

## Successful Response to Cholera Outbreak in Nutrition and Pediatrics Ward, Blue Nile State, 2019: Case Report

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### ABSTRACT

**Background:** Notably, most healthcare-associated infections (HAIs) are transmitted through the hands of healthcare workers through direct contact or environmental contamination. Therefore, hand washing remains the single most important preventive strategy.

**Objectives:** This case report aimed to evaluate the intervention of WASH regarding cholera outbreak in Damazin hospital.

**Materials and methods:** Pre and post Wash intervention was applied in Damazin hospital during cholera outbreak.

**Results:** WASH Integrated Interventions applied in the Pediatric ward during 17 Sept - 30 Nov 2019 was resulting in zero case of cholera.

**Conclusion:** WASH intervention was unique in elimination of cholera outbreak in Damazin hospital.

**Keywords:** *Damazin hospital, Blue Nile state, Sudan.*

### Introduction:

In many underdeveloped and low-income countries, cholera an ancient disease continues to be a global health challenge (1). Cholera infections affect both children and adults who consumed water and food contaminated with the bacterium *Vibrio cholerae* (2). Annually, over 2.8 million

people are affected by cholera, resulting in more than 94,000 deaths globally (3). With the outbreak of the COVID-19 (Corona virus) pandemic, more harm and threats are posed to the global economy and healthcare system, resulting in an increase in emerging and re-emerging diseases. Cholera is a disease that reflects social protection levels, availability of clean water, sanitation, and hygiene, as well as population density (1, 2). Of the 6.5 million Syrians who are internally displaced, roughly 500,000 civilians mostly women and children are compelled to live in filthy, overcrowded settlements and communal shelters, where they stand at risk of contracting diseases like cholera and others that are spread by polluted water (2). The current report aimed to evaluate the intervention of WASH regarding cholera outbreak.

### **Material and methods:**

#### **Study setting:**

Nutrition and Pediatrics Ward, Damazin hospital, Blue Nile State, 2019.

**Design:** Pre and post WASH intervention.

#### **Data collection:**

WASH assessment tools.

#### **The event:**

In 27 Sept 2019 Nutrition and Pediatrics Ward reported 3 cholera cases this continued in 17 Oct. 2019 and it was 19 cholera cases by 20 Oct. 2019 with 2 deaths. WHO sub office called for meeting for rapid response ; a joint team included Environmental Health dept, Hygiene Promotion, EHA, and WHO led by BNS SMOH had had quick field visit to the site for evaluation met with the Medical Director of Damazin hospital include the sections of the hospital; Nutrition , and Child Wards Friend Initiative. The team toured around the hospital and come up with main observations, and some interventions to contain Cholera spreading within the hospital among specially the admitted children.

#### **Team tour observations (Pre-intervention):**

- Open defecation (near the fences and in the yards), flooded latrines; broken inspection- wholes; poor, dirty environment (grass, stagnant water, bad smells, broken floors of latrine , scattered garbage, no excising system for waste collection and transportation.
- Medical wastes (no excising system for waste collection and transportation).
- Waste water of laundries.
- Co-patients used to cook the food in the yards.
- No safe drinking water,
- No hand-washing facility

- Two places of food preparation were visited (one inside the hospital) and the other one outside; it was observed that the both places are very poor in terms of hygiene, number of 8 (100%) labors don't have medical examination, some canned food near expiry dates, and hygiene measures are not followed.

**Interventions proposed and determination of responsibilities:**

- A. To generate plan of action
- B. To identify focal person to be in charge
- C. Rapid and immediate interventions included:
  - Latrines Sludge to be evacuated every 2 weeks from identified latrines; **costs 2,000 SDG**
  - D. Open defecation stopped and removed out nominated (2 persons);
- Maintenance of all man holes, inspection rooms maintained with covers, and make them higher leveling from earth; **cost calculation (Hospital).**
- Cleaning up of the grass all over the hospital around Nutrition and Pediatrics, the space ground to be covered with interlock; general cost: **(Hospital).**
- Flies knock down through spray and disinfection by state ministry of health-**work started immediately**
- Number of (2) Disinfectant labors started cleaning the floor, with 0.2ml/l concentrated chlorine solution, one person as an environmental Health (monitor)- **SMoH**
- Maintenance of the (6) latrines floors, and connect them separately to siphon's disposal (all latrines in Nutrition and Pediatrics)- **cost calculation**
- Water supply two Tiga tanks , include one motor , plus 2 barrels fitted with taps for chlorinated Drinking water -**cost calculation**
- Allocate number of (14) labors /works for morning shift- Schedule: **(Nutrition department).**
- Lights and establish fence (3 Lights x 4,200 SDG). fencing to separate Pediatrics from the hospital **(Child Ward Friend Initiative).**
- Provision of Diarrheal sachets, and buckets: **by (Child Ward Friend Initiative)**
- Shelter and waiting area (Nutrition)-UNICEF; Child Wards Friend Initiative **(Child Ward Friend Initiative).**
- Protective clothes for all labors as needed; in patients nutrition and on job training **(WHO) .**
- Distribution of ITNs for children, Nutrition follow up with -**EHA**
- Medical waste incineration for the hospital and build Laundry: cost calculation **(Hospital)**

**Results:**

**Summary of interventions and achievements:**

**Table 1** below explains the WASH Integrated Interventions report in the Pediatric ward 17 Sept - 30 Nov 2019. Number of (29) ward and rooms and 12 bath rooms were daily cleaned and disinfected including floors and surfaces using standard detergents and disinfectant. Moreover all persons coming in and out of pediatric ward were disinfected that include the patients, co patients and visitors.

