**Introduction:**

This document summarizes evidence from available Indian and International guidelines/ published reviews in clinical journals and medical books. It aids physicians and other caregivers in making appropriate diagnostic and therapeutic decisions in an outpatient setting. It provides a framework for managing patients with particular symptom or condition. It covers diagnosis, clinical assessment, alarm features, clinical management, and investigations at outpatient level and referral management to inpatient facility/ hospital.

**Scope and objective:**

- To provide evidence backed recommendations for the identification and care of adults with diarrhea at an outpatient clinic
- To give physicians a practical approach and guide to the care of patients with diarrhea
- To develop a tool that can be used with medical documentation and therefore promote compliance with best practice to standardize clinical care for patients with diarrhea in an outpatient setting.

**Target population:**

Adult population with new onset of symptoms of diarrhea

**Target Users:**

- General Physicians
- Nurses
- Other health care professional
- Outpatient Clinics

The clinical protocol cover critical elements of patient care from patient's first visit to a physician, outpatient management, through to follow up and referral to inpatient facility/ hospital. The Clinical team can refer to these protocols and bibliography for detailed information.

**Exclusions:**

Adults suffering from known underlying pathology have been excluded from the scope of this tool.

**Disclaimer:**

The clinical protocol are designed to be used by medical professionals licensed to practice in India as a guide and are not intended to substitute for informed medical decisions or judgment by a licensed medical professional.

Milliman

**Adult Diarrhea: Outpatient Care Protocol**

## 1. Introduction / definition *J1,J2, J6, B1,B2*

Diarrhea in an adult is defined as increase of volume, frequency or fluidity of stool lasting for 14 days or less. WHO defines diarrhea as the passing of three or more loose, watery stools per day.

## 2. General presentation *J2, J3, J6*

A person may present at the outpatient clinic with the following:

- Frequent watery or loose stool
- Presence of blood or mucus in the stool
- Associated conditions such as nausea, vomiting, fever and /or abdominal pain may be present
- Decreased urination, sunken eyes and dry mouth or skin in those who present with dehydration
- Drowsiness or listlessness or irritability in severe dehydration

## 3. Alarm features *J7*

In the presence of any of the alarm features the person should be assessed by the physician carefully and referral management along with supportive treatment should be initiated. The alarm features are:

- Diarrhea accompanied with fever above 102.2 F
- Abdominal distension
- Prolonged symptoms of diarrhea (>14 days)
- Persistent vomiting
- Passing of black tarry stool
- Severe dehydration (e.g., sunken eyes or decreased tears, dry mucous membranes, orthostatic hypotension or decreased urine output)
- Severe pain in the abdomen or rectum
- Diarrhea with severe abdominal pain in a patient older than 50 years or in the elderly (above 60 years)
- Drowsiness or listlessness
- Convulsions or loss of consciousness
- Inability to administer oral rehydration therapy

## 4. Clinical types of diarrhea *J1, B2*

Generally the management is based on the type of diarrhea. Clinical type of diarrhea can be determined by assessing the person so that an appropriate treatment plan can be developed and implemented without delay

- **Acute watery diarrhea:** Diarrhea without blood, with or without vomiting and fever. This can be managed at the outpatient clinic by providing symptomatic treatment.
- **Dysentery:** Diarrhea with visible blood and mucus, tenesmus, fever and abdominal pain. This generally requires certain investigations for further treatment.
- **Persistent diarrhea:** Diarrhea of more than 14 days, with marked weight loss, with or without blood in stool. This condition is usually not managed at outpatient setting and is referred to the hospital.

## 5. Risk factors *B3, J3*

- Poor hygiene
- Eating food or drinking water contaminated with bacteria or parasites
- Intake of certain antibiotics lead to diarrhea

## 6. Clinical diagnosis *J6*

The evaluation of diarrhea requires a careful review of medical history, a physical examination, and occasionally diagnostic testing.

### 6.1. History

**Ask for**

- **Stool details**
  - Duration of symptoms and number of stools in the past 24hrs
  - Color and consistency of stools
  - Blood or mucus in stools suggest infection by invasive organisms, inflammation, ischemia, or neoplasm
- **Associated symptoms**
  - Any changes in urine output
  - Presence and duration of fever
  - Association with vomiting, abdominal pain or tenesmus
- **Food intake history**
  - Degree of reduction in appetite since onset of symptoms and whether food intake has been with-held
  - Recent ingestion of contaminated food
  - History of any alcohol abuse, intake of milk products, sea food

- **Other**
  - Recent antibiotic treatment within past 2 months
  - Outbreak of diarrhea in the neighborhood
  - Any existing disease condition celiac disease, cystic fibrosis, lactose intolerance, hirschsprung's disease, immunodeficient and immune compromised condition

### 6.2. Physical examination *J1, J2, B2*

Physical examination is a critical step in establishing diagnosis and management thereon.

