DESIGN OF A MOBILE ISOLATION, DIAGNOSIS AND TREATMENT UNIT FOR USE IN CHOLERA EPIDEMICS

Type of disease: “CHOLEREA”, potentially a public health concern in Bangladesh

Cholera is an acute diarrhoeal infection caused by ingestion of contaminated food or water and affects children and adults. It can kill in a matter of hours due to rapid dehydration.

Cholera remains a major public health problem in many low income countries with poor access to safe water and proper sanitation, including Bangladesh. Especially during monsoon season flood causes acute scarcity of pure drinking water in the affected areas. People drink contaminated water and falls victim to cholera almost every year.

A number of studies have shown that epidemic outbreaks in Bangladesh usually occur twice during a year with the largest number of cases occurring during the last two months of the monsoon. A somewhat smaller peak of cholera cases is also observed in the spring between March and May.

Problems faced by cholera affected people

- There is scarcity of pure drinking water as deep tube wells go under contaminated water.
- People are forced to drink contaminated water and fall victim to cholera and diarhoea that spreads as epidemic.
- Patients can’t reach hospital as roads and streets go under water.

Type of vehicle: Boat

- Boat will work best for the mobile unit in the flood affected areas.
- Bangladesh is a Maritime country with vast network of inland waterways.
- Being a country with many rivers, Inland Water Transport (IWT), is a major mode for the transport of goods and people.

Concept

- Relieving people from Cholera.
- Supply pure drinking water during cholera epidemic.
- Our health facility will provide a solution to those suffering from cholera epidemic and are destituted in the flood affected area.

Because it is in these times when our people are most vulnerable and unable to get any health service.
Program analysis

1. Waiting Screening and registration: 13 sq.m. (140 sq.ft)
2. Observation (Out patient): 48 sq.m. (515 sq.ft)
3. Dispensary: 3.9 sq.m. (42 sq.ft)
4. Stool test: 2.9 sq.m. (31 sq.ft)
5. In-patient area: 36.04 sq.m. (388 sq.ft)
6. Staff area/Neutral area (kitchen, laundry, supplies, store): 9 sq.m. (97 sq.ft)
7. Waste disposal: 1.35 sq.m. (14 sq.ft)
8. Sterilization or Disinfection area: 1.6 sq.m. (17 sq.ft)
9. Water treatment plant and supply area: 3.06 sq.m. (33 sq.ft)

Total: 81.75 sq.m. (878 sq.ft)

Zoning scale: 1:100

LEGEND
- public
- private
- service

In-patient Area
Observation (Out patient)
Waiting, Screening and Admission
Staff area/Neutral area
Stool test
Dispensary
Water treatment plant
Supply area
Modular covering:
The boat is provided with a modular covering and setup which can be
can be mobilized anywhere by any means.
It can also be used as tent for a cholera camp.

Section AA'
scale : 1:100

Secondary septic tank
Primary septic tank
collection line

Emergency Wastewater Treatment
In a Cholera Treatment Unit

- Add lime - neutralizer
- Coagulation/precipitation with aluminium sulphate
- Put supernatant through sedimentation/tanks
- Sludge

Waste Management & Treatment
Medical Waste Incineration

Medical wastes include both infectious medical wastes as well as non-infectious, general housekeeping wastes.

Add bleaching and deodorants
Use for 50hrs with 100-degree
Add lime - neutralizer
Concentration/precipitate with aluminium sulphate
Put supernatant through sedimentation/tanks
Sludge