

## **CHAPTER III**

### **PROPOSAL**

#### **Introducing Standard Treatment Schedule through face-to-face Education: A way to improve rational prescribing at BRAC Health Centers**

##### **3.1 Introduction**

###### **3.1.1 Background**

Bangladesh Rural Advancement Committee, nowadays is well known by its acronym 'BRAC' - a non-government developmental organization established in 1972, following Bangladesh's War of Independence, worked on the resettlement of refugees in a village of Sylhet district in the northeastern part of the country. Looking back on the past 26 years of BRAC's activities in the developmental field, what becomes most visible is the amazing growth of the organization - both in terms of program content and coverage. What made BRAC set out on its remarkable journey was the realization that relief-oriented activities could only serve as a stopgap measure. From then on the new pledge was to provide sustainable measures to improve the condition of the rural poor.

The concept of BRAC Health Center (BHC) is a new approach of service delivery to BRAC. BRAC is now strengthened with well trained and experienced health professionals, managers and workers to provide quality services both through the community based approaches and formalized static health facilities.

BRAC Health Center (BHC) is a static health facility in the rural area to offer a package of comprehensive health and family planning services especially focused on the reproductive health including other elements of essential services (Annex-II). It is not a traditional clinic or hospital but has emerged from the needs of the community. BHC was established in an effort to ensure health services to the rural people, ensuring the availability of and accessibility to quality services.

Although there is a belief that BHCs have been providing quality health services to the rural people, it may not be true in case of rational use of drugs. As BHC is a new initiative operating since 1995, no study has been carried out so far involving BHC to measure the extent of rational use of drugs. There were three studies carried out in 1997 involving BHC on different aspect. One of the studies done by Afsana and her team involved the quality aspect of BHCs. In that study she mentioned that management guideline was not properly followed by the personnel of BHCs that includes a list of drugs and a drug formulary. She also recommended that emphasis should be placed on rational use of drugs to minimize irrational or inappropriate use of drugs.

### 3.1.2 Problem statement

There is irrational or inappropriate prescribing in the treatment of acute watery diarrhea in children under - 5 years of age by the prescribers of BRAC Health Center. Diarrhea is one of the leading causes of morbidity and mortality in children under 5 years. It kills around 110 million children in Bangladesh (UNICEF, 1196) even though it can be prevented by a cheap, simple treatment - oral rehydration solution. But as reported by Cash the most common error in the treatment of diarrhea in Bangladesh is the use of multiple and inappropriate antibiotics and failure to recommend the use of ORS (Cash, 1996). Laing also mentioned one study done by Chowdhury in 1990 which illustrated that there is also a significant increase in prescribing of Metronidazole after antidiarrheal agents were banned in Bangladesh.

The causes of this irrational prescribing may be due to inadequate knowledge on the standard treatment schedule. The knowledge comes from the informational sources, internally from the organization in the shape of clinical guidelines, list of drugs or drug formulary that would be used by the health center. The consequences of such inappropriate or irrational prescribing are enormous in respect to patient concern as well as provider side. If treated inappropriately there is decrease in quality of drug therapy resulting in prolongation of the disease and suffering, spreading, chance of developing resistance and adverse reaction, increasing in cost of treatment and patient psychologically comes to believe that there is "a pill for every ill". It might cause an apparent increase demands for drugs.

