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PHILIPPINE CLINICAL PRACTICE GUIDELINES on the Management of ACUTE INFECTIOUS DIARRHEA in Children and Adults – a Pocket Guide

Introduction

The Department of Health (DOH), in collaboration with medical professional societies and agencies, spearheaded the development of this clinical practice guideline for acute infectious diarrhea to help reduce variation in clinical practice and to promote delivery of evidence-based quality patient care.

The burden of disease from diarrhea is significant, with an estimated 1.8 million people worldwide dying annually from diarrheal diseases. Morbidity and mortality from diarrheal diseases threaten public health security and the socio-economic development of this country. In recognition of the debilitating effects of acute infectious diarrhea, DOH spearheaded the creation of this clinical practice guideline to help reduce the burden of diarrheal disease in the country.

Food and water-borne diseases (FWBDs) is the most common cause of diarrhea. Although the exact burden and cost of FWBDs is still unknown, it is surmised to be substantial. According to the World Health Organization (WHO), the burden of diarrheal diseases is estimated to be 3.6% of the total Disability Adjusted Life Years (DALY) worldwide. Based on the DOH report, acute watery diarrhea (AWD) ranked seventh among the top leading causes of morbidity, affecting 76.3 per 100,000 population. AWD is also the seventh leading cause of mortality among infants, with a rate of 0.5 per 1,000 live births.

This pocket guide summarizes the Philippine CPG recommendations for the management of acute infectious diarrhea in immunocompetent adults and children. It is intended as a quick reference for healthcare professionals. It does not contain the evidence tables and rationale of the recommendations which can be found in the full text version of this CPG. The GRADE criteria was used to rate the quality of the evidence and strength of the recommendations. Details on the methods used in developing this CPG is found at the end of this pocket guide. This pocket guide and the full text version of this CPG can be accessed at the websites of the DOH and PSMID.

DIAGNOSIS

1. When is the diagnosis of acute infectious diarrhea suspected?

Acute diarrhea is the passage of 3 or more loose, watery or bloody stools from an immunocompetent person's normal baseline in a 24-hour period, with a duration of less than 14 days. The patient should not have received antibiotics within the last three months and should not have been previously hospitalized, and the diarrhea should not have occurred after more than 48 hours of hospital admission.¹ The change in stool consistency is more important to consider than the change in stool frequency in assessing if a patient has diarrhea.

Acute infectious diarrhea is suspected if a patient presents with passage of 3 or more loose, watery or bloody stools within 24 hours that may be accompanied by any of the following symptoms: nausea, vomiting, abdominal pain, and fever. (Operational definition)

Strong recommendation, low to moderate quality evidence

According to WHO, a young infant has diarrhea if there is change in the usual stool pattern. A breastfed baby will normally have frequent, semi-solid stools which should not be considered diarrhea.²

2. What pre-treatment clinical evaluations are recommended for immunocompetent persons presenting with acute infectious diarrhea?

- Extensive clinical history that includes questions on consumption of raw, ill-prepared, or rotten food, intake of contaminated food or water, and history of travel should be obtained since this could provide clues to the possible etiology.

Strong recommendation, low to moderate quality evidence

- Complete physical examination should be done to assess disease severity, degree of dehydration, presence of complications, and presence of comorbid conditions. (See question 4 for discussion)

Strong recommendation, low to moderate quality evidence

3. What is the clinical use of diagnostic tests in children and adults with acute infectious diarrhea?

- Diagnostic tests should be based on the assessment of the patient's clinical status.
- Routine stool examination is NOT indicated in acute watery diarrhea, except in cases where parasitism is suspected or in the presence of bloody diarrhea.

Strong recommendation, low quality evidence

- Stool cultures are indicated only for the following:

- Severe cases - significant dehydration, high fever, persistent vomiting, severe abdominal pain, dysenteric stool
- High risk of transmission of enteric pathogens, e.g. food handlers
- High risk of complications
- For epidemiologic purposes - when there is suspicion of an outbreak that is enteric in origin.

The yield of a stool culture is highest when requested within 3 days of symptom onset and before administration of antibiotics.

Strong recommendation, low quality evidence

- There is insufficient evidence to support the use of biomarkers (CRP, calprotectin, ESR, procalcitonin, total serum WBC) in distinguishing the cause of acute infectious diarrhea.

Strong recommendation, low quality evidence

- Rapid diagnostic tests may be used during suspected outbreaks of cholera and shigella, but confirmation with stool culture is still recommended.

Strong recommendation, low quality evidence

- Clinical correlation is necessary in interpreting tests done using molecular diagnostics. Although these tests have high sensitivity, they are unable to distinguish between viable and non-viable organisms.

Strong recommendation, low quality evidence

4A. What are the clinical parameters indicative of dehydration in children with acute infectious diarrhea?

- Clinical findings indicative of dehydration in children include abnormal vital signs (tachycardia, tachypnea), depressed level of consciousness, depressed fontanel, sunken eyes, decreased or absent tears, poor skin turgor, prolonged capillary refill time, abnormal respiratory pattern, and decreased urine output.

Strong recommendation, moderate quality evidence

☞ The parameters to assess the severity of dehydration in children are shown in Table 1.

4B. What are the clinical and laboratory parameters indicative of dehydration in adults with acute infectious diarrhea?

☞ Clinical findings indicative of dehydration in adults include fatigue, thirst, sunken eyes, orthostatic hypotension, tachypnea, tachycardia, lethargy, dry oral mucosa, muscle weakness, poor skin turgor, prolonged capillary refill time, and cold, clammy skin.

Strong recommendation, low quality evidence

☞ Laboratory parameters indicative of dehydration in adults include Increased urine specific gravity (≥ 1.010), increased urine osmolality (>800 mosm/kg), increased serum osmolality (≥ 295 mosm/kg), increased BUN/creatinine ratio (>20), and metabolic acidosis ($\text{pH} < 7.35$, $\text{HCO}_3^- < 22$ mmol/L).

Strong recommendation, low quality evidence

☞ The clinical and laboratory parameters to assess the severity of dehydration in adults are shown in Tables 2 and 3.

Table 1. Clinical manifestations of dehydration in children according to severity³⁻¹⁰

Parameters		No signs of dehydration	Mild to Moderate dehydration	Severe dehydration
Fluid Deficit (% body weight)	Infant	<5%	5-10%	>10%
	Child	3%	6%	9%
Condition ^a		Well, alert	Restless, irritable	Lethargic, unconscious
Thirst		Drinks normally, not thirsty	Thirsty, drinks eagerly	Drinks poorly, not able to drink
Fontanel/Eyes ^a		Normal	Slightly depressed/slightly sunken	Sunken
Tears		Present	Present or decreased	No tears
Cutaneous Perfusion/Capillary Refill Time ^b		<2 seconds	Around 2 seconds	>3 seconds
Respiration		Normal	Deep, may be rapid	Deep and rapid 2mo-12mo: ≥ 50 breaths/min >12mo-5yrs: ≥ 40 breaths/min
Skin Pinch ^a		Goes back quickly	Goes back slowly	Goes back very slowly
History of Urine Output		Normal	Decreased (<0.5 ml/kg/hr in 8 hours)	Minimal (<0.3ml/kg/hr in 16 hours) or none (no urine output in 12 hours)
Interpretation			If the patient has two or more of the above signs, there is MILD to MODERATE DEHYDRATION	If the patient has two or more of the above signs, there is SEVERE DEHYDRATION

^aThese parameters are unreliable for patients with severe malnutrition. Use other parameters to distinguish malnutrition from dehydration.

