Diarrhoea: Why children are still dying and what can be done?

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Facts

- Diarrhoea remains the second leading cause of death among children under five globally.
- Nearly one in five child deaths – about 1.5 million each year – is due to diarrhoea.
- **Diarrhoea kills more young children than AIDS, malaria and measles combined.**
Major causes of death in newborns and children, WORLD - 2008

Children under 5 years
- Noncommunicable diseases (postneonatal): 41%
- Injuries (postneonatal): 3%
- Other: 13%
- Measles: 1%
- HIV/AIDS: 2%
- Malaria: 8%
- Diarrhoea (postneonatal): 14%
- Pneumonia (postneonatal): 14%

Newborns under 1 month
- Other: 11%
- Congenital anomalies: 8%
- Neonatal tetanus: 2%
- Diarrohoeal diseases: 2%
- Neonatal diseases: 2%
- Neonatal infections: 25%
- Birth asphyxia & birth trauma: 23%
- Prematurity & low birth weight: 29%

35% of under-five deaths are due to the presence of undernutrition

Sources
Major causes of death in newborns and children, 
EASTERN MEDITERRANEAN REGION - 2008

Children under 5 years

- Noncommunicable diseases (postneonatal) 4%
- Injuries (postneonatal) 3%
- Other 12%
- Measles 0.5%
- HIV/AIDS 0.4%
- Malaria 3%
- Diarrhoea (postneonatal) 17%
- Pneumonia (postneonatal) 14%

Newborns under 1 month

- Other 4%
- Congenital anomalies 11%
- Neonatal tetanus 2%
- Diarrhoeal diseases 2%
- Neonatal infections 26%
- Birth asphyxia & birth trauma 22%
- Prematurity & low birth weight 32%

Source
World Health Statistics 2010, WHO.
نمودار ۱۴- توزیع نسبی مرگ کودکان ۱-۵۹ ماهه کشور بر حسب علت در سال ۷۷
Facts

- Why is diarrhoea, an easily preventable and treatable disease, causing an estimated 1.5 million under-five deaths every year?
- Diarrhoea is more prevalent in the developing world due, in large part, to the lack of safe drinking water, sanitation and hygiene, as well as poorer overall health and nutritional status.
The Millennium Development Goals (MDG) call for a reduction of child mortality by two thirds between 1990 and 2015. As the deadline approaches, the reality is that although progress is being made, much more remains to be done…
Facts

- According to the latest available figures, an estimated 2.5 billion people lack improved sanitation facilities, and nearly one billion people do not have access to safe drinking water.
- These unsanitary environments allow diarrhoea - causing pathogens to spread more easily.
Facts

- Improving unsanitary environments alone, however, will not be enough as long as children continue to remain susceptible to the disease and are not effectively treated once it begins.
- Younger children who are also malnourished, are more vulnerable to serious infections like acute diarrhoea and suffer multiple episodes every year.
Lessons to be learned from past

- An international commitment to tackle childhood diarrhoea in the 1970s and 1980s resulted in a major reduction in child deaths.
- This came about largely through the scaling up of oral rehydration therapy, coupled with programmes to educate caregivers on its appropriate use.
Today, in 3rd millennium, only 39 percent of children with diarrhoea in developing countries receive the recommended treatment, and limited trend data suggest that there has been little progress since 2000.
Definition

- Diarrhoea is the passage of unusually loose or watery stools, usually at least three times in a 24 hour period. However, it is the consistency of the stools rather than the number that is most important. Age and diet are essential factors for defining diarrhoea.

- *Mothers usually know when their children have diarrhoea* and may provide useful working definitions in local situations.
What causes diarrhoea?

- Just a handful of organisms are responsible for most acute cases of childhood diarrhoea. *Rotavirus* is the leading cause of acute diarrhoea, and is responsible for about 40% of all hospital admissions due to diarrhoea among children under 5 worldwide.

- Other major bacterial pathogens include E. coli, Shigella, Campylobacter and Salmonella, along with V. cholerae during epidemics.
Severity and outcome

- Younger age, at least complex formula feeding and formerly established malnutrition; all result in more frequent, more severe, more prolonged bouts of diarrhea.
- All of the above mentioned parameters increase the rate of hospital admissions and complications such as persistent diarrhoea and further weight loss.
Clinical types of diarrhoea

- It is most practical to base treatment of diarrhoea on the *clinical type* of the illness, which can easily be determined when a child is first examined. *Laboratory studies are not needed.*
- Three clinical types of diarrhoea can be recognized, each reflecting the basic underlying pathology and altered physiology.
Clinical types of diarrhoea

- **Acute watery diarrhoea**, which lasts hours to days: the main danger is dehydration; weight loss also occurs if feeding is not continued.

- **Acute bloody diarrhoea**, also called *dysentery*: the main dangers are dehydration, damage of the intestinal mucosa and sepsis.

- **Persistent diarrhoea**, which lasts 14 days or longer: the main danger is malnutrition and serious non-intestinal infection; dehydration may also occur.
In the early stages of dehydration, due to negligible loss of body water content, there are no signs or symptoms.
Stage B

As dehydration increases, signs and symptoms develop. Initially these include:

- Thirst
- Restless or irritable behaviour
- Decreased skin turgor
- Sunken eyes
- Sunken fontanelle (in infants).
Stage C

_In severe dehydration_, the patient may develop evidence of hypovolaemic shock, including:

- diminished consciousness
- lack of urine output
- cool moist extremities
- rapid and feeble pulse
- low or undetectable blood pressure
- peripheral cyanosis. Death follows soon if rehydration is not started quickly.
A 7-point plan for comprehensive diarrhoea control
The treatment package focuses on two main elements, as outlined in a 2004 joint statement from UNICEF and WHO:

1) fluid replacement to prevent dehydration
2) zinc treatment
Prevention Package

The prevention package highlights five main elements:

3) rotavirus and measles vaccinations
4) promotion of early and exclusive breastfeeding and vitamin A supplementation
5) promotion of hand washing with soap
6) improved water supply quantity and quality, including treatment and safe storage of household water
7) community-wide sanitation promotion
Treatment Plan A: home therapy to prevent dehydration and malnutrition

- Give the child *suitable fluids* to prevent dehydration
- Continue to feed the child, to prevent malnutrition
- Give supplemental zinc (10 - 20 mg) to the child, every day for 14 days
- Take the child to a health worker if there are signs of dehydration or other problems
Treatment Plan B

Oral rehydration therapy for children with some dehydration

- How to give ORS solution and how much of it
- Giving Zinc
- Giving food
Treatment Plan C

- Guidelines for intravenous rehydration
- Monitoring the progress of intravenous rehydration
## Hypoosmolar vs. traditional ORS

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<th>New WHO ORS</th>
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