

# KIT ASSEMBLY

4

**path**

Program for Appropriate Technology in Health

[www.path.org](http://www.path.org)

# SECTION 4

## KIT ASSEMBLY

### SUMMARY

Section 4 reviews all the action steps required for assembling basic delivery kits including:

- writing a work plan,
- determining the number of kits to assemble,
- developing a budget,
- procuring raw materials and supplies,
- locating the assembly site,
- recruiting and training assemblers,
- setting up the assembly site,
- setting up the storage site, and
- writing a monitoring and quality assurance plan.

## 4.1 WORKING WITH THE COMMUNITY

This section provides information for kit assemblers from commercial projects, maternity facilities, and community-based organizations (CBOs). The focus, however, is on the advantages of working with CBOs. A delivery kit assembly site provides community members with excellent opportunities to upgrade their skills and generate additional income. Community participation, especially women's participation, therefore, should be promoted.

Creating a natural network of women's groups around the issue of clean delivery will help raise awareness of clean delivery practices, and may further stimulate people to seek creative solutions to harmful practices. Depending on local circumstances, kit project managers may choose to create such a network, or perhaps build on networks established by existing women's groups; working within existing structures often enhances potential for sustainability. Kit project managers should investigate local community groups to determine which groups might be appropriate for and interested in collaboration.

### Women's Groups in South India Achieve High Quality Assurance

While local kit assembly offers flexibility with respect to kit content and design, it is important to standardize kit components and production to ensure consistency and quality. In South India, the Rural Women's Social Education Centre, a grassroots women's organization, initiated a field study on the feasibility of developing a simple delivery kit through local women's groups. The study, conducted in late 1990, found that the quality assurance of kit production was better when it was managed by local women's groups rather than individual women.<sup>1</sup>

4

## 4.2 STEPS FOR ESTABLISHING KIT ASSEMBLY SITES

Kit project managers should base many of their decisions about kit assembly on the needs assessments discussed in Section 3 and input from the community's village councils or village health committees. Together, kit project managers and community members can develop appropriate guidelines that determine who the kit assemblers will be, which facilities will serve as assembly and storage sites, and how employment issues such as salaries, incentives, and workload will be addressed.

The following 11 steps provide a framework for establishing kit assembly sites. They can be adapted to local circumstances as needed.

### **Step 1: Develop a work plan.**

Kit project managers should develop a work plan that outlines each step needed to establish a kit assembly site. Steps should include the following activities:

- procuring raw materials and equipment required to assemble kits;
- establishing kit assembly sites and storerooms;
- training assembly staff, including master trainers, assemblers, and supervisors;
- orienting staff to kit assembly procedures;
- supervising kit assembly;
- maintaining quality assurance standards; and
- monitoring and evaluating production quality and capacity.

The work plan should clearly identify and state who is responsible for each activity. It should be limited to a specified time period (for example, one year). Work Tool 4.1 provides a sample work plan that outlines the process for establishing a kit assembly site.

### **Step 2: Determine the number of kits to assemble each month or year.**

Determining the number of kits to assemble within a given timeframe is a critical decision that will affect many project activities. The target number of kits must be as accurate as possible. It should be based on the community's true situation and factors such as the total number of kits needed to meet demand, the number of assemblers available, the scale of production, and the regularity of the distribution methods chosen.

Table 2 lists the information needed to determine the quantity of kits to be assembled each month or year. The data are based on a hypothetical district. Work Tool 4.2 provides a blank worksheet that kit project managers can use to estimate the number of kits to assemble per year/month.

Work Tool 4.3 provides a blank worksheet for calculating the number of delivery kits for different types of sites.

### **Step 3: Procure raw materials and supplies.**

Cost-effective procurement of the raw materials and supplies needed for assembling the kits is key to keeping costs down. As discussed in Section 3, it is important to be conservative in determining kit contents and to negotiate costs with the manufacturers.

Table 2. Estimated Number of Kits to Assemble<sup>2</sup>

Information	Equation	Calculation	Final Data
Population in District Z	n/a	n/a	100,000
Annual birth rate	n/a	n/a	30/1,000
Total no. of births per year	Population multiplied by birth rate	100,000 x 30/1,000	3,000
Estimated no. of home deliveries	70 percent of total births	3,000 x .70	2,100
Estimated no. of deliveries in maternity facilities using delivery kits	10 percent of total births	3,000 x .10	300
Total no. of deliveries to be covered by delivery kits	Home deliveries plus maternity-facility deliveries using same delivery kits	2,100 + 300	2,400
Annual requirement of delivery kits*	Total deliveries covered plus 20 percent for wastage/loss	2,400 + (2,400 x .20)	2,880
Monthly requirement of delivery kits	Annual requirement divided by 12	2,880 ÷ 12	240

n/a = not applicable

\*At all facilities, a buffer stock of 20 percent should be maintained so that supplies do not run out.

Kit project managers should base their procurement on the results of the manufacturers' survey conducted during the needs assessment (see Section 3), which obtained important information about availability, cost, quality, bulk-purchase options, and manufacturers' willingness to subsidize prices.

During negotiations, kit project managers should make sure that manufacturers understand that:

- they are competing with other manufacturers to provide the lowest price, and should offer the most competitive price possible;
- the basic delivery kit is a socially beneficial product (a point that may encourage them to subsidize their price);
- to keep kit costs down, kit project managers need lower- rather than higher-priced items, while still maintaining the quality of the material.

Kit project managers should purchase materials in quantities that will last for three months. Very large quantities can create storage problems and, over time, can lead to decreased quality of supplies.

**Step 4: Develop a budget.**

The initial estimates of program costs should include the salaries for all of the staff involved in the project as well as the cost of the kit contents, packaging, assembly and storage sites, and distribution.

**Payment for Assemblers**

If possible and consistent with local policies, the kit assemblers should earn either salaries or a payment for each kit assembled. If assemblers are members of voluntary organizations, the organization may require payment for each kit. Payment to volunteer organizations helps strengthen their activities for improving health.