^bCapillary refill time is the time required for return of color after application of blanching pressure to a distal capillary bed.¹⁰

Table 2. Clinical manifestations of dehydration in adults according to severity¹⁰⁻¹⁴

Parameters	Mild dehydration	Moderate dehydration	Severe dehydration
Fatigue	+/-	+	+
Thirst	+/-	+	+
Sunken eyes	-	+	+
Blood pressure	Normal	Orthostatic hypotension	Shock
Respiratory rate (breaths per minute)	Normal	21 - 25	≥25
Pulse rate (beats per minute) ^a	≥80	≥100	Faint or thready pulses
Peripheral circulation	Warm extremities	Cold, clammy skin	
Level of consciousness	Alert	Lethargic	Coma or stupor
Oral mucosa	Moist	Dry	
Muscle weakness	None	Mild to moderate	Severe
Skin turgor ^b	≤2 seconds	>2 seconds	
Capillary refill time ^c	≤2 seconds	>2 seconds	
Urine output (ml/kg/hr)	≥0.5	<0.5	

^aThese values are appropriate for assessing severity of dehydration if the patient has no fever

^bSkin turgor is best assessed at the anterior forearm, anterior thigh, anterior chest, subclavicular area, or sternum

^cCapillary refill time should be assessed with the examiner's middle finger at the same level as the patient's heart

Table 3. Other parameters used in assessing dehydration in adults¹²⁻¹⁵

Parameters	Mild dehydration	Moderate dehydration	Severe dehydration
Body Weight Change	Reduction of 3-5% of body weight in ≤7 days or Increase of 3-5% of body weight in ≤7 days as an indication that a person was dehydrated before rehydration	Change of >5% of body weight	
Urine Specific Gravity	≥1.010	≥1.020	
Urine Osmolality (mosm/kg)	>800		
Serum Osmolality (mosm/kg)	295-300	>300	
BUN/Creatinine Ratio	>20		
Metabolic acidosis (pH <7.35, HCO ₃ <22 mmol/L)	-	-	+

Table 4. Symptoms associated with hyponatremia

Stratification	Serum Level	Symptoms
Mild	130 – 135 meq/L	Usually non-specific: Headache, nausea, vomiting, fatigue, gait disturbances, confusion, restlessness, irritability
Moderate	120 – 129 meq/L	
Severe	< 120 meq/L	Seizure, obtundation, coma, respiratory arrest

Table 5. Symptoms associated with hypernatremia

Stratification	Serum Level	Symptoms
Mild	145 – 150 meq/L	Usually asymptomatic
Moderate	151 – 158 meq/L	Lethargy, weakness, irritability
Severe	>158 meq/L	Twitching, hyperreflexia, seizure, coma

Table 6. Symptoms associated with hypokalemia

Stratification	Serum Level	Symptoms
Mild	3-3.5 meq/L	Usually asymptomatic
Moderate	2.6-2.9 meq/L	Muscle weakness, muscle cramps, fatigue
Severe	<2.6 meq/L	Rhabdomyolysis, bradycardia, arrhythmia, respiratory failure

5. What laboratory tests should be done to assess for the presence of complications of acute infectious diarrhea?

☐ Complications such as acute kidney injury, electrolyte imbalances and hemolytic-uremic syndrome can occur in children and adults with acute infectious diarrhea. The following laboratory tests may be requested for patients suspected to have complications of acute infectious diarrhea: complete blood count, urinalysis, serum electrolytes (Na, K, Cl), BUN and creatinine, and serum bicarbonate or total CO₂ (if available) or ABG (optional).

Strong recommendation, low quality evidence

6. What is the role of colonoscopy in the evaluation of acute infectious diarrhea in children and adults?

☐ Colonoscopy is NOT warranted in the **initial** evaluation of acute infectious diarrhea.

Strong recommendation, moderate quality evidence

TREATMENT: CHILDREN

1A. What are the criteria for admission among children presenting with acute infectious diarrhea?

- ☞ Children with acute infectious diarrhea who have any of the following signs and symptoms should be admitted:
 - *Based on clinical history:* unable to tolerate fluids, suspected electrolyte abnormalities, or conditions for safe follow-up and home management are not met
 - *Based on physical findings:* altered consciousness, abdominal distention, respiratory distress, or hypothermia (temperature <36°C)

Strong recommendation, very low to low quality evidence
- ☞ Children with acute infectious diarrhea who have any of the following co-existing medical conditions should be admitted:
 - Co-existing infections such as pneumonia, meningitis/encephalitis, or sepsis
 - Moderate to severe malnutrition
 - Suspected surgical condition

Strong recommendation, very low to low quality evidence

2A. How should dehydration among children with acute infectious diarrhea be managed?

- ☞ The recommended management according to level of dehydration is shown in Table 7. The algorithm for fluid resuscitation is shown in Figures 1 and 2.
- ☞ Frequency of monitoring
 - a. Check the child from time to time during rehydration to ensure that ORS is being taken satisfactorily and that signs of dehydration are not worsening.
 - b. Evaluate the child's hydration status at least hourly.

Strong recommendation, low quality evidence
- ☞ For breastfed infants, breastfeeding should be continued in addition to hydration therapy.

Strong recommendation, moderate quality evidence
- ☞ Carbonated, sweetened, caffeinated and sports drinks are not recommended for fluid replacement.

Good practice statement

Table 7. Recommended management for children with acute infectious diarrhea according to level of dehydration

No dehydration	Mild to Moderate dehydration	Severe dehydration
Reduced osmolarity oral rehydration solution (ORS) is recommended to replace ongoing losses	Reduced osmolarity ORS is recommended to replace ongoing losses.	Rapid intravenous rehydration is recommended with plain Lactated Ringer's (LR) solution or 0.9% Sodium Chloride.
If commercial ORS is not available, homemade ORS may be given (4-5 teaspoons of sugar and 1 teaspoon of salt in 1 liter of clean drinking water)	If oral rehydration is not feasible, administration of ORS via nasogastric tube is preferred over IV hydration.	
<i>Strong recommendation, moderate quality evidence</i>	<i>Strong recommendation, low quality evidence</i>	<i>Strong recommendation, low quality evidence</i>

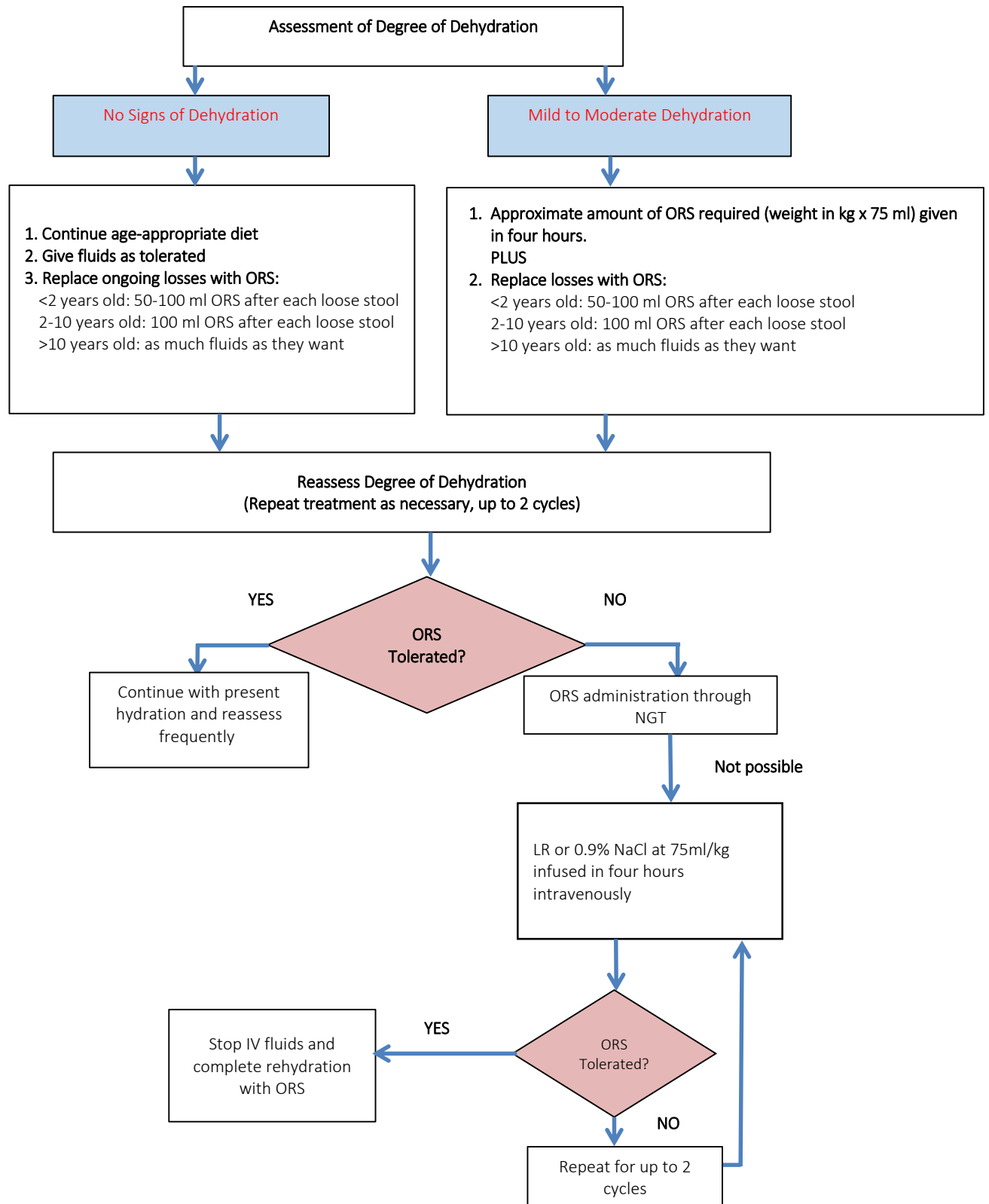


Figure 1. Protocol for no signs of dehydration and mild to moderate dehydration (Adapted with modifications^{4,7})