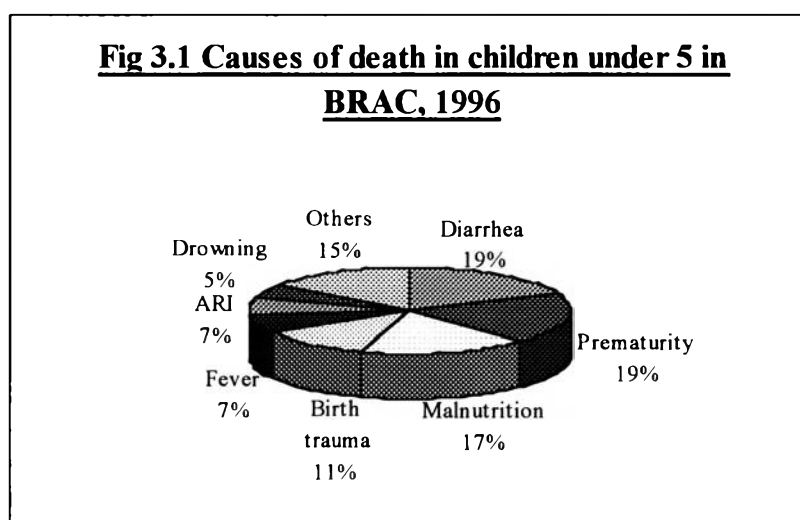
## **3.2 Rationale**

### **3.2.1 About prescribing**

The problem with the treatment of acute watery diarrhea is common worldwide especially in the South - East Asian region including Bangladesh. Many studies found irrational prescribing behavior on the treatment of diarrheal diseases among the prescribers especially in the private practice practitioners (Chowdhury et al. 1995; Ronsman et al., 1996; Baqui et al., 1996). Although there was door to door campaign carried out by BRAC through 1980 to 1990 which covered 13 million households in Bangladesh to educate mothers about ORT (oral rehydration therapy) in the treatment of diarrhea (BRAC, 1994); the ORT use rate still lies below 50% (BBS & UNICEF, 1997). The mentioned ORT campaign was done by a set of staffs other than BHCs. National goal for the ORT use rate is 80% by the year 2000, which is very unrealistic at this stage. So, this study will intensify the previous activities and try to improve the use of oral rehydration therapy by some means by the personnel of BHCs. Roy Chowdhury found several studies, which confirms irrational or inappropriate prescribing in Bangladesh. One of those covering 80 facilities throughout the whole country done in 1992 illustrated that 25% of the patients were prescribed antibiotics related for six common diseases (watery diarrhea, dysentery with blood, helminthiasis, pneumonia, acute respiratory tract infection and scabies). The study also found a high rate of use (17%) of Metronidazole, particularly when it was not recommended for any of the conditions mentioned above (UNICEF, 1993). Roy Chowdhury also stated another study of public health facilities in Bangladesh done in 1990 where antibiotics were prescribed unnecessarily in 23% of watery

diarrhea cases. That study also found that 78% of the rural practitioner said that they used antibiotics in all cases of diarrhea (UNICEF, 1992). There is a little doubt that there is considerable inappropriate: wrong type, too many, too much use of antibiotics, and other drugs in Bangladesh. At the same time there is under use of ORS and other antibiotics also. Perhaps every health worker or researcher in the health field is able to cite incidents where there is irrational use of drugs concerning of prescribing, dispensing, purchasing or use by the patient. Studies mentioned above confirmed the under use of oral rehydration therapy, and use of non-rehydration drugs which is irrational or inappropriate in the treatment of acute watery diarrhea in children.

### 3.2.2 About diarrhea



*Source: RHDC Annual report, 1996*

Diarrhea causes dehydration, which kills approximately 3 million children each year worldwide. Diarrhea is also the leading cause of mortality in under - 5 children in Bangladesh as well as BRAC catchment area. In Bangladesh, 110,000 children under - 5 years died due to diarrheal diseases in 1996.

Figure 3.1 shows that 19% of under - 5 children died in 1996 from diarrheal diseases in BRAC working area (Annual report, 1996). The children under - 5 years attended at BHCs in 1997 from which 20.51% were suffering from diarrheal diseases (Annual report, 1997). Majority of them were male (11.5%). Table 3.1 shows the national prevalence of diarrhea within last 15 days of the survey conducted is similar to the disease profile of diarrhea at BHCs. In the survey, prevalence last 15 days means the percentage of children under 5 age group who had 3 or more instances of loose or watery stools per day in the last 15 days from the date of interview (Progotir Pathy, 1997). Disease profile at BHCs refers to the percentage of children under 5 age group attended at the centers due to diarrhea in 1997.

