Evaluation of the introduction and usage of chlorhexidine in selected facilities in Liberia

February 2014

Report compiled by Anne-Marie Bergh[1]
in collaboration with Josephine Wachekkwa[2] and Dr. Olusola Oladeji[2]

[1] MRC Unit for Maternal and Infant Health Care Strategies, University of Pretoria, South Africa
[2] Save the Children, Liberia

TABLE OF CONTENTS

BACKGROUND 1
INTRODUCTION OF CHLORHEXIDINE IN LIBERIA 1
REVIEW PROCESS 3
CURRENT IMPLEMENTATION STATUS 4
Procurement 4
Recordkeeping 4
In-facility storage and distribution of stock 5
Acceptability 6
CHALLENGES AND RECOMMENDATIONS 6
Sustainability 6
Cost 6
Procurement routes 7
Antenatal care clinics 7
Monitoring and evaluation 7
References 8

Appendix 1: Tool used to gather information from facilities 9
Appendix 2: In-hospital storage and stock flows 11
Appendix 3: Clinic procurement routes 12

REVIEWERS

Joseph de Graft-Johnson	Team Leader, Newborn Health, (MCHIP), Washington, DC
Rachel Taylor	Senior Program Officer, (MCHIP), Washington, DC
Gabriel Cohen	Program Coordinator, (MCHIP), Washington, DC

ACRONYMS

IRC	International Rescue Committee
JICA	Japanese International Cooperation Agency
MCHIP	Maternal and Child Health Integrated Program
MOHSW	Ministry of Health and Social Welfare
MSH	Services for Health
PATH	Program for Appropriate Technologies in Health
PSI	Population Services International
RBHS	Rebuilding Basic Health Services in Liberia
SC	Save the Children
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

BACKGROUND

The effects of chlorhexidine for umbilical cord care on neonatal mortality have recently been demonstrated in a number of studies in Nepal, Bangladesh and Pakistan.[1,2] The United States Agency for International Development's (USAID) Maternal and Child Health Integrated Program (MCHIP), through Save the Children (SC) and in collaboration with the Ministry of Health and Social Welfare (MOHSW) and other partners[a], supported the introduction of chlorhexidine for umbilical cord care in Liberia in 2013.[2] Funding from the United Nations Commission on Life Saving Commodities through the Program for Appropriate Technologies in Health (PATH) to Save the Children, and a generous donation from a private donor complemented the MCHIP funds. The primary purpose of MCHIP's involvement was to assist the MOHSW and partners (a) to lay the foundation for the scale-up of this intervention in the country and (b) to develop a policy for the use of chlorhexidine for umbilical cord care of all babies born in Liberia. The MOHSW adopted the policy on 1 April 2013 and steps were initiated to include 7.1% chlorhexidine digluconate for cord care in Liberia's Essential Medicines List.[2,3]

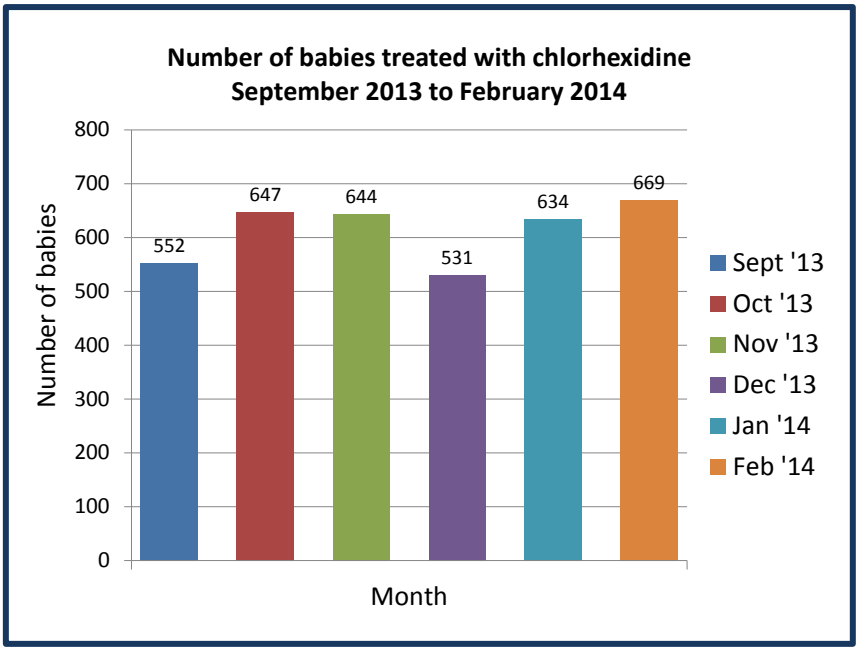
As the MCHIP support was coming to an end, an assessment was done on achievements. The objectives were:

