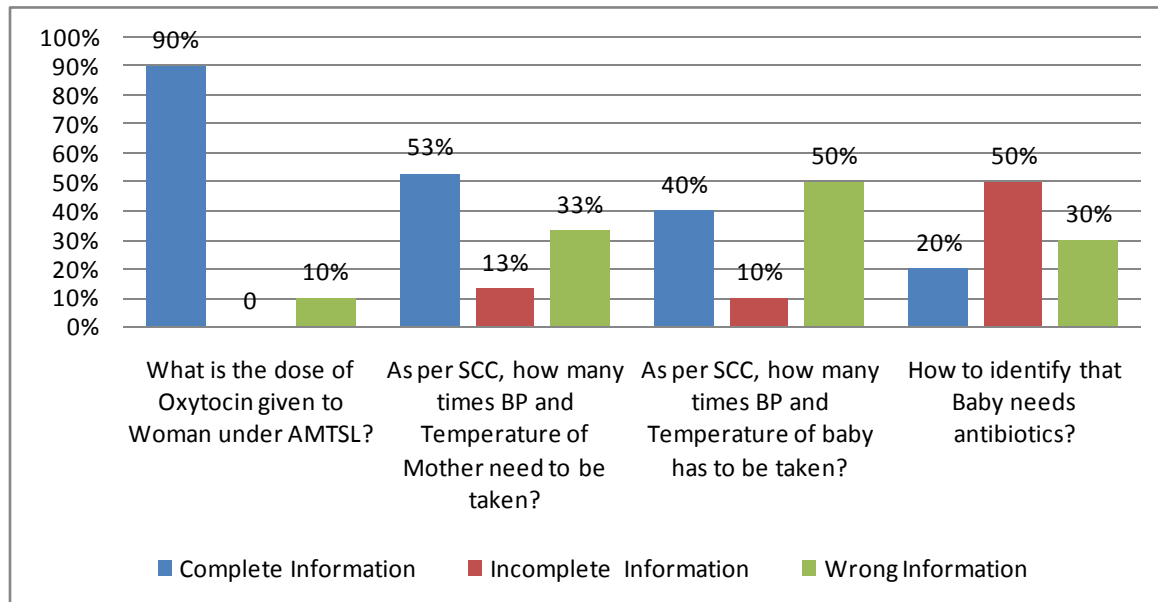
Graph 3 – Technical Competency of Service Providers



Measured on basis of level of information staff had i.e. complete information or incomplete or wrong on Safe Childbirth Checklist, 30% participants showed varied result on asking questions about the child birth checklist program. About 80% participants had the correct information about to when to start the Partograph. More than 50 percent had incomplete knowledge about when magnesium sulphate is given to pregnant woman. Approximately 50 percent had incomplete knowledge about signs when pregnant woman need to start

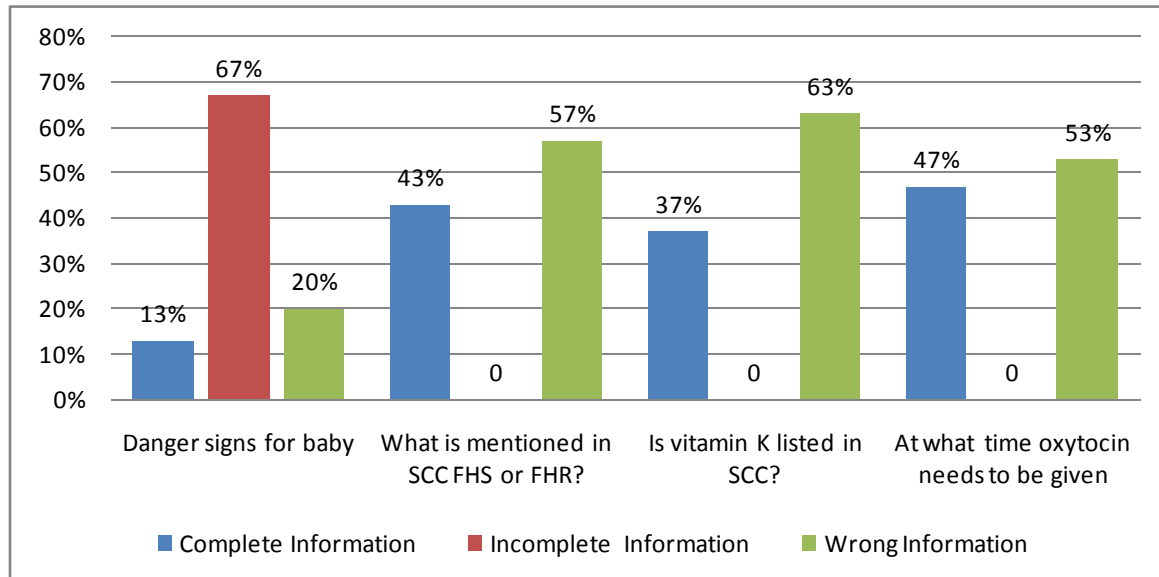
antibiotics. 60 percent of participants had incomplete knowledge about danger signs and symptoms of the pregnant women.

