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CLINIC WASTE DISPOSAL IN THE RURAL FAMILY PLANNING PROGRAMME OF BANGLADESH

MCH-FP Extension Project (Rural)
Health and Population Extension Division

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ABSTRACT

There is no dispute among the international family planning community that the Bangladesh family planning programme has been one of success stories of the last two decades. The contraceptive use rate in Bangladesh has risen from 7.1 per cent in 1975 to 45 per cent in 1994, and the total fertility rate has decreased from 7.2 per cent in 1970 to 3.4 per cent in 1994. One of the reasons for the rise in contraceptive use is the easy availability of a wide variety of contraceptives such as oral pills, condoms, injectables, intra-uterine device (IUD), sterilization and menstruation regulation (MR). Provision of clinical contraceptive services generates clinic wastes, such as used needles, syringes, ampules, cotton, gauze, swabs, etc.

The waste generated at the family planning service sites is a hindrance to the provision of quality of care. However, very little information is available about the existing situation of waste disposal. To determine the existing situation of clinic waste disposal in the rural family planning set-ups, an exploratory research was conducted to understand the mechanisms of clinic waste disposal in rural family planning programmes.

The study was conducted in three *thanas* of Bangladesh, Monohardi, Sirajganj and Abhoynagar. These *thanas* are the laboratory areas of the MCH-FP Extension Project (Rural) of ICDDR,B, where among other interventions, injectable contraceptives were being offered to rural women in their homes.

Results of the study showed that there was almost no awareness among the providers of family planning on hazards of clinic waste. Previously, there were no government instructions on this topic. Based on our recommendations to the Directorate of Family Planning, a nationwide circular on the disposal of the used syringes and needles at FWCs, THC's, and Maternal Child Welfare Centres (MCWC) was circulated by the Directorate of Family Planning. The feasibility of designing and constructing low-cost, effective incinerators at the *thana* level is being tested at the MCH-FP Extension Project (Rural) of ICDDR,B.

INTRODUCTION

The contraceptive use rate in Bangladesh has risen from 7.1 per cent in 1975 to 45 per cent in 1994, and the total fertility rate has decreased from 7.2 per cent in 1970 to 3.4 per cent in 1994 (1,2). One of the reasons for the rise in contraceptive use is the easy availability of a wide variety of contraceptives in rural areas (3). The "cafeteria" approach offers a variety of modern contraceptives, both permanent and temporary methods, such as oral pills, condoms, injectables, intra-uterine device (IUD), sterilization, menstruation regulation (MR), etc.

Provision of clinical contraceptive services generates clinic wastes, such as used needles, syringes, ampules, cotton, gauze, swabs, etc. These wastes are the potential sources of infection to service providers, service recipients, and community members where the services are offered. To decrease the risk of infection at the site of injection, disposable syringes are used by the family planning workers. This technique further increases the load of items that have to be disposed of safely at the field sites. The waste generated at the family planning service sites is a hindrance to the provision of quality of care. However, very little information is available about the existing situation of waste disposal. Hence, a study was carried out to look into the situation of waste disposal created by the provision of family planning services in rural areas.

BACKGROUND INFORMATION

Family Planning Services

Innovative approaches have been tried in Bangladesh to make the family planning services more accessible to the rural population. Currently, IUD services are offered at the static Family Welfare Centres (FWC), and at the mobile Satellite Clinics (SC) which are held in households of community members at eight different spots each month (4,5). The female paramedic, Family Welfare Visitor (FWV), provides IUD services at FWCs and also takes necessary supplies to the Satellite Clinic on scheduled dates.

Voluntary sterilization services, both vasectomy and tubectomy, are provided at the *Thana* Health Complex (THC) by the Medical Officers (6,7). In addition, the Medical Officers also set up sterilization camps at various places suitable for conducting mini laparotomy.

Injectable contraceptives are offered in all the rural areas at the union level FWCs and Satellite Clinics (8). To further increase the accessibility of this contraceptive, ICDDR,B initiated training of field workers to provide domiciliary injectable contraceptive services (8). Hence, the Government of Bangladesh requested the MCH-FP Extension Project (Rural) of ICDDR,B to further test this intervention in eight additional *thanas* within the government set-up. Many non-government organizations also provide injectables at the homes of clients (9,10). Data from all these pilot projects show that there is a sharp increase in the use of injectable contraceptives when they are offered at the homes of clients by the field workers (8,11,12). Based on these findings, the Directorate of Family Planning has planned to expand domiciliary injectable services in other areas of Bangladesh in phases.

These different types of service-delivery mechanisms in rural areas indicate that the wastes generated at these sites require various methods of safe disposal (13,14,15).

Hazards of Clinic Waste

Wastes that are produced at health and family planning care facilities are of two types: non-contaminated and contaminated (13,14,16). Non-contaminated wastes include paper, trash, boxes, bottles, and plastic containers. However, most of the wastes produced at the health and family planning set-ups are contaminated. Examples of contaminated wastes are blood, pus, urine, stool, and any other body fluids. In addition, any items that come in contact with these body fluids, such as dressings, cotton, needles, syringes, etc., also become contaminated. Wastes that arise from operative procedures or from laboratory examinations are also considered contaminated. Furthermore, such wastes are potentially harmful to the community if they are not disposed of properly. Wastes such as needles, broken glass, ampules, etc., produced at the health and family planning set-ups can also inflict injury if they are not properly handled or disposed of.

The diseases, which can be spread by improper handling and inappropriate disposal of wastes, include AIDS, hepatitis B, and hepatitis C. Nosocomial infections, infections which were not present or were incubating at the time a patient or a client or a visitor came to the clinic or centre, are an additional hazard. Such infections can develop in patients, employees, and visitors who have close contact with patients. These infections include post-operative wound infections, such as skin or gastro-intestinal infections. Improper procedures can also give rise to iatrogenic infections. Finally, collection of wastes creates breeding places for flies, insects, and microorganisms. They are foul smelling, unsightly and may pose fire hazards.

Acquired Immune Deficiency Syndrome (AIDS)

Acquired Immune Deficiency Syndrome (AIDS) is a disease caused by the virus, known as Human Immune Deficiency Virus (HIV) (17) which can transmit through an exchange of body fluids, such as blood, serum, semen, etc. It is a fatal disease, and there is currently no treatment available. It can, however, be prevented by blocking the routes of transmission.

