

South Australian Paediatric Clinical Practice Guidelines

Gastroenteritis in children

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Note

This guideline provides advice of a general nature. This state-wide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this state-wide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This state-wide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

Explanation of the aboriginal artwork:

The aboriginal artwork used symbolises the connection to country and the circle shape shows the strong relationships amongst families and the aboriginal culture. The horse shoe shape design shown in front of the generic statement symbolises a woman and those enclosing a smaller horse shoe shape depicts a pregnant woman. The smaller horse shoe shape in this instance represents the unborn child. The artwork shown before the specific statements within the document symbolises a footprint and demonstrates the need to move forward together in unison.



Cultural safety enhances clinical safety.

To secure the best health outcomes, clinicians must provide a culturally safe health care experience for Aboriginal children, young people and their families. Aboriginal children are born into strong kinship structures where roles and responsibilities are integral and woven into the social fabric of Aboriginal societies.

Australian Aboriginal culture is the oldest living culture in the world, yet Aboriginal people currently experience the poorest health outcomes when compared to non-Aboriginal Australians.

It remains a national disgrace that Australia has one of the highest youth suicide rates in the world. The over representation of Aboriginal children and young people in out of home care and juvenile detention and justice system is intolerable.

The accumulative effects of forced removal of Aboriginal children, poverty, exposure to violence, historical and transgenerational trauma, the ongoing effects of past and present systemic racism, culturally unsafe and discriminatory health services are all major contributors to the disparities in Aboriginal health outcomes.

Clinicians can secure positive long term health and wellbeing outcomes by making well informed clinical decisions based on cultural considerations.

The term 'Aboriginal' is used to refer to people who identify as Aboriginal, Torres Strait Islanders, or both Aboriginal and Torres Strait Islander. This is done because the people indigenous to South Australia are Aboriginal and we respect that many Aboriginal people prefer the term 'Aboriginal'. We also acknowledge and respect that many Aboriginal South Australians prefer to be known by their specific language group(s).



Gastroenteritis in children

Purpose and Scope of PCPG

The Gastroenteritis in Children Clinical Guideline is primarily aimed at medical staff working in primary care or hospitals. It may however assist the care provided by other clinicians such as nurses. The information is current at the time of publication and provides a minimum standard for the assessment (including investigations) and management of gastroenteritis; it does not replace or remove clinical judgement or the professional care and duty necessary for each specific case.