Graph 4 – Technical Competency of Service Providers regarding Vital Statistics of Mother & Child



Dosage of oxytocin injection to be given to pregnant women under Active Management of Third Stage of Labor was almost known to almost 90% participants. Knowledge about the number of time BP and temperature need to be measured according to Safe Childbirth Checklist guideline was 33% for wrong information despite of training given to all of them. 50% of them had wrong information about number of temperature and FHR to be measured of the baby. 57% of them had no idea about what has to be listed in checklist between FHR (fetal heart rate) or FHS (fetal heart sound) and how many times it has to be listed. Vitamin K was one of the major issues for them as it has not been mentioned as the checklist item but was mentioned in the protocols of safe child birth process.

Graph 5 – Technical Competency of Service Providers on Danger signs for Baby in SCC



Therefore 63 percent said that vitamin k is not listed in the safe childbirth checklist. The optimum time of injecting oxytocin during delivery was known by 50 percent of the staff and 50 percent didn't had correct knowledge about it. Therefore there was not optimum required competence for the safe child birth procedure. Knowledge was found to be below average among all staff working at labour room.

Training

All the participants who were interviewed were trained in safe childbirth checklist program for its implementation. It was given almost one year back (2013) conducted for 3 days and all found the training useful by the service providers. Refresher training was also started at few health facilities and was continued in other left CHC. All participants found the orientation training useful. 60% participants asked to give them refresher training on Safe Childbirth Checklist and they emphasized that they should more training on child health and Partograph.

Partograph training is essentially required in all facilities as none of the health facility staff fills Partograph correctly and completely.

Attitude of providers towards Safe Childbirth Checklist

According to all the respondents, Safe Childbirth Checklist helped them in governing the vitals of both mother and child. They also said that it helped them in determining the danger signs and critical condition of pregnant women with the help of Partograph, few said that it helped them in identifying PPH and thus preventing PPH with the help of oxytocin. It helped them in recalling the patient history as said by one of the labor room staff at Mundawar CHC. Most of them agreed that checklist tool is relevant. They didn't want any component to be deleted or inserted more in the checklist. Few of them said we have never gone through it thoroughly so can't suggest any deletion or addition of component in the checklist.

Practice of service Providers towards Safe Child Birth Checklist

All of the staff filled the checklist daily. According to them, fully filled checklist gave the view of vitals of mother and new born and helps them follow patients. They didn't get any incentive for filling the checklist, but when asked few of them said they would like to have monetary incentive for filling to do proper implementation and filling of checklist is required, while other didn't demand for any incentives. They seem satisfied and committed to their work.

Therefore staff should be motivated more on Safe Childbirth Checklist as their responses demonstrated their negligence and unwillingness towards implementation of the program. Few of the staff was really dedicated, following and having knowledge on all the procedures, ready for more training and learn things for the improvement for safe child birth.

5) Health Workforce

Most Community Health Centers didn't have Gynecologist and Pediatrician. These were posted only at Tapukda CHC and District hospital Alwar. No Anesthetist was available at any CHC except at the District Hospital (Zanana). There was also shortage of ANM, Staff Nurse, Lady Health volunteers (LHV's) and Yashoda in all CHCs.

District hospital had exceptionally high load of delivery with average 1200 deliveries per month. Ramgarh CHC, Rajgarh CHC, Tapukda CHC and Govindgarh CHC were high load CHC at the block with average of 200-300 deliveries per month. Kishangarh CHC, Thangazi CHC, Kotkasim CHC and Mundawar CHC were medium load health facilities with average 70- 120 deliveries per month. Kherthal CHC, Harsoli CHC, Laxmangarh CHC and Narayanpur CHC were the low load health facilities with average 30-50 deliveries per month. More deliveries were conducted in night with comparison to day. Generally deliveries were conducted by Staff Nurses, Auxiliary Nurse Midwives (ANM), or Lady Health Visitors (LHV). All CHCs have shortage of staff in their labor room and it was such deep that only one staff could be available on duty at a time in labor room. Only at district hospital, there was optimum number of staff but high overload of number delivery was burden on the staff. These staff were assisted by Doctors only during complicated deliveries, and in most of the health facilities, there were no gynecologists or pediatricians. So, most of the complicated deliveries were referred to the district (higher facility level).