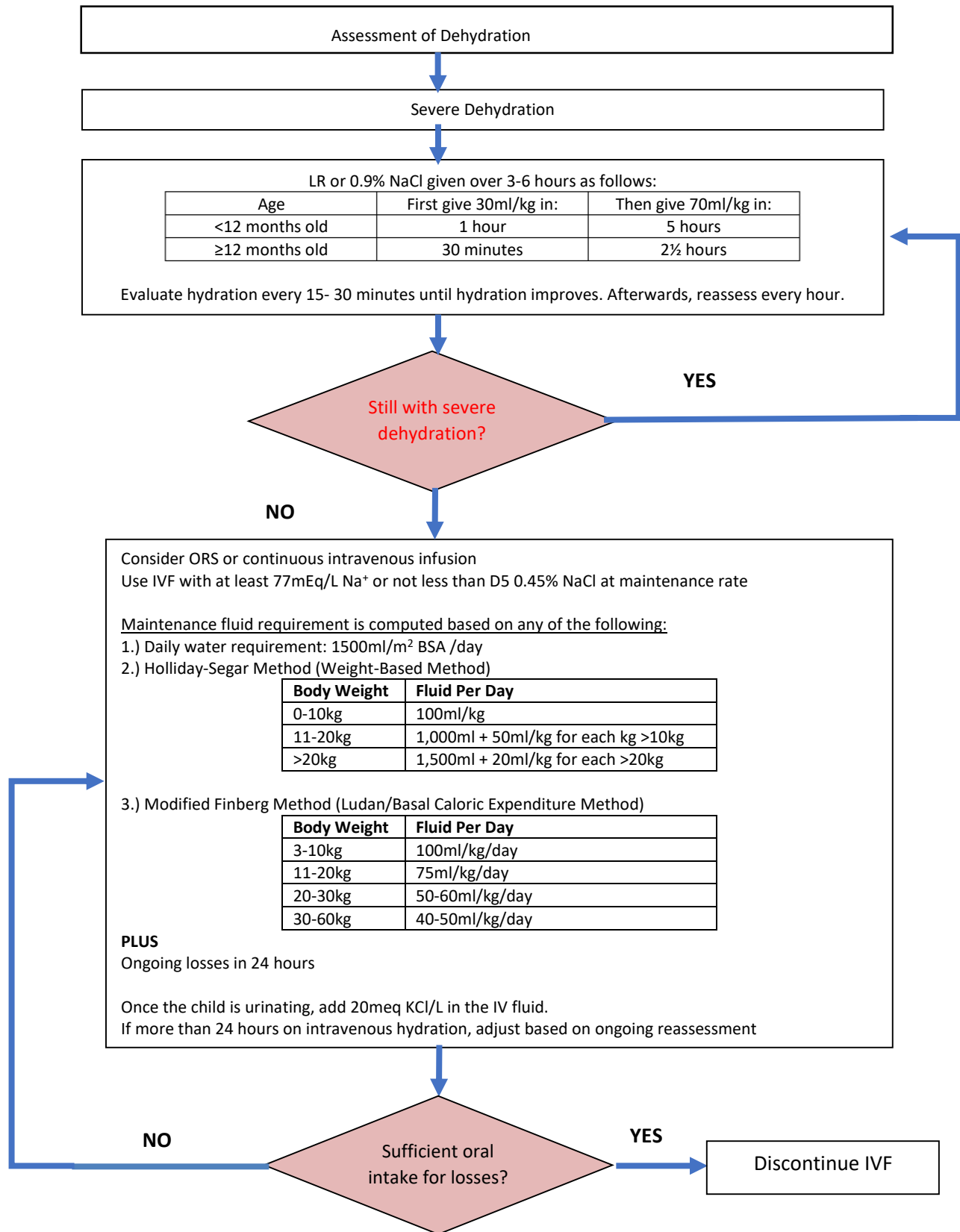


Figure 2. Protocol for severe dehydration. (Adapted with modifications ^{4,7})

3A. What are the indications for empiric antibiotic treatment in children with acute infectious diarrhea?

- ☞ Primary management of acute infectious diarrhea in children is still rehydration therapy.
- ☞ Routine empiric antibiotic therapy is NOT recommended.
Strong recommendation, very low quality evidence
- ☞ Antimicrobials may be recommended for the following conditions:
 - Suspected cholera,
 - Bloody diarrhea
 - Diarrhea associated with other acute infections (e.g. pneumonia, meningitis, etc.)*Strong recommendation, very low quality evidence*

4A. What are the recommended antimicrobials for the following etiologies of acute infectious diarrhea in children?

- ☞ The recommended antimicrobials for specific etiologies of acute infectious diarrhea is summarized in Table 8.

Table 8. Directed therapy for specific organisms causing acute infectious diarrhea in children

Etiologic agent	Antimicrobial
Suspected or confirmed cholera <i>Strong recommendation, low to moderate quality evidence</i>	<ul style="list-style-type: none"> • Azithromycin 10 mg/kg/dose PO once a day for 3 days, or 20 mg/kg single dose (max dose: 500 mg/24 hours) • Doxycycline (use only for >8 years old): 2 mg/kg PO single dose (max dose: 100 mg/dose) • Alternatives (when susceptible) include: <ul style="list-style-type: none"> - Co-trimoxazole 8-12 mg/kg/day PO (based on trimethoprim component) divided into 2 doses for 3-5 days (max dose: 160 mg/dose) - Chloramphenicol 50-100 mg/kg/day PO every 6 hours for 3 days (max dose: 750 mg/dose) - Erythromycin 12.5 mg/kg/dose PO every 6 hours for 3 days (max dose: 4 g/24 hours)
Suspected or culture-proven <i>Shigella</i> dysentery <i>Strong recommendation, moderate quality evidence</i>	<ul style="list-style-type: none"> • Ceftriaxone 75-100 mg/kg/day IV every 12-24 hours (max dose: 2 g/24 hours) for 2-5 days • Ciprofloxacin 30 mg/kg/day PO divided into 2 doses for 3 days (max dose: PO 1.5 g/24hours). • Azithromycin 10 mg PO once a day for 3 days (max dose: 500 mg/dose)
Non-typhoidal <i>Salmonella</i> (NTS) <i>Strong recommendation, low quality evidence</i>	Antibiotic treatment is NOT recommended for children with non-typhoidal <i>Salmonella</i> EXCEPT in high-risk children to prevent secondary bacteremia, such as: <ul style="list-style-type: none"> • Neonates or young infants <3 months old • Immunodeficient patients • Anatomical or functional asplenia, corticosteroid or immunosuppressive therapy, inflammatory bowel disease, or achlorhydria
Amoebiasis <i>Strong recommendation, very low quality evidence</i>	Metronidazole 10 mg/kg/dose IV or PO 3 times a day (max dose: 750 mg/dose) for 10-14 days is recommended for confirmed cases of amoebiasis to prevent relapse.

5A. Should zinc and racecadotril be given in children with acute infectious diarrhea?

- ☞ Zinc supplementation (20mg/day for 10-14 days) should be given routinely as adjunctive therapy for acute infectious diarrhea in children >6 months old to shorten the duration of diarrhea and reduce frequency of stools.

