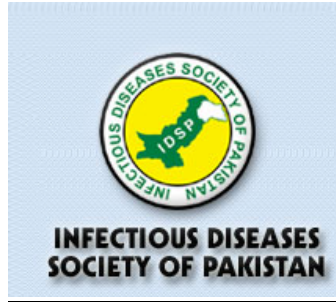


Guidelines for Management of Flood Related Infectious Diseases



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Introduction

The epic flood of 2010 has taken hundreds of lives and devastated tens of thousands of homes. Millions of people have been displaced and the landscape remains ravaged. An onslaught of infectious diseases is expected to further add to morbidity and mortality.

Massive displacement of a population may lead to an increase in disease transmission. Populations may move into areas where pathogens exist, to which the immigrants have no specific immunity. Evacuation to camps following mass migration or loss of housing is particularly dangerous from an infectious disease perspective. Refugee camps tend to combine high population density and poor sanitary conditions, a perfect prescription for fecal-oral, airborne droplet and skin infections by contact of disease pathogens. Environmental changes result in fresh invasion by animals and vectors.

Well-meaning groups or individuals are trying to help prevent and treat diseases but the efforts are in isolation and uncoordinated. Under uncontrolled conditions medicines, antimicrobials especially tend to be given away without understanding the basics or principles of their rational use.

The Infectious Diseases Society of Pakistan (IDSP) has collectively written these recommendations in consultation with WHO guidelines and Cochrane library, while keeping in view endemicity of diseases in our local population, cost effectiveness of preventive and treatment modalities, and practicality of drug dispensation

Diagnoses in calamity situations are at best presumptive under circumstances where laboratory confirmation is nonexistent; judgments must be made on clinical grounds while over treatment should be considered erroneous as much as under treatment or negligence. At the same time wastage of precious resources should be minimized. ***A balance between need and delivery is essential for optimum success in health care.***

Communicable Diseases Associated with Floods

Modes of disease transmission

- **Water borne diseases**

Viruses: *Rotavirus, Norwalk virus, Polio, Hepatitis A, Hepatitis E*

Bacteria: *Vibrio cholera*, Escherichia coli 0157, Salmonella typhi*, Shigella flexneri*, Campylobacter pylori, Chlamydia trachomatis**

Most diarrheas are due to viruses or toxins and do not require antibiotics. Rehydration is critical

***Only these infections require antibiotic.**

Protozoa: *Giardia lamblia, Entameba histolytica, Cryptosporidium parvum, Cyclospora cayetanensis Balantidium coli, Naegleria*

Helminths: *Strongyloides stercoralis, Dracunculus medinensis, Echinococcus*

- **Airborne infections****

Viruses: Viral influenza, respiratory syncytial virus, adenovirus, common cold viruses, measles, mumps, rubella, pertussis, varicella

Bacterial: *S. pneumonia, Mycoplasma, Legionella, N meningitides, Mycobacteria tuberculosis*

****Most airborne infections are due to viruses and do not require antibiotics**

- **Vector borne diseases:**

Malaria, dengue, Japanese encephalitis, viral hemorrhagic fever, leishmaniasis, plague, trachoma

- **Skin and soft tissue infections**

*Impetigo, cellulitis, boils, furuncles (staphylococcal)
Scabies, lice*

- **Animal bites: Snakes, dogs (Rabies)**

- **Risk factors for increased HIV transmission in emergencies:**

Anger and frustration leading to sexual violence, injecting drug use; unsafe blood transfusions, non availability of ARVs, reuse of needles

- **Risk for MDR/XDR TB**

Treatment defaults due to non-availability of TB

IMMEDIATE MANAGEMENT OF INFECTIOUS DISEASES IN FLOOD RAVAGED AREAS

Recommendations of the Infectious Diseases Society of Pakistan

1. HYGIENE AND CLEAN WATER:

- a) Soap for hand washing and bathing should be provided as a priority item, and personal hygiene stressed and practiced as much as possible.
- b) Purification of drinking water: Chlorination with PUR sachet is a cheap, effective and easily accessible way of purifying water, 1 sachet costing Rs 4/ will disinfect 10 liters of water.