- To review the process for the introduction of chlorhexidine as the standard of care for umbilical cord care and current implementation status
- To provide recommendations for improvement of the chlorhexidine intervention

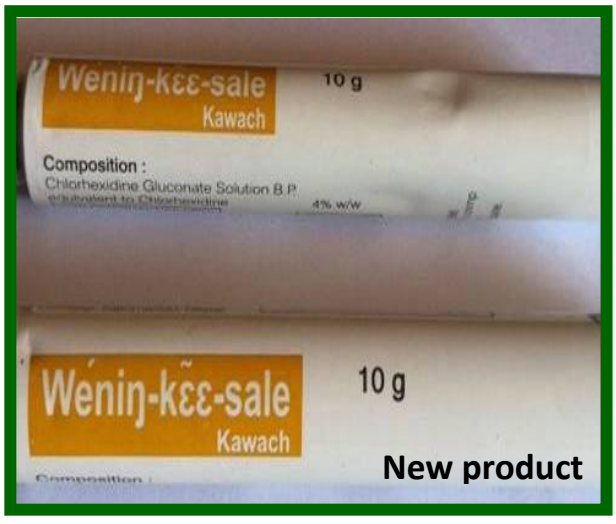
INTRODUCTION OF CHLORHEXIDINE IN LIBERIA

A user-preference study indicated that both providers and pregnant women preferred the chlorhexidine product in gel form. As Liberia is currently not in a position to manufacture its own product, Lomus Pharmaceuticals Pvt. Ltd. in Nepal was selected to supply 10,000 3-gram tubes of 7.1% chlorhexidine digluconate gel to the country (July 2013). The feasibility of importing the chlorhexidine product from Nigeria, once manufacturing commenced, was also under consideration.[2] Save the Children initiated the chlorhexidine intervention by providing trainings and supplies to five hospitals and nine clinics in three counties (Bong, Margibi, Montserrado). The objective was to expand the number of recipient health facilities in the counties served by Save the Children, while UNICEF and UNFPA undertook the initiative to support the MOHSW with scale-up in the southeastern region of the country.[4] By March 2014, 48 facilities were included on the distribution schedule in the three SC-supported counties (29 additional facilities in Montserrado and 19 in Margibi County). By the end of February 2014, the period for which data was available, a total of 3,677 babies had received this treatment (see chart below).

[a] Save the Children, USAID, Rebuilding Basic Health Services in Liberia (RBHS), World Health Organization (WHO), UNICEF, Population Services International (PSI), International Rescue Committee (IRC), Management Services for Health (MSH), United Nations Population Fund (UNFPA), Japanese International Cooperation Agency (JICA), PATH



Save the Children continues to contribute to the availability of the chlorhexidine product through direct purchase orders on behalf of the MOHSW. In February 2014, a consignment of 20,000 10-gram tubes with Liberia-specific branding including the product name, *Wénin-kɛ̃ɛ̃-sale* ("naval string medicine"), with instructions in English, had arrived. In this new packaging, only one multiple-application tube is needed per baby instead of the three separate 3g tubes. In the same month, the MOHSW directly ordered another 38,500 10-gram tubes, with funding provided by UNICEF. Furthermore, UNFPA has provided funding for Save the Children to procure 25,000 10-gram tubes for four counties in the south east region of Liberia.