Flowchart for the management of gastroenteritis in children

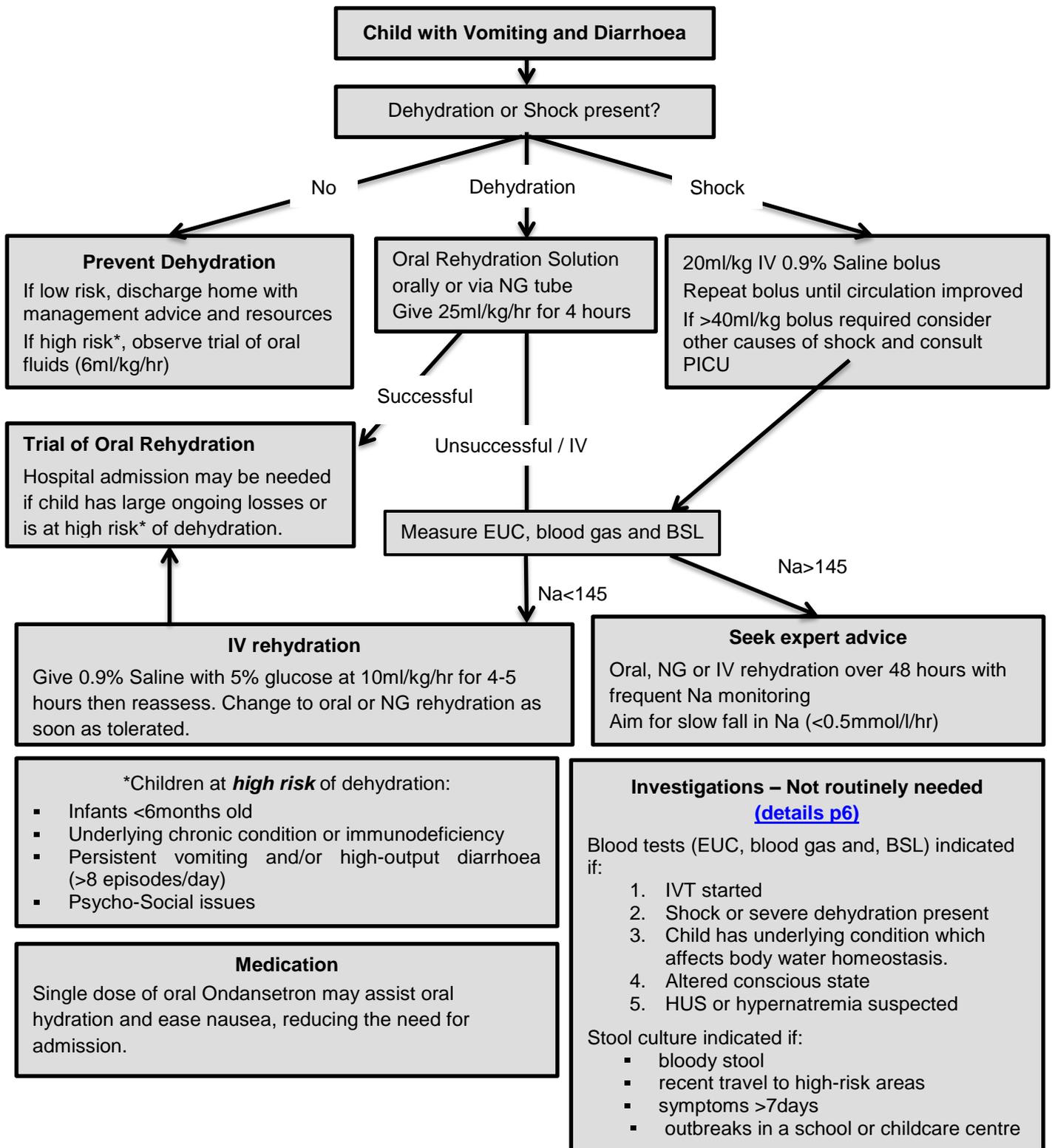


Table of Contents

Flowchart for the management of gastroenteritis in children	2
Important Points	3
Abbreviations	4
Introduction	4
Management summary	4
Assessment	5
Management	7
Medication	10
References	12
Information for parents	12
Acknowledgements	13
Appendices	14
APPENDIX 1 - Differential diagnoses and warning signs of serious conditions mimicking gastroenteritis	14
APPENDIX 2 - Oral rehydration solutions	15
APPENDIX 3 – Fluid requirements and recommendations	16
APPENDIX 4 - Management decisions in gastroenteritis in children	17
APPENDIX 5 - Ondansetron dosage guidelines	18
APPENDIX 6 – Management of Hypoglycaemia in the Paediatric Emergency Department	19

Important Points

- > Gastroenteritis is a common infection of the gastrointestinal tract characterised by diarrhoea with or without vomiting and cramping abdominal pain.
- > Most cases of gastroenteritis do not need hospital admission and can be managed using oral hydration. Enteral rehydration is preferable to intravenous (IV) hydration.
- > Similar symptoms may occur in other illnesses which should be considered before the diagnosis of gastroenteritis is made.
- > Dehydration and electrolyte abnormalities are the commonest complications requiring treatment.
- > Electrolyte abnormalities such as hypernatraemia ($\text{Na} > 145\text{mmol/L}$) and hypokalaemia are potentially dangerous and, if present, close monitoring is critical.
- > Severe dehydration can cause life-threatening shock and should be managed with 20ml/kg boluses of IV 0.9% sodium chloride.
- > Prior to discharge ensure that the family can access timely medical review should the child deteriorate.



