Delivery Kit Workshop Manual
Nairobi, Kenya
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A Brief Overview of the Purpose, Development, and Evaluation of Clean Delivery Kits

Developed by

path

Program for Appropriate Technology in Health

Contents

Purpose of this Manual

This manual is intended as a background document and brief overview of issues related to the design and development of disposable clean delivery kits. It will be distributed to participants attending the Delivery Kit Workshop sponsored by PATH in Nairobi, Kenya, in March 1999.

Because PATH has previously collaborated to develop kits primarily in Bangladesh and Nepal, most of the examples in this manual reflect those experiences. We look forward to learning from our African colleagues so that we can incorporate their rich experiences and perspectives into the workshop proceedings that will be available later in Spring, 1999. In this way, we hope to initiate a more integrated international dialogue on clean delivery kits and look carefully at the issues surrounding their development in different countries.

The Clean Delivery Kit Workshop in Nairobi and this manual were generously supported by funds from the William H. Gates Foundation.

Why are Clean Delivery Kits Needed?

Of 8.1 million infant deaths in 1993, almost half (48%) were neonatal deaths. While infant mortality has been decreasing steadily all over the world, changes in neonatal mortality have been much slower. Almost two-thirds (2.8 million) of newborn deaths occurred within the first week of life, and many of the deaths that took place after that time were due to perinatal causes (WHO/FRH/MSM, 1996).

In 1993, 42 percent of all newborn deaths were due to infections, principally neonatal tetanus and sepsis. Two-thirds of those infections were related to the birth process. Neonatal tetanus caused more than half a million of these deaths (14% of the total). Increasing immunization coverage of pregnant women with tetanus toxoid vaccine is an effective means of reducing neonatal tetanus deaths, but babies may still die of other bacterial infections transmitted by unhygienic birth practices. Infants delivered at home without a trained birth attendant and without precautions of hygiene are particularly at risk, as are their mothers (WHO/FRH/MSM, 1996).

"Each year, 60 million women (approximately half of all births in developing countries) give birth with the help of an untrained traditional birth attendant (TBA) or family member, or with no help at all" (WHO, 1997). The clean delivery kit addresses this problem with an innovative, cost-effective way of promoting hygienic deliveries. Research by the World Health Organization (WHO) indicates that preassembled, clean delivery kits with instructions for use can be a vital component in the reduction of neonatal and maternal mortality and morbidity due to cord infection, tetanus, and puerperal sepsis by promoting and supporting the use of clean delivery practices (Rooney, 1992).

The manufacture and distribution of low-cost, disposable, clean delivery kits partially addresses critical perinatal and neonatal health problems such as tetanus and sepsis by making clean delivery supplies accessible to large numbers of women. Clean delivery kits help women protect their own and their baby's health. Beyond the immediate health effects, local development, production, and distribution of clean delivery kits can help establish and/or strengthen local women's organizations, and improve outreach into rural communities. Lastly, the kits can be incorporated into the training of trained birth attendants.

Rural areas have no monopoly on poor delivery conditions. Many urban health care facilities lack appropriate emergency care equipment and supplies. Delivery equipment may be unclean because of inadequate sterilization or inappropriate storage, or—due to lack of economic resources—not available at all. Women may be expected to bring their own delivery supplies when they go to the hospital or clinic to deliver a baby. For these reasons, clean delivery kits may be appropriate not only in rural areas where women deliver alone or with trained or untrained TBAs, but also in resource-poor medical facilities where clean supplies for uncomplicated deliveries are scarce.

What are Clean Delivery Kits?

Clean delivery kits are simple kits containing essential items for conducting clean delivery of babies. For the purpose of this discussion, clean delivery kits are disposable, one-time use kits designed to be used by women delivering alone at home or with the assistance of a trained or untrained birth attendant or family member. The components of the kit are meant to improve hygienic birth practices following the World Health Organization's principles for clean delivery and cord care. These refer to practices that "observe the principles of cleanliness throughout the labor and delivery and after birth until the separation of the cord stump" (WHO/FHR/MSM, 1996).