An A4-sized information leaflet (poster) with pictures illustrating the correct application of the chlorhexidine gel was developed as the main information, educational and communication material. The leaflet was developed by the Health Promotion Unit of the MOHSW. Save the Children supported the process and the printing of copies for distribution. The insert for the new 10-gram tube contains the same instructions as the leaflet, which will enhance the consistency of the message.

In all the project facilities health workers were orientated in the correct application of the chlorhexidine gel when the stocks were delivered. Orientation was also included during the step-down (in-service) training for KMC in all the health facilities.

REVIEW PROCESS

The review comprised studying available documents related to the introduction of chlorhexidine and a visit to Liberia between 6 and 14 February 2014, which was combined with an assessment of the implementation progress of kangaroo mother care in five hospitals. A short interview schedule was devised to guide the collection of information at health facilities (Appendix 1). Information was collected at four hospitals in three counties (Bong, Margibi and Montserrado) and two clinics in Montserrado County. Verbal feedback was given to the Director: Family Health Division of the MOHSW, the health management specialist at USAID, and family planning, reproductive health and maternal health advisors of Jhpiego.

The review had several limitations as a result of time and logistical constraints. All the aspects related to the procurement of chlorhexidine could not be probed and no 'walk the walk' could be undertaken to trace how tubes were distributed. Further, very few informants outside health facilities were interviewed on their views on the introduction and usage of chlorhexidine. No mothers who had used the product were made available and the review had to rely on providers' perceptions.

The kinds of information received also depended on the informants available during the consultant's visits and their willingness to provide information. In some facilities, for example, it was possible to speak to the pharmacy assistant and see the location where stock was kept; in others it was not possible. The process of exactly how and when facilities, particularly hospitals, decided to reorder another batch of the product could also not be probed in depth.

CURRENT IMPLEMENTATION STATUS

The description provided in this report pertains mostly to the six facilities visited. Three hospitals and one clinic started with the use of chlorhexidine in September 2013, whereas the fourth hospital and the second clinic started in October 2013.

Informants in two hospitals providing secondary and tertiary levels of care were the only ones aware of the national chlorhexidine policy and had a copy. One county health officer interviewed was not aware of the existence of the policy.

With regard to educational materials, most facilities used the A4-sized poster described above. In some facilities the poster was laminated and/or put up on the wall. In one clinic, informants indicated that the only information they had were the pictures on the tube insert with wording in a foreign language (referring to the initial 3g product).

Procurement

The imported consignments of the chlorhexidine product are collected from Customs by the Save the Children Liberia country office. Physical counts of boxes are done together with the logistic teams and there is a distribution plan by which the boxes are physically delivered to the county offices. Way bills are issued for facilities and the recipient signs on delivery. One copy of the way bill is kept at the facility, one at the SC county office and one copy is brought back to the SC office in Monrovia. Stocks are delivered to hospital pharmacies and to the officer in charge at clinics on request. Pharmacists are required to alert the SC county office when stocks are low.

After the initial distribution, each facility requests stock from Save the Children based on their need. The community clinics received ample stock with the initial distribution. Two hospitals had experienced shortages since the introduction of chlorhexidine; one in the peak delivery season and one because of stock not being available at the SC county office. In one hospital, there were problems with the release of stock from the pharmacy to the maternity unit. The SC county field officer present at the visit undertook to investigate this matter in order to find a solution.

Recordkeeping

The Save the Children reproductive health supervisor in each of the three counties has a database for the records collected from the clinic. They share the information on the utilization of the chlorhexidine with the county health teams. The data from the three counties are then

harmonized in the Monrovia office. The records are verified by SC staffs against the delivery record and any anomaly is clarified and corrected.

