



Nepal Family Health Program II Technical Brief # 27 www.nfhp.org.np

Chlorhexidine Program



Chlorhexidine being applied on a newborn

BACKGROUND

Nepal's neonatal mortality rate currently stands at 33 per 1,000 live births and 72% of all deliveries occur at home, usually without the assistance of a skilled birth attendant¹. Neonate vulnerability is further aggravated by unhygienic birthing conditions and surroundings that occur in home settings.

In such conditions, there is a high risk of infection to both mothers and newborns. Among newborns, the exposure of the freshly cut cord stump to pathogens through hands, instruments, cloths, etc, may progress to systemic infection and death of the neonate. According to Nepal's 2004 *National Neonatal Health Strategy*, the major causes of neonatal deaths are: infection, birth asphyxia/trauma and pre-maturity. Neonatal infection is the leading cause of neonatal death in Nepal². In addition, infection can be exacerbated by the topical application of locally available substances such as mustard and other oils – an integral part of traditional neonatal care practice in Nepal - powder, Dettol, ash, *harro* (herbal medicine), turmeric powder, Gentian violet and vermilion on the cord stump.

Although the World Health Organisation (WHO) ideally recommends dry cord care, to avoid the potentially harmful aforementioned traditional practices, WHO recommends use of topical antiseptics in settings with high infection risk.³ A study conducted by John Hopkins University in Sarlahi district by Luke Mullany et al demonstrated that application of CHX on the umbilical cord on the day of delivery can reduce mortality by 34% at home births.⁴ A recent study

has reinforced these results – a 20% reduction in neonatal mortality was observed during a study conducted in rural Bangladesh.⁵

Given WHO recommendations and the studies showing the effectiveness of chlorhexidine (CHX), the Ministry of Health and Population (MOHP) with support from NFHP II, conducted two feasibility and acceptability studies and piloted CHX in several districts to explore its effectiveness and acceptability.

KEY ACHIEVEMENTS

The Ministry of Health and Population approved of national-level scale-up of the CHX program on 12 December, 2011.

4% CHX lotion was included in the essential medicine list of the Department of Drug Administration in 2011.

STRATEGIC APPROACH

Based on the findings from the two studies⁶ (see Box 1), the Department of Health Services (DoHS) approved the pilot implementation of CHX lotion as a component of the maternal and neonatal health (MNH) activities at community-level program in three districts: Banke, Jumla and Bajhang and as a component of the Community-Based Neonatal Care Program (CB-NCP) in Parsa. NFHP II provided technical assistance to PLAN Nepal in Parsa and partnered with United Mission to Nepal to implement the program in Bajhang.

Box 1

Chlorhexidine gel versus aqueous for preventive use on umbilical stump: a randomized noninferiority Trial

During the randomized non-inferiority trial on whether the use of 4% CHX gluconate in a gel formulation versus an aqueous solution was more effective in preventing cord stump infection, it was found that the gel formulation was not inferior to the aqueous and the gel reduced bacterial colonization to a greater degree.

Chlorhexidine for Umbilical Cord Stump Care: Acceptability Study

This community acceptability study examined the ease of use of gel versus aqueous CHX formulations for prophylactic application on freshly cut cord stumps. Participants indicated a clear preference for the gel.

The CHX pilot focused on the use of 4% CHX lotion - locally referred to as Kawach - immediately after umbilical cord cutting both during institutional and home births to prevent infection.

In program districts, health facility staff and female community health volunteers (FCHVs) received specific orientation on the CHX product, counseling associated with dispensing and documentation materials and procedures, while mothers and other household care-givers also received counseling for proper CHX application (see Box 2).

Box 2

Proper Application of CHX

- Wash hand with soap and water
- Open CHX tube
- Apply CHX to the umbilical cord immediately after the cord is cut
- Apply the CHX to the cut tip of the cord, and the stump, and around the base of the stump
- Let dry
- Do not apply anything else and keep cord clean and dry

The major strategic approaches were as follows:

- Maximize program coverage by utilizing all appropriate government channels and systems—especially at the community level
- Use CHX during HF deliveries, as part of routine newborn care
- Distribute CHX through FCHVs during any contact with pregnant women, from 32 weeks gestation, along with suitable counseling using CHX information sheet and doll
- Integrate the program with the MNH activities at community-level and CB-NCP programs
- Ensure availability of CHX through social marketing approaches.