- **Check for:**
  - Vital Signs such as temperature, pulse, respiratory rate and blood pressure
  - Signs of volume depletion including dry mucous membranes, decreased skin turgor, and confusion
  - Abdominal mass, distension, tenderness, guarding etc
  - Skin color

- **Assessment of hydration status** *J1, J2* , *J7*
  - Assessment of hydration is a critical step in determining the management for diarrhea

**Table 1. Assessment of Hydration status**

| Physical Examination | Mild Dehydration | Moderate Dehydration (2 or more signs) | Severe Dehydration (2 or more signs) |
|---|---|---|---|
| General condition | Well, alert | Slightly lethargic | Very lethargic or drowsy |
| Thirst | Mild | Moderate | Intense |
| Mucus membrane | Slightly dry | Dry | Parched |
| Eyes | Normal | Normal | Sunken |
| Skin pinch (abdomen) | Retracts quickly (< 1sec) | Retracts slowly (1 to 2 sec) | Retracts very slowly (>2 sec) |
| Skin Temperature/ color | Normal | Normal | Cold and clammy |
| Pulse rate | Normal | Increased (>90/mint) | Increased (>90/mint) |
| Blood pressure | Normal | Mild hypotension | Severe hypotension |
| Urine output | Normal to decreased | Decreased | Minimal |

## 7. Investigations *J1, J2, J6, B2*

Investigations are usually not required for an acute diarrhea but may be required in some conditions to help determine the causative organism / pathology of illness and to determine the severity of the condition.

### 7.1. Routine investigations

- CBC
- Microscopic examination of stool (Stool M / E)
- Stool culture
- Stool for ova / parasite
- Fecal leucocyte test
- C. difficile assay

### 7.1.1. Indications for routine investigations

- CBC is indicated in suspected systemic infection, dysentery and persistent diarrhea
- Microscopic examination of stool (Stool M/E) is indicated in acute watery diarrhea with fever (to rule out bacterial / protozoal infection), diarrhea with tenderness on abdominal palpation (to rule out surgical causes) and dysentery (for blood in stool)
- Stool culture and fecal leucocyte test is indicated in frank bloody diarrhea, fever before onset of diarrhea or lasting more than 48hrs, tenesmus, severe or persistent symptoms, known exposure to a bacterial agent and presence of fecal leukocytes
- Stool for ova / parasite is indicated in negative stool culture with persistent symptoms and persistent diarrhea
- C. difficile assay is indicated if there is a recent history of antibiotic use or hospitalization

## 7.2. Additional investigations *J2*

In persisting cases additional investigations as follows may be indicated.

- Stool exam for phenolphthalein and magnesium sulphate
- Clinitest or Benedict's test to detect lactose intolerance
- Endoscopic studies to rule out surgical or neoplastic causes
- Small bowel biopsy to rule out surgical or neoplastic causes
- Sigmoidoscopy or colonoscopy with biopsies to rule out surgical or neoplastic causes
- Barium studies to rule out surgical or neoplastic causes

## 8. Differential diagnosis *J1,*

Physician should rule out other causes / conditions which are responsible for diarrhea:

- Infections such as urinary tract infections, pneumonia(fever predominates)
- Malabsorption (history of known cystic fibrosis, celiac disease)
- Food allergy or intolerance / lactose intolerance (vomiting, abdominal cramps, rashes, eczema, respiratory congestion or flu-like symptoms)
- Food poisoning (vomiting, abdominal cramps, nausea, recent history of contaminated food ingestion)

- Hemolytic-uremic syndrome (pallor, jaundice, oliguria / anuria, blood in stool),
- Antibiotic associated diarrhea: Diarrhea after a recent course of antibiotics up to 2 months, pseudomembranous colitis etc. (history of previous treatment, absence of infection)
- Immune deficiency disease, protein losing enteropathy, laxative abuse, motility disorders etc. (history, previous treatment and specific signs and symptoms)

## 9. Management of Diarrhea *J1, J2, J6, J7, B1,B2*

### 9.1. Principles of management

- Rehydration therapy
- Nutritional management
- Drug therapy for underlying pathology and other symptomatic treatment
- Referral management if condition worsens or in presence of alarm features

#### 9.1.1. Rehydration therapy *J1, J6, B3*

Rehydration therapy is necessary to replace fluid and electrolyte loss in adults with diarrhea and is based on the assessment of severity of dehydration. Assessment of severity and correction of dehydration is the most important step in the management of diarrhea. Choice of fluid therapy depends on the severity and type of dehydration.