***Calculating Costs***

To determine the combined cost of the basic delivery kit materials, assembly, storage, and distribution, kit project managers should develop a table that includes:

- costs of all materials and supplies required for assembly,
- salaries of assemblers and supervisors,
- salaries of staff from nongovernmental organizations (NGOs) or ministries of health (MOHs),
- payment to voluntary organizations,
- lease costs for assembly and storage sites, and
- payments (commissions) to distributors.

Table 3 provides the combined costs for a hypothetical kit assembly program. Costs will vary from location to location, and should be adjusted to each situation.

**Step 5: Locate the assembly site.**

Kit project managers should establish a central or multiple kit assembly site(s) in either a major township or a local village. Each type of location offers several advantages and disadvantages (Table 4). Using several local sites can become problematic, particularly with respect to maintaining adequate supplies of components and consistent quality of the kits. The use of a single, central site maintains quality assurance and avoids the need for additional storeroom space or complex distribution networks.

Table 3. Example of Combined Kit Assembly Costs  
(cost units are units of currency)

Kit Items and Salaries	Quantity per Kit	Specifications	Manufacturer	Make / Brand	Bulk Cost	Cost per Unit	Cost per Kit	Cost per 100 Kits
Polyethylene packing bag	1	18 x 13 cm	X plastic factory	Local	64.00/kg (250 bags/kg)	0.26 per bag	0.26	26
Soap bar for making soap pieces	1 piece	150 gm of soap bar (each bar cut into 15 pieces)	Soap factory	Sweet Soap	49.20 per dozen	4.10 per bar, 0.27 per piece	0.27	27
Razor blade	1	Stainless steel	Razor factory	Topaz	4.00 for 5 blades	0.80 per blade	0.8	80
Wrapping paper pieces	1 piece	Paper sheet: 90 x 45 cm (each sheet cut into 30 pieces of 20 x 13 cm)	Paper manufacturer	Local	36.00 for 24 sheets	1.50 per sheet, 0.05 per piece	0.05	5
Ball of thread or string for making cord ties	3 ties	50 m ball (each cut into 333 cord ties of 15 cm each)	JR Thread factory	Twine and thread	5.00/ball	0.015 per tie	0.045	4.5
Plastic sheet	1	1 meter square	X plastic factory	Local	2,500/25 kg roll	4.16/piece	4.16	416
Pictorial instruction sheet	1	—	Printing company	—	—	.15 per sheet	0.15	15
Kit assemblers' salaries	—	5 assembly workers	—	—	50 kits/hr, paid 10.00/hr each	—	1	100

Table 4. Advantages and Disadvantages of District and Local Sites

District/Town Level	Local/Community Level
<p><b>Advantages:</b></p> <ul style="list-style-type: none"> <li>• Distribution of kits to various parts of the district is easier due to existing distribution channels.</li> <li>• Supervision is easier; ensures uniform quality of kits.</li> <li>• Kit assembly staff from established organizations may be more stable.</li> </ul> <p><b>Disadvantages:</b></p> <ul style="list-style-type: none"> <li>• No involvement of peripheral health staff or the community in kit assembly.</li> </ul>	<p><b>Advantage:</b></p> <ul style="list-style-type: none"> <li>• Involvement of peripheral health staff and community members will increase acceptance and promotion of kits.</li> </ul> <p><b>Disadvantages:</b></p> <ul style="list-style-type: none"> <li>• After assembly, kits may have to be sent to the district for further distribution.</li> <li>• If the assembly site supplies different areas of the district, a more complex, costly distribution system may be required.</li> <li>• Multiple community-based kit assembly units may be difficult to supervise.</li> <li>• Quality of kits may vary from one kit assembly unit to another.</li> <li>• Quality assurance is limited.</li> <li>• Higher turnover of kit assemblers who are volunteers or seasonal workers. This may affect the kit quality.</li> </ul>



Photo: MCHP

Delivery Kit assembler cutting soap.

### Step 6: Purchase assembly equipment.

The types of equipment used by assemblers will vary depending on the kit contents. Table 5 provides an example of the equipment and supplies required for assembling delivery kits at a hypothetical assembly site. Work Tool 4.4 provides a blank worksheet for assessing the cost of assembly equipment.

### Step 7: Recruit assemblers.

Methods of recruiting assemblers vary depending on whether assembly will be conducted in a central or urban area or a rural village. In urban areas, assemblers can be recruited through NGOs, women’s groups, or existing income-generating groups. In villages, assemblers can be recruited through existing groups such as the village health committees, mothers groups, or traditional birth attendants (TBAs). Before recruiting assemblers from villages, however, it is important to discuss the basic delivery kit project with the village leaders.

Table 5. Purchase of Assembly Equipment and Supplies (sample only)

<b>Equipment</b>	<b>Quantity</b>	<b>Specifications</b>	<b>Cost per Unit</b>	<b>Total Cost</b>	<b>Purpose</b>
<i>Permanent Items</i>					
Scissors	3	medium-size, sharp	27	81	To cut paper, cord ties.
Knives	2	sharp, strong	15	30	To cut soap.
Wooden board	1	30 cm square	20	20	To cut soap.
Trunks	2	small	125	250	Storage for materials and finished kits.
Wooden cord-tie equipment	1	15 cm long central rod with two flat ends	15	15	To measure cord ties.
Trays	4	plastic	25	100	To hold materials such as cord ties and soap pieces.
Soap dish	1	small, plastic	5	5	To hold soap for washing hands of assemblers.
Bucket	1	sturdy plastic	80	80	To wash hands.
Mug	1	sturdy plastic	15	15	To wash hands.
Rulers	2	6 inches, plastic	3	6	To measure size of gauze and paper pieces.
Stock and distribution register	1	100 pages	20	20	For stock control.
Plastic sheet	1	plain 2.5 x 3.5 meters	40	40	To provide a clean assembly surface.
<i>Items Requiring Re-supply</i>					
Candles	24	large size	21.00/doz.	42	To seal plastic bags.
Soap	1	150 gm bar	5.75	5.75	To wash hands.
Matches	2 boxes	safety matches	0.5	1	To light candles.