WHO's Six Principles of Cleanliness at Birth	Relevant Kit Components
♦ clean hands	soap; nail cleaning stick
♦ clean perineium	soap; nail cleaning stick
♦ nothing unclean to be introduced into the vagina	soap; nail cleaning stick
♦ clean delivery surface	plastic sheet
♦ cleanliness in cutting the umbilical cord	individually wrapped, unused razor blade
♦ cleanliness for cord care of the newborn baby	clean cord ties

According to WHO, "the hands of the birth attendant must be washed with water and soap, as well as the perineum of the woman. The surface on which the baby is delivered must be clean. Instruments, gauze and ties for cutting the cord should be clean. Nothing should be applied either to the cutting surface or to the stump. The stump should be left uncovered to dry and to mummify."

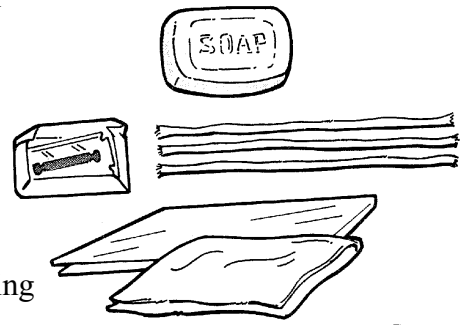
WHO further states that "the use of simple, disposable delivery kits will help achieve as clean a delivery as possible". WHO recommends that "kits should contain,

as a minimum, a nail cleaning stick, a small piece of soap for clean hands and clean perineum, a plastic sheet of about 1 x 1 meters to provide a clean surface, and a sterile razor blade, ties, and gauze for the clean cutting and care of the umbilical cord. All the materials should be packed in a sealed plastic bag with instructions on how to wash hands thoroughly before delivery and again before handling the baby's umbilical cord, and how to use other items in the package." WHO emphasizes that "the best means of producing, distributing and promoting the kits to pregnant women should be determined locally". This is essential in order to adapt the kits to local conditions. Depending on local conditions, it is necessary to leave out some essential components, ie: fingernail sticks, if they are readily available in the home or add significantly to the cost of the kit so that they preclude the kit from being affordable.

Kit contents

Opinion varies among maternal and child health practitioners as to exactly what clean delivery "essential items" are; however most kits contain at minimum:

- a small piece of soap for use by the person conducting the delivery to wash their hands, as well as the perineum of the mother;
- a plastic sheet to place under the delivering woman to prevent dirt from contaminating the perinium and cord;
- 3 clean pieces of string for tying the cord;
- 1 newly packaged, unused razor blade for cutting the umbilical cord;
- 2 pieces of gauze for various uses; and
- pictorial instructions illustrating the use of the items in the kit.



Beyond these basic items, depending on the resources of the organization producing the kit and whether it is subsidized or intended as an unsubsidized commercial kit, contents vary tremendously. Some of the other items that have been provided in kits include:

- wooden fingernail cleaning sticks;
- cord-cutting surface (for example, in Nepal, a plastic coin);
- latex gloves;
- eyedropper for placing medication such as tetracycline or silver nitrate in the baby's eyes;
- flashlight;
- 2 small pans or bowls for washing with hot water; and
- mechanical umbilical cord cutters.

Kit packaging


Christian Commission for Development in Bangladesh

Packaging delivery kits.

Kit packaging varies from stiff paper boxes the size of match boxes, to small plastic bags with a paper label inserted inside, to metal boxes resembling large briefcases that are normally provided to trained TBAs as part of their training course. Some commercial, unsubsidized kits are carefully packaged to display a logo using a culturally specific traditional symbol of healthy newborns, with colors of fertility, happiness, or good luck. These delivery kits are packaged using commercial advertising techniques to promote and lend credence to the kit. Other kits (usually subsidized by NGOs) may be packaged more simply and cost-effectively, perhaps in a plastic bag with a simple label designating the name and purpose of the kit.

The diversity in kit packaging reflects the wide variety of delivery kits that have been developed throughout the world. Where kits are designed and produced locally, they are intended to be culturally appropriate for that particular region and are designed primarily for use by pregnant women who deliver alone, or for use in the home by both trained and untrained TBAs.

These locally produced kits vary in content depending on the region in which they were developed, whether they are subsidized or unsubsidized, and on the expertise and priorities of the health personnel who develop them. For example, in Bangladesh and Nepal, PATH provided technical assistance to NGOs that developed very simple, low-cost, disposable commercial kits that were intended to be unsubsidized.