6) Health financing

To implement the Safe Childbirth Checklist program, no extra manpower or equipment or facility is required at any health facility. This program supports the maternal health in government health setting and is not based on parallel system with government. It is based on capacity building of the present health workforce and strengthening the existing government health facilities. Only extra requirement is of procuring safe childbirth checklist which is to be attached to admission tickets. Presently the checklists are supplied by the JHPEIGO working at Rajasthan. Presently, Program Managers at block or district under government health system have no role in procuring and supplying the checklist. Availability and supply of checklist is not an issue at all in a long run of the program as government is enough competent to provide the availability of printed checklist tool.

Conclusion and suggested recommendations

In order to compile the findings and deduce the bottlenecks in each health system building blocks, each health facility is categorized into the degree of improvement needed in the program under each building block. Four categories are used to classify each health facility: Good, Need Minor Improvement, Need Major Improvement and Inadequate. This classification will help in identifying the broader area in which major efforts are required and also the present status of health facility in the light of Safe Childbirth Checklist implementation in Alwar District.

Table 3 – Bottlenecks distributed among Health System Building Blocks

	District Hospital (Zanana)	CHC Ramgarh	CHC Rajgarh	CHC Naryanpur	CHC Iaxmangarh	CHC Kishangarh	CHC Kotkasim	CHC Tapukda	CHC Thanagazi	CHC Harsoli	CHC Kherthal	CHC Govindgarh	CHC Mundawar
Essential medical products and technology													
Leadership and Governance													
Health Information system													
Health service delivery													
Health workforce													
Health finance													

Indicators:

Good	
Need minor improvement	
Need major improvement	
Inadequate	

As per the classification of health facilities on the WHO Health System building blocks, Leadership and Governance is the area which is inadequate at all the health facilities. Thus the foremost step in improvement of the program should be developing Leadership and Governance at facility level. Health Information System at some facilities are either inadequate or require major improvement. Health workforce needs some improvement by recruitment of the unfilled posts of all cadres at all the facilities. The essential medical equipment and products improvement varied in different health facilities. Similarly health information system varied in improvement range within facilities and can still be managed with proper supervision and coordination. Service delivery needs major improvements in few facilities and some improvement in others remaining.

Table 4 – Health System Building Blocks wise Bottlenecks and Suggestions for them

Building Block	Bottleneck	Strategies and solution to address identified challenges and bottle neck
Leadership and Governance	Lack of supervision and feedback to service providers	Need proper supervision by identifying one of the medical officer as Supervisor and a proper two way feedback mechanism should be developed.
Health Financing	No major bottlenecks	
Health Work Force	- Shortage of staff - Lack of Skilled staff on Partograph, Labor Services and Obstetrics Care	- Filling up the vacant post of all cadres and at all levels by government that would help in decrease of workload on existing staff. - Availability of Pediatrician, Gynecologist and Anesthetist will decrease the maternal and neonatal death due to complication during deliveries. - Require planned training program. Refresher training/workshop required on knowledge about danger signs of pregnant women/mother/newborn
Essential Medical Products and Equipments	- Unavailability of Towel, Soap, HIV tests Kit, Thermometer, Cotton pads, Vitamin K and Sphygmomanometer. - Lack of coordination within store incharge and labour room incharge for the procurement of the products and equipments. - Lack of responsibility within the staff	- Proper monitoring and supervision required by Medical Officer Incharge of the health facility. - Shortage of product should be monthly analyzed and reviewed in the monthly meeting at district level and Surplus stock of products required and maintenance of equipment should be done at regular intervals.