To recruit assemblers, kit project managers should discuss the basic delivery kit project with potential recruits, including the project's purpose, objectives, and benefits. Managers also should discuss issues related to assembly, such as the tasks involved, time requirements, and, if appropriate, level of payment. They should select kit assemblers who are motivated, reliable, and available to commit the time



Photo: MCHP

*Handwashing is critical to quality assurance during assembly.*

required for this effort. Literacy levels need not limit correct assembly. Careful training and demonstration, plus instruction cards suited to the staff's literacy level, can guide them in correct kit assembly.

Once the assemblers are selected, the kit project managers should establish written agreements or contracts with them. They should provide detailed information about their responsibilities through group meetings. This information should be provided verbally so that all assemblers, including those who are not literate, can understand.

Assemblers must be supervised carefully to reinforce hygienic practices such as hand washing and use of uniforms or aprons, and to ensure quality of the kits being assembled. Kit

project managers also should be sure to carefully coordinate and realistically schedule their time to work with assemblers for training, setting production standards, and ongoing supervision.

## 4



Photo: MCHP

*Delivery Kit assembler measures string for cord ties.*

### ***Voluntary Women's Groups and TBAs***

Involving members of voluntary women's groups in kit assembly fosters a sense of personal involvement in the success of the basic delivery kit project. The organization and the women themselves are likely to become active promoters of the kits in their communities. Community members will increase their own and others' awareness of clean delivery practices and correct use of the basic delivery kits. TBAs also can serve in this capacity.

It is important to motivate volunteer assemblers through incentives such as recognition in the community or payment of their children's school fees.

## ***Maternity Facility Staff***

Participation of health center or maternity facility staff in basic delivery kit production reinforces the staff's motivation to promote clean delivery. If the staff members are involved in kit production and sales, they may be able to earn income that will supplement existing salaries. Participation also reinforces correct use of the kits with women attending antenatal clinics.

## ***Commercial Groups***

If a private, commercial enterprise decides to manufacture the kit, it must include the cost of establishing and supporting the kit assembly unit into its business strategy. The commercial group will need to arrange and budget for the supervisors and/or trainers as well.

### **Step 8: Train kit assemblers.**

Before beginning the training process, kit project managers must recruit an experienced supervisor/trainer. Once selected, the supervisor/trainer should be thoroughly trained by a "master trainer" from the basic delivery kit project. The supervisor/trainer will then train a group of assemblers. Because the quality of the training will determine the quality of kit production, training should be thorough and of consistently high quality.

The trainer should plan and organize the assembly equipment, raw materials, and training aids prior to the actual training.

### ***Methods for Training Assemblers***

Trainers should use interactive, hands-on training methods that include pictorial instruction. Training sessions should be lively and involve all participants. Verbal instruction through discussion, question-and-answer sessions, demonstrations, and hands-on practice encourages active participation. Hands-on

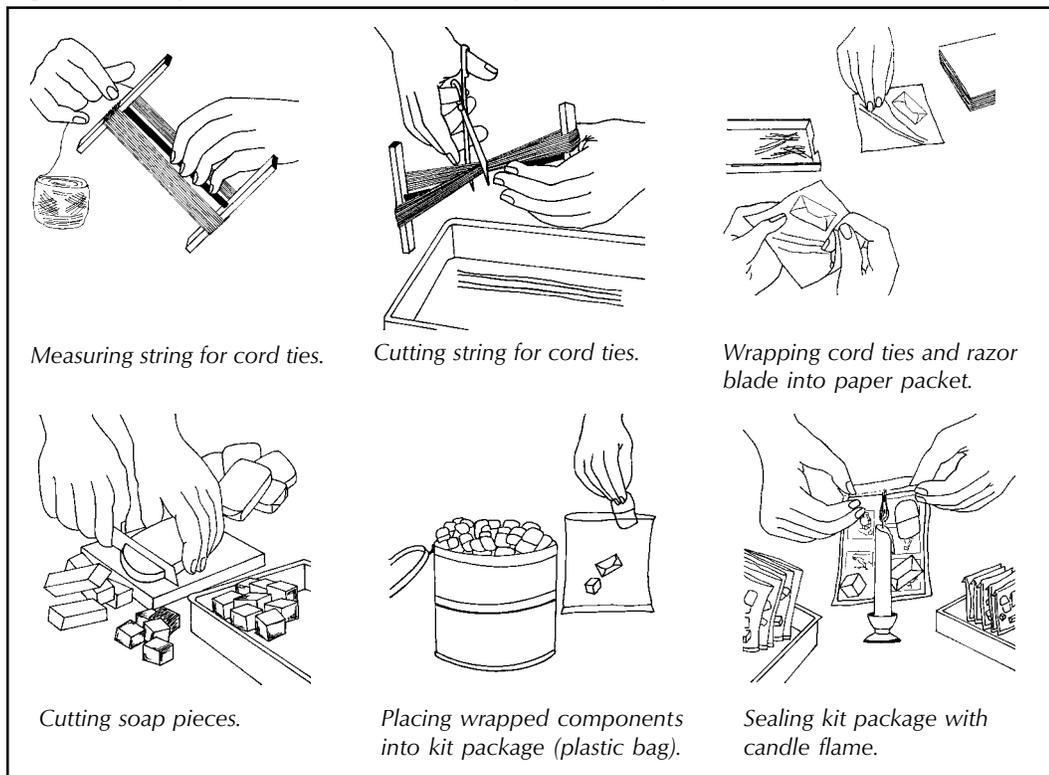
### **Visual Instructions for Training Kit Assemblers**

In Chandigarh, India, the local group Survival for Women and Children Foundation (SWACH) conducted extensive testing of prototype clean delivery kits. The agency adapted World Health Organization (WHO) guidelines for kit production, and established a local production site. Volunteer kit assemblers were recruited from local women's groups and trained in assembly procedures. "For each step, a visual [aid] was developed, field tested, and then finalized by an artist. . . . Each visual was provided to the women volunteers in a separate plastic jacket to keep the visual protected. These visuals were numbered sequentially to help the volunteers systematically follow the steps of assembly."<sup>3</sup> The visual aids as well as participatory demonstration of assembly steps reinforced volunteers' expertise in assembly.

practice sessions should be repeated until assemblers perform each step with speed, skill, and precision. If assemblers are not literate or only partially literate, written information should be avoided.