Recordkeeping of the procurement and distribution of stocks varied across the facilities. It appears as if the maternity sections of some facilities were provided with ledger books to serve as registers to record the issuance of tubes to mothers. There was no opportunity to examine records kept by pharmacies, although some facilities indicated that they used the normal request forms to transfer stocks from the pharmacy to the maternity ward.

The two clinics visited were small and had few deliveries in the period since the first distribution of chlorhexidine (only 7 and 23, respectively). Both clinics kept special registers (ledgers) specifically for recording the issuance of chlorhexidine. However, one clinic's register did not have a column to fill in the date of issuance. The consultant suggested that health workers create such a column and that they leave a line open between different months to summarize monthly totals.

One hospital kept no record of the distribution of tubes in their maternity ward and stated that all live babies had received the treatment, despite the previous report of a shortage. Another hospital with records did not make them available during the visit. One hospital had a separate ledger and could provide a summary of chlorhexidine use. The fourth hospital previously only recorded the application of chlorhexidine in the patient file, but had added a column in the labor register in January 2014, which allowed for proper recordkeeping. In the interaction between hospital staff and the consultant, a suggestion emerged that, for twins, two ticks instead of one would be made in order to make accurate monthly aggregations.

In none of the facilities were informants aware of the eventual end-use of the data on chlorhexidine that was being collected from the registries and ledgers.

In-facility storage and distribution of stock

Graphic presentations of in-hospital storage and stock flows are included in Appendix 2. Appendix 3 illustrates the procurement routes described by the two clinics.

All facilities stored stocks in the pharmacy or dispensary, except in one clinic where the chlorhexidine tubes were kept in a box under a bed in the labor ward. Informants indicated that three tubes were allocated to each mother and that some mothers would come back to ask for more. In hospitals, tubes were issued to mothers in two different ways:

- All tubes were provided to mothers by labor ward staff.
- One tube was used in the labor ward, with a second application after 24 hours. The other two tubes were collected from the pharmacy on prescription.

Due to the inability to access all relevant records, no conclusions could be made about the appropriateness of accounting of stock at the pharmacy and in the maternity and neonatal units.

Acceptability

Providers reported that there had been no resistance to the introduction of chlorhexidine. In one hospital, the lack of pre-introduction communication had created some confusion and conflict among health workers. The practice was accepted once the product had been introduced and providers understood what was required of them.

As noted earlier in this report, the evaluation did not include clients and is based on provider perceptions. Providers felt that mothers generally accepted the practice if they had been counseled well. One provider stated, *"They love it"*. Reasons given for this perceived acceptance included the following:

- Mothers trusted the opinions of health care providers.
- Chlorhexidine was provided at no cost.
- Mothers perceived the product as easy to use.
- Mothers could see the effectiveness of the intervention.

CHALLENGES AND RECOMMENDATIONS

Recommendations should be viewed in the light of the fact that observations were based mostly on practices in only six facilities and that important issues, especially at other levels of the health system, may have been missed. Based on this evaluation, five key areas were identified for consideration in efforts to improve overall rates of chlorhexidine usage in Liberia: sustainability; cost; procurement routes; antenatal care clinics; and monitoring and evaluation.

Sustainability

Measures are needed to ensure sustainability of the provision of chlorhexidine for newborn cord care. The following responses from informants regarding how their facility would procure chlorhexidine once the SC-supported project came to an end help to demonstrate the uncertainty and importance of continued chlorhexidine distribution:

- *"Government will hopefully step in"*
- *"We pray that the government will take over"*
- *"No idea; that's the scary piece"*

According to the MOHSW Family Health Director, chlorhexidine was on the commodity list and in order to ensure for sustainability it would be included in the essential drugs list at the next revision of this list.

Cost

Issues of cost that need to be addressed include:

- Will chlorhexidine always be available free of charge? Who will foot the bill?
- How will the private healthcare sector access the product? (One informant related difficulties they had had with another product that was supposed to be available at public hospitals only but where government stocks were in found in private pharmacies.)