2. GENERAL DIARRHEA TREATMENT:

Educate regarding rehydration and continuing breast-feeding for infants who are breast-fed

- a) Regular ORS
(Low osmolarity ORS (pedialite) is not recommended, as it will cause hyponatremia in cholera)
- b) IV Fluids (0.9 NS and Ringer lactate drips) for severe dehydration. In children if shock: 0.9% NS 10 ml/kg bolus then Ringer lactate 90 ml/kg over 4 hours. If no shock Ringers lactate 100 ml/kg over 4 hours
- c) Syp Zinc (strength 20mg/5ml) 1 TSF/day for 14 days (in children)
- d) Anti diarrheal: not recommended because of risk of toxic mega-colon
- e) Ciprofloxacin for bloody diarrhea or severe acute watery diarrhea with dehydration, or child less than 6 months old with toxicity

Dose: Adults: 250 mg twice a day for 3 day

Peds: 10 mg/kg/dose every 12 hours for 3 day

Flagyl 400 mg TDS if amebic dysentery suspected in adults, or 30-45 mg/kg/day in children

(Flagyl should not be used as a general anti diarrheal)

3. ACUTE RESPIRATORY INFECTIONS:

Most acute respiratory infections are viral and self-limiting and do not need antibiotic therapy. Supportive care may be given

Pneumonia in Adults: Levofloxacin 750mg daily for 7-10 days

Pneumonia in Children:

Amoxicillin

2 months to 12 months: 125mg three times a day for 7 days

12 months to 5 years: 250 mg three times a day for 7 days

5 years to 14 years: 20-50 mg/kg/day divided 3 times a day for 7 days

4. EYE INFECTIONS:

- Mostly secondary to viral infection, hence no specific treatment required.
- If symptoms persist more than 3 days or purulent discharge then use topical chloramphenicol eye drops.
- If symptoms persist for more than 2 wks, give oral erythromycin 12.5 mg/kg QID x 14 days for trachoma.

5. VECTOR CONTROL:

Insect repellants may be used.

Permethrin impregnated bed nets, if practical

6. SKIN AND SOFT TISSUE INFECTIONS:

Scabies: Local application of Benzyl benzoate or permethrin lotion.

(Apply all over body from neck down, keep on for 24 hours, bathe and repeat once more. Therapy of whole family members is strongly recommended)

Impetigo, cellulitis, boils, furuncles:

Cephadrine Dose: 250-500mg every 6 hours (adults), or Clindamycin 300 mg TDS x 5-7 d, or Amoxicillin /Clavulanic acid 375 mg TDS x 5-7 d

Local antiseptics : Pyodine , Gentian violet

7. SERIOUS SYSTEMIC INFECTIONS

Typhoid:

Cefixime: Adults: 400 mg twice a day for 14 days

Children: 16mg/kg once a day for 14 days

Typhoid (if not responding to cefixime) or leptospirosis, give:

Ceftriaxone: Adults: 2g daily for 14 days

Children 75-100 mg/kg/day for 14 days

Bacterial Meningitis:

Adults: Ceftriaxone 2 g twice a day for 10-14 days

Children: Ceftriaxone 100 mg/kg/day BID for 10-14 days

8. ANTIMALARIALS:

For suspected *P falciparum* or *P vivax*: Co artemether (40/240) Dose: 2 stat, 2 after 8h, then od x 2 d (8 tab)

For proven *vivax* species: Chloroquine 250 mg tab 4 stat, 2 after 6 hours, 1 bd for 2 d (10 tab)

9. ANTIFUNGAL:

Topical antifungal: Clotrimazole in combination with or without 1% hydrocortisone.

10. DEWORMING:

Syp Albendazole (Zentel) or Mebendazole (Vermox), as single dose.

11. TUBERCULOSIS:

Patients already on anti TB treatment should be helped to continue their medications with first line drugs in fixed drug combination. New suspected cases of TB should be referred to tertiary care hospitals.