Work Tool 4.5 provides a sample training curriculum and guidelines for kit assemblers.

Figure 3: Sample illustrations for assembly of kit components.



Source: WHO

### Step 9: Set up the assembly site.

The room in which basic delivery kits are to be assembled should be set up to reflect the correct sequence of the assembly stations. This sequence will facilitate laying out the materials required for each assembly step, and will help assemblers become familiar with their assigned responsibilities. Having several assembly steps at each station minimizes the quantity of assembly equipment required.<sup>4</sup> The assembly room should also be a clean environment, with easy access to a place for assemblers to wash their hands.

Work Tool 4.6 outlines the model steps for organizing an assembly station, and Work Tool 4.7 provides a model system for assembly stations.

### Step 10: Set up the storage site.

Projects should maintain the high quality of the basic delivery kit packages and contents by storing them in a clean, dry room designed for safe storage.

Ensuring good storage conditions, including steady room temperature and protection from direct sunlight, water damage, and insects, will maintain kit quality for more than three months.

Groups of kits should be placed in large plastic bags and stored in wooden or steel chests or cupboards to further protect them from heat, moisture, pests, and other types of environmental contamination. The condition of the storage facilities should be assessed and monitored regularly to ensure that good condition of the kits is maintained.

At district hospitals or maternity facilities, the basic delivery kits can be stored in medical supply storerooms. They can then be distributed to TBAs who visit the facility for training, and to pregnant women who attend antenatal or tetanus toxoid (TT) immunization clinics. When a basic delivery kit is given to a pregnant woman, she should be advised to store it in a protected, safe place until the time of delivery.

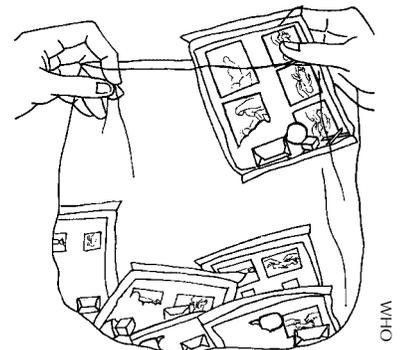
At each storeroom, supervisors should maintain a register that records the quantities of basic delivery kits received, when they were received, the number of delivery kits distributed (with relevant dates), and the current number of kits available. Kit project managers should use the register to regularly inform the supplies supervisor about the current kit supply, monthly distribution, and need for kit re-ordering at each storeroom.

Photo: MCHIP



*Delivery Kit assemblers sealing plastic bags containing kit components.*

4



*Placing delivery kits in large plastic bag for storage.*

## Step 11: Develop a monitoring and quality assurance plan.

Using a description of program activities and the work plan, kit project managers should select several key indicators for monitoring kit assembly and storage. They

should decide how these indicators will be monitored (for example, by routine monthly or quarterly reports, or by regular direct observation by the supervisor). Kit project managers should develop a monitoring schedule that includes the frequency of monitoring and the persons responsible. Table 6 provides a sample plan for monitoring quality assurance at the assembly site. Random or non-scheduled monitoring should also be conducted periodically to ensure the quality of basic delivery kits. Random monitoring is an effective way to spot-check kits for poor packaging or deteriorating quality of kit components, such as rusty razor blades. Work Tool 4.8 provides a checklist for random monitoring.

### Quality Assurance During Assembly in Nepal

In a 1999 field report, a consultant states: “Maternal and Child Health Products, Ltd. is committed to maintaining the high standard of quality of the Clean Home Delivery Kit by ensuring that rigorous standards of hygiene are maintained during product production. The kit is packaged inside a clean factory by trained staff. Every precaution is taken to ensure the cleanliness of the work area. Kit assembly staff must change into clean clothes reserved solely for work-time wear. Outside shoes are not permitted inside the factory. Hand washing is done any time a staff member leaves the production area. Quality control sampling of finished kits includes confirming all necessary items are included. Kits are periodically sampled from retail stores in village and urban areas to assess the quality of the enclosed items.”<sup>5</sup>

4

Table 6. Sample Plan for Monitoring Quality Assurance at the Assembly Site

<b>Service Activity</b>	<b>Monitoring Activity</b>	<b>Frequency</b>	<b>Responsible Person</b>
Kit assemblers' physical condition	Observe that assemblers: <ul style="list-style-type: none"> <li>- maintain hygiene,</li> <li>- wear head scarf,</li> <li>- wash hands thoroughly,</li> <li>- wear apron.</li> </ul>	Daily	Production Manager
Kit assembly	Observe that: <ul style="list-style-type: none"> <li>- cleanliness is maintained,</li> <li>- correct procedures are followed,</li> <li>- quality assurance is maintained.</li> </ul>	Weekly	Production Manager
Material supply	Stock review.	Monthly	Production Manager
Kit quantities	Stock review.	Monthly	Supervisor
Kit quality	Random spot-check. Quality assurance inspection.	Weekly	Production Manager
Kit storage at assembly site	Observe condition of: <ul style="list-style-type: none"> <li>- storeroom,</li> <li>- storage containers for kits,</li> <li>- kits.</li> </ul>	Weekly	Supervisor
Record-keeping	Record number of kits produced, dates produced. Complete supply register at the storeroom.	Weekly	Production Manager and/or Supervisor



# KIT ASSEMBLY

# WORK TOOLS

# 4

**Adapt as needed for local circumstances.**

# W O R K T O O L S

## 4.1 SAMPLE WORK PLAN FOR ESTABLISHING A KIT ASSEMBLY SITE<sup>2</sup>

Activity	1	2	3	4	5	6	7	8	9	10	11	12
Write work plan	X											
Locate sources/determine cost of raw materials and packaging	X	X										
Determine assembly site location	X	X										
Decide number of kits needed yearly	X											
Develop a budget	X											
Identify assembly staff and supervisors		X	X									
Buy initial supplies/materials		X										
Train staff and supervisors		X	X									
Set up assembly site		X	X									
Set up storage site		X	X									
Write monitoring and QA plan			X									
Monitor kit assembly				X	X	X	X	X	X	X	X	X
Monitor kit supply and storage					X	X	X	X	X	X	X	X
Monitor kit distribution					X	X	X	X	X	X	X	X
QA/problem solving			X	X	X	X	X	X	X	X	X	X