Strong recommendation, low to moderate quality evidence

- ☞ Zinc supplementation is NOT routinely given as adjunctive therapy for acute infectious diarrhea in children <6 months old as it may cause diarrhea to persist.

Strong recommendation, low to moderate quality evidence

- ☞ Racecadotril (1.5 mg/kg/dose) 3 times a day during the first 3 days of watery diarrhea may be given to infants and children as adjunctive therapy to shorten duration of diarrhea.

Weak recommendation, low quality evidence

- ☞ Loperamide is NOT recommended for children with acute infectious gastroenteritis due to serious adverse events.

Strong recommendation, moderate quality evidence

6A. What is the role of anti-emetics in the management of vomiting in children with acute infectious diarrhea?

- ☞ Anti-emetics are NOT recommended in children presenting with vomiting with acute infectious diarrhea due to safety issues.

Strong recommendation, low quality evidence

7A. What is the role of probiotics in the management of acute infectious diarrhea in children?

- ☞ Probiotics are recommended as adjunctive therapy throughout the duration of the diarrhea. Probiotics have been shown to reduce symptom severity and duration of diarrhea.

Strong recommendation, moderate quality evidence

- ☞ Probiotics may be extended for 7 more days after completion of antibiotics.

Strong recommendation, moderate quality evidence

- ☞ The following probiotics may be used:

a. *Saccharomyces boulardii* 250-750 mg/day for 5-7 days

Strong recommendation, moderate quality evidence

b. *Lactobacillus rhamnosus* GG $\geq 10^{10}$ CFU/day for 5-7 days

Strong recommendation, moderate quality evidence

c. *Lactobacillus reuteri* DSM 17938 10^8 to 4×10^8 CFU/day for 5-7 days

Weak recommendation, very low quality evidence

d. There is insufficient evidence to recommend *Bacillus clausii*.

8A. What is the recommended diet for children with acute infectious diarrhea?

- ☞ Breastfeeding should be continued in breastfed infants.

Strong recommendation, moderate quality evidence

- ☞ In general, feeding should be continued. However, if feeding is not tolerated, early refeeding may be started as soon as the child is able. Resumption of age-appropriate usual diet is recommended during or immediately after rehydration process is completed.

Strong recommendation, low to moderate quality evidence

- ☞ If diarrhea persists for >7 days or if patients are hospitalized due to severe diarrhea, lactose-free diet may be given to children who are predominantly bottle-fed to reduce treatment failure and decrease the duration of diarrhea.
Strong recommendation, very low to low quality evidence
- ☞ No change from age-appropriate diet is recommended.
Strong recommendation, low quality evidence
- ☞ Diluted lactose milk is NOT recommended.
Strong recommendation, low quality evidence
- ☞ Restrictive diet such as BRAT (banana, rice, apple, tea) diet is not recommended because of the risk of malnutrition from its inadequate nutritional value.
Strong recommendation, low quality evidence

9A. What is the recommended management for complications of acute infectious diarrhea in children?

- ☞ Acute kidney injury (AKI) is a serious and potentially life-threatening complication. It is best to refer the patient immediately to a specialist at the first sign of AKI.
Good Practice Statement
- ☞ ORS is safe and effective therapy for nearly all children with hyponatremia.
Good Practice Statement
- ☞ Hospital treatment and close monitoring are recommended for patients suspected to have hyponatremia. Referral to a specialist is advised.
Good Practice Statement

TREATMENT: ADULT

1B. Who should be admitted among adults presenting with acute infectious diarrhea?

- ▣ Presence of any of the following clinical history and physical findings warrant admission:
 - Poor tolerance to oral rehydration
 - Moderate to severe dehydration
 - Acute kidney injury
 - Electrolyte abnormalities
 - Unstable comorbid conditions (e.g. uncontrolled diabetes, congestive heart failure, unstable coronary artery disease, chronic kidney disease, chronic liver disease, immunocompromised conditions)
 - Frail or elderly (≥ 60 years old) patients
 - Poor nutritional status
 - Patients with unique social circumstances (living alone, residence far from a hospital)
- Strong recommendation, low to moderate quality evidence*

2B. How should dehydration in adults be managed?

- ▣ The recommended management for dehydration in adults is summarized in Table 9.

- ▣ Sports drinks and soda are NOT recommended to replace losses.
Strong recommendation, low quality evidence

- ▣ For calculations of maintenance fluid rate, it is suggested to use the actual or estimated body weight. However, the ideal body weight should be used for overweight or obese patients.
Weak recommendation, low quality evidence

- ▣ Elderly patients and those at risk of fluid overload (patients with heart failure or kidney disease) should be referred to a specialist for individualized fluid management.
Strong recommendation, low quality evidence

- ▣ Recommendations for the type of fluid:
 - PLRS, a chloride-restrictive IVF, is the fluid of choice for hydration and fluid resuscitation of patients with diarrhea. If PLRS is not available, plain normal saline solution may still be used.
Strong recommendation, low quality evidence

 - During initial resuscitation, hourly monitoring of vital signs, mental status, peripheral perfusion, and urine output must be done. The subsequent frequency of monitoring should be based on the clinician's judgment.
Strong recommendation, very low quality evidence

 - The routine use of albumin, hydroxyethyl starch (HES), dextran, or gelatin for fluid resuscitation of dehydrated patients is not recommended.
Strong recommendation, moderate quality evidence

Table 9. Recommended management for adults according to degree of dehydration

Mild dehydration	<p>Oral rehydration solution is recommended at 1.5 - 2 times the estimated amount of volume deficit plus concurrent gastrointestinal losses.</p> <p><i>Strong recommendation, low quality evidence</i></p>
Moderate dehydration	<p>500 to 1,000 ml of plain Lactated Ringer's solution (PLRS) in the first 2 hours is recommended.</p> <p><i>Strong recommendation, low quality evidence</i></p> <p>Once hemodynamically stable, give</p> <ul style="list-style-type: none">☞ 2-3 ml/kg/hour PLRS for patients with actual or estimated body weight of <50 kg☞ 1.5-2 ml/kg/hour PLRS for patients with actual or estimated body weight of >50 kg.☞ Use ideal body weight for overweight or obese patients. <p><i>Strong recommendation, low quality evidence</i></p> <p>Replace ongoing losses volume per volume with PLRS boluses or ORS (if tolerated).</p> <p><i>Strong recommendation, low quality evidence</i></p>
Severe dehydration	<p>1,000 to 2,000 ml of PLRS within the first hour is recommended.</p> <p><i>Strong recommendation, low quality evidence</i></p> <p>Once hemodynamically stable, give</p> <ul style="list-style-type: none">☞ 2-3 ml/kg/hour PLRS for patients with actual or estimated body weight of <50 kg☞ 1.5-2 ml/kg/hour PLRS for patients with actual or estimated body weight of >50 kg.☞ Use ideal body weight for overweight or obese patients. <p><i>Strong recommendation, low quality evidence</i></p> <p>Replace ongoing losses volume per volume with PLRS boluses. ORS is not recommended since patients with severe dehydration may have compromised mental status and therefore have high risk for aspiration.</p> <p><i>Strong recommendation, low quality evidence</i></p>