**Table 3.1 Morbidity related data of Diarrhea in children under 5 years**

Gender	Prevalence last 15 days		Disease Profile of BHCs
	Rural	National	
Male	18.9	18.3	11.5
Female	16.8	16.6	9

*Source: Adapted from BBS/UNICEF, 1997 & RHDC Annual report, 1997*

### 3.2.3 About Standard Treatment Schedule

Standard treatment schedule on Tuberculosis (TB) and Acute Respiratory Infection (ARI) developed by WHO and adapted by the national programs already exists in BRAC setting. The personnel have already been trained on standard schedules, and the result of those programs is very much satisfactory. Both the

programs achieved the national target to control TB & ARI in the BRAC catchment area, which are the facilitation program to the government TB & ARI control activities (RHDC Annual report, 1996, 1997). Standard treatments are now currently used all over the world in the U.S., Europe, Latin America, Asia, Africa, and the Western Pacific. There were specific examples that standard treatment schedule improve rational prescribing when introduced properly (Ross-Degnan, Laing, Santoso, Ofori-Adjei, Diwan & Lamoureux, 1997).

### **3.3 Objectives**

#### **3.3.1 Overall Objective**

To assess the impacts of face-to-face education on standard treatment schedule and to improve the prescribing pattern by the BHC prescribers in the treatment of acute watery diarrhea in children under 5 years.

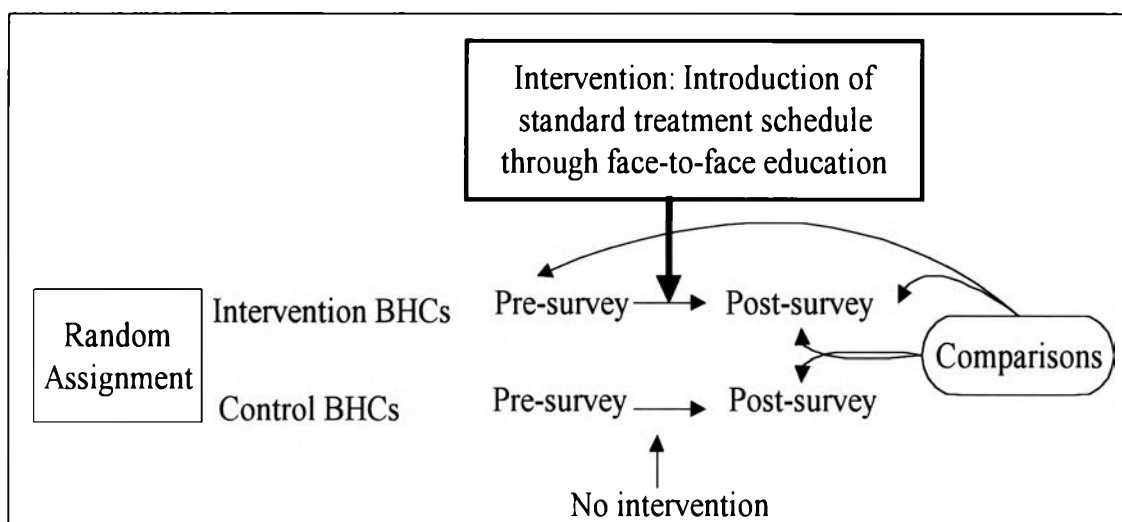
#### **3.3.2 Specific Objective**

1. To increase the knowledge and awareness of the prescribers of BHCs in the treatment of diarrhea in children under - 5 years.
2. To increase the use of ORS in the treatment of acute watery diarrhea in children under 5 years.
3. To reduce the use of antibiotic and/or anti-amoebic agents in the treatment of acute watery diarrhea in children under 5 years.

### 3.4 Study design

This is an experimental study, comprising pretest and posttest design. Total target population i.e. all 33 BHCs is randomly assigned into intervention and control group. The standard treatment guideline will be introduced to the intervention group prescribers through face-to-face education. The control group prescribers do not get anything. BHC has to be treated as study unit for random assignment. All the prescribers of one BHC are to be assigned as unit either in the intervention group or in the control group.