Since the major mode of HIV transmission is through sexual contact, the risk of transmission can be reduced by blocking this route. Another route of transmission is the exchange of body fluids, such as blood and serum. This can happen when the virus enters the body through a cut in the skin, when infected needles are used for injections or when infected blood is used for transfusion. Hence, this mode of transmission can be prevented by proper use of needles, syringes, proper handling of products coming in contact with body fluids, and the safe disposal of such items.

Although the true prevalence of HIV in Bangladesh is not yet known (18), WHO estimates that there are more than 20,000 HIV-positive cases in Bangladesh. This is regarded as a conservative estimate. With the high prevalence of HIV in India and Myanmar, there is an increased probability of HIV transmission in Bangladesh. Hence, it is essential that safety measures be strengthened against the disease.

Hepatitis B

Hepatitis B is a potentially fatal blood-borne disease caused by the hepatitis B virus (HBV). HBV is transmitted through the exchange of body fluids, use of infected needles, transfusion of infected blood and blood products, etc. The disease can be prevented by vaccine, though this vaccine is not widely accessible in Bangladesh. Studies have shown that the risk of disease after exposure to hepatitis B (HBV) from a needle-stick injury ranges from 27 per cent to 37 per cent, even an accidental splash of infected blood into the eye can transmit HBV to a susceptible host (18). Recently, hepatitis C and D have also been identified, and their mode of transmission and prevention mechanisms are similar to that of the hepatitis B virus.

Studies conducted in Bangladesh show that the prevalence of HBV is quite high, ranging from 5 per cent to 20 per cent in various high-risk groups, such as intravenous drug users, commercial sex workers, and professional blood donors (19,20,21). Unfortunately, no community-based study on the prevalence of HBV could be found, although a prevalence as low as 5 per cent is still very high in any population.

Rationale for Safe Disposal of Clinic Waste

In health and family planning facilities, blood is the most common path of transmission of HBV and HIV (16). Since it is not feasible to try to identify persons infected with hepatitis B or HIV virus, the only means of protecting service recipients and providers is to practise "universal precaution", which means that all products that come into contact with the body fluids must be regarded as infected (13).

As mentioned earlier, to increase the accessibility, family planning services are offered at the domiciliary level, at outreach static services, such as Satellite Clinics held in the community member's houses. All of these innovative service-delivery approaches also highlight the need for innovative ways of disposing waste without creating environmental hazards. In addition to these outreach centres, there is also a serious concern about the safety of clinic waste disposal in the referral centres such as the Family Welfare Centre and the *Thana* Health Complex.

The availability of contraceptives in the remote rural areas means that, in addition to the concern about disposal of wastes, there are also issues of transportation and storage of used contaminated articles, such as syringes, needles, swabs, etc. before they can be disposed of.

With the emergence of AIDS and the continuing problem of hepatitis B and more recently hepatitis C and D, the issue of disposal of clinical waste has become a serious concern. Hospital/clinic-acquired (nosocomial) infections and iatrogenic infections are a hindrance to the expansion of family planning services and are also a barrier to the quality of care offered by the family planning providers. Attention now must be directed at minimizing the risk of transmission and prevention of infection of the health care providers, clients, and the community where family planning services are available. However, very little documentary evidence is available regarding the mechanisms of waste disposal in the national family planning programme. Hence, it was felt that a study should be undertaken to describe the existing situation of transportation, storage, and waste disposal in the national family planning programme in rural areas of Bangladesh.

OBJECTIVE OF THE STUDY

To determine the existing situation of clinic waste disposal in the rural family planning set-ups, an exploratory research was conducted with the following objective:

To describe the mechanisms of clinic waste disposal in rural family planning programmes.

Clinic waste has been defined as wastes that are generated due to provision of family planning services irrespective of the site of service provision. Thus, wastes generated at the homes of clients where services are offered, Satellite Clinics, sterilization camps, Family Welfare Centres, Thana Health Complexes, etc., are included.

RESEARCH METHODOLOGY

Study Design

As no study had been conducted on this topic hencebefore, a qualitative exploratory research was carried out to find out about the existing situation. Information was collected from key persons handling clinic wastes at the community, union and *thana* level in the family planning programme. These include the family planning field workers known as Family Welfare Assistants (FWA), and the paramedics, Family Welfare Visitors (FWV), *Thana* Store Keepers, Medical Officers, and the *Thana* Family Planning Officer (TFPO). In addition, observation method was also used to determine what happens to used needles, syringes, swabs, ampules, etc. at the field, union and *thana* level.

Study Site

The study was conducted in three *thanas* of Bangladesh, Monohardi, Sirajganj and Abhoynagar. These *thanas* are the laboratory areas of the MCH-FP Extension Project (Rural) of ICDDR,B, where among other interventions, injectable contraceptives were being offered to rural women in their homes. As family planning field workers provide injectables, the question of re-use and disposal of syringes was a potential threat to the expansion of choice of contraceptives to clients. Hence, these *thanas* were selected purposively. All the unions of these *thanas* were observed.

Study Sample

All the three TFPOs of the three *thanas* were interviewed. In these *thanas*, all FWVs and FPIs were also interviewed. In Sirajganj, there are 10 rural unions. All FWVs and FPIs attend the monthly meeting at the *Thana* Family Planning office. Information was collected at the meeting. Some of the paramedics were absent on the day of the meeting and, hence, they were interviewed at their FWCs. A similar procedure was used for collecting information from FPIs and FWVs of Monohardi and Abhoynagar *thana*. Eleven FWVs and 11 FPIs were interviewed in Monohardi *thana*, while nine FPIs and 10 FWVs were interviewed in Abhoynagar *thana*.

The interviews with FWAs were conducted on the FWC meeting day when the field workers come to the FWC. Information was collected from 66 FWAs of Sirajganj, 62 of Monohradi, and 50 of Abhoynagar.

Data Collection Instruments

An unstructured topic list was prepared after pretesting to discuss the key points related to clinic waste in the family planning set-up. The topic list was altered as needed during the subsequent data collection periods. Another topic list was also designed after pretesting to observe what happens to clinic waste. Data were collected in September through October, 1993.