	• Poor stock management	• Coordination within the staff required for procuring products available at facility. • Redefining the supply and distribution system tool.
Health Service Delivery	• Incorrect filling of Partograph and incomplete knowledge of danger signs of pregnant women was major issue. Vitamin K injecting method was not known to many providers. • Rotation of the staff as per rooster depending on their skills	• Need a proper training on how to fill, use and interpret Partograph. Vitamin K should be listed in the checklist as it is mentioned in the protocols to be followed for safe child birth during delivery. • Trained staff on the Safe Childbirth Checklist should be placed in labor room.
Health Information System	• No awareness and knowledge about use of safe childbirth checklists after the discharge of women and reasons to its data entry.	• Knowledge about the importance of checklist tool should be given to the providers. • MOIC and District Officials should be trained on Data Demand and Use. • Data from Safe Childbirth Checklist can be used to identify the pattern of maternal mortality and morbidity in institutional deliveries. • Can be used as a tool for assessing the service delivery quality at health facilities. • Can be used for training of newly recruited Staff.

Annexure -1 Bottlenecks Analysis in Implementation of Safe Childbirth Checklist in Alwar district, Rajasthan

LABOR ROOM SERVICE PROVIDER QUESTIONNAIRE

Informed Consent Form for Service Providers

Part 1 : Information Sheet

Greetings to you, I am Aastha Shrivastava, pursuing Masters in Public Health from IIHMR University Jaipur in collaboration with John Hopkins University, USA. As a part of my capstone program, I am currently conducting a study on Bottle Necks in Implementation of Safe Childbirth Checklist in Alwar district, Rajasthan. I would be providing you information and inviting you to be a part of this study.

I would be reading the consent for you. If you are unable to understand anything or have any question at any point of time, please ask me to stop as we go through the information and I will take time to explain.

Through this survey, we are trying to explore the key factors or gaps which are acting as bottlenecks in the better implementation of Safe Childbirth Checklist program. Most maternal and neonatal deaths can be prevented if danger signs and complications are identified on time using Partograph and Checklist based approach. I believe that you can help me by telling us what you know both about checklist, your attitude towards the use of checklist and about your practices during labor. This knowledge might help us to know the key factors, eliminating those factors and thus ultimately reducing maternal and neonatal deaths.

This study will involve your participation in a face to face interview that will take about 30-35 minutes. You are being invited to take part in this study because we feel that being an service provider in Labor room, you can contribute much to our understanding.

Your participation in this study is entirely voluntary. It is your choice whether to participate or not. You may change your mind at any point of time during interview. You do not have to answer all questions or take part in the survey if you don't wish to do so. You can choose not to answer any question or complete the study if you wish.

The study will cover many health facilities in Alwar district which may draw attention from the co-workers. I assure you that your identity and information collected through the questionnaire will be kept confidential and will only be used for research purposes. If you have any questions, you can ask them now or later.

Part 2 – Certificate of Consent

I have been invited to participate in study about Safe Childbirth Checklist under “Bottleneck Analysis of Implementation of Safe Childbirth Checklist in Alwar, Rajasthan”.

Foregoing information has been read out to me. I have had the opportunity to ask questions about it and any questions I have asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Name of the _____
Participant

Signature _____

Date _____

Name of the _____
Person
taking consent

Signature _____

Date _____

BLOCK I: IDENTIFICATION AND CONSENT/ASSENT STATUS

Q. No-	Questions	Responses		Code	Go To
101.	Name and code of the Health Facility				
102.	Type of Health Facility	CHC	1		
		District Hospital	2		
103.	Name of District	_____			
104.	Name of Block	_____			
105.	Name of Respondent	_____			
106.	Designation of Respondent				
107.	Date of interview (DD/MM/YY)				
108.	Name of the interviewer	Name:			
109.	Consent status	Agreed		1	→END
		Refused		2	
110.	Completion status	Completed		1	
		Partially completed		2	

BLOCK II: HEALTH WORKFORCE

No.	Question	Responses		Code	Go To
201.	What is the existing human resource distribution at your health facility?				
	Type of Post	Number Sanctioned	Number Posted		
	General Duty Medical Officer				
	Obstetricists / Gynaecologist				
	Anesthetist				
	Surgeon				
	Pediatricists				
	Nurses				
	ANMs				
	Yasodha				
	LHV				

BLOCK III : MEDICAL PRODUCTS, VACCINES & TECHNOLOGIES

No.	Questions	Responses		Code	Go To
301.	What are the Equipments / Products available at your health facility?				
	Name of Equipments / Instrument / Drugs / Medical Supplies	Available or Not Available	Functional or Non Functional		
	Thermometer				
	Sphygmomanometer				
	Doppler / Fetoscope				
	Partograph				
	Mucous Extractor				
	Bag and Mask				
	Sterile Scissor / Blade				
	Cord Ligature / Thread				
	Antibiotics for Mother				
	Antibiotics for Child				
	Magnesium Sulfate				
	Corticosteroid				
	Oxytocin Injection				
	IV Set with fluids				
	Neviparine / Zidovudine				
	Soap				
	Running Water				
	Gloves				
	Towel				
	Cotton Pads for Mother				
	HIV Test Kit				
	Vitamin K				