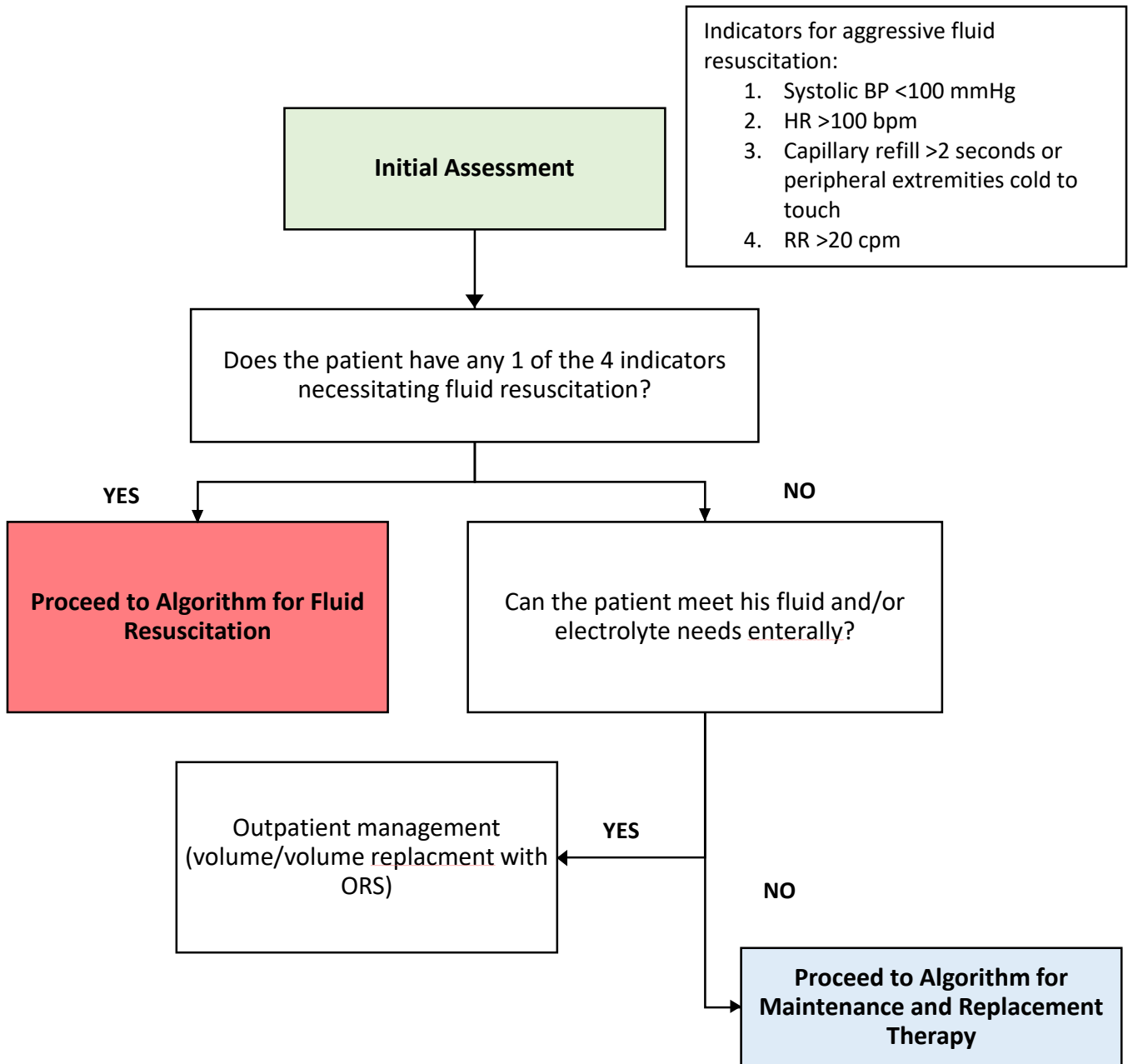


Figure 3. Algorithm for initial assessment of dehydration in adult patients

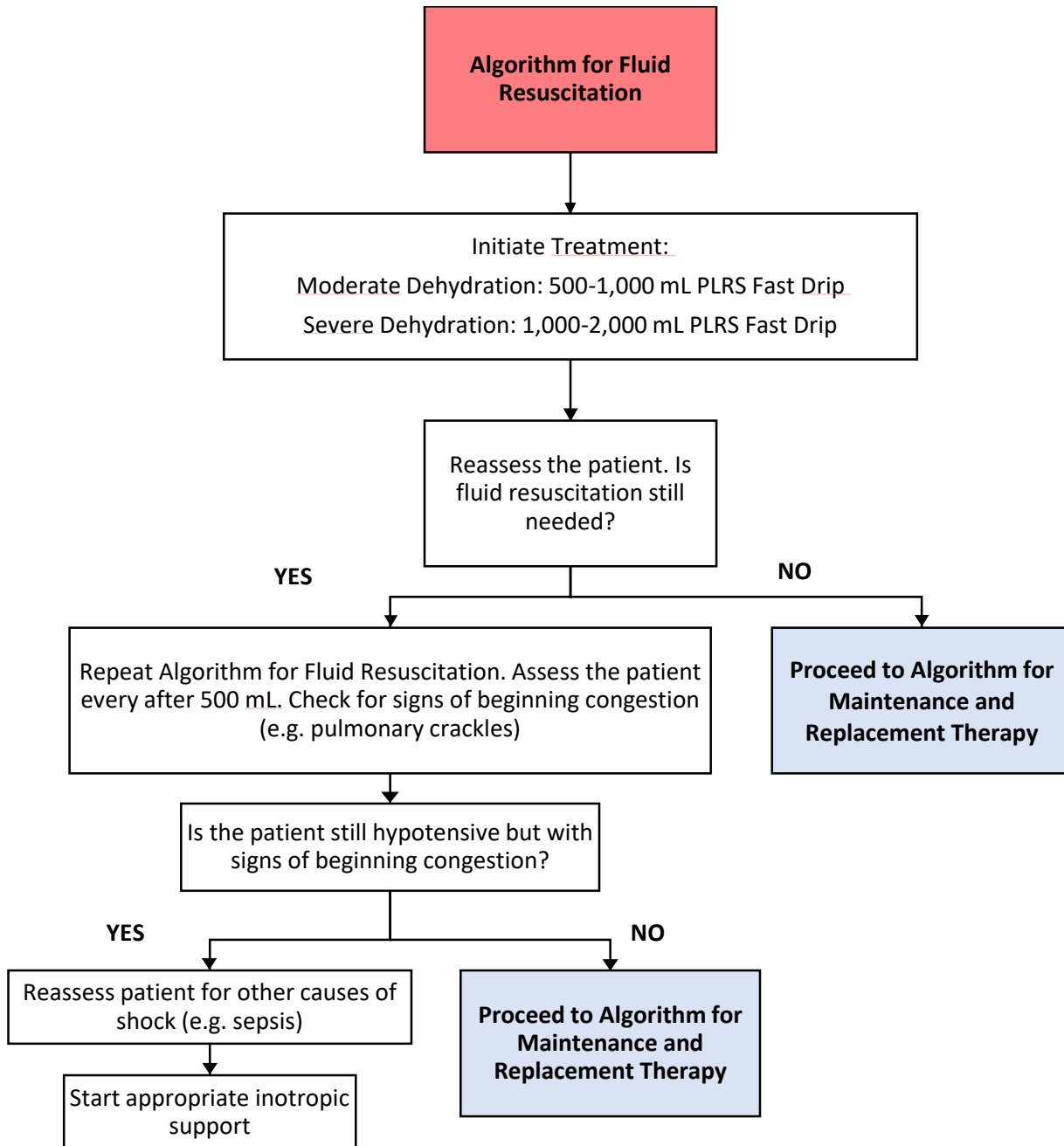


Figure 4. Algorithm for fluid resuscitation of adult patients

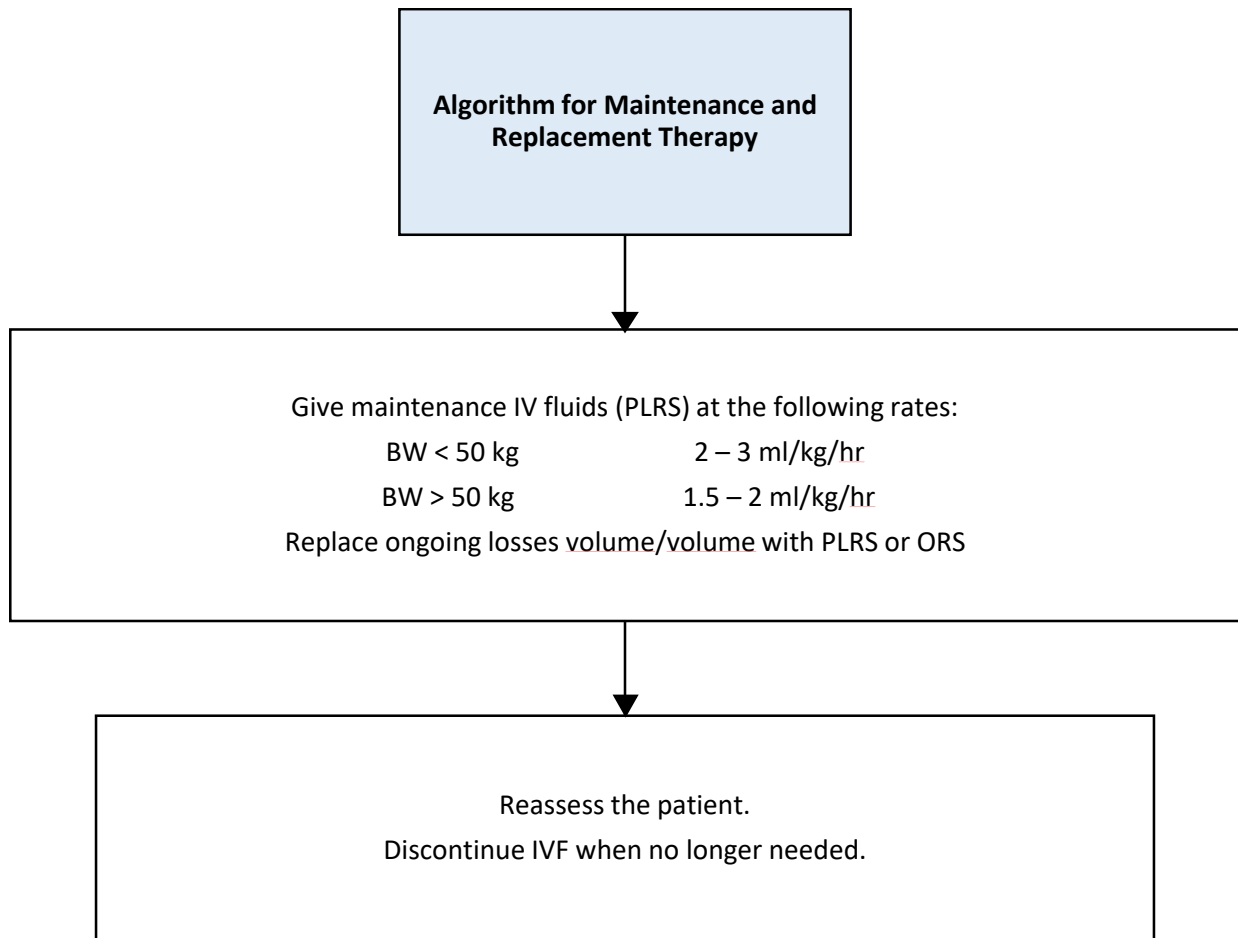


Figure 5. Algorithm for maintenance and replacement therapy

3B. What are the indications for empiric antimicrobial treatment in adults with acute infectious diarrhea?

- ⊕ Empiric antimicrobial treatment is NOT recommended for adults with acute diarrhea and the following clinical features: mild to moderate dehydration, non-bloody stools, and symptoms <3 days.
Strong recommendation, low quality evidence
- ⊕ Empiric antimicrobial treatment is recommended for patients with acute diarrhea with moderate to severe dehydration plus any of the following clinical features: fever alone, fever and bloody stools, or symptoms persisting >3 days.
Strong recommendation, low quality evidence
- ⊕ The following antimicrobials are recommended for empiric treatment of acute infectious diarrhea:
 - Azithromycin 1g single dose OR
 - Ciprofloxacin 500 mg twice daily for 3-5 days*Strong recommendation, low quality evidence*
- ⊕ Once the suspected organism is confirmed, antimicrobial therapy may be modified accordingly.

4B. What are the recommended antimicrobials for the following etiologies of acute infectious diarrhea in adults?

- ⊕ The recommended antimicrobials for specific etiologies of acute infectious diarrhea in adults is summarized in Table 10.

5B. Should loperamide and racecadotril be given in adults with acute infectious diarrhea?

- ⊕ Loperamide is NOT recommended in adults with acute infectious diarrhea due to unfavorable risk-benefit profile.
Weak recommendation, low quality evidence
- ⊕ Racecadotril (100 mg three times a day) may be given to decrease the frequency and duration of diarrhea.
Weak recommendation, low quality evidence

6B. What is the role of probiotics in the treatment of acute diarrhea among adults?

- ⊕ There is insufficient evidence to recommend the use of probiotics in adults with acute diarrhea.
Weak recommendation, very low to low quality evidence

7B. What is the recommended management for complications of acute infectious diarrhea in adults?

- ⊕ Acute kidney injury is a serious and potentially life-threatening complication. It is best to refer the patient immediately to a specialist at the first sign of AKI.
Good Practice Statement
- ⊕ Hospital treatment and close monitoring is recommended for patients with severe hyponatremia, severe hypernatremia, or symptomatic patients regardless of the degree of sodium imbalance. The approach to therapy depends on the patients' risk stratification. Referral to a specialist is advised.
Good Practice Statement
- ⊕ Hospital treatment and close monitoring is recommended for patients with severe hypokalemia, severe hyperkalemia, or symptomatic patients regardless of the degree of potassium imbalance. Referral to a specialist is advised.
Good Practice Statement

Table 10. Directed therapy for selected etiologic agents causing diarrhea in adults

Etiologic agent	Antimicrobial