Finally, delivery kits are called many things: clean home delivery kits, safe delivery kits, TBA kits, and disposable delivery kits. For the purposes of this manual, kits will be referred to as ***clean delivery kits.*** Most of the clean delivery kits discussed in this manual are disposable, for use primarily by women delivering alone or with the help of an untrained TBA or relative. These kits can also be used by trained TBAs who may charge the family of the newborn a small fee for providing and using the kit.

Sustainability of Clean Delivery Kits

If organizations can recover the production and distribution costs of the kits, they will reduce their dependence on increasingly scarce donor funds and avoid burdening already strapped governmental services. The goal of some projects is to create an effective product that will eventually become self-sustaining. Sometimes self-sustainable kits can result from innovative, cost-containing local production and distribution that results in reasonable profit. However, typically the profit margin is

too low. To sustain strong product demand, the retail price must be kept to an affordable level that enables purchase by motivated people of limited resources. If the stocking of clean delivery kits is to be attractive to retailers who have minimum stock space, they generally need to be assured of a brisk product turnover and a reasonable profit margin. Indeed, in small retail sites clean delivery kits face stiff competition from common household items.

To maintain cost-effective production, clean delivery kits must be produced in very large quantities. This in turn requires quality production practices, professional distributors, and transportation systems that are capable of distributing a large volume of products to a wide range of geographical areas. These distributors must reach even the most remote areas where many small retailers have difficulty getting consistent delivery of products. Distribution and marketing plans for clean delivery kits need to be carefully developed with prices set at a level that takes into account the harsh realities of the market place and efficient, aggressive distribution systems.

One way the clean delivery kit producer can address the problem of low profit margin is to develop other maternal and child health products that can be produced and sold at a greater profit than the kit. These profits can then be utilized to subsidize the clean delivery kits' manufacture and distribution.

Local Development of Clean Delivery Kits

Many people believe that the utilization and effectiveness of clean delivery kits is highly dependent upon their cultural appropriateness. For this reason, local design, development and production of kits should be seriously considered. If designing a kit locally, it is important that the developers become familiar with traditional birth practices and attitudes toward birth, as well as the general decision-making processes regarding health care. Qualitative research techniques (focus groups, in-depth interviews, pretesting, and observation) have been used creatively in the design and development of delivery kits. To maximize its use, it is critical to make the kit as much a part of the traditional delivery process as possible.

Research in traditional delivery techniques provides kit designers with information about the most appropriate items to include in the kit as well as developing comprehensive, simple instructional inserts by illustrating local birth methods and the traditional clothing of the birthing mother and TBAs.

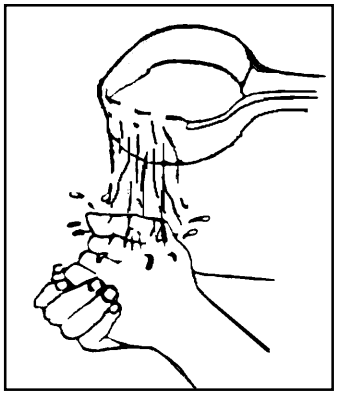
Access to and availability of the kit partially depends upon local pricing and marketing, both of which must be carefully researched with the intended user/audience in mind. Typical sources of marketing information may include: pregnant women,

husbands of pregnant women, mothers-in-law, traditional birth attendants, distributors, wholesalers, and retailers. Pricing depends not just on the cost-recovery issues but on what local users are willing to pay for the product. For example, in Bangladesh, men said they were willing to pay the equivilant of the price of a pack of cigarettes for the kit. This was important information as it provided the kit developers with a cost ceiling that the price of kit components should not exceed.

In Nepal, kit designers found through their initial research into traditional birth practices that the cord is usually cut on a cutting surface, usually a coin, but often a betel nut. Based on this finding, and concern about the WHO standard of the clean cutting surface, the kit designers decided to include a clean plastic coin in the kit.

Another finding in Nepal, revealed that although not much money is spent on items for the delivery itself, families do spend significant amounts of money on birth items including special foods, gifts, and oils needed for the purification ceremony. This shows that families are able to pay cash for birth-related purchases (up to 2,000 Nepalese Rupees), and that if the retail price of the kit is limited to 15 Rupees, it is well within the means of most families (Crook, 1995).