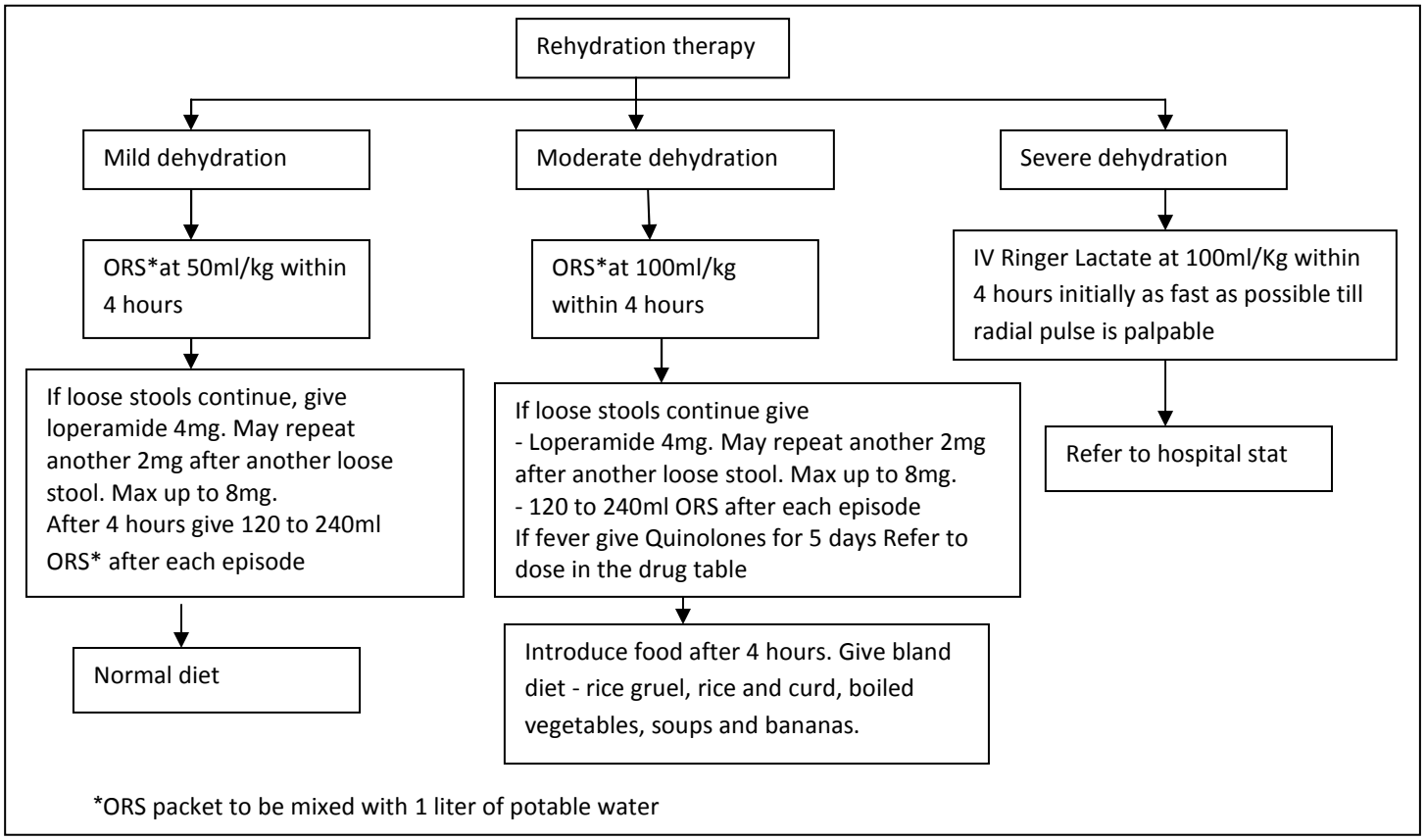
- **No or mild dehydration**
  - Oral intake of fluids containing glucose or starch with electrolyte solution is encouraged. Oral rehydration therapy is usually not required. However replacement for ongoing losses may be given. Oral rehydration solutions (ORS) are readily available. Ideally 120-240 mL ORS for each diarrheal stool or vomiting episode should be given as replacement for ongoing losses. Other alternatives are tea, fruit juices without the pulp and soda drinks that are not caffeinated.
- **Moderate dehydration**
  - Oral rehydration solutions (ORS) should be given as much as the person with diarrhea is able to drink. The usual dose is ORS 50-100 mL/kg body weight over 3-4 hours. After 4 hours 120-240 mL ORS for each diarrheal stool or vomiting episode should be given as replacement for ongoing losses.
- **Severe dehydration**