RESULTS

The waste disposal methods used in the national family planning programme are presented according to the site of service provision.

Used Syringes and Needles in the Domiciliary Services

The qualitative information collected has been analyzed and summarized here in a flow-chart fashion for better understanding.

FWA carries these in her bag and keeps them in her house until the next FWC meeting. Used ampules and cotton are thrown away at the client's residence.

No instructions or containers are given to carry the used needles and syringes. The needle coverings very often open in their bags. No instruction on "no touch technique" for re-capping needles. Needles kept at home are accessible to the family members/children.

FWA either returns these needles and syringes to FPI on the FWC meeting days with a statement of number used, or brings them directly to the THC storekeeper from where they had obtained the supplies.

FPI has no container to collect the disposable syringes and needles returned by all FWAs. No definite format for noting the numbers.

FPI collects wastes in a paper carton and records the number returned on a loose sheet. FWV also stores the ones used at FWC in a paper carton. When accumulated in "good number," the contaminated used syringes and needles are either sent back to the *Thana* office with a statement of number returned, or they are disposed of at FWC. Disposal is done by burning in a pit in front of behind or near the latrine. Pit measurements (3 feet deep and 35 feet away from the tubewell) are sometimes followed. FPI/FWV or ayah or guard do the burning.

No definite safe place for storing waste. The instruction for presence of Thana official at the time of disposal makes it difficult to dispose the wastes each month.

The used needles and syringes sent by the union and field staff are received at the *Thana* office by the storekeeper. They are disposed only after a "good" number of syringes and needles have been collected in a paper carton. Disposal is done by burning in a ditch. There is no fixed timing for burning waste. It may be done every one/two/three months. FWV, ayah, or sweepers burn the waste in the presence or absence of *Thana* officials.

No instructions for safe storage. Instructions to burn every month are not followed. How pits should be dug is not specified (distance from source of water, slope of land, depth of pit).

The field workers are at the constant risk of coming in contact with the used syringe and needles at all the above mentioned steps. Even their family members, including children, may contact the contaminated items when the used disposable items are kept in their homes. The service recipients are also at risk as they may come in contact with the used needles or syringes. This is because FWAs are not provided specific containers to store the used items. FPIs are also at risk when they collect the used items

and carry them to THC. Similarly, FWVs, MAs, and the cleaners at FWC handle the wastes without any protection and, hence, are at risk of getting infected.

Disposal at the Family Welfare Centre and at the *Thana* Health Complex

The used cotton balls, gauze, needles, syringes, and ampules are collected in open bowls, paper cartons, baskets etc. In some clinics, there are no bowls, and the used items, such as cotton and swabs, are dropped on the floor only to be removed the following morning by the sweepers. The sweeper also empties the bowls (if used). These items are disposed of by throwing "outside" FWC or THC through the window. Sometimes these contaminated objects are thrown into the drains or in the backyard.

The used items are handled by the ayah or sweeper either every morning, or twice a day depending on the amount of waste. Sometimes, wastes may accumulate for one week in open containers. There are **no instructions on how to store or collect clinic wastes and no orders on where and how they should be disposed of safely.** No training or information has been provided to any staff, such as storekeeper, ayah, MLSS, sweeper, etc, who usually dispose of waste. There are no instructions regarding the responsibility and supervision of such tasks.

Disposal at Satellite Clinics and at Sterilization Camps

Cotton, swabs, needles, syringes, etc used for providing injectable contraceptive and for IUD insertions are collected in a paper carton and thrown away at the house where the Satellite Clinic is being held. When the ayah or the helper cleans the IUD set at the tubewell in the premises of Satellite Clinic residence she throws the wastes away near the tubewell. The status of clinic waste disposal at the sterilization camps is also similar. **There are no instructions or guidelines on safe disposal of wastes at the satellite clinics or sterilization camps.**

The majority of the field-level staff interviewed were not aware of the hazards of using the contaminated needles. Very few knew about the diseases, such as hepatitis B and AIDS, that may spread from the use of the

contaminated needles. None of the staff was aware of the need for safe disposal of clinic waste.

The existing situation described above is very hazardous. The delivery of family planning services may be responsible for the transmission of various types of infections to the service recipients, as well as to the members of the community where the services are being offered. In addition, the service providers are also exposed to serious risks of infections. This lack of proper disposal procedures poses a grave threat to the environment. These existing situations can be altered by designing a mechanism for safe transportation, storage and disposal of clinic waste in the *family planning service-delivery system*.

Government Instruction on Disposal of Used Syringes and Needles

For the safe disposal of used syringes and needles, the Government of Bangladesh (GoB) has issued a circular regarding the disposal of disposable injectable syringes for the pilot project areas of ICDDR,B only where domiciliary injectable services were being tested. But no instructions on clinic waste disposal have been issued for the rest of the country. The circular was signed in August 1991 by the Director General, Directorate of Family Planning. This section describes the GoB circular and discusses the gaps which need to be addressed.

Government circular for disposal of disposable syringes

Four categories of instructions were mentioned in this circular.

Directions are given to create awareness about the hazards of re-using disposable syringes for the prevention of abscess at the site of injection and for the prevention of hepatitis B.

Orders are given to provide new syringes and needles only after the used ones have been returned. The number of syringes provided must be calculated based upon the doses of injectable contraceptive needed.

Instructions are provided to recap the used needles with care, so that the workers do not prick their fingers. Workers are asked to return the used needles and syringes to the place from where they procured those supplies.

The used items are to be disposed of by burning in a ditch, which is then to be covered with soil.

When the supply of disposable syringes is obtained from the *Thana* Storekeeper, the used items should be returned to the storekeeper, who has instructions to dispose them of in the presence of the *Thana* Family Planning Officer or Medical Officer (MO-MCH).

If the supply is from FWC, the Family Planning Inspector (FPI) should dispose of the syringes collected from FWV on the monthly meeting day. This procedure must be carried out in front of the *thana*-level official, such as TFPO, MO-MCH, or Senior FWV.

Implementation of the Government circular

The recommendations of the circular have been implemented for about two years at the Extension Project sites. The following problems were identified which hampered the implementation of the circular.