QA = Quality assurance

# W O R K T O O L S

## 4.2 WORKSHEET FOR ESTIMATING NUMBER OF KITS TO ASSEMBLE PER YEAR/MONTH<sup>2</sup>

Information	Equation	Calculation	Final Data
Population	n/a	n/a	
Annual birth rate	n/a	n/a	
Total births in one year	Population multiplied by birth rate		
Estimated home deliveries	Percent of home deliveries multiplied by total births		
Estimated deliveries in maternity facilities using delivery kits	Percent of deliveries in maternity centers multiplied by total births		
Total deliveries to be covered by delivery kits	Home deliveries plus maternity facility deliveries using same delivery kits		
Annual requirement of delivery kits*	Total deliveries covered plus 20 percent for wastage/loss		
Monthly requirement of delivery kits	Annual requirement divided by 12		

n/a = not applicable

\*At all facilities, a buffer stock of 20 percent should be maintained so that supplies do not run out.

### 4.3 WORKSHEET FOR CALCULATING NUMBER OF DELIVERY KITS FOR DIFFERENT SITES

A kit assembly site can function efficiently only if there is enough demand for delivery kits. Each program needs to decide the annual, quarterly, and monthly production levels.

	<b>Village Level (per ____ population)</b>	<b>Maternity Facility (per ____ population)</b>	<b>District Level (per ____ population)</b>	<b>Province Level (per ____ population)</b>
Expected births per year				
Additional 20 percent for wastage				
Annual requirement				
Quarterly requirement				
Monthly requirement				



## 4.5 SAMPLE TRAINING CURRICULUM AND GUIDELINES FOR KIT ASSEMBLERS

### Objective

By the end of this session, participants will be familiar with:

- current problems of infant and maternal morbidity and mortality,
- existing practices regarding home delivery,
- benefits of clean delivery practices,
- kit assemblers' roles and responsibilities,
- assembly steps,
- concept of "quality control and assurance," and
- appropriate storage for packaged kits.

### Schedule

Time Total: 4.5 hours	Content	Method and Materials
1 hour	<b>Introduction and Background</b> <ul style="list-style-type: none"> <li>• Introduction of assemblers</li> <li>• Purpose of producing a delivery kit                             <ul style="list-style-type: none"> <li>- Current problems with maternal and infant mortality</li> <li>- WHO's Principles of Clean Delivery</li> <li>- Clean delivery practices/benefits</li> </ul> </li> <li>• Role of assemblers Clean assembly procedures</li> <li>• Contents of kit</li> </ul>	Register Discussion  Kit contents/items
30 min.	<b>Assembly Room Preparation</b> <ul style="list-style-type: none"> <li>• How to prepare assembly room</li> <li>• How to clean floor, door, and window</li> <li>• Where to set up hand-washing area</li> <li>• Tea and food are not allowed</li> <li>• Spread clean plastic sheet on room floor</li> </ul>	Discussion

*continued on next page*



***Room Preparation***

The assembly room should be clean. The floors and walls should be dusted and swept. Windows should have glass, and doors should be closed during packing to minimize dust. The work surface should be scrubbed with disinfectant. The shelves of the storage cupboards should be cleaned with disinfectant. An area for washing hands should be nearby. The room should be swept and dusted, and work surfaces should be scrubbed each day of assembly. The assembly area should be well ventilated, adequately lit, cool, and free from dust at all times. Eating, smoking, and spitting must be prohibited.

***Worker Preparation***

Assemblers should clip and clean nails on each assembly day. Hands should be washed thoroughly with soap and water and dried on a clean towel. If they stop and do other work, assemblers should wash their hands again. Hair should be tied back. Each assembler should wear a clean apron or cloth over his/her street clothes. Outside shoes should not be worn in the assembly production room. Workers with respiratory infections should be excluded. Only authorized assembly personnel should be present when assembly is in progress.<sup>6</sup>

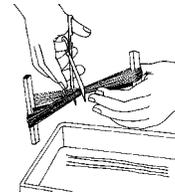
## 4.6 MODEL STEPS FOR ORGANIZING ASSEMBLY STATIONS

**Step 1:** Roll thread or string from a ball onto the wooden spool as shown in the illustration. The wooden spool has two flat ends connected by a central rod that is 15 cm long.



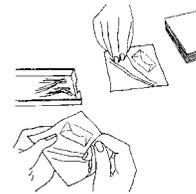
*Measuring string for cord ties.*

**Step 2:** Cut the thread/string as shown in the illustration. The length of each piece should be about 15 cm. Using this method, quickly prepare a large number of cord ties with equal lengths. Neatly lay the pieces of thread on a clean tray.



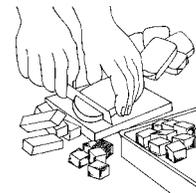
*Cutting string for cord ties.*

**Step 3:** Cut pieces of paper from the roll of paper. Prepare packets by wrapping three cord ties and one wrapped razor blade in each piece of paper. Ensure that the packets are wrapped in such a way that the razor blade and cord ties do not fall out. (Note: In some kits, thin plastic bags that can be heat-sealed are used instead of paper wrappers.)



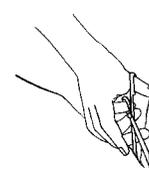
*Wrapping cord ties and razor blade into paper packet.*

**Step 4:** Cut bars of soap into small pieces that are large enough for the birth attendant to wash her hands, as well as the perineum of the mother. Put the pieces of soap in a tray.



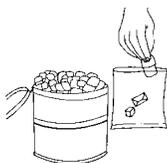
*Cutting soap pieces.*

**Step 5:** Cut sheets of plastic into squares that are one square meter. Neatly fold the sheets into small squares that will fit inside the plastic bag containing the kit contents.