Local development of clean delivery kits may ensure that they are culturally appropriate, and encourages long-term production and distribution. The personal and economic investment of local groups in the project provides greater assurance of its sustainability when initial project development funds are exhausted. It also increases interest, knowledge, and awareness of the kit and the health issues underlying its use. When local groups control production, they can modify the kit contents, distribution, or retail price as necessary to accommodate local realities. They may also advocate for increased training for health professionals and traditional birth attendants.



Washing hands prevents infection for both mother and child.

While local kits have advantages, it is important to standardize essential kit components and production to ensure consistancy and quality. For example, in South India, the Rural Women's Social Education Centre, a grassroots women's organization, initiated a field study on the feasibility of developing simple delivery kits through local women's groups, identifying effective strategies to ensure the use of the kits by women and determining the health impact of kit use. The study, conducted in late 1990, found that kit development was better in villages where it was done by local women's groups where quality assurance standards were observed than when left to individual women.

Creating a natural network of women's groups around the issue of clean deliveries may further stimulate people to seek creative solutions to improve delivery practices. This could include development and distribution of kits or involve consciousness-raising over the issues inherent in clean deliveries.

The Burundi experience — an example of a subsidized clean delivery kit (UNICEF)

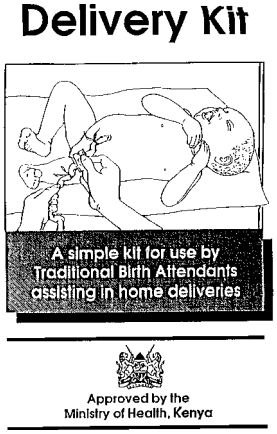
The Safe Home Delivery Assistance Project was started in the southern province of Makamba, Burundi, in 1995. This collaborative effort of UNICEF, the Ministry of Health, and provincial health authorities encourages women to purchase subsidized home delivery kits at a price which is one third of the local market value. Kits are sold through 18 local health centers and are available only to women attending antenatal care or to those with low-risk factors. A special registry of buyers is maintained, along with monitoring forms for women and babies. Revenues from the kits are retained by the health centers and used to send women with obstetrical emergencies to the local referral hospital. Public support of the project has been generated by an awareness that kit revenues benefit the local health centers and community (UNICEF).

Approximately 2,000 kits were sold in Makamba in 1996, benefiting 16 percent of the province's pregnant women. Within six months of the project's inception, first antenatal visits increased by 50 percent and institutional deliveries rose by 10 percent. Collateral advantages of the system have included the establishment of a cost-sharing system and better linkage between mothers and health units (UNICEF).

Civil war in Makamba makes it difficult to measure the project's performance against its original objectives. However, the overwhelmingly positive reaction from the community has led to a decision to expand the project to other provinces in Burundi (UNICEF).

Use of Clean Delivery Kits by Traditional Birth Attendants

Traditional birth attendants (TBAs) are still responsible for the majority of deliveries in the world. It is important to incorporate the correct use of delivery kits into the training of TBAs in order to provide them with the skills, knowledge, and tools to minimize opportunity for infection in both the mother and child. In Nepal, Kenya, and Zimbabwe, the Ministries of Health now mandate the use of delivery kits by TBAs. In UNICEF-sponsored training of TBAs, attendants are provided with complete, reusable delivery kits. In some circumstances it is appropriate for the TBAs to buy single-use disposable kits and sell them to their client as part of their services. Though the kits are often used by trained TBAs, they are designed to be used primarily by untrained TBAs and family members.



While kits are usually used by pregnant women or TBAs in rural settings where medical resources are scarce, the use of kits in urban clinic and hospital settings where there are severe shortages of supplies and equipment should be further

researched. If women could purchase the kit as part of their delivery preparations and take the kit with them to the hospital, it might ensure a cleaner cord cutting by hospital personnel who are hampered by lack of supplies.

Evaluation of Clean Delivery Kits

Previous evaluations of delivery kits

For almost two decades, delivery kits have helped to provide a clean environment for birth, but their impact on maternal morbidity, mortality, and neonatal infections has been difficult to determine due to lack of rigorous evaluation. To date, studies examining the impact of delivery kits on infections and mortality rates have demonstrated positive results; however, study designs lacking randomization or control groups have limited the interpretation of results.