Abbreviations

mg	milligram
kg	kilogram
hr	hour
ORS	Oral rehydration solution
EUC	Electrolytes, Urea and Creatinine
Na	Sodium
PICU	Paediatric Intensive Care Unit
WHO	World Health Organisation
LMO	Local medical officer
IV	Intravenous
NG	Nasogastric
NGT	Nasogastric tube
BSL	Blood sugar level
IO	Intraosseous

Introduction

- > Gastroenteritis in children is usually caused by a viral infection but may be bacterial or parasitic in origin. Outbreaks in the community are seasonal and sporadic
- > A number of potentially serious conditions have symptoms in common with gastroenteritis and must be considered before the diagnosis of gastroenteritis is made. Warning signs of other diagnoses must be recognised and investigated ([See Appendix 1](#))
- > Most children with gastroenteritis can be managed in the outpatient setting using oral fluids and parental education
- > A small number of children become significantly dehydrated, requiring more aggressive rehydration under clinical supervision. Untreated or poorly treated dehydration can lead to shock and death
- > The risks of treatment include iatrogenic over-hydration and cerebral oedema from the use of solutions with inadequate sodium concentrations
- > Children with pre-existing conditions that make them more susceptible to dehydration or electrolyte derangement require close monitoring

Management summary

Establish diagnosis

Vomiting is a non-specific symptom-exclude other illnesses before making the diagnosis of gastroenteritis (see [Appendix 1](#)).

Assess level of dehydration

Clinical assessment of dehydration allows an estimate of fluid deficit to be made, which guides the amount of fluid replacement to give. Regular reassessment is important, to assess adequacy of treatment and allow for ongoing losses.

Rehydrate or prevent dehydration

- > In mild or no dehydration oral administration of ORS ([see Appendix 2](#)) is recommended using frequent, small volumes. This can be successful even in the presence of ongoing vomiting. Short, frequent breast feeds can be used for breast fed infants.
- > Moderate dehydration can be managed with oral, nasogastric or intravenous rehydration, either rapidly or over 24 hours. Choice of method will depend on a number of factors discussed below.
- > Infants and children with severe dehydration should be resuscitated with IV crystalloid, oxygen and close monitoring. Once circulation has been restored rehydration can occur via the IV or enteral route.

See [Appendix 4](#) for a summary of management decisions



Assessment

Primary care / outpatient history and examination

History

- > Suspect gastroenteritis if there is a sudden increase in stool frequency and a change in stool consistency to loose or watery.
- > Early in the illness the only symptoms may be vomiting and fever. **It is important to exclude other serious conditions that may present in this way** ([See appendix 1](#)).

In taking the history it is important to determine:

- > Frequency and nature of vomiting and diarrhoea
- > Fluid intake
- > Urine output
- > Recent antibiotics
- > The presence of a similar illness in family members or close contacts
- > The presence of bile-stained vomiting (volvulus or obstruction) or blood/mucous in the stool (intussusception or dysentery) should be specifically sought.

Examination

This should focus on detecting and quantifying the degree of dehydration ([Table 1](#)), as well as excluding other diseases

- > Dehydration is expressed as a percentage of pre-illness body weight, using the assumption that 1kg of body weight approximates 1000ml water.
- > Clinical estimation of dehydration is imprecise, even by experienced clinicians. The following signs have been found to be the most useful: ([see Table 1](#)).
- > Comparison of body weights, if available, is likely to be the most accurate.
- > **Note that in Hypernatraemic dehydration clinical estimation of dehydration may be more difficult, Consider hypernatremia in the presence of:**
 - Lethargy
 - Irritability
 - A 'doughy' skin consistency
 - Ataxia, tremor
 - Hyperreflexia, seizures, reduced conscious level

Young infants usually present with non-specific symptoms and signs of illness and are more prone to developing significant dehydration rapidly. A higher level of surveillance should therefore be given to them.