Procurement and distribution routes

In any further roll-out, the county and facility procurement and distribution routes need to be clear to all. If chlorhexidine is to be procured by Save the Children or any other partner organization as an interim measure until procurement is centrally initiated by the MOHSW for the whole country, it is strongly recommended that the product be channeled through the county health offices for storage and distribution to health facilities (see flow diagram below). The government requisition forms and procedures should be used and the same processes of control and request should be followed that are followed for government-provided drugs. To minimize potential facility stock-outs, pharmacies need to be sensitized to recognize the importance of the product. Lastly, proper recordkeeping of stock and proactive requisitioning will be important considerations to attend to (see also monitoring and evaluation below).

Recommended procurement and distribution routes

	CURRENT SITUATION	INTERIM PROPOSAL	FINAL PROPOSAL
Procurement	Save the Children	Partner organization(s)	MOHSW
	↓	↓	↓
Storage	SC head office	(Organization head office)	Central medical stores
	↓	↓	↓
	SC county office	County health office	County health office
	↓	↓	↓
Distribution	SC county office	County health office	County health office
	↓	↓	↓
Receipt	Health facilities	Health facilities	Health facilities

Antenatal care clinics

Roll-out to antenatal care clinics is also anticipated.[2] The development of similar procurement measures as utilized by hospitals will be a priority. In this phase, community awareness messages through the local media and other communication networks may be essential to promote acceptability and adherence.

Monitoring and evaluation

With regard to monitoring and evaluation, it might be beneficial to consider the extent to which hospitals and health centers/clinics will be required to report on the number of babies who benefited from chlorhexidine. This information could also be used as a mechanism of monitoring stock-outs and identifying bottlenecks in the supply chain. Individual facilities should be encouraged to collate and use their own data to monitor facility-based use of chlorhexidine and to forecast future supply needs.

References

1 GWG (Chlorhexidine Working Group). (2013). Chlorhexidine for umbilical cord care: A new, low-cost intervention to reduce newborn mortality. September 2013. http://www.healthynewbornnetwork.org/sites/default/files/resources/Chlorhexidine%20Technical%20Brief_24February2014.pdf (accessed 17 April 2014).

2 GWG (Chlorhexidine Working Group). (2013). Implementing chlorhexidine for umbilical cord care. Country guidance. November 2013.

3 MOHSW (Ministry of Health and Social Welfare), Government of Liberia. (2013). Policy on the use of chlorhexidine for cord care in Liberia.

4 Chlorhexidine Country Update. (2013). PowerPoint presentation.

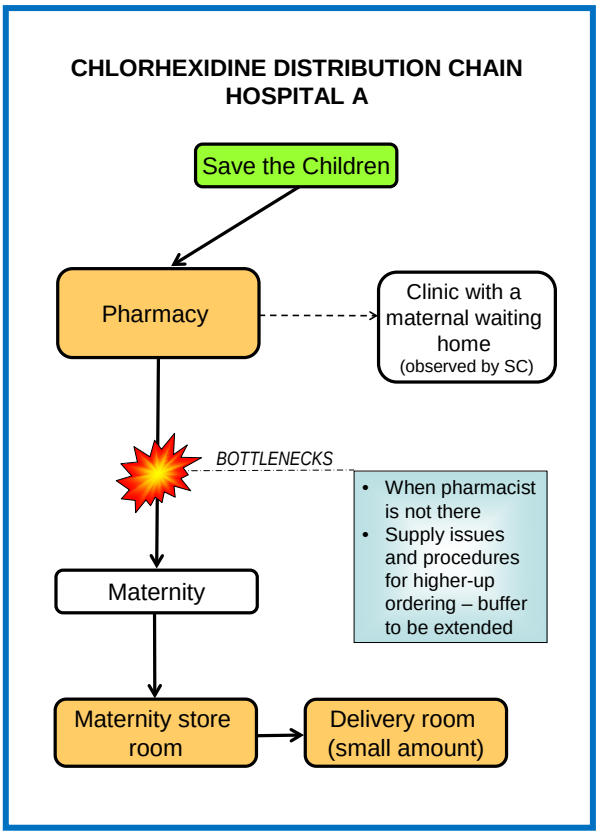
Appendix 1: Tool used to gather information from facilities

