

Indian Academy of Pediatrics (IAP)



STANDARD TREATMENT GUIDELINES 2022



Persistent Diarrhea

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Persistent Diarrhea

Introduction

Diarrhea is the second most common cause of death in children. There are about 6 billion episodes of diarrhea every year in the world with 2 million deaths. Diarrhea is a condition characterized by a change in the consistency and frequency of stools compared to the normal bowel habit of the child. The vast majority of cases of diarrhea subside within 7 days—this is known as **acute diarrhea**.

- ☑ An episode of diarrhea of presumed infectious etiology, which starts acutely but lasts for more than 14 days, and excludes chronic or recurrent diarrheal disorders such as celiac disease, tropical sprue, or other congenital, biochemical or metabolic disorders, leading to a deterioration in nutritional status and a substantial risk of death.
- ☑ About 60% of PD occurs before 6 months and 90% below 1 year of age. According to WHO, PD accounts for only 10% of diarrheal episodes, but as much as 35% of diarrheal deaths in children below 5 years are due to it.

Persistent Diarrhea (PD)

Chronic diarrhea has an insidious onset unlike PD, lasts more than 2 weeks and is usually due to non-infectious causes. These children need a complete work up for underlying malabsorption.

Factors that contribute to PD:

- ☑ Secondary lactose intolerance
- ☑ Fungal super infection
- ☑ Primary malnutrition leading to enteropathy
- ☑ Other bacterial infections such as urinary tract infection, otitis media, etc.
- ☑ Antibiotic associated diarrhea

Acute Diarrhea

70% resolves in 1 week

If not then

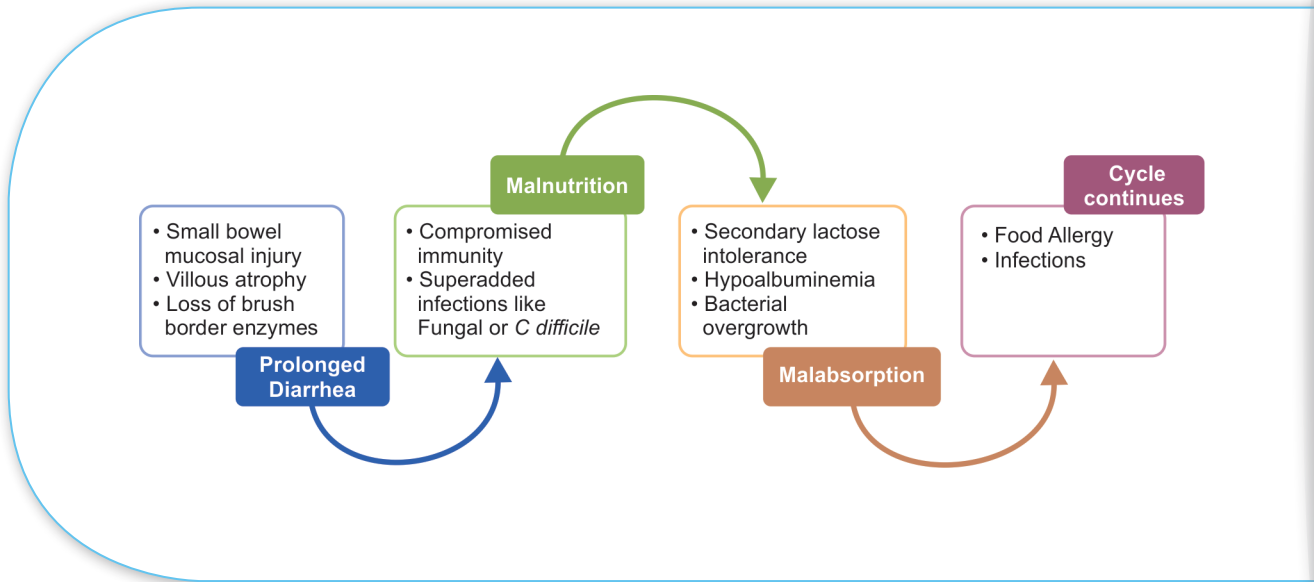
90-95% resolves in 2 weeks

Only 5-10% Become Persistent

- Majority subsides in 4–6 weeks
- If persisting beyond then think of other causes

Other causes of prolongation > 6-8 weeks

- Cow's milk protein allergy
- Immunodeficiency
- Celiac disease.
- Lymphangiectasia
- Cystic fibrosis
- Anatomical causes



Management of PD

The common features in all children with PD are small bowel mucosal damage which affects absorption of nutrients, and infections including small intestinal bacterial overgrowth (SIBO).

The cornerstone of management of PD is to break the above chain as mentioned in the pathophysiology.