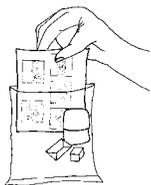
*Cutting sheets of plastic into squares.*

Placing wrapped components into kit package (plastic bag).



**Step 6:** Place a soap piece, folded plastic sheet, and the paper or plastic packet (containing the cord ties and new, packaged razor blade) into a plastic bag.

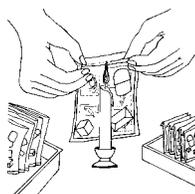
Placing the pictorial instruction sheet in a plastic bag.



**Step 7:** Place the pictorial instruction sheet in the plastic bag with the visuals facing outward.

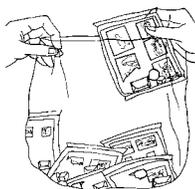
**Step 8:** Place the package label inside the plastic bag. (This is not necessary if the final packaging is a paper box.)

Sealing kit package with candle flame.



**Step 9:** Seal the plastic bag with a candle flame. Hold the two sides of the open end of the plastic bag together. At approximately two centimeters from the top of the bag, fold them over to one side to form a crease. Run this crease along the tip of the candle flame. Be careful not to let the flame touch any other part of the bag, and confirm that the bag is sealed along the full length of the crease. Place any parts of the bag that are not sealed over the candle flame and confirm the seal again. If the final packaging is a box, place the plastic bag into a pre-labeled paper box.

Placing delivery kits in large plastic bag for storage.

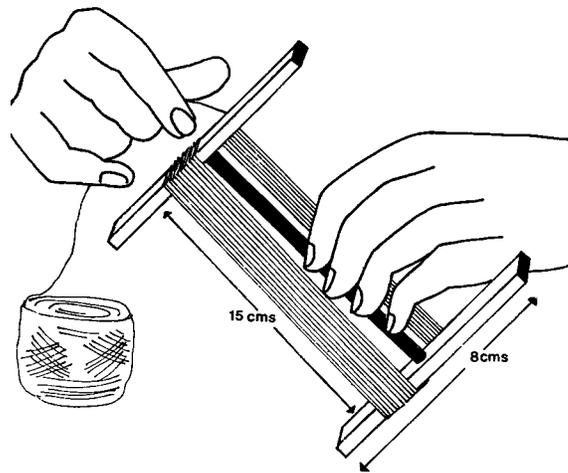


**Step 10:** Place several basic delivery kits in a large plastic bag, close the bag securely, and put this plastic bag in a trunk or box for storage. Store the trunk or box in the clean, dry storeroom protected from rodents and insects.<sup>2</sup>

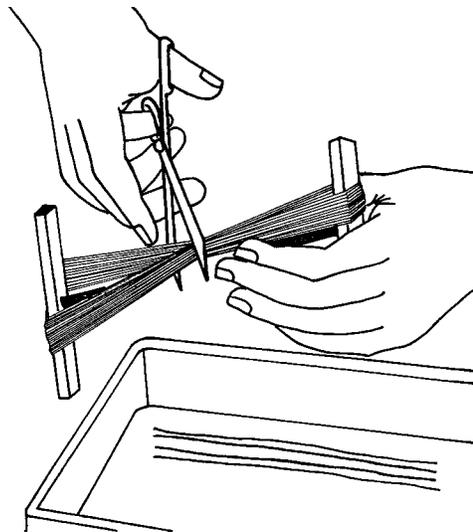
### Model Steps: Visual Aids

The following visual aids can be photocopied and placed at each work station.

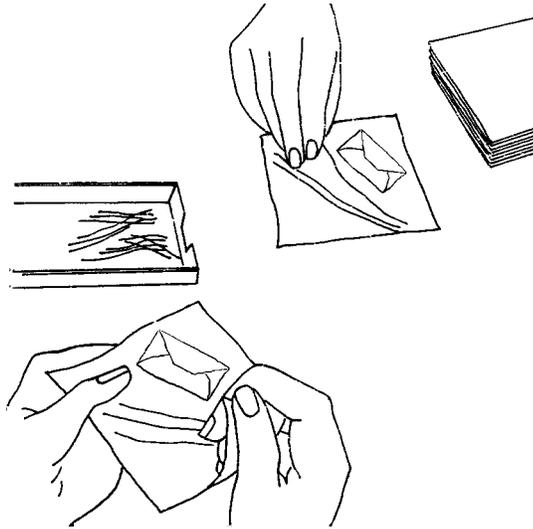
**Step 1:** Roll thread or string from a ball onto the wooden spool as shown in the illustration. The wooden spool has two flat ends connected by a central rod that is 15 cm long.



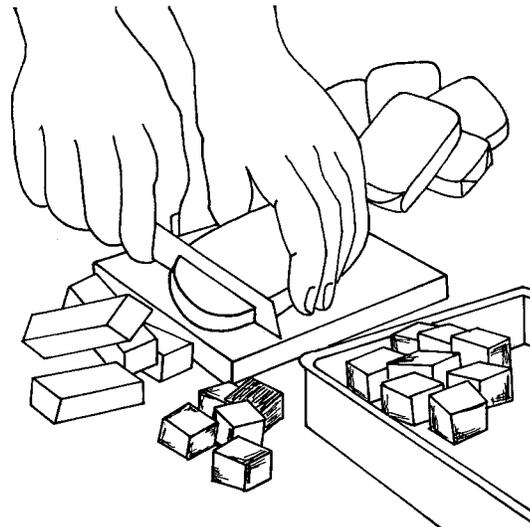
**Step 2:** Cut the thread/string as shown in the illustration. The length of each piece should be about 15 cm. Using this method, quickly prepare a large number of cord ties with equal lengths. Neatly lay the pieces of thread on a clean tray.