BLOCK IV: PROCUREMENT OF SAFE CHILDBIRTH CHECKLIST

No.	Questions	Responses	Code	Go To
401.	How the procurement of Safe Childbirth Checklist does take place?			
402.	Is the Safe Childbirth Checklist available for every pregnant woman coming to your health facility?	Yes	1	Go to 404.
		No	2	
403.	If No, when was the last time you faced stock out of Safe Childbirth Checklist at your health facility?			
404.	How the number of Safe Childbirth Checklist to be procured for a month is decided?			
405.	How the stock of Safe Childbirth Checklist is maintained?			
406.	Who is responsible for Identing of Safe Childbirth Checklist for your health facility?			

Block V: HEALTH INFORMATION SYSTEM

No.	Questions	Responses	Code	Go To
501.	Where do you submit the filled Safe Childbirth Checklist?			
502.	When you submit the filled Safe Childbirth Checklist?	Patient Wise	1	
		Daily	2	
		Monthly	3	
		Others _____	4	

503.	What happen to the filled Safe Childbirth Checklist submitted by you?			
504.	Do you receive any feedback on your submitted Safe Childbirth Checklist?	Yes	1	
		No	2	
505.	Do you have a booklet of SCC or loose sheets of Safe Childbirth Checklist?	Yes	1	
		No	2	
506.	Percentage Completeness of Safe Childbirth Checklist filled by the respondent (Through Physical Observation)			
507.	Percentage of Correctness of Data from Safe Childbirth Checklist (Through Physical Observation)			

**BLOCK VI : TECHNICAL COMPETENCY OF HEALTH CARE PROVIDERS ON SAFE
CHILDBIRTH CHECKLIST**

No.	Questions	Responses	Code	Go To
601.	When to start plotting Woman's vital signs in Partograph?			
602.	When mother need to start Magnesium Sulfate?			
603.	How to identify when a pregnant woman need to start antibiotic?			
604.	How to identify the Danger Signs in Pregnant Woman?			

605.	What is the dose of Oxytocin given to Woman under Active Management of Third Stage of Labor?			
606.	As per Safe Childbirth Checklist, how many times BP and Temperature of Mother has to be taken?			
607.	As per Safe Childbirth Checklist, how many times BP and Temperature of baby has to be taken?			
608.	How to identify that Baby needs antibiotics?			
609.	What are the danger signs for a new born?			
610.	What is mentioned in Safe Childbirth Checklist : Fetal Heart Sound or Fetal Heart Rate?	Fetal Heart Sound	1	
		Fetal Heart Rate	2	
		Don't Know	9	
611.	Is Vitamin K listed in Safe Childbirth Checklist?	Yes	1	
		No	2	
612.	At what time Oxytocin need to be administered to Pregnant Women?			

Block VII : WORKLOAD ON HEALTH WORKERS AND TRAINING

No.	Questions	Responses	Code	Go To
701.	No. of Deliveries conducted at your health facility per month			
702.	No. of Deliveries conducted at your health facility per day			
703.	Maximum Number of Delivery during	Day	1	
		Night	2	
704.	Most Deliveries conducted by	Designation : _____		
705.	Average Number of Nurses / ANMs on duty in Labour Room			
706.	Are you trained in Safe Childbirth Checklist implementation?	Yes	1	Go to Block VIII
		No	2	
707.	When was your last training done?	Date of Training: _____		
708.	For how many days was the training given?	No. of Days: _____		
709.	Did you find the training useful?	Yes	1	
		No	2	
710.	Do you need more training or refresher training related to Safe Childbirth Checklist?	Yes	1	Go to Block VIII
		No	2	
711.	If yes then on which component?			