Intravenous infusion of fluids is usually required in those with severe dehydration. The patient should be immediately started with intravenous (IV) rehydration therapy and referred to a hospital. The fluids recommended by WHO for IV infusion are:

- Ringer lactate – is the best fluid for treating severe dehydration as it contains adequate concentrations of sodium and potassium and the lactate yields bicarbonate to correct the acidosis
- Diarrhea treatment solution (DTS) – Is an alternate solution recommended by WHO
- Normal saline – In the absence of any of the above fluids one may start a normal saline infusion, however it should be replaced with the above fluids as soon as available. Normal saline does not correct the acidosis and also does not replace potassium which is why it is not recommended to treat dehydration
- Oral Replacement of ongoing losses is the same as for moderate and mild dehydration. In those who are unable to accept orally recommended dosage of IV fluid is IV boluses of 20 mL/kg body weight until perfusion and mental status improve, then administer 100 mL/kg body weight ORS over 4 hours or 5% dextrose ½ normal saline intravenously at twice maintenance fluid rates.

*Note: In severe diarrhea normal saline as IV therapy is not recommended as it is less effective in correcting dehydration because it does not contain bicarbonate or potassium.*

Fig.1 Rehydration therapy:




### 9.1.2. Nutritional management *J1*

Early nutritional supplementation should be recommended as nutritional status is an important determinant of diarrheal duration and severity of condition.

- Food should not be withheld in a person having diarrhea
- Nutritional advice during rehydration phase - Food should be reintroduced as soon as possible which is after 4 hours in those under oral or intravenous therapy
- Food rich in micronutrients such as grains, pulses, meat etc should be started
- Only foods that aggravate the diarrhea such as milk products, canned juices etc should be avoided

### 9.1.3. Drug therapy in diarrhea *J2, J6, B1,B2, B3,*

#### 9.1.3.1. Antidiarrheal medications

These drugs provide symptomatic relief and are not meant for treating the underlying causes of diarrhea. They are of three types:

- Antimotility drugs – These are not recommended for bloody diarrheas or diarrhea with severe abdominal cramping or fever. These drugs inhibit intestinal peristalsis and have mild antisecretory properties.
- Antisecretory agents - Racecadotril is the most commonly used drug amongst the antisecretory agents. It helps alleviate the symptoms of diarrhea.
- Adsorbents - Kaolin-pectin, activated charcoal, attapulgite are adsorbents used, however their efficacy and safety in the treatment of diarrhea still needs to be studied.

#### 9.1.3.2. Antibiotics *J2, J3*

Most cases of diarrhea are self-limiting and generally no medication is necessary except in a few cases. Physicians should emphasize on given elements when practicing:

- Physicians should encourage rational use of antibiotics to prevent emergence of multi resistant pathogens
- Antibiotic therapy depends on the results of stool culture specifying the causative organism responsible for the disease
- The risk of adverse reactions, harmful eradication of normal intestinal flora, the induction of Shiga toxin production, and the increase of antimicrobial resistance should be considered
- Emperic therapy for presumed bacterial diarrhea
    - In patients with fever and either faecal leucocyte, lactoferic or haematocrit positive stool, infection with invasive bacterial pathogens such as shigella, salmonella and campylobacter Quinolones for 3-5 days are recommended.
    - In moderate to severe traveler's diarrhea Quinolones for 1-5 days is recommended
    - In persistent diarrhea (possible giardiasis) metronidazole 250mg 3 times for 7 days

### 9.1.3.3. Other Drugs *J5*

- Anti spasmodic drugs such as dicyclomine is commonly used in the presence of diarrhea accompanied by abdominal spasms
- Antiemetics such as ondansetron or domperidone may be used in the presence of nausea or vomiting
- Probiotic Lactobaccillus has been proven to be useful in those with diarrhea due to antibiotic use or in diarrhea due to clostridium deficille