For example, an evaluation of the standard of care provided by TBAs in the Gondar region of Ethiopia following a two-week training course found a decrease in the infant mortality rate from 103 to 99.4 per 1,000 live births and an increase in deliveries by trained personnel from 36.5 to 76.4 percent (Okubagzhi, 1988). However, no tests of statistical significance were reported, and because of the methodology, it was not possible to separate the impact of delivery kits from the other TBA training skills.

A study by Garner et al. (1994) is one of only two studies where delivery kits were the only intervention, thereby increasing the ability to assess impact. The 131 infants participating in the Garner study were divided into two treatment groups and one control group. The 64 infants in the control group received no treatment, the 33 in the first treatment group received razors and acraflavine (spirit application), and the 34 in the second treatment group received razors, acraflavine, and clamps to control blood flow. Kits were provided to women through antenatal care clinics. Of the nine documented cases of neonatal sepsis, eight were in the control group and one was in the first treatment group. Although this program was associated with a significant reduction in serious illness in the neonatal period, the ability to generalize these findings are limited.

Another study in Korea attempted to demonstrate and assess the possibility of distributing delivery kits to mothers to improve reporting of vital statistics and postpartum family planning experience (Yang et al., 1969). Although the treatment variables were similar to the Garner study, the Yang survey was completed by enumerating households and measures of vital events were matched against civil registration. The infant mortality decreased in the intervention area (20.8 compared to 72.3 in the control areas) but the study period was limited to one year.

Evaluation of kit utilization by TBAs

In most countries delivery kits are provided to traditional birth attendants upon completion of training programs. Unfortunately, there is a paucity of literature examining the impact of trained TBAs' use of delivery kits on neonatal infections,

and there is no literature documenting the impact of delivery kits on maternal infection. The bulk of existing literature simply documents the distribution of kits to TBAs and/or pregnant women (Morelli & Missoni, 1986; Egullion, 1985; Kapoor, Reddaiah & Lobo, 1991; Kumar, 1991). In areas such as Nepal where most women give birth alone or with an untrained attendant, the potential for the kit's impact on infections is high. Until recently, the actual use of delivery kits has needed clarification but no study had attempted to document these processes. It is essential to understand the strengths, weaknesses, and processes of delivery kit utilization to help clarify, and possibly quantify, their potential in preventing infections.

Until 1998, studies that evaluated TBA training and delivery kit use report mixed results. Although many programs have provided TBAs with delivery kits upon completion of their training programs, studies have found that TBAs may not use or even carry their delivery kit (Liskin et al., 1988; Williams & Yumkella, 1986). Reasons for nonuse include poor systems of resupply for delivery kit items, a shortage of items such as soap, flashlight batteries, and eye droppers; and lack of knowledge of use of items. However, assessments of general performance and practical knowledge in one study found that trained TBAs with delivery kits scored higher than those trained TBAs without delivery kits (Williams & Yumkella, 1986). Okubagzhi (1988) documented a further need for TBA training in care of the delivery kit and handling of clean materials needed at childbirth.

Although delivery kits are thought to improve the delivery environment, it is possible that training in the importance of hand washing may be more important than delivery kit ownership. Williams and Yumkella (1986) report TBAs trained by a mission hospital lacked delivery kits but conducted safe deliveries because of hand washing procedures. Smith et al. (1997) found that trained TBAs in Ghana were far more likely than untrained attendants to have supplies for clean deliveries, but both groups were equally likely to use a clean razor blade.

The unknown utilization factors and questionable impact of delivery kits on maternal and infant health are addressed in a study by Nessa, Arco, and Kabir (1992). This study documented the extensive development and testing of delivery kits distributed to women in Bangladesh and explored some issues associated with their use. Women were asked within one month after birth if they had used the kits, if they had difficulty, and if they would use them in the future. Reportedly, women "generally approved of the kit," however, the use of the polyethylene sheet was not understood, and some changes in design were made based upon feedback from the research trials. It was not possible to separate the impact of women's kit use on neonatal mortality rates because intensified efforts around tetanus immunization and TBA training were occurring concurrently (Reynolds, 1998).