- There is no definite format for recording the number of syringes received and returned all the way from FWA to the *thana* storekeeper.
- The procedure of "no-touch technique," of recapping mentioned in the circular for preventing an accidental injury, has not been demonstrated and taught to the workers.
- The need for the *thana* officials to be present at the FWC meeting for the disposal of clinic waste is not feasible, since the FWC meetings are held on same days in all the unions. Thus, this instruction was difficult to carry out, and the disposal of waste was delayed. Information collected also shows that the disposal could not take place due to the lack of the *thana* official's presence at FWC. This difficulty can be avoided either by disposal without any *thana* officials or by returning all the wastes to the *thana*, where all the disposal can take place.

Constraints in Clinic Waste Management in Rural Bangladesh

Various problems can be anticipated in proposing a model for clinic waste management for the family planning programme in rural areas of Bangladesh.

The waste disposal system must take into account the fact that Bangladesh is a flood-prone country. Burial of clinic wastes by digging holes may not solve the problem as flood water may wash away the topsoil of the holes, thereby exposing the contents. Furthermore, land is scarce in this over-populated country. Hence, such repeated digging for the burial of wastes cannot be a practical solution. The only other solution is to burn wastes in an incinerator. This will render the waste harmless, although the ashes or semi-burnt needles have to be buried; it will not require much space as the burning process will reduce the volume of wastes.

But the construction of incinerators is costly. Energy is essential to maintain the required temperature to destroy the harmful organisms. Gas is a cheap source of energy, but it is not available everywhere. Electricity is very expensive, and burning wood is environmentally unsafe. Additionally, the question of where to construct incinerators remains. If one incinerator is constructed in each district, 64 incinerators would be needed in Bangladesh. Furthermore, construction at the district level means that the clinic waste from each union and *thana* level has to be transported all the way to the incinerator, which may not be feasible. Another alternative, but an expensive procedure, may be to construct incinerators at the *thana* level.

Under these circumstances, the best possible solution would be to ignite the contents to be incinerated with paper, cardboard boxes, etc. after dousing the wastes with kerosine. The temperature obtained by this procedure may not be the ideal (170°C or 340°F) essential to kill all organisms, but it will render the syringes, needles, swabs, etc. non-usable.

PROPOSED ALTERNATIVE MODEL FOR MANAGEMENT OF CLINIC WASTE

This section discusses the management of clinic wastes, including transportation and storage from the field to the *thana* level. The proposed model has been designed based on the results of discussions with the field workers, their supervisors, and the *thana* managers.

Management of Used Syringes and Needles

The management of the used syringes and needles after provision of domiciliary injectable service is presented here in a flow-chart fashion.

FWA recaps the used needles with the "no touch technique."

Puts the used needles, syringes, ampules in a tin box with a tight lid.

FWAs should be provided with stainless steel tin containers for storing the used syringes and needles.

FWA returns the used items to FPI on the FWC meeting day and takes new supplies, etc. The format for recording the number has to be filled in the FWA registers.

FPI needs a large container with a tight lid for storing the used syringes and needles returned by all FWAs.

FWV/MA also store all the needles, syringes, and ampules used at FWC for injectable contraceptives in a container for giving to FPI along with the field workers.

Two options can be proposed here at this point.

If there is no incinerator at the *thana* level, FPI can collect all used syringes and needles from the field workers, and burn and bury them in a hole in the compound of FWC. The syringes and needles used by the Medical Assistant and FWV are also put in the same hole. This procedure can be followed every four months.

If there is an incinerator available at THC, FPI can bring the container of used syringes and needles from union to the *thana* storekeeper. He also submits the statement of numbers returned. Only then will he be provided with new supplies.

The storekeeper can ensure that all the wastes are put in the **incinerator**. The burning of wastes should be conducted by the storekeeper in the presence of a *thana* official. This should be done on the day after the monthly meeting, so that all field workers have returned the injectable wastes, and these have been deposited in the incinerator.

The proposed system of management of used syringes and needles mentioned above is probably the best, if not ideal, that can be materialized within the existing limitations. The system is hierarchical and depends on FPIs for waste management. This has been done to keep the disposal mechanism within the existing infrastructure of the government family planning programme. The disposal mechanism can be adapted to different set-ups of the non-government organizations.

Management of Clinic Waste at Family Welfare Centres

If an incinerator is available at THC, the used syringes and needles can be transported to THC as elaborated above. However, if there is no incinerator, the used syringes and needles have to be managed at FWC.

Disposal by burial

Clinic wastes, such as used swabs, cotton, etc., contaminated with blood, vaginal secretions, etc., have to be collected in corrosion-proof washable containers made either of plastic or of galvanized iron and to be disposed of every day (16). The waste containers should be placed at a convenient place, such as near the IUD insertion table, delivery table, client examination table or at the corner of the examination room, as found suitable by the provider. These containers should have tight-fitting covers, be easy to carry, and must be emptied in a burial site every day and not scattered around. The containers must be decontaminated with .5 per cent chlorine solution before washing every day. The individuals, such as sweepers, ayas, MLSS, etc., who will handle wastes, must be provided with utility gloves for protection, and should be instructed to wash their hands after handling clinic wastes.

Wastes, such as used syringes and needles, can be stored in containers, such as cardboard cartons and must not be accessible to others. The carton and key, containing the used items can be kept under lock and key, so that they are not reused. These can be disposed of once every four months by burying them in a hole in the FWC compound. Frequent disposal should be avoided to prevent repeated digging at FWC.

The safe burial site must be located 50 metres away from the sources of water to prevent any contamination. The refuse pit should be 3-4 feet wide and 6 feet deep and will be covered by 1/2 to 1 foot of earth each day after disposal. Once filled up the pit will be covered by 2 feet of earth to keep animals from digging.

Drum incinerators

Disposal by burial is not an ideal system, particularly in over-populated Bangladesh where land is scarce. However, before any alternative solution is available, clinic wastes have to be managed. For proper management of wastes, **drum incinerators** need to be made available at FWC which cost less than brick and can be made available at FWC for daily waste disposal. Kerosine may be needed to burn wastes properly. Dry wastes, such as paper, boxes, etc., may be added to facilitate the burning process. After incineration, the burnt items have to be taken out of the drum and buried in a safe place. The person in-charge of FWC, usually MA, would be responsible for the proper functioning of the drum incinerator.