Suspected or confirmed cholera	<ul style="list-style-type: none"> • Azithromycin 1 g single dose <i>Strong recommendation, high quality evidence</i> • Ciprofloxacin 1-2 g single dose or 500 mg twice a day for 3 days <i>Strong recommendation, low to moderate quality evidence</i> • Alternative: Doxycycline 100 mg twice a day for 3 days <i>Strong recommendation, low to moderate quality evidence</i>
Suspected or culture-proven <i>Shigella</i> dysentery	<ul style="list-style-type: none"> • Ceftriaxone 1 g IV once a day for 5 days <i>Strong recommendation, moderate to high quality evidence</i> • Ciprofloxacin 500 mg PO twice a day for 5 days <i>Strong recommendation, moderate to high quality evidence</i> • Azithromycin 1 g PO single dose <i>Strong recommendation, moderate to high quality evidence</i> <p>*Once culture results are available, antimicrobial therapy can be modified accordingly.</p>
Suspected or confirmed non-typhoidal <i>Salmonella</i>	<ul style="list-style-type: none"> ESP Ciprofloxacin 500 mg PO twice a day for 5 days <i>Strong recommendation, high quality evidence</i> ESP Ceftriaxone 1 g IV once a day for 5 days <i>Strong recommendation, low quality evidence</i> <p>* Once culture results are available, antimicrobial therapy can be modified accordingly.</p>
Confirmed amoebiasis	<ul style="list-style-type: none"> • Metronidazole 500-750 mg PO three times a day for 10 days. <i>Strong recommendation, high quality evidence</i> ESP Alternative: Tinidazole 2 g once a day for 3 days, or secnidazole 2 g single dose <i>Strong recommendation, high quality evidence</i> ESP Diloxanide furoate 500 mg three times a day may be added to metronidazole, if available.

PREVENTION

1. What interventions are effective in the prevention of acute infectious diarrhea?

A. Hand hygiene

- ☞ Hand hygiene should be promoted in all settings and on all occasions to reduce transmission of microbes that cause acute infectious diarrhea.
 - Handwashing with soap and water is the best method to reduce the number of microbes.
 - If soap and water are not available, alcohol-based hand sanitizers (containing at least 60% alcohol) may be used. Hand sanitizers, moist hand wipes or towelettes are not recommended when hands are visibly dirty or greasy.
 - The proper handwashing techniques are shown in Figures 6 and 7.

Strong recommendation, moderate quality evidence
- ☞ All efforts should be made to provide access to clean water, soap and hand drying materials.

Strong recommendation, moderate quality evidence

B. Water safety Interventions

- ☞ Drinking water should be clean and safe. Recommended methods to ensure clean and safe water include boiling, chemical disinfection, and filtration with ultraviolet radiation.

Strong recommendation, low quality evidence
- ☞ Drinking water should comply with the Philippine National Standards for Drinking Water.¹⁶

Good Practice Statement

C. Proper food handling

- ☞ There is no standard recommended screening test for food handlers in the Philippines.
- ☞ No person shall be employed in any food establishment without a health certificate issued by the city or municipal health officer in accordance with Food Establishments Code on Sanitation of the Philippines.¹⁷

Good Practice Statement
- ☞ Food industry workers need to notify their employers if they have any of the following conditions: hepatitis A, diarrhea, vomiting, fever, sore throat, skin rash or other skin lesions, and discharge from the ears, eyes or nose.