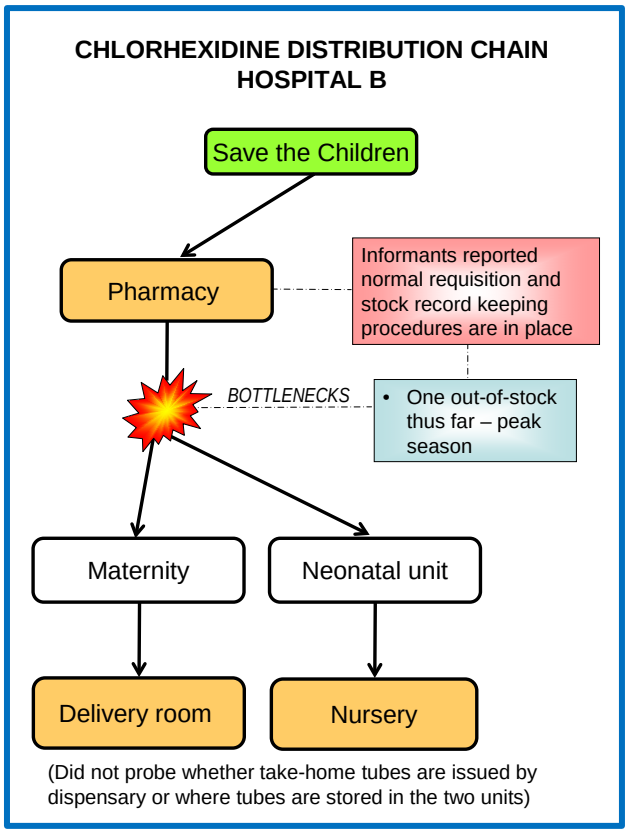
Persons providing information:	County:	Facility name:

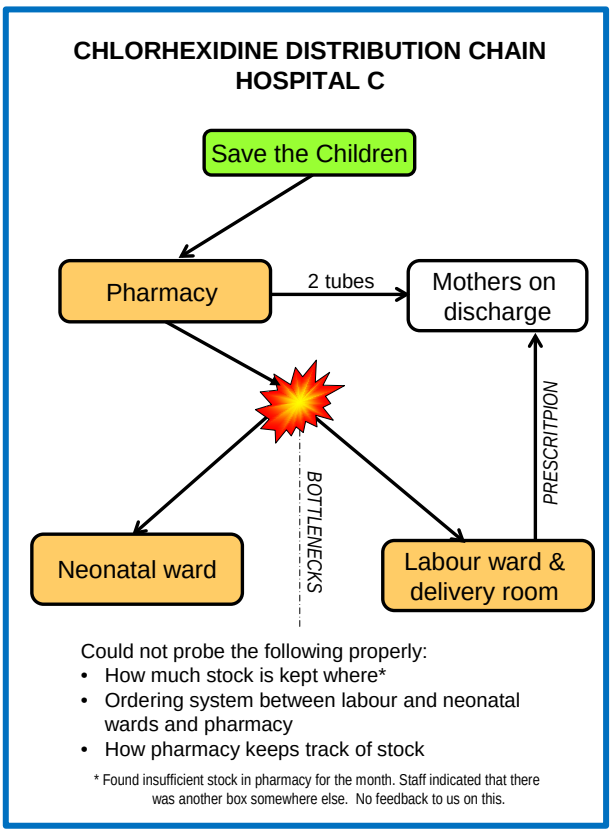
Focus area	Responses
1) I**ntroduction of the use of chlorhexidine** for umbilical care introduced in your facility:	
a) When was the use of chlorhexidine introduced?	
b) How was the use of chlorhexidine introduced?	
2) Does your facility have copies of a **national policy or guidelines** on chx? (Elaborate)	YES NO ??
3) What **BCC/educational materials** are available on chlorhexidine?	
4) Recording of chlorhexidine **use:**	
a) Are records kept of babies who receive chlorhexidine?	YES SOMETIMES NO ?? ***If NO or ??, go to Q5***
b) If Yes or Sometimes,	
i) Where is this recorded? (Ask to see the register/file examples)	
ii) Is the data/information collated/summarised regularly?	YES SOMETIMES NO ?? ***If NO or ??, go to Q5***
If Yes or Sometimes,	
iii) How do you do the summaries/aggregations?	
iv) Can you provide the number of babies whose umbilical stump was treated with chlorhexidine in the last month?	YES NO ??
c) How do you use this information at the clinic/hospital/county?	
d) Is the data/information passed on to the county health office?	YES NO ??
5) Storage and accessibility:	
a) Where is the chlorhexidine stored?	