Autoclave

Another alternative for sterilizing the used syringes and needles for disposal is the use of the autoclave which is available in some FWCs. This will render the syringes and needles safe. This practice, however, can be used only in those areas where autoclaves have been supplied, and the members of the staff know how to use them properly. Furthermore, autoclaves are expensive to operate due to the high cost of fuel. In addition, they can be used only for syringes and needles but not for other clinic wastes. Hence, the use of autoclaves may not be feasible in Bangladesh.

Management of Clinic Wastes at Satellite Clinics

Clinic wastes produced at the Satellite Clinics must not be scattered on the clinic premises. They must be put into a small airtight stainless steel container, which is easy to carry. Wastes should be brought back to FWC and managed along with the rest of the wastes.

Clinic Waste Management at *Thana* Health Complex

At THC, ideally all clinic wastes should be incinerated every day, especially the organic perishable items. The procedures of handling decomposable wastes are similar to those mentioned for FWCs. The *Thana* Health and Family Planning Officer (THFPO) would be in charge of

maintaining the incinerator and supervising its activity. This incinerator can be used for the management of clinic wastes produced in the course of provision of various other health services, such as minor surgery, obstetric care, etc. If no incinerator is available at THC, the procedures for managing clinic waste are similar to those of FWC.

ITEMS NEEDED FOR SAFE DISPOSAL OF CLINIC WASTE

1. An incinerator has to be constructed at each THC for the disposal of all clinic wastes, including wastes from maternity, surgical wards, etc. (See Annexure-1 for diagram of an incinerator). An estimated Taka 20,000 would be needed to construct a covered incinerator. Once constructed its use should be supervised by THFPO. After every use, the incinerator must be emptied. Although the ashes are safe, the burnt needles need to be buried as they may prick someone and possibly cause tetanus infection.
2. A drum incinerator can be constructed at FWC. The exact cost is not yet known. (See Annexure-2 for diagram of a drum incinerator). Drum incinerators would also be a suitable option for all clinics where space is limited, such as clinics in urban areas.
3. Storing containers, made of galvanized iron, with a tight lid, which are easy to carry, must be provided to all, from FWAs to Storekeepers (16). These containers must be decontaminated with .5% chlorine solution after every disposal. The size of the containers will vary. For example, FWAs will need small containers for carrying to households, whereas FWVs will also need a small one for Satellite Clinics. FPIs may need a larger one for collecting all items from a union.
4. All THCs and FWCs where wastes are produced must have waste containers with tight lids, one for liquid and one for solid wastes. In addition, utility gloves have to be supplied to the individuals who handle wastes.
5. Syringes and needles must be stored separately. Perishable items stored separately must be disposed of every day as they may give rise to offensive odours and attract flies.

Training

Members of all staff concerned with storing, transporting and disposing wastes must receive training on the necessity of waste disposal, including the hazards of clinic waste. These training sessions must include the sweepers, ayahs, guards, etc., who actually handle wastes. Furthermore, the procedures of waste disposal must be taught in detail. The responsibilities of the members of the staff who are supposed to handle wastes must be clearly delineated. In addition, supervisors, such as FPI, Senior FWV, and TFPO must be made aware of these problems and the rationale for the elaborate disposal procedures.

Monitoring

Monitoring activities must be carried out by supervisors, such as FPI, Senior FWC, TFPO, and THFPO. To monitor the activities of safe disposal of clinic wastes, the following tools can be used:

1. The formats for recording the supply and return of injectable syringes and needles can be used as a monitoring tool. FWA notes down in her injectable register, the number obtained, the number used and the number returned to FPI. However, if the number of injectable doses increases, FPIs can only do an eye count as it is not safe to touch the used needles. As the union supervisor, FPI also notes down the supply status. A supervisor from the *thana* should check these figures while doing supervisory rounds.

FPI should also supervise the FWA's activity regarding the presence of the steel container containing the used needles in the field while on routine visits. FPI also must sign the format of the storekeeper at THC while getting new supplies.

2. The burning and burial at FWC should be the responsibility of the Medical Assistant, Family Welfare Visitor and Family Planning Inspector. A format noting down the number of syringes returned and buried needs to be recorded and sent to the *thana* level.

3. THFPO and TFPO would be in-charge of the incinerators. They would supervise and monitor the activity related to clinic waste management. A format may be supplied for the purpose of monitoring the waste management activities.

CONCLUSION AND FOLLOW-UP

This study was conducted to understand the existing situation with regard to clinic waste management in the family planning programme in rural areas of Bangladesh. Since the study was conducted in areas where field test of domiciliary injectable contraceptive service was being done, emphasis has been placed on the management of the used syringes and needles. Due to the lack of information about this topic, an exploratory qualitative research was carried out. Results of the study showed that there was almost no awareness among the providers of family planning on hazards of clinic waste. Previously, there were no government instructions on this topic. Based on existing resources, a plan for clinic waste management has been proposed.

The recommendations proposed to the Directorate of Family Planning have been materialized. The Directorate of Family Planning has sent out a nationwide circular on the disposal of the used syringes and needles, in which the members of the staff are instructed to dispose of clinic wastes, especially used needles and syringes at FWCs, THCs, and Maternal Child Welfare Centres (MCWC). Clear guidelines are provided on the depth and breadth of the hole to be dug for disposing wastes. The syringes and needles are to be collected at the union level and are to be burnt and buried every four months.

The Directorate of Family Planning has also sent out mats for monitoring the activities related to the disposal of the used syringes and needles. They are planning to include this information in the regular Management Information System, so that there are not too many additional forms to be completed by the members of the staff.

The feasibility of designing and constructing low-cost, effective incinerators at the *thana* level is being tested at the MCH-FP Extension Project (Rural) of ICDDR,B (Documentation note 1, October 1994, MCH-FP Extension Project (Rural), ICDDR,B).