Good Practice Statement

How to Handrub?

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

 **Duration of the entire procedure: 20-30 seconds**



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WHO acknowledges the Hôpitaux Universitaires de Genève (HUG), in particular the members of the Infection Control Programme, for their active participation in developing this material.

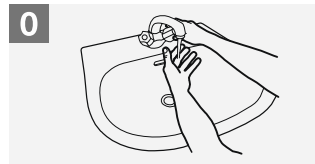
Figure 6. Proper handwashing technique with hand sanitizer

(Reference: World Health Organization. How to Hand Rub. www.who.int/gpsc/5may/How_To_HandRub_Poster.pdf. Revised 2009. Accessed August 10, 2018.)

How to Handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

 Duration of the entire procedure: 40-60 seconds



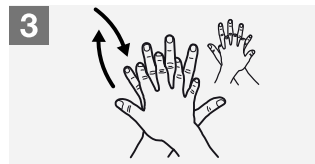
Wet hands with water;



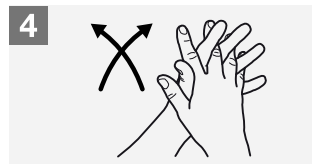
Apply enough soap to cover all hand surfaces;



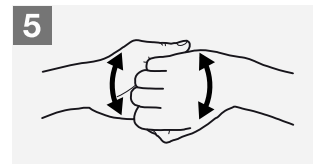
Rub hands palm to palm;



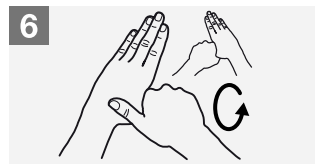
Right palm over left dorsum with interlaced fingers and vice versa;



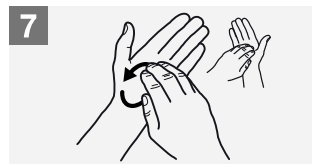
Palm to palm with fingers interlaced;



Backs of fingers to opposing palms with fingers interlocked;



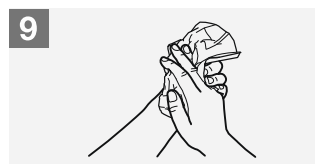
Rotational rubbing of left thumb clasped in right palm and vice versa;



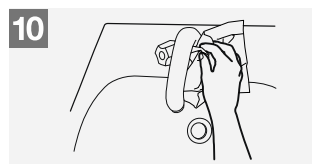
Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



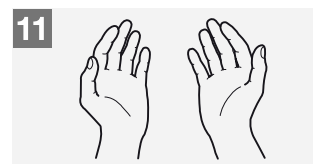
Rinse hands with water;



Dry hands thoroughly with a single use towel;



Use towel to turn off faucet;



Your hands are now safe.



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May 2009

Figure 7. Proper handwashing technique with soap and water

(Reference: World Health Organization. How to Handwash? http://www.who.int/gpsc/5may/How_To_HandWash_Poster.pdf. Revised 2009. Accessed August 10, 2018.)

D. Proper Excreta Disposal

- ☞ Safe stool disposal and hand hygiene are key behaviors to prevent infectious diarrhea.
Strong recommendation, low to moderate quality evidence
- ☞ The following are approved excreta disposal facilities based on the Code on Sanitation of the Philippines:¹⁸
 - Flush toilet connected to a community sewer, Imhoff tank, septic tank, digester tank, or chemical tank
 - Ventilated improved pit (VIP) latrine, sanitary pit in rural areas, pit type, or “antipolo” toilet
 - Any disposal device approved by the Secretary of Health or his duly authorized representative*Strong recommendation, low to moderate quality evidence*
- ☞ Open defecation threatens public health and safety and is unacceptable.
Strong recommendation, low to moderate quality evidence

E. Vaccines

- ☞ Killed oral cholera vaccine may be given to children and adults living in endemic areas and during outbreaks to prevent acute infectious diarrhea caused by cholera.
Strong recommendation, moderate to high quality evidence
- ☞ Universal immunization of infants against rotavirus is recommended. Rotavirus vaccines are effective in preventing rotavirus diarrhea and rotavirus diarrhea-associated hospitalization.
Strong recommendation, moderate quality evidence

F. Supplements

- ☞ The following probiotic strains may be given to children and adults to prevent acute infectious diarrhea or its recurrence:
 - *Bifidobacterium lactis*
 - *Lactobacillus rhamnosus* GG
 - *Lactobacillus reuteri**Strong recommendation, low quality evidence*
- ☞ Zinc supplementation is recommended to prevent acute infectious diarrhea among children 6 months to 12 years old. It should NOT be given to children <6 months old.
Strong recommendation, moderate quality evidence
- ☞ Vitamin A supplementation may be given to children ≥6 months to reduce the incidence of acute infectious diarrhea. The recommended doses are:
 - 100,000 IU every 4-6 months for infants 6-12 months old
 - 200,000 IU every 4-6 months for children >12 months old*Strong recommendation, low quality evidence*

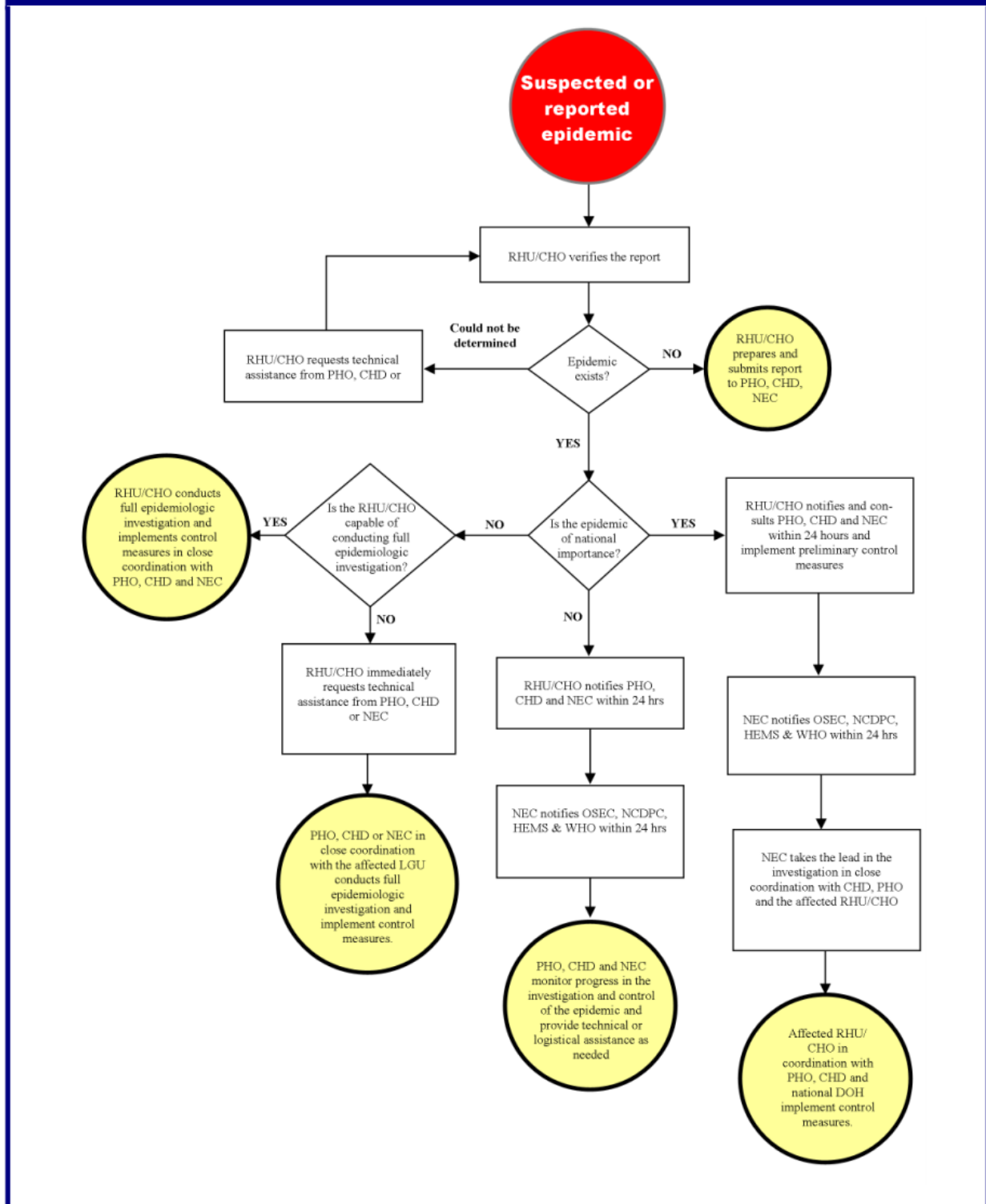
G. Breastfeeding

- ☞ Exclusive breastfeeding is recommended during the first 6 months of life to prevent diarrhea. Breastfeeding also reduced the incidence of hospitalization and mortality from diarrhea.
Strong recommendation, moderate quality evidence
- ☞ All healthcare providers should promote breastfeeding.
Strong recommendation, moderate quality evidence

