

**ThinkAskLearn**  
Health Professional Education

**The Kid that gave me the s....!**  
**Gastroenteritis in the ED**


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**Gastroenteritis**


- Leading childhood mortality worldwide
- Rotavirus causes half the diarrhoea admissions in Australia
- 20,000 admissions per year of children under 5
- Acute Diarrhoea
- Fever
- Vomiting last 12-24 hours
- Watery diarrhoea last about 5 days



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**Rotavirus Vaccine**


- Sept, 1998 - July, 1999 released to market
- Found 1 in 12000 cases of intussusception following vaccine
- Almost 2 million doses were given
- Withdrawn from market
- New vaccine - available in Australia since 2007
- On immunisation schedule



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**Diarrhoea and Vomiting**


- Essentially 2 aspects of assessment
  - Diagnosis
    - Does the child have a cause other than infective gastroenteritis?
  - Degree of dehydration
    - Does the child need admission to hospital?
    - Is there any reason why oral rehydration is not appropriate?



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**Diagnosis?**


- Viral gastroenteritis
- Invasive bacterial disease
- Food poisoning
- Appendicitis
- Urinary infections
- Intussusception
- Abdo pain is not a feature of uncomplicated gastroenteritis



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**Assessment Criteria**

- ABC's
- Duration of illness
- Presence of blood or mucus in the stool
- Intake of fluids
- Activity of the child
- Number of diarrhoea and vomiting episodes
- Fever
- Moisture of the mucous membranes
- Urine frequency



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## Diagnosis-History

- Diarrhoea
  - Freq, amount and quality (bloody, watery, mucous)
- Vomiting
  - Freq, amount and quality (bloody, food contents, bile)
- Urine Output
  - Freq (wet nappies), time since last, colour, odour,
- History of travel, exposure to contaminated foods or water -risk of bacterial/parasite



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**BEWARE THE  
VOMITING CHILD  
WITHOUT MUCH IN  
THE WAY OF  
DIARRHOEA**



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## Red Flags in Gastro - Clinical

- Severe abdominal pain or abdominal signs
- Persistent diarrhoea (> 10 days)
- Blood in stool
- Looks very unwell
- Bilious (green) vomit
- Vomiting without diarrhoea



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## Red Flags for Gastro - History

- Short gut syndrome
- Ileostomy
- Complex/cyanotic congenital heart disease
- Renal transplants or renal insufficiency
- Very young (<6 months)
- Poor growth
- Fortified feeds (concentrated feeds or caloric additives)
- Recent use of potentially hypertonic fluids (eg Lucozade)
- Other chronic diseases
- Repeated presentations for same/similar symptoms



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## Investigations Required

- RARELY NEEDED for Gastroenteritis
  - severe dehydration
  - comorbidity of renal disease or on diuretics
  - altered conscious state
  - 'doughy' skin (suggests hypernatraemia)
  - home therapy with excessively hypertonic fluids (eg homemade solutions with added salt) or excessively hypotonic solutions (eg prolonged plain water or diluted formula)
  - Profuse or prolonged losses
  - ileostomy



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## Simple Gastroenteritis

- Uncomplicated, resolves spontaneously
- No intervention or investigation required for most patients
- Convincing patients and other staff of this is often our greatest challenge



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## Look for Hypo

- Reid & Losek 2005
- Well known in third world
  - dehydration in malnourished kids 3% - 14%
- 207 kids 1 month - 5 years old
  - Excluded
  - Need IVT rehydration for acute gastroenteritis
- 9.2% had serum glucose <3.3mmol
- Duration of vomiting longer in hypo kids
  - 2.6 days vs 1.6 days
- Heeley Ray et al 2012 – n=145 - 1.9% Rate



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## Yes look for hypo

ACTA PEDIATRICA  
NURTURING THE CHILD

Regular Acta Paediatrica homepage

**Hypoglycaemia was common in acute gastroenteritis in a prospective hospital-based study, but electrolyte imbalances were not**

Mohammed Qudus, Elmira Fliem, Terese Bekkevold, Henrik Dallner, Ann Mari Gilje, Astrid Rogahn, Kristi Skjott

First published: 13 March 2018 | <https://doi.org/10.1111/apa.14318> | Citations: 9