**Fig 3.2 Experimental pretest posttest design**



The main advantage of this study design is that it will be able to describe the impact of experimental variable i.e. introduction of standard treatment schedule through face-to-face education over time. From the comparisons, we should expect two findings. For the experimental group, the extent of prescribing practices in the treatment of childhood diarrhea measured in their post-survey should be higher than



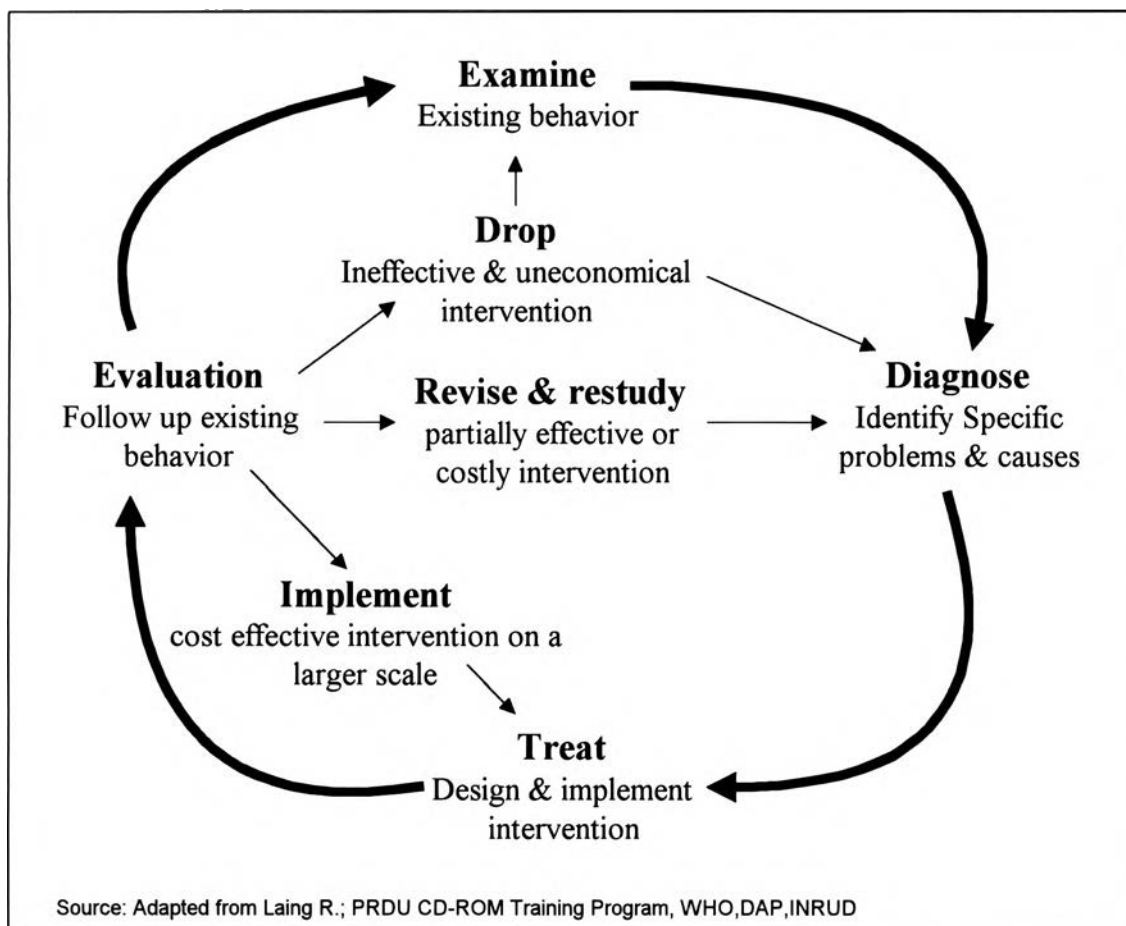
that found in their pre-survey. In addition, when the two post-survey are compared, the extent of prescribing practices should be more in the experimental group than that in the control group. The prescribers of the experimental BHCs may have certain characteristics at the commencement of the experiment, but following the administration of standard treatment schedule through face-to-face education, they will be found to have a different characteristic. As the prescribers have experienced no other stimuli, it may be concluded that the changes of prescribing is credited to the 'introduction of standard treatment schedule through face-to-face education'. As the results of this study will be based on several observations, rather than just one, the validity of the results increases. The study may establish 'cause and effect' relationship.

The other advantage of this design with random assignment is that it guards all threats of validity, although external validity can not be ensured by this design. So, the study may be generalizable at the BRAC setting only; can not be generalizable in the public sector due to, perhaps, for some variables related to the personal aspect, such as, anxiety level can have an effect on the prescribing performances.