12. SNAKE BITE:

First Aid:

R= Reassurance. 70% of all snake bites are from non-venomous species. Only 50% of venomous species actually envenomate.

I=Immobilise in same way as a fractured limb with bandage or cloth. Do not apply compression.

G.H=Get to Hospital immediately.

T=Tell the doctor of any systemic symptoms

ANTI SNAKE VENOM (ASV):

- Anti snake venom in Pakistan is polyvalent i.e effective against all 4 common species; Russells viper (*Daboia russelii*), Common Cobra (*Naja naja*), Common Krait (*Bungarus caeruleus*), Saw Scaled viper (*Echis sochureki/multisquamatus*).
- Available in two forms:
 - a) Liquid (NIH) more effective as produced from Pakistani snake venom, but requires reliable cold chain and refrigeration and has a 2-year shelf life.
 - b) Lyophilized (Indian) in powder form requires only to be kept cool.
- **Indications:**

Anti-snake venom carries risks of anaphylactic reactions and should be used only if **evidence of coagulopathy**: Primarily detected by 20WBCT (20 min whole blood clotting test) or visible spontaneous systemic bleeding, hemoptysis etc.

Evidence of neurotoxicity: Ptosis, external ophthalmoplegia, muscle paralysis, inability to lift the head etc.

- **Dosage:**

Neurotoxic/Anti Hemostatic 8-10 Vials NIH/Indian

Confirmed Saw Scaled Viper 4 Vials NIH

- As a general rule if type of snake not known 8-10 vials of Indian or 4 vials of NIH can be used for initial dose.
- Repeat doses every 6hrs if coagulopathy is not restored on clotting test up to a maximum of 30 vials for haemostatic envenomation. For neurotoxic venom dose can be repeated at 1-2 hrs if no improvement or worsening up to a maximum of 20 vials.

- **Administration:**

1. Intravenous Injection: Reconstituted or liquid ASV is administered by slow IV injection (2ml/min). Each vial is 10 ml of reconstituted ASV.
2. Infusion: Liquid or reconstituted ASV is diluted in 5-10ml/kg body weight of isotonic saline or glucose.

All ASV to be administered over 1 hr at constant speed.

Children and pregnant women are treated with same dosage.

Victims who arrive late (often up to several days) perform a 2WBCT and determine if any coagulopathy administer ASV. If neurotoxic symptoms, administer 1 dose of 8-10 vials of ASV.

- **ASV reaction:**

At first sign of urticaria, itching, fever, shaking chills nausea, vomiting, diarrhea, abdominal cramps, tachycardia, hypotension, bronchospasm and angioedema.

a) Discontinue ASV

b) Give 0.5mg of 1:1000 adrenaline IM (children 0.01mg/kg body weight)

Once stabilized, the ASV can be restarted slowly over 10-15 min, under close observation. Then normal drip rate should be resumed.

13. **DOG BITE:**

Wash and flush wound immediately with soap and clean water for 15 minutes, and then clean with antiseptic. Inject 1 dose of any cell culture vaccine IM into deltoid. Further management of deep wounds with Rabies immunoglobulin should be done at a hospital.

14. **VACCINES:**

For pediatric age group: EPI vaccines should be continued, especially for measles.

For adults no injectable vaccination is recommended **in the current phase of this emergency** for the following reasons:

- a) Most vaccines require 2 or more injections to be effective. It would be logistically difficult to attain this goal
- b) It is not possible to maintain cold chain in flood-affected areas
- c) Re-use of needles and syringes is likely to occur in majority of cases, further compounding the already high incidences of Hepatitis B and C

15. **PERSONAL PROTECTION:**

Gloves, masks and hand sanitizers should be provided in large quantities.

16. **LABORATORY:**

Rapid malaria detection tests are easy and cost effective for diagnosis of Malaria and its species. A positive test will help rule out dengue and typhoid fever and help in correct management of malaria. It will also help in malaria Surveillance.

NOTE:

As the relief and rehabilitation process evolves there may be change in the burden and type of infections that we will likely witness. These will need to be addressed as per assessment at that time.