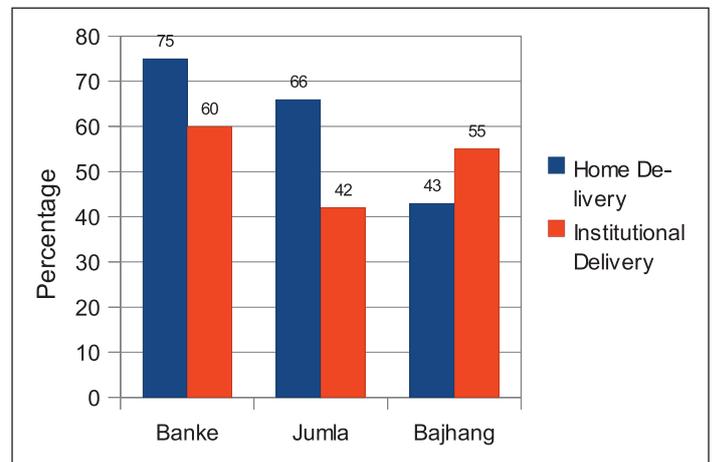
FCHV counseling pregnant women about and distributing CHX

RESULTS

After piloting the program for at least one year in all 3 districts, a study to assess coverage and compliance of CHX use was carried out in Banke, Jumla and Bajhang jointly by New ERA and NFHP II. As per the survey, application of CHX on newborns was relatively high – 67% of newborns in Banke had CHX applied on umbilical cords, 58% in Jumla and 47% in Bajhang.

Banke showed the highest coverage of CHX during home deliveries, at 75%, followed by Jumla (66%) and Bajhang (43%). Despite the comparatively low CHX coverage at the home setting in Bajhang, coverage of CHX during institutional deliveries was higher, at 56%, than that in Jumla at 42% and only slightly less than in Banke at 60% (see Figure 1).

Figure 1: Percentage of intervention facilities where partographs are in use



On average, compliance of CHX was lower than coverage in all three districts. It was highest in Banke followed by Jumla and Bajhang (see Figure 2). However, similar to coverage patterns, compliance of CHX was higher during institutional deliveries (45%) than during home deliveries in the case of Bajhang.

Figure 2: Percentage of intervention facilities where partographs are in use

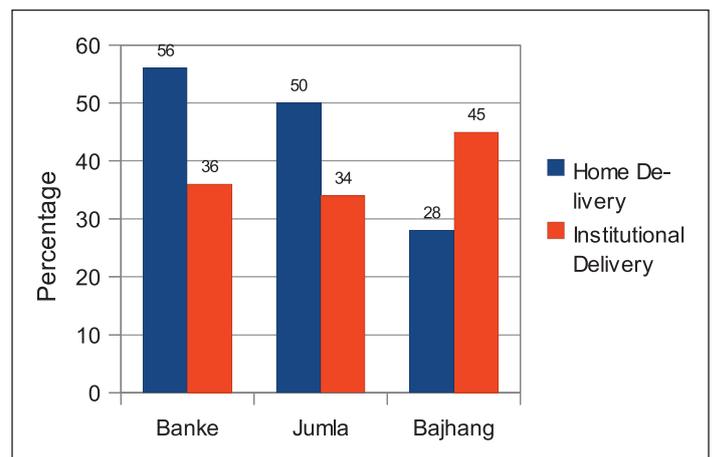


Table 1 shows that in the more remote districts, such as Bajhang, family members and recently delivered women (RDW) predominantly applied CHX, whereas in Banke, a less remote district, health workers did the application. Overall, more than 80% of those who applied CHX on newborns washed their hands before application.

