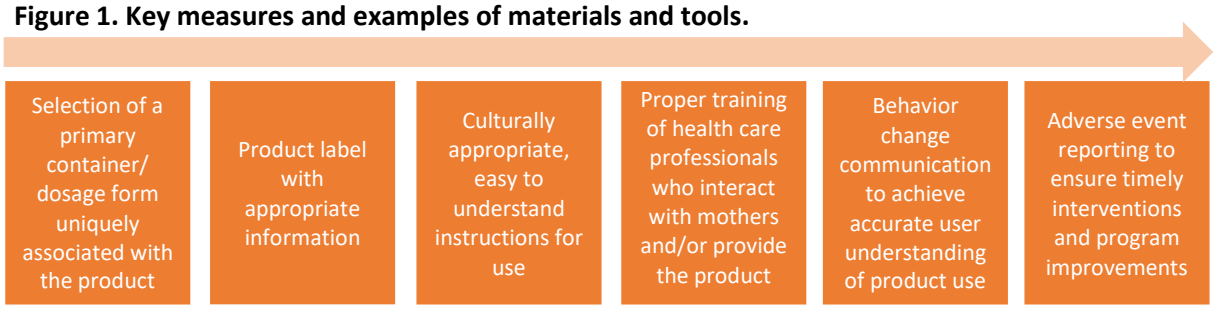
Ensuring correct use of 7.1% chlorhexidine digluconate for umbilical cord care

Chlorhexidine for umbilical cord care is formulated as 7.1% chlorhexidine digluconate (CHX) in either aqueous solution or gel, which delivers 4% chlorhexidine. CHX in solution form (i.e., liquid product) has been proven to be sufficiently potent as an antiseptic based on three randomized controlled trials in South Asia.[1–3] A gel form of CHX has been proven to be as effective as its liquid form based on a noninferiority study performed in Nepal.[4] Currently, cord cleansing with CHX is being implemented in more than ten countries in South Asia and sub-Saharan Africa as part of a package of essential newborn interventions. Approximately 5.5 million units of CHX were distributed in 2016.

As with all other medicines, care must be taken to ensure that the product is used appropriately. CHX can cause serious harm if applied to the eyes and should also not be put into the ear canal. The Chlorhexidine Working Group (CWG) has learned of several cases of misuse of the product in eyes—which occurred with the product formulated both as a liquid in a 10 mL dropper bottle and as a gel in a 3 g tube. Therefore, regardless of the type of primary container and dosage form used, it is critically important that persons and organizations responsible for chlorhexidine for umbilical cord care programs, as well as those responsible for the distribution of the product to caregivers, take necessary measures to ensure correct use. Key measures, and examples of materials and tools used for each of those measures, are described below. These measures are not mutually exclusive and require multidisciplinary efforts to implement. For more information, and materials mentioned for each measure, visit the Healthy Newborn Network website at https://www.healthynewbornnetwork.org/issue/chlorhexidine-for-umbilical-cord-care/.

Figure 1. Key measures and examples of materials and tools.



Selection of a primary container uniquely associated with CHX

In order to ensure correct use of CHX, program implementers and manufacturers must select a primary container that can distinguish this product from other products used for newborns. Therefore, it is good practice to first assess what products are commonly used for newborns and/or are included in an essential newborn package. A user preference or product attribute study is a good way to identify user preferences and perspectives. Based on the study and assessment results, organizations implementing a program with CHX can then select the optimal primary container/dosage form or modify the design of the primary container to distinguish the product from other medicines typically used for newborns. For example, one pharmaceutical

company in Bangladesh added a distinctive purple cap to the dropper bottle to avoid user confusion and to ensure proper use, based on feedback from program implementers.

Product label with appropriate information

The product label is a compilation of information about a product written by the manufacturer and approved by a regulatory authority. The label contains information required for safe and effective use of the product. A package insert (or a patient information leaflet) is one example of such product labeling. A "package insert," which is typically found inside the box of a prescription drug, is intended to provide health care professionals with the information they need to properly prescribe the drug. An insert that is found inside the box of an over-the-counter drug is called a "patient information leaflet" and is directed to consumers to ensure that they can:

- Diagnose their underlying condition.
- Determine whether or not the drug is appropriate for them.
- Self-administer the product safely and effectively.
- Avoid potential serious consequences.
- Recognize when to see a physician or seek emergency assistance.