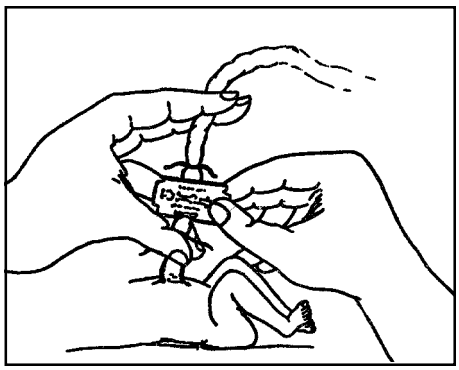
Kit evaluation efforts in Bangladesh and Nepal

Bangladesh

In 1988 with funds from UNICEF and the Ford Foundation, the NGO Christian Commission for Development in Bangladesh (CCDB) in collaboration with the Ministry of Health developed a commercial delivery kit. The evaluation of the kit was primarily a process evaluation of kit development and marketing. The evaluation spent little time examining the actual use of the kit and no effort was devoted to the impact of the kit on neonatal cord infection. The Bangladesh process evaluation was divided into three phases: needs assessment, field testing, and test marketing, which are discussed below.

Needs assessment

The needs assessment included trained female interviewers who interviewed traditional birth attendants and conducted focus group discussions among women of reproductive age. Male interviewers replicated these activities among groups of men. The purpose of these qualitative discussions was to learn about traditional birth practices and to elicit suggestions for the design and content of the kit, instructional insert, and marketing logo. Regarding marketing, men were asked what they would pay for a kit, how they would recommend that it be promoted, and where they would buy it.



One frame of pictorial insert in delivery kit.

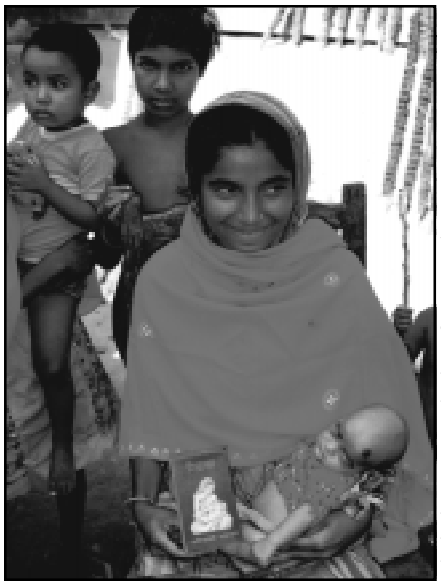
Field testing

The prototype kit that resulted was evaluated for acceptability through field testing. Field trials were held in five areas of Bangladesh. Female field workers identified pregnant women in these areas and distributed the delivery kits to them in their eighth month of pregnancy. They interviewed them using a standardized questionnaire within a month after birth. Women were asked if they had used the kit, if they had difficulty using or understanding any items, their use of items in the kit, the acceptability of the kit design, and if they would buy the kit in the future. Some women who later bought the kit were asked how they heard of the kit and where they purchased the kit. Based on the field testing, changes were made in the design of the pictorial instructional insert.

Test marketing

The kits were test marketed in five areas of Bangladesh. They were sold through small retail outlets, pharmacies, and women's committees—a total of 100 outlets. A tally sheet was used by monitors to record the sales. Field monitors recorded who purchased the kits and which field sites sold the most kits. Women's groups were by far the favorite place of purchase; small shops were also popular. The majority of purchasers were health staff of NGOs, men, pregnant women, and traditional birth attendants. The majority of purchasers heard about the kit through various

promotional efforts, the most popular of which were village meetings and rickshaw broadcasts. Both purchasers and retailers were asked about the promotional materials, cost, and the packet design.



Christian Commission for Development in Bangladesh

Mother in Bangladesh who used delivery kit to deliver baby.

Process evaluation tools

The process evaluation tools used in the Bangladesh project included the following:

- focus group and in-depth interview guides for interviewing women of reproductive age, traditional birth attendants, and husbands;
- in-depth interview guides for retailers;
- a topic guide to pretest the pictorial instructions in the kit;
- a topic guide to pretest the package design, name, and logo;
- production guidelines and quality assurance procedures for the kit assemblers;
- training outline for kit assemblers;
- list of field worker responsibilities;
- postnatal follow-up questionnaire;
- list of field test monitor responsibilities, and
- assessing guidelines for promotional materials.