Indicators	Banke	Jumla	Bajhang
Person who applied CHX on the umbilical cord stump			
Health Worker	47.0%	24.3%	34.5%
FCHV	25.6%	46.0%	12.6%
RDW/Family members	7.7%	17.2%	44.2%
Others	11.9%	2.4%	1.1%
Person applying CHX washed hands (among home deliveries)	90.0%	81.0%	80.0%
Newborns who received CHX application on umbilical stump and surrounding area among recently-delivered women	89.1%	89.6%	86.0%

Data from the surveys clearly indicate acceptance and success of the pilot program.

LESSONS LEARNED

- All health post and sub-health post health workers (HW) need to be given a thorough orientation as they are in turn responsible for training FCHVs on CHX. HWs need training on CHX application procedures, compiling reports and records, maintaining CHX stock and monitoring and supervising FCHVs.
- HF staff and FCHVs can be oriented on CHX in two to three hours.



CHX being applied on newborn's umbilical cord stump and surrounding area

- This effort demonstrates the ability to assess research findings, ensure applicability to the local context through feasibility and coverage pilots, and develop policy to bring the intervention to scale.

PROGRAM EXPANSION

At the regional dissemination meeting on chlorhexidine for umbilical cord care, held September 14-15, 2011, evidence relating to the efficacy of using 4% CHX for umbilical cord care from Nepal, Pakistan and Bangladesh was presented. The meeting also provided a forum for the identification of “next steps” to assist policy-makers introduce CHX for umbilical cord care and integrate it with other ongoing GON programs.

During the national-level dissemination meeting on September 29, 2011, evidence from all CHX-related studies was shared with partners working in maternal and newborn health. As per the recommendations given during the meeting, on 12 December, 2011, the MOHP approved the *tippani* (official memo) to scale-up CHX at the national-level, integrating it with the community-based neonatal care package (CB-NCP), the use of misoprostol to prevent post-partum hemorrhage at home births, skilled birth attendant curriculum and health workers' pre-service curriculum.

JSI recently won a 3-year project - the Chlorhexidine Navi Care (CNC) Project - which will help the MOHP scale-up and implement CHX on a national scale. CNC plans to:

- Implement CB-NCP with CHX in two new districts (Pyuthan and Rupandehi)
- Scale-up CHX in existing CB-NCP districts
- Scale-up CHX in new CB-NCP districts with other partners
- Introduce CHX as part of misoprostol program expansion in non-CB-NCP districts
- Include CHX in pre-service and SBA training curriculum

REFERENCES

1. Nepal Demographic and Health Survey 2011 Preliminary Report. Ministry of Health and Population, New ERA, Measure DHS. 2011.
2. National Neonatal Health Strategy. Family Health Division, Department of Health Services, Ministry of Health, His Majesty's Government of Nepal. 2004.
3. WHO. Care of the umbilical cord. WHO/FHE/MSM-cord care. Geneva: WHO, 1998.

4. Luke Mullany et al. Topical applications of chlorhexidine to the umbilical cord for prevention of omphalitis and neonatal mortality in southern Nepal: a community based, cluster-randomised trial. Lancet 2006; 367:910-18.
 5. The effect of cord cleansing with chlorhexidine on neonatal mortality in rural Bangladesh: a community-based, cluster-randomised trial. Lancet. Published online February 8, 2012.
- Steve Hodgins et al. Chlorhexidine gel versus aqueous for preventive use on umbilical stump: a randomized non-inferiority trial. *Pediatr Infect Dis J* 2010;29:11.



USAID
FROM THE AMERICAN PEOPLE

The program/research described in this article was supported under the Nepal Family Health Program II which is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of NFHP II and do not necessarily reflect those of USAID or The United States Government.

NFHP II is implemented by JSI Research and Training Institute, Inc., in partnership with Engender Health, Jhpiego, Save the Children, World Education, Inc., Nepal Technical Assistance Group, Nepal Fertility Care Center, Management Support Services Private Ltd., Nepal Red Cross Society, United Mission to Nepal, BBC Media Action, Digital Broadcast Initiative Equal Access Nepal, Family Planning Association of Nepal and Center for Development and Population Activities.