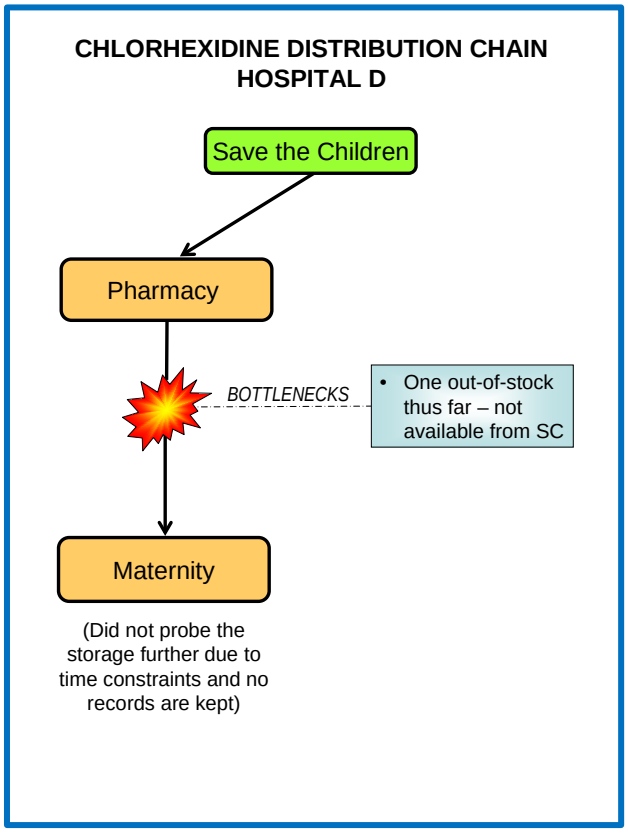
Focus area	Responses
b) How is it stored?	
c) Is it accessible to the midwives during all three shifts? (Elaborate)	YES NO ??
6) Procurement:	
a) Where does your facility get its chlorhexidine supply?	
b) If from the project: Where will you continue to get supplies when the project ends?	
7) Education and client matters:	
a) What are the key messages that you provide to mothers on continued cord care after discharge from the health facility?	
b) Are mothers given the chlorhexidine product to take home with them?	YES NO ??
i) If Yes, how many tubes of the 3g tubes?	
8) Acceptability of the intervention:	
a) Is the intervention acceptable to service providers? (Please elaborate)	YES NO ??
b) Is the intervention acceptable to mothers? (Please elaborate)	YES NO ??
9) Challenges:	
a) What are the current and potential challenges regarding use of chlorhexidine?	
b) How are these challenges being addressed?	
10) Any other comments?	
11) Pictures	- Mother with newborn (general photos, do not have to be chlorhexidine program specific) - Chlorhexidine being applied to newborn - Chlorhexidine training with TBAs, SBAs, CHWs, or mothers

Appendix 2: In-hospital storage and stock flows









Appendix 3: Clinic procurement routes