Nepal

In Nepal, the process evaluation of the kit (developed from 1994 to 1996 with funds from UNICEF, USAID and Save the Children Alliance) was very similar to that used in Bangladesh. However, to supplement the process evaluation, in 1998 USAID provided funds to PATH to develop the first comprehensive evaluation of the immediate health impact on cord infection and intermediate outcomes of the kit.

Maternal and Child Health Products Ltd.

Nepal TBA placing plastic sheet under mother in labor.

Key research questions

1) **What is the immediate health impact of the kit?**

   The primary immediate impact would be a reduction in simple cord infection rates in newborns.

2) **What are the intermediate outcomes of the kit, including behaviors, knowledge, and intentions that might effect longer-term improvements in health?**

   These include indicators of behavior changes such as the birth attendant washing her hands before the delivery and the cord cutting, and correct use of items in the kit. Client intention to use the kit herself in future deliveries or recommend it to others would be an indicator of enhanced perception of the importance of a hygienic delivery.

3) **What are the factors that effect the use or effectiveness of the kit?**

   These include sociodemographic factors such as age, education, economic status and events associated with the delivery, such as type of attendant and/or cord cutter, type of delivery surface, preparation of cord care items and the application of foreign substances to the cord stump.

4) **Are the kits accessible and acceptable?**

   Data was collected from kit users on client satisfaction, source of kit used, price of kit, and preferred outlet for obtaining kits. Nonusers were asked why they did not use a kit.

Methodology

The prospective, cross-sectional study was conducted from June through November 1998. It involved four cohorts of pregnant women to be interviewed within 7 to 28 days after giving birth to collect information on newborn health status during the first few weeks of life; reported delivery practices; and mother's knowledge, experience, and intentions. The four cohorts included: kit users with trained birth attendant, kit users with untrained birth attendant, non-kit users with trained birth attendant, and non-kit users with untrained birth attendant. The women were located in three districts in the Terai area of Nepal.

Data collection

Structured interviews were used to gather information on newborn status, behavior of birth attendants, breastfeeding behavior, and future intention of delivery kit use. Information was also gathered about the actual use of the kit contents, events associated with the delivery, disposal or reuse of contents, and understanding of kit instructions. Sociodemographic factors and health history were also collected. Mothers were asked about kit acceptability and social marketing factors.

Barbara Crook, PATH

Nepal—pretesting pictorial insert of delivery kit.

To aid in the identification of cord infection, color photos of cord stumps were shown to respondents and the interviewer inspected the baby's cord if possible. A neonatologist reviewed questionnaires to further determine instances of cord infection. The validation of the survey was ensured by translation and back translation of the survey questionnaire, training of the field interviewers, review of all data by a field supervisor, and by ascertaining ten mothers' ability to identify their infant's diagnosed cord infection by comparing their situation to photos of cord infection.

Data analysis

Statistical analysis was employed to estimate the independent effects of the delivery kit components, understanding of the pictorial instructions on kit use, and the modifying effect of the type of birth attendants on cord infection.

At the time of writing this manual, the data is still being analyzed. A report with study findings will be completed in June 1999.

Follow-up qualitative study in Nepal

PATH will conduct a qualitative study in Fall 1999. This study will analyze secondary data from the 1998 PATH survey and conduct a prospective, observational study to further explore practices related to delivery kit use. It is hoped the proposed study will yield a more comprehensive understanding of why some groups develop maternal or neonatal infections by assessing the impact of the delivery kit and by describing the strengths, weaknesses, and processes of delivery kit use during birth, disposal, resupply, and reuse.

Objectives

- Further examine the impact of the delivery kit on neonatal cord infections.
- Document the processes involved in obtaining, using, and disposing of the delivery kits.

Maternal and Child Health Products Ltd.

In Nepal, poster advertises delivery kit.

Methodology

Data will be collected through observations of delivery processes and qualitative interviews with women in the same Terai districts as the earlier 1998 study.

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Conclusion

This manual has provided a brief overview of major issues related to clean delivery kits, including local design and development, sustainability, use by TBAs, and evaluation. Clearly, the design and development of these kits is a complex process. Agencies concerned about maternal and child health must approach the development of clean delivery kits with great respect for local cultures and tradition and a realistic sense of what they can accomplish. If they do not, their efforts may result in a kit that is not used and does nothing to impact the rates of maternal and neonatal morbidity and mortality.

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