*Note: Intravenous medications are used only in those who cannot tolerate orally due to persistent vomiting or in those who are suspected to have sepsis.*

**Table 2. Drug therapy in adult diarrhea**

| Indication | Therapeutic class | Drug (Generic) | Dosage | Contraindications |
|---|---|---|---|---|
| Traveler's diarrhea, acute non invasive diarrhea | Antimotility drugs | Loperamide http://www.mims.com/Page.aspx?menuid=mng&name=loperamide&brief=false&CTRY=IN#Dosage | 4mg initially, then 2 mg after each loose stool. Usual dose: 6-8 mg/day.<br><br>Administration: May be taken with or without food. | Contraindicated in bloody diarrheas or diarrhea with severe abdominal cramping or fever. Caution to be used during pregnancy and lactation. |
| | Antisecretory agents | Racecadotril http://www.mims.com/Page.aspx?menuid=mng&name=racecadotril&brief=false&CTRY=IN | 100mg 3 times a day upto 7 days.<br><br>Administration: May be taken with or without food. | Contraindicated in known hypersensitivity.<br><br>Special precaution: pregnancy, lactation |
| Acute gastroenteritis, diarrhea with fever or haematocrit positive stool and in moderate to severe travelers diarrhea | **Antibiotics (Quinolones)** | Ciprofloxacin (*Depending upon the sensitivity pattern of the region)<br>OR<br>Combination of Ciprofloxacin and tinidazole<br>OR<br>Cotrimoxazole<br><br>http://www.mims.com/Page.aspx?menuid=mng&name=ciprofloxacin&brief=false&CTRY=IN#Dosage | 500mg 2 times daily for 5 days<br>OR<br><br>500mg (Ciprofloxacin) and 600mg (Tinidazole) 2 times daily for 5 days<br>OR<br>80 mg Trimethoprim and 400 mg sulphamethoxazole 2 times daily for 5 days<br><br>**Administration:** May be taken with | Contraindicated during lactation. To be used with caution in pregnancy<br><br>Avoid exposure to strong sunlight or sun lamps during treatment. |

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| | | | or without food. (May be taken with meals to minimise GI discomfort. Do not take with antacids, iron or dairy products.)<br><br>**Food Interaction:** Food decreases rate but not the extent of absorption. | |
| Shigella and bacterial diarrhea | **Antibiotics** (Based on the organism identified on culture) | Doxycycline<br>OR<br>Cotrimoxazole<br><br>http://www.mims.com/Page.aspx?menuid=mng&name=doxycycline&brief=false&CTRY=IN#Dosage | Single dose of 100mg<br>OR<br>80 mg Trimethoprim and 400 mg sulphamethoxazole 2 times daily for 5 days<br>**Administration:** Should be taken with food. (Take with a full glass of water & remain upright for at least ½ hr. Avoid taking with dairy products.) | Doxycycline is Contraindicated in known hypersensitivity. Children <8 yr; pregnancy, lactation; porphyria; hypersensitivity to tetracyclines; severe hepatic dysfunction; prolonged exposure to sunlight<br><br>Cotrimoxazole is contraindicated in hypersensitivity; severe renal or hepatic insufficiency; infants <4 wk; megaloblastic anaemia; pregnancy and lactation. |
| V. cholerae | | Metronidazole (for invasive Amoebiasis)<br>FOLLOWED BY<br><br>Diloxanide furoate (for elimination of cysts)<br><br>http://www.mims.com/Page.aspx?menuid=mng&name=metronidazole&brief=false&CTRY=IN#Dosage | 750mg 3 times daily for 7-10days<br><br>500mg 3 times daily for 10 days | Metronidazole is contraindicated in the presence of any neurological disorders, blood dyscrasias and seizures.<br><br>Contraindicated in hepatic damage hypersensitivity and iodine intolerance |
| Entamoeba histolytica | | Metronidazole<br>OR<br>Tinidazole<br><br>http://www.mims.com/Page.aspx?menuid=m | 400mg 2 times daily for 5 days<br><br>2 g once daily for 3 days | Metronidazole is contraindicated in the presence of any neurological disorders, blood dyscrasias and seizures. |