2. When is an outbreak suspected? How is it managed?

- Outbreak is suspected in the presence of cases of acute infectious diarrhea in excess of what would normally be expected in a defined community, geographical area or season, and lasting a few days, weeks, or several years” (World Health Organization)¹⁹
- Suspected cases of outbreaks should be reported immediately to disease reporting units or disease surveillance coordinators (see Figure 8).
- Collection of demographic data, signs and symptoms, relevant exposures and specimens are mandatory. Stool samples (rectal swab or bulk stool) should be sent to designated laboratories for analysis and confirmation. Water and food samples may also be collected to determine the source of the outbreak.
- Response to outbreaks should involve epidemiologic investigation and formulation of hypotheses, treatment of cases, implementation of control and preventive measures, and risk communication.

Figure 16: Flow of Investigation, Reporting and Response to a Suspect Epidemic or Reported Epidemic



Adapted from Manual of Procedures for Philippine Integrated Disease Surveillance and Response (PIDSRS)²⁰

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Methodology of Developing the CPG

Committee Selection

The Steering Committee headed by the Department of Health and PSMID provided organizational and logistic support. The committee also provided guidance on the scope, target audience, activities and timelines of the CPG development. A multidisciplinary technical working group (TWG) composed of adult and pediatric clinicians, academicians, epidemiologists, public health practitioners, and program implementers was convened. Designated representatives of the stakeholder medical societies were assigned into their respective committees based on their field of expertise. The voting panel consisted of experts from the government and private sectors. The participants of the TWG and Expert Panel included representatives from PSMID, PIDSP, PSPGHAN, PSG, PNSP, PSN, and PAFP. A Clinical Practice Guideline Development Workshop was conducted by the TWG Chair and Co-Chair for the TWG members and Expert Panel in 2016.

Evidence Synthesis

The Expert Panel and TWG members generated an initial list of relevant clinical questions on diagnosis, treatment and prevention of acute infectious diarrhea. The group identified and prioritized the outcomes of interest according to importance based on its impact on decision-making. Each member was assigned to least one question and was tasked to search the literature, review and appraise the articles, generate the evidence tables, draft the summary of evidence and the recommendations. Monthly group discussions and presentations were held from the years 2016 to 2017.

The TWG used the Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology to systematically rate the quality of evidence and determine the strength of recommendation (Table 1).

Table 1. Quality of evidence using the GRADE framework¹

Quality of Evidence		Study Design	Lower if:	Higher if:
High	Further research is very unlikely to change confidence in the estimate of effect	Randomized controlled trials (RCTs)	Study quality: Poor quality of implementation of RCT	Stronger association: Large magnitude of effect, no plausible confounders
Moderate	Further research is likely to have an impact on the confidence in the estimate of effect	Downgraded RCTs or upgraded observational studies	Inconsistency of results Indirectness: Different population, intervention, outcomes	Very large magnitude of effect, no major threats to validity
Low	Further research is very likely to have an important impact on the confidence in the estimate of effect	Observational studies	Imprecise results: High probability of reporting bias	Dose-response gradient
Very Low	Any estimate of effect is very uncertain	Case series or expert opinion		

¹Reference: Guyatt GH, Oxman AD, Vist GE, Kunz R, Falck-Ytter Y, Alonso-Coello P, et al. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ*. 2008;336:924-926.

The TWG drafted the recommendations including the strength of recommendations. These recommendations were then presented to the Expert Panel for consensus. Factors that influenced the strength of recommendations included the balance between benefits and harms, values and preferences, baseline risks and resource implications (Table 2).

Table 2. Implications of strength of recommendations to patients, clinicians and policy makers using the GRADE approach²

Strength of Recommendation		Implications of the recommendations		
		Patients	Clinicians	Policy Makers
Strong	The benefits outweigh the harm. There are no costs or access issues for the general population	Most people in the situation would want the recommended course of action and only very few would not; request for discussion if the intervention is not offered	Most patients should receive the recommended course of action. The recommendation can be used as a quality or performance indicator	The recommendation can be adopted as a policy in most situations
Weak	Best available evidence is very low to low quality The magnitude of benefits and risks is uncertain or closely balanced for the general population and applicable to a specific group, population or setting. Benefits may not warrant the cost or resource requirements in all settings.	Most people in the situation would want the recommended course of action, but many would not	Different choices are appropriate for different patients, and clinicians must help patients arrive at a management decision consistent with the patients' values and preferences	Policy making will require substantial debate and involvement of stakeholders

² Reference: Guyatt GH, Oxman AD, Kunz R, Falck-Ytter Y, Vist GE, Liberati A, and Schünemann HJ. Going from evidence to recommendations. *BMJ*. 2008;336(7652):1049-1051.

There are several Good Practice Statements (GPSs) found in this document. GPS is used when benefit and harm is equivocal, and the evidence cannot be assessed using the GRADE methodology. Table 3 outlines the criteria used by the TWG and Expert Panel in issuing GPSs.

Table 3. Criteria for issuing Good Practice Statements.³

<ol style="list-style-type: none">1. Is the statement clear and actionable?2. Is the message necessary in regard to actual health care practice?*3. After consideration of all relevant outcomes and potential downstream consequences, will implementing the good practice statement result in large net positive consequences?*4. Is the evidence difficult to collect and summarize?*5. Is there a well-documented clear and explicit rationale connecting the indirect evidence?*

*Answer to this question should be yes in order to proceed.

³Reference: Guyatt GH, Alonso-Coello P, Schünemann HJ, Djulbegovic B, Nothacker M, Lange S, et al. Guideline panels should seldom make good practice statements: guidance from the GRADE Working Group. *Journal of Clinical Epidemiology*. 2016;80:3-7.

Consensus Development Process

Each statement was presented to the Expert Panel for discussion and consensus using the nominal group technique. Results were tabulated and summarized. Two rounds of group discussion were conducted on October 14, 2017 at Manila Grand Opera Hotel and on November 17, 2017 at Ramada Hotel to finalize the wording and strength of the recommendations.

Voting was done as follows: A=accept completely; B=accept with some reservations; C=accept with major reservations; D= reject with some reservations; and E= reject completely. Statements reached consensus if 80% voted A or B; rejected if less than 80% was reached or at least one (1) member voted D or E.

Statements that reached consensus were presented at the Annual Convention of the Philippine Society for Microbiology and Infectious Diseases on November 28-30, 2017 for initial feedback and comments. Statements that did not reach consensus on the initial voting were deliberated and sent back to the TWG for revision or further review of literature. The succeeding drafts were circulated via electronic communication to the members of the panel for comments and approval. The penultimate draft was elevated to the Steering Committee for final review and approval.

Dissemination Plans

A Training of Trainers Workshop will be conducted among members of the participating society using standard slide decks summarizing the CPG recommendations. A manual of procedure shall also be developed to train frontline healthcare workers such as barangay health workers and midwives. The pocket guide and full text of the CPG will also be available in the websites of the participating societies and agencies. A detailed description of the background, methods and evidence summaries that support each of the recommendations can be found in the full text of the guidelines.

Future Revision Dates

The need to update this guideline will be determined annually by the Steering Committee by reviewing the current literature. If deemed necessary to be updated, the CPG Task Force will be reconvened.