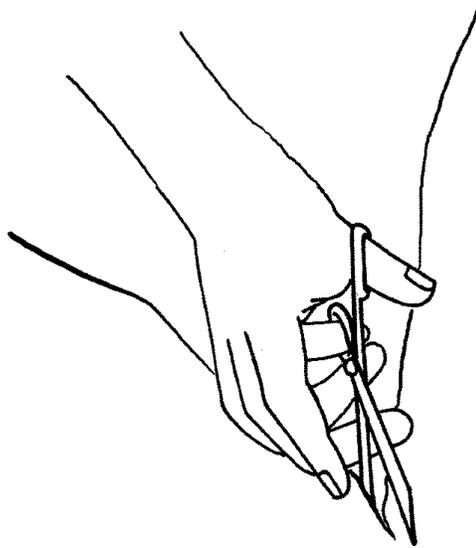
**Step 3:** Cut pieces of paper from the roll of paper. Prepare packets by wrapping three cord ties and one wrapped razor blade in each piece of paper. Ensure that the packets are wrapped in such a way that the razor blade and cord ties do not fall out. (Note: In some kits, thin plastic bags that can be heat-sealed are used instead of paper wrappers.)



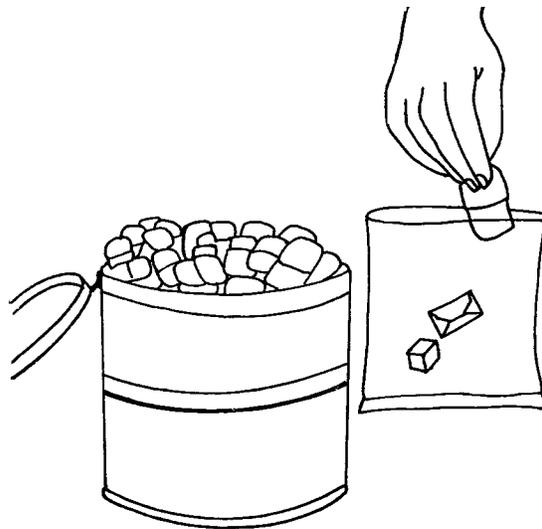
**Step 4:** Cut bars of soap into small pieces that are large enough for the birth attendant to wash her hands, as well as the perineum of the mother. Put the pieces of soap in a tray.



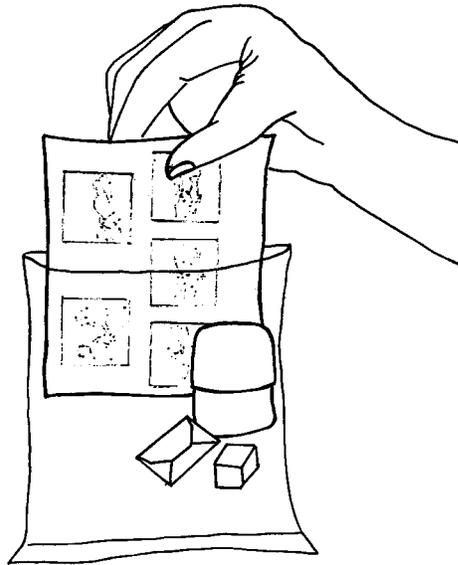
**Step 5:** Cut sheets of plastic into squares that are one square meter. Neatly fold the sheets into small squares that will fit inside the plastic bag containing the kit contents.



**Step 6:** Place a soap piece, folded plastic sheet, and the paper or plastic packet (containing the cord ties and new, packaged razor blade) into a plastic bag.

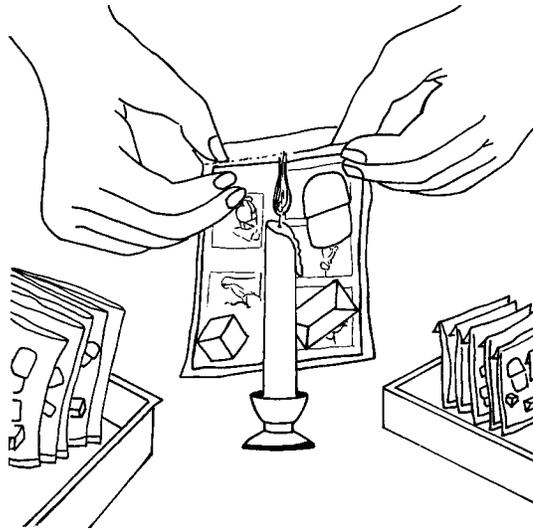


**Step 7:** Place the pictorial instruction sheet in the plastic bag with the visuals facing outward.

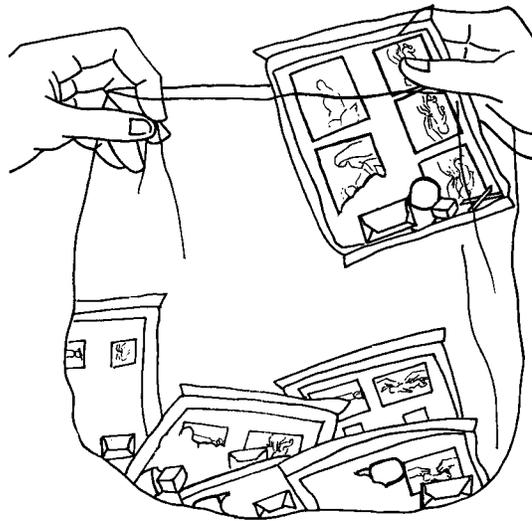


**Step 8:** Place the package label inside the plastic bag. (This is not necessary if the final packaging is a paper box.)

**Step 9:** Seal the plastic bag with a candle flame. Hold the two sides of the open end of the plastic bag together. At approximately two centimeters from the top of the bag, fold them over to one side to form a crease. Run this crease along the tip of the candle flame. Be careful not to let the flame touch any other part of the bag, and confirm that the bag is sealed along the full length of the crease. Place any parts of the bag that are not sealed over the candle flame and confirm the seal again. If the final packaging is a box, place the plastic bag into a pre-labeled paper box.