| | | | | |
|---|---|---|---|---|
| | | ng&name=metronidazole&brief=false&CTRY=IN#Dosage<br><br>OR<br>http://www.mims.com/Page.aspx?menuid=mng&name=tinidazole&brief=true&CTRY=IN&searchstring=tinidazole | | Tinidazole is contraindicated in blood dyscrasias and hypersensitivity. |
| Acute giardiasis | | Cotrimoxazole<br>OR<br>Ciprofloxacin<br>OR<br>Metronidazole<br><br>http://www.mims.com/Page.aspx?menuid=mng&name=clotrimazole&brief=false&CTRY=IN#Dosage | 80 mg Trimethoprim and 400 mg sulphamethoxazole 2 times daily for 5 days<br>OR<br>500mg 2 times daily for 5 days<br>OR<br>250 mg 3 times daily for 5 days | None<br><br>Contraindicated during lactation. To be used with caution in pregnancy |
| Enteroinvasive E.coli | | Antibiotics are not necessary | | |
| Campylobacter jejuni | | Azithromycin<br><br>http://www.mims.com/Page.aspx?menuid=mng&name=azithromycin&brief=false&CTRY=IN#Dosage | 500mg once daily for 3 days<br><br>Administration:<br>Tab: May be taken with or without food. (May be taken w/ meals to reduce GI discomfort.)<br>Cap: Should be taken on an empty stomach. (Take on an empty stomach 1 hr before or 2 hr after meals.) | Contraindicated in known hypersensitivity |
| Quinolone-resistant Campylobacter | | Ampicillin<br>http://www.mims.com/Page.aspx?menuid=mng&name=ampicillin&brief=false&CTRY=IN#Dosage | 50-100 mg /kg / day 6hourly | None |
| Non-typhoid | | Dicylomine | 10-20mg sos, 8 | Contraindicated in |

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|---|---|---|---|---|
| salmonella | | http://www.mims.com/Page.aspx?menuid=mng&name=dicycloverine+hydrochloride&brief=false&CTRY=IN#Dosage | hourly | known hypersensitivity, glaucoma, inflammatory bowel disease, jaundice, myasthenia gravis and acute abdomen of unknown etiology. |
| Diarrhea with abdominal spasms or pain or nausea and vomiting | Antiemetics | Ondansetron<br>OR<br>Domperidone<br>http://www.mims.com/Page.aspx?menuid=mng&name=domperidone&brief=false&CTRY=IN#Dosage | 2-4 mg sos,12 hourly<br>10-20mg 3 times daily before meals | Contraindicated in known hypersensitivity<br><br>Contraindicated in patients with gastrointestinal bleeding and obstruction |
| Diarrhea due to antibiotics or due to C.deficile | Probiotics | Lactobaccillus | 1 tab 2 times daily for 5 days | Not known |

#### 9.1.3.3.1. Adverse reactions:

| Table 3. Adverse reactions of drug therapy in adult diarrhea | |
|---|---|
| **Drug** | **Adverse reactions** |
| Loperamide | Abdominal pain, distention and discomfort; paralytic ileus; constipation, dry mouth, drowsiness, dizziness, fatigue, rash; Toxic mega colon |
| Racecadotril | Vomiting, nausea, constipation, abdominal pain, thirst and headache. |
| Ciprofloxacin | GI disturbances; headache; joint pain |
| Doxycycline | Staining of teeth; rash, super infection; nausea, GI upsets |
| Metronidazole | GI disturbances e.g. nausea, unpleasant metallic taste, vomiting, diarrhea or constipation |
| Cotrimoxazole | GI disturbances |
| Azithromycin | Mild to moderate nausea, vomiting, abdominal pain, dyspepsia, flatulence, diarrhea, cramping |
| Ampicillin | GI upset, nausea, vomiting, diarrhea |
| Dicyclomine | Difficulty in accommodation, exacerbation of glaucoma; tachycardia, palpitations |
| Domperidone | Drowsiness, constipation or diarrhea |

### 9.1.4. Referral management *J1*

In the presence of any one of the alarm features mentioned in the previous section referral management should be initiated. Depending on the severity of dehydration supportive management should be started.

## 10. Follow up

- Educate the person to immediately return to the physician if warning signs appear (Refer to patient advisory).
- Inform about the next timely follow up visit *(Refer to patient advisory).*

## 11. Quality indicators

The quality indicators that are important in documenting the adherence to policy in the management of adult diarrhea are:

- ORS given as the first line of treatment in mild to moderate diarrhea
- Referral management for alarm features
- Antibiotics used after stool culture
- Nutrition management advice given

## 12. Patient advice:

Patient education must be reinforced about the disease, its causes, alarm features, prevention, treatment, zinc supplementation and when to seek help.

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