The Use of Oral Rehydration Fluids in Children with Acute Gastroenteritis and Moderate Dehydration

DCH project

Dr R Kauna
Introduction

• Diarrhea is defined as a passage of 3 or more watery stool in 24 hours.

• Intestinal tract infection were etiology is bacteria/virus/parasites

• Pathogens come from fecal contaminated water/food from poor hygiene and sanitation.

• In developing countries, 2 most common pathogens; Rotavirus and Escherichia Coli
WHO Classification of Diarrhea

• **Acute diarrhea**: defined as diarrhea less than 14 days.

• **Dysentery**: diarrhea with blood mixed stool.

• **Persistent diarrhea**: defined as diarrhea more than 14 days.

• **Chronic diarrhea**: painless and non infected diarrhea that lasts for more than 4wks
# Symptoms and signs of Dehydration

<table>
<thead>
<tr>
<th>Signs</th>
<th>No dehydration</th>
<th>Moderate dehydration</th>
<th>Severe dehydration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Condition of baby/child</strong></td>
<td>Alert/ active /well</td>
<td>Restless / irritable</td>
<td>Drowsy/ lethargic/coma /floppy</td>
</tr>
<tr>
<td><strong>Eyes</strong></td>
<td>Normal</td>
<td>Sunken (++)</td>
<td>Very sunken (+++)</td>
</tr>
<tr>
<td><strong>Tears</strong></td>
<td>Present</td>
<td>Reduced / absent</td>
<td>Absent</td>
</tr>
<tr>
<td><strong>Oral mucosa</strong></td>
<td>Moist</td>
<td>Dry</td>
<td>Very dry</td>
</tr>
<tr>
<td><strong>Thirst</strong></td>
<td>Drinks normally</td>
<td>Thirsty/ drinks eagerly</td>
<td>Drinks poorly/not drinking</td>
</tr>
<tr>
<td><strong>Skin turgor</strong></td>
<td>Normal</td>
<td>Goes back slowly</td>
<td>Goes back very slowly</td>
</tr>
<tr>
<td><strong>Fontanel</strong></td>
<td>Normal</td>
<td>Sunken (+)</td>
<td>Sunken (+++)</td>
</tr>
<tr>
<td><strong>Extremities</strong></td>
<td>Warm</td>
<td>warm</td>
<td>Cool/moist/pale skin</td>
</tr>
<tr>
<td><strong>Pulse</strong></td>
<td>Normal (&lt;120/min)</td>
<td>Increased (120-160/min)</td>
<td>Increased/thready (&gt;160/min)</td>
</tr>
<tr>
<td><strong>Capillary refill</strong></td>
<td>&lt; 2 seconds</td>
<td>&lt;2 seconds</td>
<td>&gt;2seconds</td>
</tr>
<tr>
<td><strong>Urine output</strong></td>
<td>Normal</td>
<td>Reduced</td>
<td>Absent</td>
</tr>
</tbody>
</table>
Introduction

• There is no proper national data of diarrheal diseases in PNG due to incomplete reporting.

• It is 2nd common in &out-patient disease PMGH as well as the country.

• For over 40 yrs, ORS has greatly improved the treatment of diarrheal diseases with mild dehydration.

• Despite proven efficacy of ORS, its not being utilized as often in clinics /hospitals in PNG.

• If it was possible to safely manage children with moderate dehydration as outpatients, it would avoid costs & complications.
Aim of the study

• To determine safe use of ORS in treatment of acute gastroenteritis with moderate dehydration at home in patients ≤ 5 yrs.

• To promote efficacy of oral rehydration therapy to parents/guardians/health workers.
Methodology

• A Prospective study was done on the use of ORS in acute gastroenteritis with moderate dehydration at CED PMGH

• Study was carried out from 1/04/2017 to 20/07/2017
Recruitment Criteria

• Children with **three or more signs of Moderate Dehydration**

• If their catchment areas were within the city
Exclusion criteria

• Persistent vomiting

• Those patients with **one or more** signs of severe dehydration. (*managed as severe dehydration*)

• Children with less than 2 signs of moderate dehydration (*treated as mild dehydration*)

• Very sick children like, severe PNA/meningitis associated with gastroenteritis and dehydration etc....
• 150 patients were recruited in this study.