REFERENCES

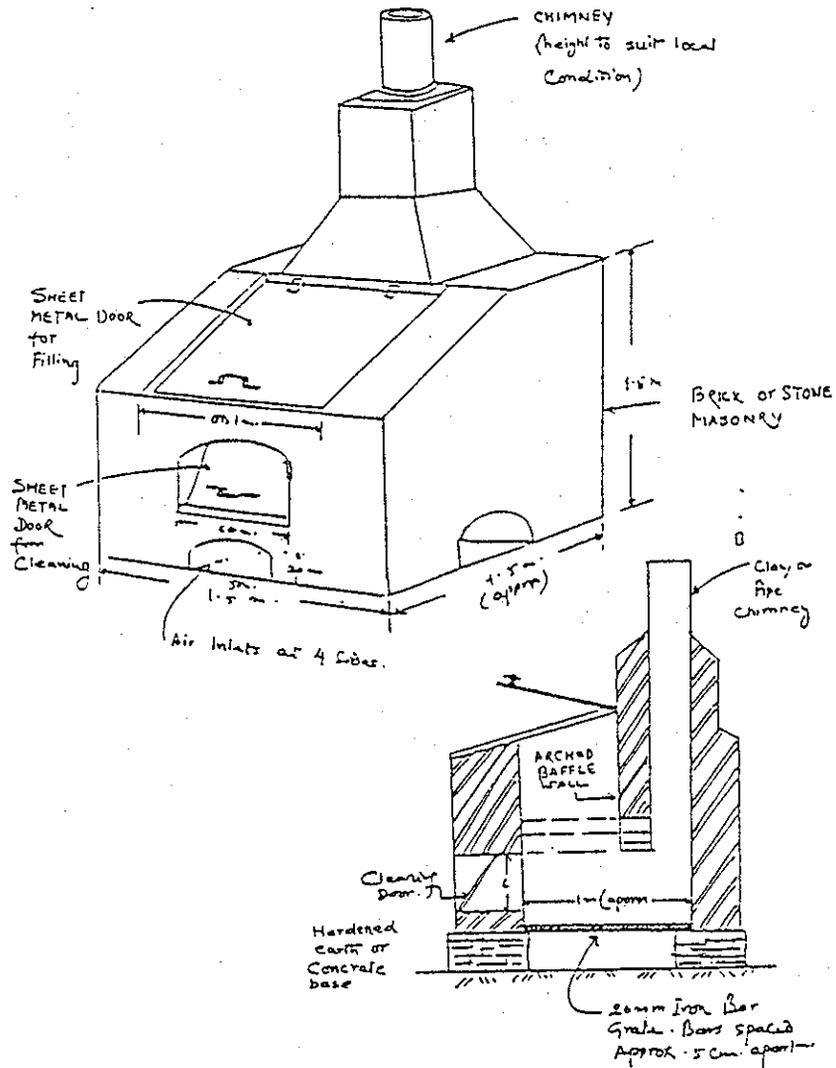
1. Bangladesh Demographic and Health Survey 1993-1994. Preliminary report. National Institute for Population Research & Training (NIPORT), Mitra and Associates, Demographic & Health Surveys, Macro International Inc., June-July, 1994.
2. Barkat-e-Khuda. Overview of the national family planning programme: past, present and future. Paper presented at the Fourth Annual Scientific Conference, ICDDR,B. 21-22 January, 1995.
3. Family planning lessons and challenges, making programs work. Population reports; XX11 (2). Population Information Center for Communication Programs, The Johns Hopkins School of Public Health, Baltimore, August 1994.
4. Kamal GM, Rahman S, Nasrin T, Hossain Z. IUD annual evaluation, 1989. Associates for Community and Population Research. May 30, 1991. ACPR publication, 27.
5. Kamal GM, Rahman S, Nasrin T. IUD annual evaluation, 1990. Associates for Community and Population Research, January 16, 1992. ACPR publication, 32.
6. Dissemination Workshop on Assessment of Clinical Contraceptive Services in the Bangladesh Family Planning Programme. Directorate of Family Planning and Association for Voluntary Surgical Contraception, University Research Corporation (Bangladesh), August 5, 1992.

7. Proceedings of the seminar on current status of sterilization programme in Bangladesh. Government of the Peoples Republic of Bangladesh, National Institute of Population Research and Training (NIPORT), October 24, 1994.
8. Rahman F, Islam M, Maru RM, Whittaker M. Home delivery of injectable contraceptives: an operations research study in Bangladesh. MCH-FP Extension Project (Rural), ICDDR,B, January 1992. Working paper, 66.
9. Proceedings of the Seminar on Experiences in the Implementation of Home Delivery of Injectables in Bangladesh. Pathfinder International, January 1994.
10. Experiences of NGOs in doorstep delivery of injectable services: Presentations from Asia Foundation, FPMD, FPAB and Pathfinder. *In: Workshop proceedings on Lessons Learned on Door-step Delivery of Injectable Contraceptives, September 28, 1994. Sasakawa International Training Centre Auditorium, ICDDR,B.*
11. Ahmed J, Mirza T. Introduction and background information on door-step injectable series. *In: Workshop proceedings on Lessons Learned on Door-step Delivery of Injectable Contraceptives. September 28, 1994. Sasakawa International Training Centre Auditorium, ICDDR,B.*
12. Mirza T, Barkat-e-Khuda, Ashraf A, Kabir H, Haque I, Alam S, et al. Door-step delivery of injectable contraceptives in eight thanas: key findings. *In: Workshop proceedings on Lessons Learned on Door-step Delivery of Injectable Contraceptives. September 28, 1994. Sasakawa International Training Centre Auditorium, ICDDR,B.*
13. A manual on infection control in health facilities. New Delhi: World Health Organization, Regional Office for South East-Asia, 1988 (SEARO regional health paper, 18).