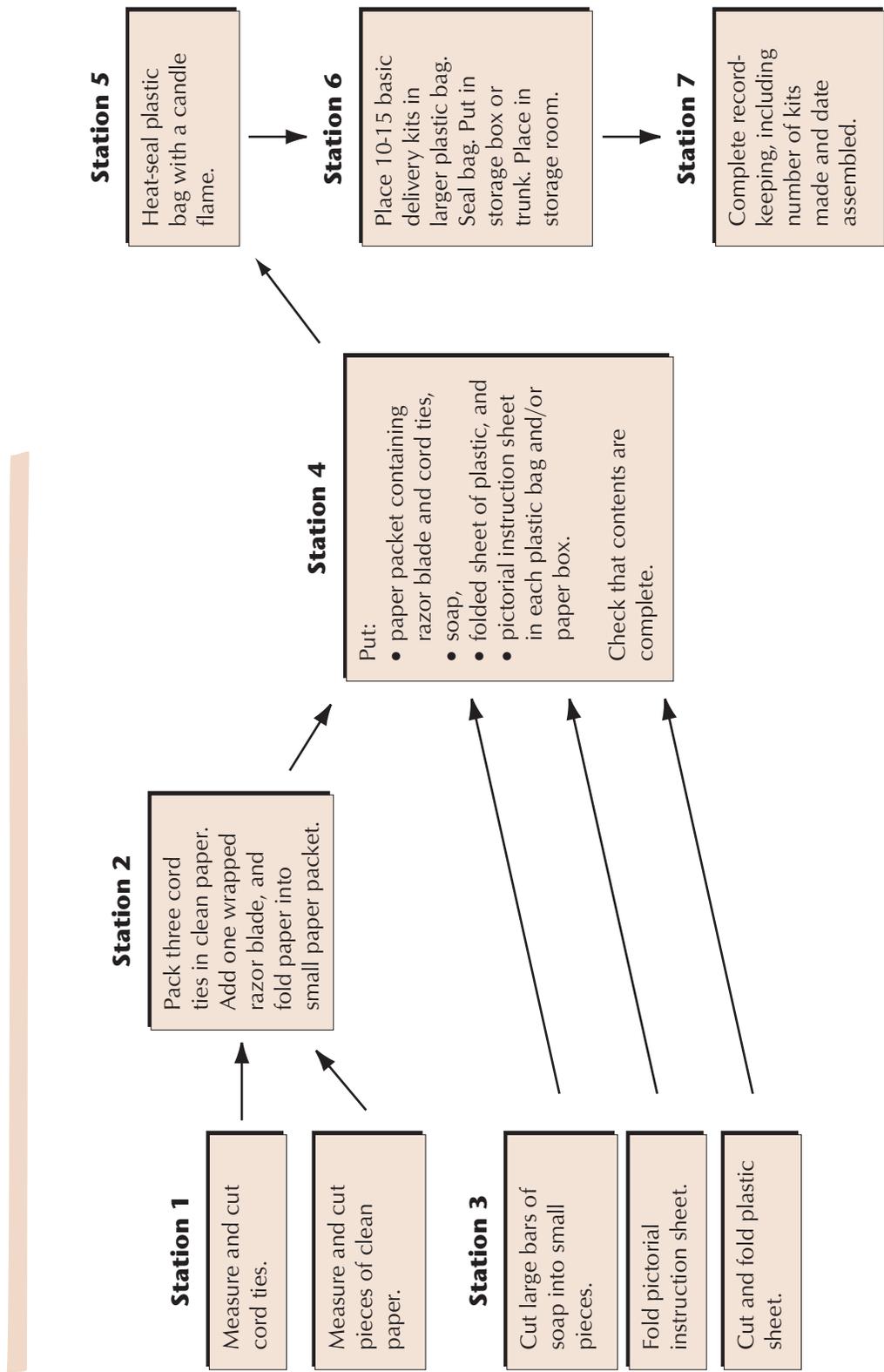


**Step 10:** Place several basic delivery kits in a large plastic bag, close the bag securely, and put this plastic bag in a trunk or box for storage. Store the trunk or box in the clean, dry storeroom protected from rodents and insects.<sup>2</sup>



WORK TOOLS

4.7 MODEL SYSTEM—ASSEMBLY STATIONS FOR DELIVERY KITS



# W O R K T O O L S

## 4.8 SAMPLE CHECKLIST FOR RANDOM MONITORING OF THE QUALITY OF BASIC DELIVERY KITS<sup>7</sup>

Item to Check	Circle One Response		
Kit	Complete	Items missing	
Razor blade	Rusted	Not rusted	Omitted
Soap piece	Intact	Disintegrated	Omitted
Cord ties	15 cm	Less than 15 cm	
Number of cord ties	3	2	Omitted
Pictorial instruction card	Correctly placed	Not correctly placed	Omitted
Plastic sheet	Folded well and included	Not folded well	Omitted
Sealing of plastic bag	Completely sealed	Not completely sealed	Omitted
Storage	No evidence of damage	Evidence of damage	

## REFERENCES

1. Ravindran S. "Development, Use, and Health Impact of Simple Delivery Kits: A Case Study by a Grassroots Women's Organization." Rural Women's Social Education Centre (Unpublished) (May 1991).
2. World Health Organization (WHO). "Clean Delivery Techniques and Practices for Prevention of Tetanus and Sepsis: Guidelines for Establishing Disposable Delivery Kit Assembling Units." (WHO/MSM/CHD94.4) Geneva: World Health Organization (1994).
3. Survival for Women and Children Foundation. "Development, Use and Health Impact of Simple Delivery Kits in Selected Districts of India." (Unpublished) (1992).
4. WHO. "Clean Delivery Techniques and Practices for Prevention of Tetanus and Sepsis—A Guide for District Programme Managers." WHO/MSM/CHD94.2. Geneva: World Health Organization (1994).
5. Murray J. "Program in Intercultural Management," Unpublished practicum final report, PATH and Maternal and Child Health Products Ltd. (May 1999).
6. Christian Commission for Development in Bangladesh. "Operations Research: Safe Birth Kit Report." (Unpublished) (August 1990).
7. Arco ES, Kabir IA. "Needs Assessment Report: Operations Research Safe Birth Kit Development." Christian Commission for Development in Bangladesh. (Unpublished) (February 1989).