BLOCK VIII : ATTITUDE OF HEALTH WORKERS TOWARDS SAFE CHILDBIRTH CHECKLIST

No.	Questions	Responses	Code	Go To
801.	How the Safe Childbirth Checklist has helped you in patient care?			
802.	What problem did you faced while filling Safe Childbirth Checklist?			
803.	Did you find Safe Childbirth Checklist relevant?	Yes	1	
		No	2	
804.	Do you want to delete some items in Safe Childbirth Checklist?	Yes	1	
		No	2	
805.	Which component you want to delete from Safe Childbirth Checklist?			
806.	Do you want to add some items to SCC?	Yes	1	
		No	2	
807.	Which component you want to add in Safe Childbirth Checklist?			
808.	According to your opinion, when the SCC is to be filled?			

BLOCK IX : PRACTICE OF SERVICE PROVIDERS TOWARDS SAFE CHILDBIRTH CHECKLIST

No.	Questions	Responses	Code	Go To
901.	How frequently do you fill the Safe Childbirth Checklist?			
902.	What Interpretation can be drawn from a fully filled Safe Childbirth Checklist?			
903.	Why is it necessary to fill a Safe Childbirth Checklist?			

904.	Do you receive any appraisal or incentive for filling Safe Childbirth Checklist for every woman?	Yes	1	
		No	2	
905.	If No, What type of appraisal or incentive do you wish to receive?			
906.	Will some incentive or appraisal help in motivation service providers to fill Safe Childbirth Checklist?	Yes	1	
		No	2	

END: THANK YOU

BIBLIOGRAPHY

- (1) WHO | Safe Childbirth Checklist: a tool to help achieve MDGs Available at: http://www.who.int/patientsafety/news_events/news/childbirth_checklist/en/. Accessed 7/10/2014, 2014.
- (2) SAFE CHILDBIRTH CHECKLIST PROGRAMME - background_document.pdf Available at: http://who.int/patientsafety/implementation/checklists/background_document.pdf. Accessed 7/10/2014, 2014.
- (3) PLOS ONE: Improving Quality of Care for Maternal and Newborn Health: Prospective Pilot Study of the WHO Safe Childbirth Checklist Program Available at: <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0035151>. Accessed 7/10/2014, 2014.
- (4) MMR_release_070711.pdf Available at: http://censusindia.gov.in/vital_statistics/SRS_Bulletins/MMR_release_070711.pdf. Accessed 7/10/2014, 2014.
- (5) Sample Registration Bulletin - SRS_Bulletin-October_2012.pdf Available at: http://censusindia.gov.in/vital_statistics/SRS_Bulletins/SRS_Bulletin-October_2012.pdf. Accessed 7/10/2014, 2014.
- (6) Rajasthan_Bulletin 2011-12 - Rajasthan_Bulletin 2011-12.pdf Available at: http://www.censusindia.gov.in/vital_statistics/AHSBulletins/files2012/Rajasthan_Bulletin_2011-12.pdf. Accessed 7/10/2014, 2014.
- (7) Every-Newborn-tools.pdf Available at: <http://www.mhtf.org/wp-content/uploads/sites/17/2013/09/Every-Newborn-tools.pdf>. Accessed 7/13/2014, 2014.
- (8) Spector JM, Agrawal P, Kodkany B, Lipsitz S, Lashoher A, Dziekan G, et al. Improving quality of care for maternal and newborn health: prospective pilot study of the WHO safe childbirth checklist program PLoS One 2012;7(5):e35151.
- (9) A surgical safety checklist to reduce morbidity... [N Engl J Med. 2009] - PubMed - NCBI Available at: <http://www.ncbi.nlm.nih.gov/pubmed/19144931?dopt=Abstract&holding=f1000,f1000m,isrcn>. Accessed 7/13/2014, 2014.
- (10) Scale-up_of_Integrated_Community_Case_Management_Catalytic_Initiative-2012.pdf Available at: http://www.unicef.org/health/files/Scale-up_of_Integrated_Community_Case_Management_Catalytic_Initiative-2012.pdf. Accessed 7/13/2014, 2014.

- (11) Every-Newborn-tools.pdf Available at: <http://www.mhtf.org/wp-content/uploads/sites/17/2013/09/Every-Newborn-tools.pdf>. Accessed 7/13/2014, 2014.
- (12) Arriaga AF, Bader AM, Wong JM, Lipsitz SR, Berry WR, Ziewacz JE, et al. Simulation-based trial of surgical-crisis checklists N Engl J Med 2013 Jan 17;368(3):246-253.
- (13) Thomassen O, Brattebo G, Softeland E, Lossius HM, Heltne JK. The effect of a simple checklist on frequent pre-induction deficiencies Acta Anaesthesiol Scand 2010 Nov;54(10):1179-1184.