### **3.4.1 Approach:**

Like diagnosis of a disease or clinical illness, changing the drug use problems follow the same process of identification (examination), understanding (diagnosis) and take action (treatment) accordingly. The framework adopted from PRDU CD-ROM Training Program (INRUD) comprises two broad portions. A diagrammatic representation of the framework has shown below -

**Fig 3.3 Steps of finding existing practices and their causes and approach to solve**



The first portion of the above mentioned model states that we can identify a problem that exist in that setting (examine), diagnose of its motivating factors and underlying causes and choosing an intervention or interventions to treat the problem and finally evaluate of the outcomes of an intervention(s). It is a cyclical medical model through which by taking repeated measures of identifying existing behavior and specific problem we can improve and maintain rational prescribing hence to promote rational use of drugs.

The second portion states that after evaluation of an intervention, we can consider three of the following steps. If the intervention is successful i.e. cost effective and improves the problems with drug use patterns we can implement the intervention on a larger scale in all BHCs. If the intervention is partially effective or effective but very costly, we can revise the part of the cycle and restudy it. If the intervention were ineffective or uneconomical we would drop the study and consider the cycle again partly or the whole. However for the purpose of quality of care we can use this cycle again and again to figure out problem and solve it by means of implementing intervention(s) to maintain and improve the rational use of drugs.

#### **3.4.1.1 Examination of the existing behavior**

This step will identify the problems with drug use patterns. All prescription pads will be collected from June to September 1998 (4 months) from all 33 BHCs. Prescriptions diagnosed as diarrhea would be separated. The objective of this retrospective quantitative technique is to explore the practices on the treatment of acute watery diarrhea in children under 5 years and to explore the area of improvement by intervention.

Quantitative data are very useful for finding out what behaviors are happening by the prescribers of BHCs and how often they are happening. This is baseline data that helps to identify problems with drug use patterns and can also measure the success of intervention(s) during the evaluation process by comparing with the data collected after intervention. All the BHCs retain a duplicate copy of the prescription

which is the most important source for measuring existing prescribing behavior in the treatment of acute watery diarrhea in children under 5 years of age.

A retrospective collection of prescriptions per month per BHCs on diarrheal treatment is easier and less costly than prospective collection. All the prescription pads are preserved at respective BHC by month and by year. So, finding out the prescription pads is not complex but rather an easy task. The strengths of this information are that the data obtained from the prescription pad can be matched with the records of patient register. A copy of prescription pad and format of patient register has shown in the appendices.

The following indicators that would be looked for in the prescription pads for measuring behavior are -

- % of encounters prescribed with ORS
- % of encounters prescribed with an antibiotic
- % of encounters prescribed with an anti-amoebic agent

All these information can be obtained from the prescriptions that are prescribed by the prescribers at BHCs.

#### **3.4.1.2. Diagnosis the motivating factors and/or underlying causes**

This step will identify the motivating factors for a specific problem and their causes. The motivating factors or underlying causes would be informational,

economical, social/cultural and/or supply system (logistic/drug). An in-depth interview would be carried out with prescribers of intervention group BHCs. Ten prescribers will be randomly selected from the intervention group prescribers. This qualitative technique is better to examine underlying beliefs, feelings, attitude and motivations. This technique will provide a broad insight of the problem and also will help to find out the possible mechanisms for improvement. A guideline format of the in-depth interview is attached in the appendices.

#### **3.4.1.3. Treatment: Design and implement intervention**

The intervention of this study has two phases. The first is face-to-face education to introduce standard treatment schedule developed by WHO and adapted by the National CDD program in the treatment of acute watery diarrhea in children under 5 years of age to the prescribers of intervention BHC. The secondly is to establish biannual auditing of drug treatment within the existing monitoring system using same indicators mentioned earlier and discuss the findings of the auditing report with the prescribers during supervisory visit. This auditing of drug treatment is not the part of this study, rather part of the management system. So, it is not elaborated in this proposal.