• Consent forms signed

• Guardians/parents were educated on;
  
  ✓ Symptoms and signs of moderate and severe dehydration by using pictures
  
  ✓ Types of oral rehydration fluids
  
  ✓ how to make/mix ORS
  
  ✓ how much to administer at home
  
  ✓ Given parent information sheet
• ORS (zinc, albendazole, tinidazole /antibiotics) was administered

• They were observed for 3-4 hours and if tolerated ORS well ie;
  – drank well without vomiting or
  – Without spiting or
  – able to drink \( \approx 40\text{ml/kg} \) then were discharged home on ORS and zinc.

**NOT tolerate** well ie;
  – vomit or
  – were weak or
  – kept having frequent diarrheal episodes, they were given HSD.

• Those tolerated ORS well were reviewed on day 1, 2 and 5 at CED or via phone.
RESULTS

- 0% in >3 yrs - 5 yrs
- 6% in >1/12 - 1 yr
- 8% in >2 yrs - 3 yrs
- 27% in >1yr - 2 yrs
- 59% in 0-1/12

Ages:
- 0-1/12
- >1/12 - 1 yr
- >1yr - 2 yrs
- >2 yrs - 3 yrs
- >3 yrs - 5 yrs
150 patients were recruited

15 Persistent/chronic gastro
EXCLUDED

135 patients with acute gastroenteritis

3 had ≤ 2 signs moderate
EXCLUDED

3 had 1 sign of Severe
EXCLUDED

129 had signs of moderate dehydration
129 patients AGE and moderate dehydration

63 patients tolerated ORS well

35 Completed 3 days r/v Resolved

63 RESOLVED

18 Resolved D1

All didn’t come back for D5 r/v

66 Patients didn’t tolerate ORS well

10 Resolved D2

HSD

• 24 resolved
• 37 unknown outcome
• 5 kept observation
For those (63) that tolerated ORS well

- Average weight: 7.68kg
- Average ORS tolerated: 192 mls
- Average time for observation: 2 hours 16 mins

NB: most of them took ≈ 20-25ml/kg over 2hrs 16 mins to reach some form of stability from dehydration
## Place of residence

<table>
<thead>
<tr>
<th>Residence</th>
<th>n=150</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Settlement</td>
<td>88</td>
<td>58.7 %</td>
</tr>
<tr>
<td>Suburb</td>
<td>53</td>
<td>35.3 %</td>
</tr>
<tr>
<td>Village</td>
<td>9</td>
<td>6 %</td>
</tr>
</tbody>
</table>
A pie chart showing the distribution of different types of toilet systems. The chart is labeled 'TOILET'.

- **Flush**: 59%
- **Bush**: 32%
- **Sea**: 5%
- **Pit**: 4%

The chart indicates that the majority of toilet systems are flush toilets, followed by bush toilets, then sea systems, and finally pit systems.
Level of education for parents/guardians

- Grade 1-10: 84%
- Grade 11-12: 7%
- Uni/College: 6%
- none: 3%
Parents understanding in making and administration of ORS at home

- Yes: 97%
- No: 3%
Bottle fed: 72%
Diarrhoea in family: 3%
Breast feed/eat: 22%
Adopted: 3%
Discussion

- This study was focused on patients who tolerated ORS well.

- Did not focus on outcome of those who received HSD.

- Not all parents were educated due to time factor and man power issues.
Conclusion

From the study, half recovered from ORS, thus;

• ORS can safely be used at home to treat acute gastroenteritis and moderate dehydration;
  ✓ only IF tolerated well &
  ✓ 20-25ml/kg over 2 hours

• During the time of the study, it had promoted the use of ORS.
Recommendations

• Education and awareness on;
  – importance of the use of ORS at health clinics.
  – causes of diarrhea
  – prevention methods (hygiene/sanitation).

• Employment: nursing and medical officers

• Availability of sweet affordable ORS in public health facilities
Acknowledgement

I would like to acknowledge;

• Prof Trevor Duke
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References

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Thank you