ORIGINAL ARTICLES

**Hypoglycemia in a Pediatric Emergency Department Single-Center Experience on 402 Children**

Pignati, Laura MD\*, Pignati, Simone MD\*, Stancu, Mari, Carlo MD\*, Perini, Pasquale MD, PhD\*, Cioffi, Angelo MD, Maria, Luisa MD\*, Macchia, Michela MD\*, Carmona, Stefano MD\*, Schiavone, Barbara MD\*, Tassinari, Roberto MD\*, Reale, Antonino MD\*, Zella, Maria Pia MD\*, Russo, Umberto MD, PhD\*

Author Information

Pediatric Emergency Care 18(1):e16-20, January 2022 | DOI: 10.1017/PEC.0000000000000205

- Norwegian kids
- 659 kids with gastro
- BSL 3.0–3.3 mmol/L - 9%
- <3.0 mmol/L in 6%
- All other electrolytes normal
- Italian kids
- 402 kids with hypo over 6 years
- 86.32% had dx gastro



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## Management of Dehydration

- With mild dehydration (<5%) there are no clinical signs
- Mild (< 5%) can usually be managed in the ED with oral rehydration if vomiting not a major problem



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## Meta analysis of data

ARTICLE

### Enteral vs Intravenous Rehydration Therapy for Children With Gastroenteritis

A Meta-analysis of Randomized Controlled Trials

Bob K. Fonseca, FRACP, MMed; Anna Holdgate, FACEM, MMed; Jonathan C. Craig, FRACP, PhD  
Arch Pediatr Adolesc Med. 2004;158:483-490

**Oral versus intravenous rehydration for treating dehydration due to gastroenteritis in children (Review)**

Hartling L, Bellemare S, Wiebe N, Russell KF, Klassen TP, Craig WR

The Cochrane Library 2010, Issue 1



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## Parents Preference

- Karpas et al 2009
- Informed parents regard ORT or IVT
- 260 parents interview
  - 62% preferred IVT
- 'More likely to be successful'
- 'Already tried ORT at home'
- 91% had attempted ORT at home
  - Only 34% had used appropriate fluid, amount, timing
- Freedman et al 2011 Education intervention study
  - Parent recognition - 90% IV vs 20% NGT



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## ORT for Dummies

- Reverse technology transfer
- Kids with mild/no dehydration can be discharged without a trial of fluids
- Aim 10/20ml/kg in first hour
  - 50/100mls in 3-4hrs
- Small aliquots 5ml every 1-2 mins
- Add 10ml/kg for every watery diarrhoea
- 2ml/kg for every vomit

Reid et al 2002 

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### Original Investigation

## Effect of Dilute Apple Juice and Preferred Fluids vs Electrolyte Maintenance Solution on Treatment Failure Among Children With Mild Gastroenteritis A Randomized Clinical Trial

Stephen B. Freedman, MDCM, MSc; Andrew R. Willan, PhD; Kathy Boutis, MD; Suzanne Schuh, MD

**JAMA** Published online April 30, 2016

- 647 kids aged 6months-60months with mild /moderate dehydration\*
- Outcomes – IV rehydration, hospitalisation, ED/GP revisit, ongoing weight loss, other secondary outcomes



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## Dilute Apple Juice and preferred fluids vs Commercial ORT

- Treatment failure rate
  - ORT 25% vs Apple 16.7%
- Needed IV rehydration
  - ORT 9% vs Apple 2.5%
- No other outcome difference
- Benefit of apple juice/preferred fluids over electrolyte maintenance solution was most notable in children aged 24 months or older



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## MANAGE VOMITING?



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## Management of Vomiting

THE NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

### Oral Ondansetron for Gastroenteritis in a Pediatric Emergency Department

Stephen B. Freedman, M.D.C.M., Mark Adler, M.D., Roopa Seshadri, Ph.D., and Elizabeth C. Powell, M.D., M.P.H.

N. ENGL. J. MED. 354:16 WWW.NEJM.ORG APRIL 20, 2006



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- 215 kids 6mth-10 yrs
- Randomised to Ondansetron or placebo for mild to moderate gastroenteritis
- All had vomited within 4 hrs prior to enrolment
- 2mg – 8-15kg; 4mg 16-30kg, 8mg for over 30kg
- Oral rehydration as per department protocol 30ml every 5 minutes
- Vomiting - 14% vs 35%, Need IVT – 14% vs 31%
- Increased rates of diarrhoea in Ondansetron group



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### In Conclusion

- Decision – Is it gastro?
- Red flags
- Assess dehydration
- Use Oral Rehydration Therapy
- Antiemetic use is worth considering