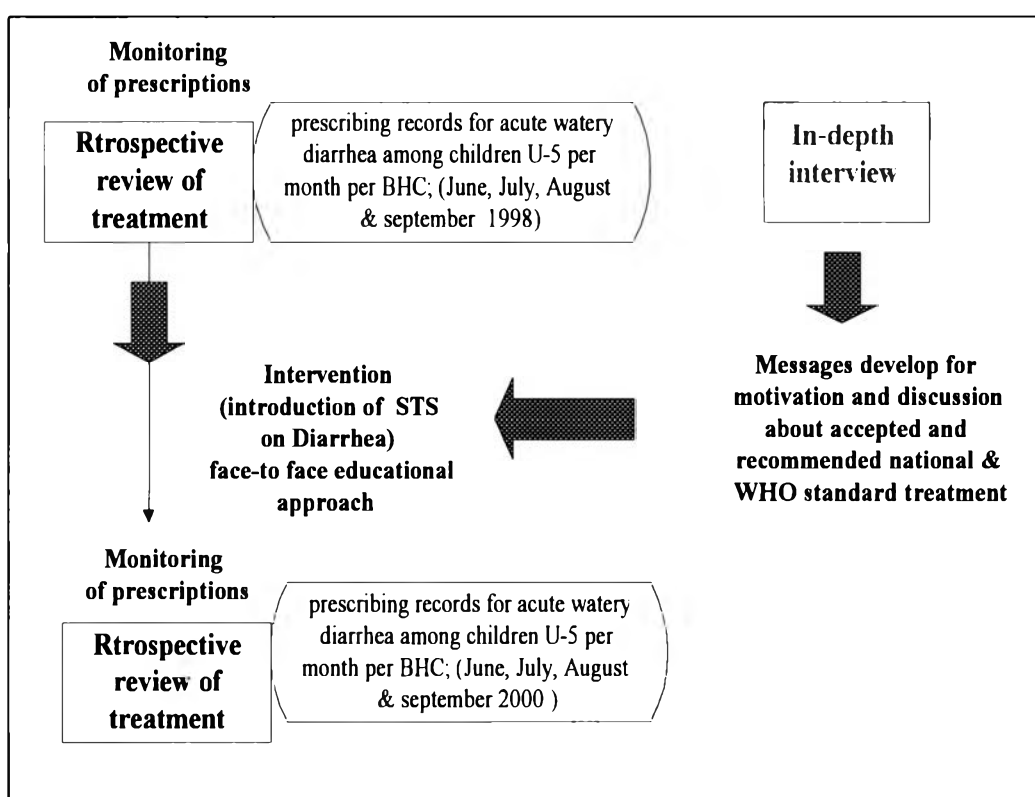
#### **3.4.1.4 Evaluation of the project**

At present we do not have "gold standard" of performance for the drug use indicators to compare the results of this study, although one study has been done to develop a standard values for WHO drug use prescribing indicators (Isah et al., 1997).

This program will be evaluated by comparing the base line data of the indicators with the data collected after the intervention fixing the same indicators for both the control and interventions BHCs. How to compare data is clearly mentioned in the figure 3.2 (diagram of experimental pretest posttest design).

### 3.4.2 Process

**Fig 3.4 Flow chart of the study process**



#### 3.4.2.1 Monitoring of the prescriptions

Base line information is collected from all BHCs on the variables that are going to be measured before and after the intervention. The flow chart (Fig 3.3) illustrated details about the total process.

### **3.4.2.2 Type of facility**

BHC is situated in the rural area covering comprehensive health and family planning services. It has general outpatient facilities including in-patient services for pregnancy-related care and other emergency cases. A medical officer leads BHC with the other staffs, being two paramedics, one laboratory technician, one program assistant and a TBA. BHC has a close collaboration and linkage with the other health related field activities. {Please see appendix-XIII for staffing pattern and administrative structures}. Paramedics and the Medical officer are the responsible persons for writing prescription to the patient. Paramedics give a prescription only when medical officer is not available at the health center. These facilities are similar in all categories such as staffing structure, services provided by BHC and follow a management guideline that includes all management aspects.