There are three principles of management:

1. Control of diarrhea and its consequences
2. Treatment of infections, if any
3. Nutritional rehabilitation and correction of malnutrition

- ☑ Fluid resuscitation:
 - Low osmolality ORS is effective; IV fluids may be necessary if child has severe dehydration
 - Correction of electrolyte imbalance
 - Correction of hypoglycemia
- ☑ Identify infections and treat with antimicrobials or antifungals as appropriate:
 - A thorough clinical examination for chest infection , otitis media or signs of sepsis
 - Examination of perineum and oral cavity for superadded fungal infection
 - CBC, CRP, total protein and albumin, blood sugar, electrolytes, blood and urine cultures, and chest radiograph
 - Stool routine examination and culture usually have no role in management
 - Stool for opportunistic infections such as fungal hyphae, cryptosporidium, and assay of *Clostridium difficile* toxin A and B in appropriate clinical setting are advisable.
 - Start antibiotics: Quinolones/oral third generation cephalosporins in the presence of gross blood in stools; parenteral ampicillin and aminoglycosides in sepsis, children <3 months of age or associated extra-gut infections, and HIV
 - Start antifungals flucazole 6 mg/kg/dose for 4–6 weeks if there is oral thrush, or perineum showed fungal infection
- ☑ Dietary management (**Tables 1 and 2**)
- ☑ Home-made, culturally acceptable and age—appropriate diet to be started.
- ☑ Total calories should be approximately 100 cal/kg/day.
- ☑ If child has features of lactose intolerance, then diet should be modified as mentioned below. Lactose intolerance should be considered when child has explosive stools with perianal redness and stool pH<6.5. Keeping child fasting for 24 hours and diarrhea will be reduced significantly which implies towards osmotic diarrhea.

TABLE 1: Diets for PD.

Type A Diet		Type B Diet	
Ingredient	Amount	Ingredient	Amount
Milk	40 ml	Puffed rice	13.5 g
Sugar	2.25 g	Egg white	11 g
Puffed rice powder	12.5 g	Sugar/glucose	3.5 g
Oil	2 g	Oil	3.5 ml
Water	Make it 100 mL	Water	Make it 100 ml
Total calories	96 kcal/100 g	Total calories	92.2 Kcal/100 g
Protein	10%	Protein	9.5%
Fat	33%		33 %
Puffed rice is ground and mixed with sugar and oil. Boiled water is then added to make a thick gruel. This has a shelf life of 3 hours.		Egg white is added to the mixture of weighed rice, sugar and oil. Boiled water is added to make a thick gruel weighing 100 g.	

TABLE 2: Nutritional Supplements in PD.

Supplement	Dose	Duration
Multivitamins	Twice RDA	2–4 weeks
Iron	After cessation of diarrhea—3 mg/kg	
Folic acid	1 mg/day	2 weeks
Vitamin A	<6 months 50,000 IU; 6–12 months one lakh IU; >12 months 2 lakh IU	One Stat Dose
Potassium	5–6 mEq/kg/day	2 weeks
Magnesium Sulphate	0.2 ml/kg/day IM	2–3 days
Elemental zinc	10 mg <6 months; 20 mg > 6 months OD	2 weeks
Vitamin D	200–400 IU/d	

Treatment of Lactose Intolerance

- ☑ Always start with Diet A (low lactose diet) for 7 days. This is based on the fact that secondary lactose intolerance is common in children with PD and malnutrition. To reduce lactose concentration in animal milk, it should be mixed with cereals, but not diluted with water as that reduces the caloric content.
- ☑ If there is no response after a week, then start Diet B—milk (lactose) free and provides carbohydrates as a mixture of cereals and glucose. Milk protein is replaced by chicken, egg or protein hydrolysate. The starch content is reduced and partially substituted by glucose.
- ☑ A small number of children with PD who do not respond to diet A/B is given diet C for 7 days. It contains only glucose and a protein source as egg white or chicken or commercially available protein hydrolysates. Energy density is increased by adding oil to the diet.
- ☑ If there is no response after a week, then elemental diet such as hydrolyzed or amino acid formula may be started. If there is still no response after a week, child may require total parenteral nutrition, and hence he may be referred to a pediatric gastroenterologist.

Green Banana Diet

- ❑ Green (unripe) banana diet is gaining acceptance for treatment of PD. The amylase resistant starch present in this is not digested in small intestine and reaches colon. Colonic bacteria ferment this to short chain fatty acids which have trophic effects for colon and increase the absorption of salt and water.
- ❑ A dose of parenteral Vitamin K should be given at admission. After the infant has begun to improve and is gaining weight, 3 mg/kg/day of iron is added.
- ❑ There are no published data to recommend the use of empiric antibiotics directed against enteric pathogens, probiotics, racecadotril, steroids or drugs that alter intestinal motility, including loperamide, codeine, and paregoric.
- ❑ The failure to respond to treatment may be due to severe systemic infections, unusual enteropathogens, sucrase/isomaltase deficiency, and severe glucose malabsorption.
- ❑ Strategies to prevent PD include promotion of exclusive breastfeeding, safe complementary feeding practices, promotion of safe drinking water, low osmolality ORS, zinc supplementation, avoiding unnecessary antibiotics, and continued feeding during diarrhea.

- ❑ The management of infants below 6 months of age continues to be a problem as they cannot be given most food recommended for older children. They may need extensively hydrolysed 100% bovine casein infant formulas and elemental amino acid formulas which are very expensive and are not freely available in our country.
- ❑ Many hospitals are not able to manage children with PD who do not respond to the usual treatments described above. Hence, IAP should take up the initiative to set up regional centres which can manage such refractory cases.
- ❑ Parent education and uniform protocols of management should be followed by all pediatricians in India.

Concerns in the Management of PD

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