14. Sterilization, disinfection, decontamination, and cleaning of FP/MCH clinic equipment, Appendix 13. *In: Guidelines for clinical procedures in family planning and sexually transmitted diseases. A reference manual for trainers. Program from intervention training in health (INTRAH). Chapel Hill, North Carolina: University of North Carolina at Chapel Hill, 208N, 1989.*
15. Working Paper on disposable syringes. MCH-FP Extension Project, ICDDR,B.
16. Tietjen L, Cronin W, McIntosh N. Infection prevention for family planning service programs: a problem-solving reference manual. Durant: Essential Medical Information System, Inc., March 1992.
17. Hubley J. The AIDS handbook: a guide to the understanding of AIDS and HIV. London: Macmillan Publishers, 1990.
18. Glimpse newsletter, ICDDR,B. vol. 15, no. 3, May-June, 1993.
19. Mustafa M, Islam MN, Rahman M, Sattar H. Prevalence of hepatitis B surface antigen (HBsAg) among prostitutes at Dhaka. *Bangladesh Med Res Counc Bull* 1980;15:67-72.
20. Mustafa M, Islam MN, Rahman M. *Surface antigen (HBsAg) among professional blood donors. Bangladesh Med J*, 1989;18.
21. Mustafa M, Islam MN, Rahman M, Salauddin ARM. Prevalence of hepatitis B surface antigen (HBsAg) among drug users at Dhaka. *Bangladesh Med Res Counc Bull* 1987;15:1-7.

Different Types of Incinerators at Thana Health Complex

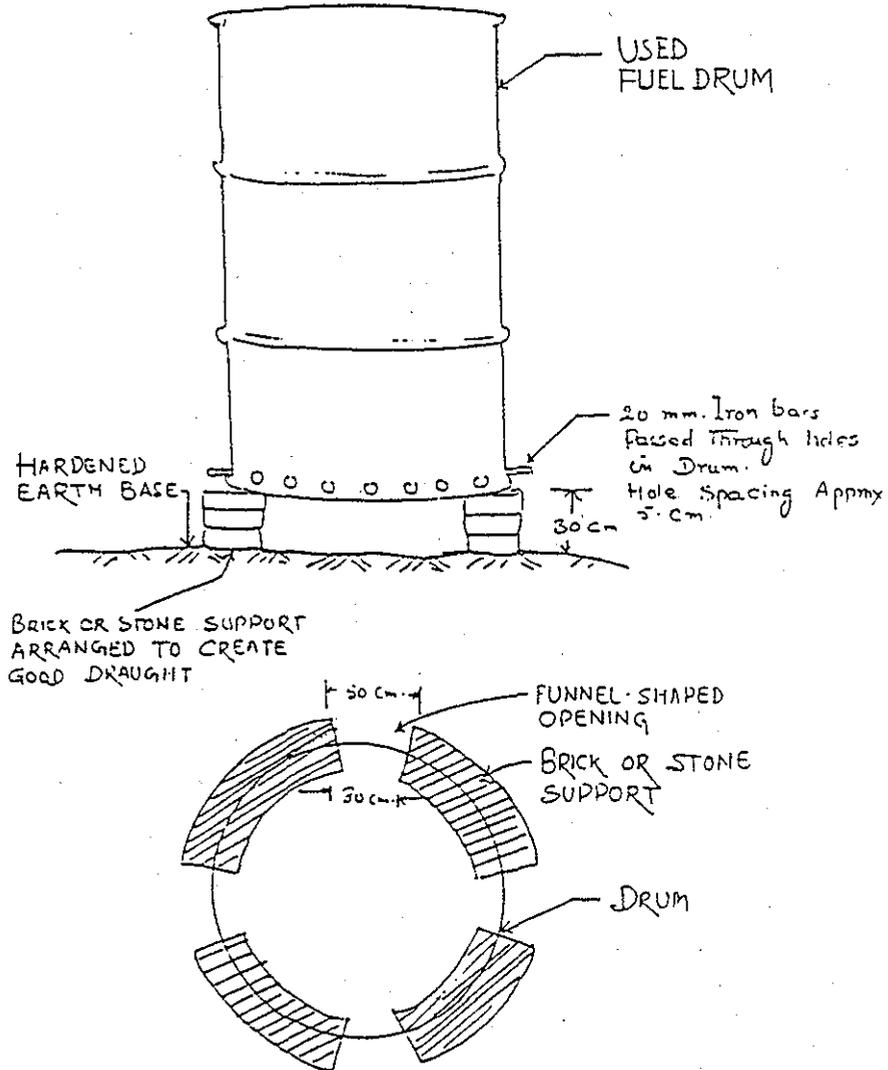
LARGE CAPACITY
INCINERATOR



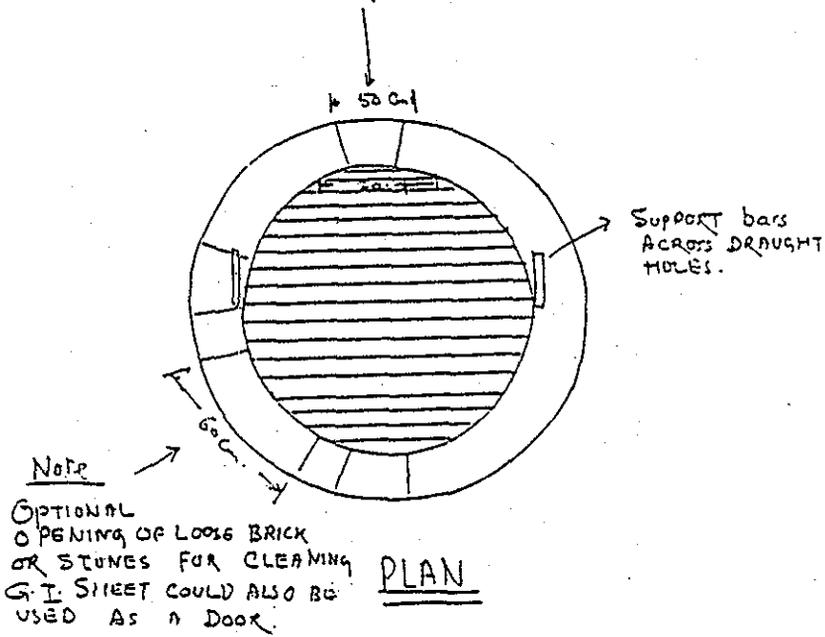
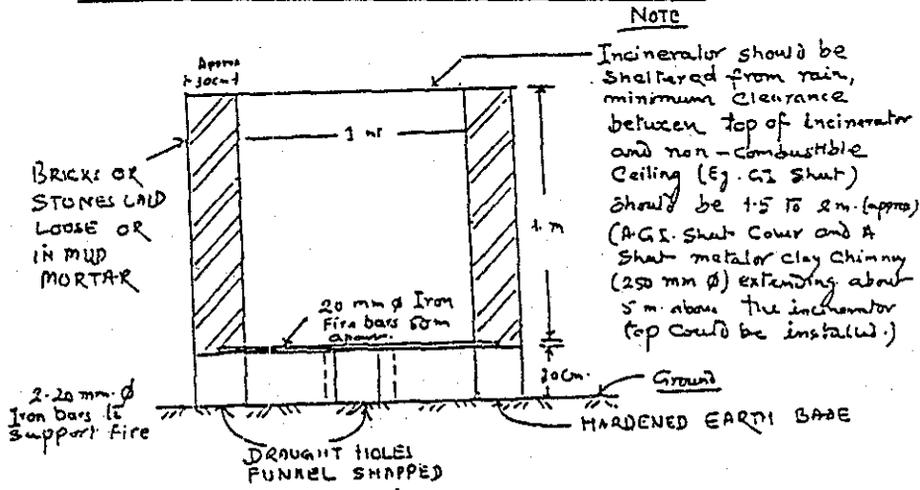
Annexure-2