### **3.4.3 Type of prescribing encounters**

From general outpatient prescribing encounters only cases diagnosed as diarrheal diseases particularly in children are selected for the study. All prescribing encounters on diarrhea from each BHC per month are collected and analyzed. In 1997, 3,216 children under the age of 5 years were treated at BHCs (Annual report, 1997). According to data, approximately 10 to 11 children under 5 years of age having diarrhea coming to each BHCs for taking care in each month.

### **3.4.4 Type of data**

Prescribing encounters will be collected retrospectively from medical records. One carbon copy of the prescription is kept at each health center for every patient in a preformed proforma (Appendix-IV). It is easier to collect retrospective data than prospective one, and suffer fewer potential biases. The data would be similar in all BHCs as a structured prescription pad is provided to every BHCs. The only weakness the study may face is when the data is incomplete or missing.

### **3.5 Sample size**

#### **3.5.1 Principles for sample size**

The main principles that have been used for obtaining sample size are listed below (WHO, 1993) -

- The objectives of this study are to estimate percentage indicators that summarize values for the sample as a whole with a 95% confidence interval.
- Within facilities, the medical officer & paramedics are ignored in both sampling and data analysis, as supervision of individual prescriber is not my objective.
- The study is planned in such a way that data collection in two facilities can be completed in a day by a team of two data collectors.



### **3.5.2 Sampling procedure**

To assess the impact of an intervention at least 10 facilities would be required in each group to provide reasonable accuracy for drawing conclusion. More than 10 facilities in each group will provide more reliable comparisons. For describing the current/ existing prescribing behavior at least 600 encounters should be observed (WHO 1993). In this study, all 33 BHCs would be randomly assigned in each group for more reliable comparisons

### **3.5.3 Data collection**

The data is collected from both the intervention and control group BHCs prior to intervention. Retrospective data of consecutive 4 months (June, July, August & September) is collected at the same time from both the groups. It can guard from the possible chances of biases that can reflect on the results of the intervention or from the knowledge that their practices were being observed.

All prescribing encounters diagnosed as diarrhea under the age of 5 years will be selected from each BHCs per month. As per calculation mentioned above approximately a total of 640 prescribing encounters will be used for each group.

### **3.6 Activity plan with timetable**

#### **3.6.1 Study Period**

The activities that research team and I myself would carry out during the study will be 6 month, starting from July 1999 to Dec 2000. First 1 month is the preparatory work, such as consultation with Program Director and taking the approval for the study. Next month is needed for the 2 steps of the framework (examination & diagnosis). Retrospective monitoring of the prescription pad for 4 months (June, July, August & September) will be collected. In-depth interview will be done with 10 prescribers at the same time during the collection of baseline data. These 10 prescribers are randomly selected from the intervention group prescribers. From the in-depth interview necessary messages are developed for motivation and in the development of consensus about the National standard treatment schedule (adapted and developed from WHO) of acute watery diarrhea. For face-to-face education, an expert from ICDDR'B (International Center for Diarrheal Diseases & Research' Bangladesh) will be hired for conducting sessions. The results of this study will be disseminated by using a review meeting, a routine meeting with staffs on a quarterly basis discussing about programs strategy and so on. A result sheet will be distributed to all BRAC Health Centers.

### 3.6.2 Activity Plan, July 1999 - December 2000

Table3.2 Activity Plan	Period					
	1999			2000		
	July	August	September	October	November	December
1. Discussion with Director, HPD	■					
2. Approval for the study and funds	■					
3. Forming a research team	■					
4. Collection of Data	■			■		
5. Data entry in computer		■		■	■	
6. Conduct in-depth interview		■				
7. Develop motivating references		■				
8. Collection & copy of national Guideline & WHO guideline		■				
9. Conduct face-to-face education			■			
10. Data analysis and report writing				■	■	■
11. Dissemination						■

### 3.7 Budget and manpower

Necessary budget and manpower for conducting the study are given in the table below. This budget preparation for the proposal is adapted from Dr. Jonathan Quick who developed this outline at INRUD Meeting, Lagos, 1992. These are tentative figures and prepared based on the BRAC payment system