Solid Waste was collected and transported to the traditional sanitary landfill in addition to the weeds; average of two tons are daily collected and removed from both the solid waste and weeds. For water and waste water; broken pipes were maintained, one main laundry for washing was constructed and suitable drainage system including man holes, inspection rooms, septic tank and other sewerage parts were maintained also that helped to remove the waste water. To insure safe water supply the ward was provided by water tanks to ensure sustainable water supply. Water in tanks and containers were chlorinated daily with daily check up for FRC readings.

The focal health officer had the role of coordinating with the locality to remove irregularities concerning food hygiene and safety as the restaurants around the pediatric ward daily have been inspected and also the kitchens inside the hospitals. Restaurants were found with no license neither the workers have not been medically checked for their fitness, corrections immediately took place. Number of (10) Educational Seminars, (280 ) Group Discussions and (4800) Individual interviews were carried out to enhance the situation and mobilize the targeted groups for better hygienic practices.

For Vectors control (IVM) a systemic weekly adult Spraying program was initiated to cover breeding places including (manholes - manholes - septic tanks) beside daily inspection activity for larvae. For OCV persons who are not vaccinated are covered in coordination with the locality this granted no body (patient or co patient) not to be vaccinated.

**Table 1. WASH Integrated Interventions report in the Pediatric ward  
 17 Sept - 30 Nov 2019**

Strategy	Activity	Target	Achievement	%
	Disinfection of floors and	Number of (29 ) ward & rooms (daily)	daily cleaning (since	<b>70 (98.6%)</b>

<b>Environmental Health</b>	surfaces Disinfection of patients and, co patients and visitors	All persons coming in and out of pediatric ward	17/9/2019) persons coming in and out of	<b>68 (95.8%)</b>
	Waste collection and transportation	71 tons	68 tons	<b>68 (95.8%)</b>
	Weeds removal	4 tons	3 tons	<b>3(75%)</b>
	Water drainage and cleaning of bathrooms	As necessary	As necessary	<b>%100</b>
	Plumbing for bathrooms and broken pipes	No of (12) bathrooms	No of (11) bathrooms	<b>11(91.0%)</b>
	Construction of laundries for washing	2laundries	1laundries	<b>1(50%)</b>
	<b>Safe Water Supply</b>	Water chlorination	Periodically chlorination of water	Daily
	Chlorine residue readings	142 reads	142 reads	
	Provide water tanks to ensure sustainable water supply	(4) water tanks	(twice daily) (3) water tanks	<b>3 (75%)</b>
<b>Food Hygiene</b>	Periodic health inspection of feeding kitchens	2 kitchen x 71 days	142 health inspection rounds	<b>142 (100%)</b>
	Inspect public restaurants around the pediatric ward	No of 284 round to 4 restaurant during 71days)	200 rounds	<b>200 (%70.4)</b>

	Coordinate with the local to control irregularities	As necessary	As necessary	<b>%100</b>
<b>Health promotion</b>	Educational seminars for patients inside the ward	10 Educational Seminar	8 Educational Seminar	<b>8 (80%)</b>
	Group Discussions on hygiene and prevention	280 Group Discussions	275 Group Discussions	<b>275 (98%)</b>
	Individual interviews with patients about personal hygiene	4800 Individual interviews	4800 Individual interviews	<b>4800 (100%)</b>
<b>Vectors control (IVM)</b>	Distribution of soap to patients	No of 4800 patient and co patient	4800	<b>4800(100%)</b>
	Spraying all breeding places including (manholes - manholes - septic tanks)	Once per week	10 round	<b>10 (100%)</b>
<b>Immunization against cholera</b>	Vaccination of persons who are not vaccinated in coordination with the locality	As necessary	As necessary	<b>%100</b>

**Post Intervention findings:**

As a result of the interventions and coordination in Nutrition and Pediatrics Ward cholera cases were stopped as Zero cases were reported from the ward since 24 Nov 2019. Work now is targeting to sustain the supportive environment.

**Discussion:**

The findings of the study showed that WASH intervention implemented was effected in dropped of cholera cases within limited period. This finding in line with the statements that WASH should be implemented to control and reduce the transmission of cholera (4). Awareness campaigns regarding the promotion of personal hygiene, the treatment and disinfection of household water, the chlorination of contaminated water, and the safe disposal of sewage should be conducted (5).

**Conclusions:**

WASH intervention was unique in elimination of cholera outbreak in Damazin hospital.

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