The "Standard Information for Patient Information Leaflet" developed by the CWG generally follows United States Food and Drug Administration guidelines and could help manufacturers include appropriate information to ensure correct use. It would be prudent for manufacturers of CHX to consult the drug regulatory authorities in countries where the product will be manufactured or marketed to understand the requirements for the product label. In addition, culturally appropriate signs or pictures could be printed on the product package for easier and instant recognition of clinical information for all types of users.

Culturally appropriate, easy to understand instructions for use

The product label typically includes information on use (i.e., indications for use) and dosage instructions (i.e., when, how, and how often to take the product). However, since product labeling information tends to be concise, more detailed instructions for use of the product should be provided to users in a flyer or on a poster to ensure correct use. The instructions for use should also be culturally appropriate and easy to understand by users. Since CHX will be used at home by mothers and other caregivers, these instructions for use should be provided by manufacturers both in text and picture forms.

Proper training of health care professionals who interact with mothers and/or provide the product

As with any other new product, training will be required for health care professionals who interact with mothers and/or are involved in provision of CHX. A training program for health care professionals should focus on gaining an understanding of policies and guidelines, indications and contraindications for use, application methods, storage conditions, messaging to mothers, recording of the amount of product provided and used (for monitoring and evaluation purposes), danger signs that require immediate medical attention, and reporting of

adverse events if they occur. Training programs, along with well-crafted job aids and training materials, are important to ensure success of the training.

In addition to initial training, refresher training should be provided periodically. Use of a digital platform might help to keep health care professionals abreast of the most updated information. In Kenya, policies and guidelines are disseminated using a mobile phone platform to allow easy and timely access to the most updated policies and guidelines.

Behavior change programs to achieve accurate user understanding of product use

Along with training for health care professionals, behavior change programs must be initiated to educate users on the importance of using CHX, encourage its use, promote switching from existing cord care products to CHX, and importantly, ensure accurate understanding of correct product use. In addition, broad awareness-raising efforts should take place among the general population to ensure that other people who might take care of newborns at home, such as grandparents, husbands, and siblings, are aware of the product, its purpose, and correct use.

Education of users can be provided at health facilities during antenatal care visits or through community health workers during their antenatal or postnatal care visits to homes. Midwives or other health care professionals who assist with births should also be involved in these behavior change programs to ensure correct use of the product at the time of birth. Posters placed at health centers and fliers that mothers can take home for repeated reading are some of the materials that can be used to effect behavior change.

Adverse event reporting to ensure timely interventions and program improvements

An adverse event (or adverse experience) is any unfavorable and unintended sign, symptom, or disease temporally associated with the use of a medicinal product, whether or not it is considered to be related to the medicinal product.[5] Chlorhexidine has been in use for more than 50 years and has a well-characterized safety profile. CHX, when used as directed, is safe and effective.

Nevertheless, it is important for health care professionals to monitor any unfavorable signs in newborns who have received CHX and to document and report those events to regulatory authorities for timely investigation and intervention. If the cause of unfavorable signs is determined to be related to errors in product use, then appropriate measures should be taken, including making improvements to product labeling, instructions for use, or in the training/education provided to health care professionals, mothers, and other caregivers. If program implementers determine that misuse is highly likely to occur no matter what measures are taken, a thorough risk-benefit analysis should be conducted. Results from the risk-benefit analysis can be used to determine whether to continue product supply.

In addition, initial and refresher training of health care professionals should include what the unfavorable signs are, how to document the information in the event that unfavorable signs are noticed, and how and when to report them. Health care professionals should provide mothers with instructions when dispensing CHX on how to store and use the product and when they should seek medical care. In home settings, it is important to ensure that other people who might take care of newborns are also aware of this information.

References

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