**Table 3.3 Budget sheet**

Project	Introduction of standard treatment schedule of diarrhea through face-to-face education		
Date	July 1999 to December 2000	47.50	Taka (Tk) = US \$ 1.00
<b>Budget Category</b>	<b>Unit cost Tk</b>	<b>Multiplying Factor</b>	<b>Total Cost Tk      US \$</b>
1. Personnel			
Researcher	300 /day	180 days	54,000
Educator	400 /day	12 days	4,800
Statistician	200 /day	60 days	12,000
Co-researcher	150 /day	180 days	27,000
			97,800 <b>2,058.95</b>
2. Transport			
Vehicle	10 /km	2000 km	20,000
Fuel	3 /km	670 litre	2,000
Bus	200 /trip	20 r/trip	4,000
			26,000 <b>547.37</b>
3. Field Allowance			
Researcher	200 /day	30 days	6,000
Co-researcher	100 /day	60 days	6,000
			12,000 <b>252.63</b>
4. Other direct cost			
Stationary supplies			
Paper	200 /ream	1 ream	200
Pen	4 /pen	24 pen	96
Communication			
Telephone	1000 /month	6 months	6,000
Fax	200 /month	6 months	1,200
Intervention materials			
Photocopy of WHO manual	100 /copy	25 copy	2,500
Photocopy of scientific literature	25 /literature	70 copy	1,750
Dissemination of reports			
Transparency		approx.	200
Meeting to disseminate results	35 /person	50 participan	1,750
Printing	100 /copy	50	5,000
			18696 <b>393.60</b>
<b>Grand Total Tk. 154,506</b>			<b>US \$3,252.76</b>

Many of the items are excluded from the total requirements of the study, such as, computer, printer diskette etc., because the whole budget would be drained from the organization itself. So, line item flexibility is more than 50%.

The educator will be needed only for two weeks, one week for discussion about the baseline data and for developing motivating factors and second week will require for 16 or 17 sessions of face-to-face education. Prescribers of one health center would be considered as small group participants.

Travel will be by bus for the purpose of data collection or field visit. Approximately, Taka 200 per trip will be needed and it may be more or less depending on the location.

Field allowances for the researcher and co-researcher only covers per diem; fooding and lodging is provided by the office, as every health center has a dinning and guest room facility.

As there is high percentage of line item flexibility, we can reorganize or shift budget from one item to another.

### **3.8 Sustainability of the project**

It is always desirable to see the long-term sustainability of the impact of this project. Changes in prescribing practices observed immediately after an intervention often returns to their baseline levels after a longer period of time. Experiences shows

that changes in prescribing usually return to pre-intervention level after six months unless there is continuation of the intervention messages (Qiuck et al. 1997). Key factors for sustainability of the project are motivated and capable staff and effective monitoring/supervision system of the organization. As mentioned earlier in the study design that the 2<sup>nd</sup> phase of this project is to continue auditing drug treatment in terms of monitoring of the prescriptions on the indicators biannually and provide feedback to the prescribers; the program might sustain. Practically, a small amount of money will be needed to carry out drug treatment auditing. Monitoring/supervision is a part of the organizational system, and organization will provide that small amount to carry out quality health services.

### **3.8.1 Drug treatment auditing - a means of sustainability of this project**

Literary, audit means inspection or examination or corrective control. Richards defines two categories of auditing. One is contractual audit, it is part of management task with prime purpose to control; the other one is, medical audit, and it is professional task with prime purpose to educate prescribers.

### **3.8.2 Who will do auditing and why?**

This auditing of drug treatment would be carried out within the existing monitoring system of the organization. There is a Quality Control Team comprising of several staffs based at head office as well as in the field to monitor activities and performances. The team will collect prescriptions biannually from each BHCs and assess the treatment prescribed in the prescription pad on the variables studied in this

project. The purpose of this auditing drug treatment will be to increase adherence prescribers with the standard treatment schedule, thus it will improve rational prescribing, hence sustainability of this project.

### **3.9 Ethical issues**

During the study the researcher will take in-depth interviews with 10 randomly selected prescribers of BHCs. Before starting the interview, prescriber will be informed in an advance about the purpose of the study. They will not be forced to answer any questions. The prescribers will be assured that any information provided by them will not be disclosed to others or mis-used. The research team will not comment or react on any information or idea provided by the prescriber. They will have the right not to participate in the discussion, if they feel any thing unethical during interview.

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