Different Types of Incinerators at Family Welfare Centre

SIMPLE OIL DRUM INCINERATOR



SIMPLE STONE OR MUD INCINERATOR



A Brief History of ICDDR,B

1960	Cholera Research Laboratory established
1963	Matlab field station started First of a series of cholera vaccine trials launched
1966	Demographic Surveillance System established
1968	First successful clinical trials of Oral Rehydration Solution (ORS)
1969	Relationship between stopping breast-feeding and resumption of menstruation demonstrated
1971	Independence of Bangladesh
1973	Shift from Classical to El Tor cholera identified
1977	Maternal Child Health and Family Planning interventions began in Matlab
1978	Government of Bangladesh Ordinance establishing ICDDR,B signed
1981	New Dhaka hospital built Urban Volunteer Programme initiated
1982	Classical cholera returned Field testing of cereal Oral Rehydration Solution began Clinical sub-centres established in Matlab MCH-FP Extension Project began
1983	First issue of the Journal of Diarrhoeal Disease Research Epidemic Control Preparedness Programme initiated
1984	ICDDR,B received UNICEF's Maurice Pate award
1985	Full Expanded Programme of Immunization activities tested in Matlab WC/BS cholera vaccine trial launched
1987	ICDDR,B received USAID's "Science and Technology for Development" award
1988	Treatment of and research into Acute Respiratory Infection began
1989	The Matlab record keeping system, specially adapted for Government use, extended to the national family planning programme
1990	The new Matlab Health and Research Centre opened
1992	ICDDR,B-Bangladesh Rural Advancement Committee study commenced
1993	New laboratories built and equipped New <i>Vibrio cholerae</i> 0139 - Bengal identified and characterized, work on vaccine development began
1994	Twenty fifth anniversary of ORS celebrated ICDDR,B epidemic response team goes to Goma to assist cholera-stricken Rwandan refugees, identifies pathogens, and helps reduce mortality from as high as 48.7% to < 1%.
1995	Maternal immunization with pneumococcal polysaccharide vaccine shown to protect infants up to 22 weeks

MCH-FP Extension Work at the Centre

An important lesson learned from the Matlab MCH-FP project is that a high CPR is attainable in a poor socioeconomic setting. The MCH-FP Extension Project (Rural) began in 1982 in two rural areas with funding from USAID to examine how elements of the Matlab programme could be transferred to Bangladesh's national family planning programme. In its first years, the Extension Project set out to replicate workplans, record-keeping and supervision, within the resource constraints of the government programme.

During 1986-89, the Centre helped the national programme to plan and implement recruitment and training, and ensure the integrity of the hiring process for an effective expansion of the work force of governmental Family Welfare Assistants. Other successful programme strategies scaled up or in the process of being scaled up to the national programme include doorstep delivery of injectable contraceptives, management action to improve quality of care, a management information system, and developing strategies to deal with problems encountered in collaborative work with local area family planning officials. In 1994, this project started family planning initiatives in Chittagong, the lowest performing division in the country.

In 1994, the Centre began an Urban MCH-FP Extension Project in Dhaka (based on its decade long experience in urban health) to provide a coordinated, cost-effective and replicable system of delivering MCH-FP services for Dhaka urban population. This important event marked an expansion of the Centre's capacity to test interventions in both urban and rural settings. The urban and rural extension projects have both generated a wealth of research data and published papers.

The Centre and USAID, in consultation with the government through the project's National Steering Committees, concluded an agreement for new rural and urban Extension Projects for the period 1993-97. Salient features include:

- To improve management, quality of care and sustainability of the MCH-FP programmes
- Field sites to use as "policy laboratories"
- Close collaboration with central and field level government officers
- Intensive data collection and analysis to assess the impact
- Technical assistance to GoB and NGO partners in the application of research findings to strengthen MCH-FP services.

The Division

The reconstituted Health and Population Extension Division (HPED) has the primary mandate to conduct operations research to scale up the research findings, provide technical assistance to NGOs and GoB to strengthen the national health and family planning programme.

The Division has a long history of accomplishments in applied research which focuses on the application of simple, effective, appropriate and accessible health and family planning technologies to improve the health and well-being of the underserved and population-in-need. There are several projects in the Division which specialize in operations research in health, family planning, environmental health and epidemic control measures which cuts across several Divisions and disciplines in the Centre. The MCH-FP Extension Project (Rural), of course, is the Centre's established operations research project but the recent addition of its urban counterpart - MCH-FP Extension Project (Urban), as well as Environmental Health and Epidemic Control Programmes have enriched the Division with a strong group of diverse expertise and disciplines to enlarge and consolidate its operations research activities. There are several distinctive characteristics of these endeavors in relation to health services and policy research. First, the public health research activities of these Projects focus on improving programme performances which has policy implications at the national level and lessons for international audience. Secondly, these Projects incorporate the full cycle of conducting applied programmatic and policy relevant research in actual GoB and NGO service delivery infrastructures; dissemination of research findings to the highest levels of policy makers as well as recipients of the services at the community level; application of research findings to improve programme performance through systematic provision of technical assistance; and scaling-up of applicable findings from pilot phase to the national programme at Thana, Ward, District and Zonal levels both in the urban and rural settings.



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