Table 1: Clinical Estimation of Dehydration in Children with Diarrhoea and Vomiting

	Mild	Moderate dehydration	Severe dehydration
Body Weight	<5% loss	5-9% loss	>9% loss
Clinical signs	None or minimal signs: <ul style="list-style-type: none"> • Normal level of alertness • Warm peripheries • Normal drinking • Normal pulse and respiratory rate 	<ul style="list-style-type: none"> • Thirst • Sunken eyes with minimal/ no tears • Dry mucous membranes (not accurate in mouth-breather) • Irritability or restlessness • Mild tachycardia • Increased capillary refill time 	Signs from mild-mod. Group (more marked) plus: <ul style="list-style-type: none"> • Abnormal drowsiness or lethargy • Capillary refill >2s • Poor peripheral perfusion • Tachycardia and tachypnoea • "Acidotic" breathing (deep, rapid breaths)
Pinch test for skin turgor	Normal. Skin fold retracts immediately	Slow. Skin fold visible <2seconds	Very slow. Skin fold visible >2seconds

Note:

- > The degree of dehydration is an estimate and should be reassessed frequently while treatment is being given.
- > Clusters of signs are more accurate than one or two signs alone.

Investigations (Flowchart of [management](#) of gastroenteritis)

EUC and blood gas (capillary or venous) measurements are **not routinely required** and do not add to the clinical estimate of degree of dehydration.

Indications include:

- > any child requiring intravenous therapy (IVT)
- > any child with severe dehydration or profuse or prolonged losses
- > altered conscious state or convulsions
- > clinical suspicion of hypernatraemia - "doughy" skin, lethargy and irritability more than expected for degree of clinical dehydration
- > suspicion of Haemolytic Uraemic Syndrome (bloody diarrhoea with pallor, haematuria and poor urine output)
- > children with pre-existing medical conditions that predispose to electrolyte abnormalities (e.g. cystic fibrosis, renal impairment)

Blood Sugar Level (point of care) Young children with gastroenteritis are susceptible to hypoglycaemia. Measure the BSL in young infants, patients with large ketones in the urine and patients who are more lethargic than would be expected for their degree of dehydration. If BSL < 2.5 mmol/L give 2ml/kg 10% glucose after taking blood for hypoglycaemia screen. (For WCH practitioners [see Management of Hypoglycaemia in the Paediatric Emergency Department guideline - Appendix 6](#)). Paediatric consultation is recommended.

Complete Blood Examination may sometimes be helpful in the investigation of vomiting and fever without diarrhoea, or if the diagnosis is uncertain



Most cases of gastroenteritis are viral (predominantly rotavirus or norovirus) and few bacterial causes benefit from antibiotic treatment. Routine stool examination is therefore not warranted when the presentation is typical.

Microbiological examination of the stool may be useful in the following situations:

- > bloody diarrhoea
- > suspected food poisoning or epidemic
- > prolonged (>7-10 days) diarrhoea
- > recent overseas travel
- > child in residential institution/childcare
- > any diagnostic uncertainty

Management

Minimal or no dehydration

Discharge home with advice about providing adequate amounts of appropriate fluids and continuing a normal diet when tolerated. It is not necessary to pass a trial of oral rehydration under supervision.

If ORS is refused dilute, unsweetened apple juice (1:4) can be used, but this is sub-optimal for rehydration as it has insufficient sodium.

Written instructions, including a guide to fluid requirements and factors which should prompt a medical review, should be provided upon discharge. Consider referral for a home nursing review with Metropolitan Referral Unit: 1300 110 600/ Country Referral Unit: 1800 003 307

Admission

Patients should be admitted for 4-6 hours or transferred to an appropriate centre for a supervised trial of oral rehydration if:

- > the diagnosis is uncertain
- > they are in a **high-risk group**
 - infants less than six months of age
 - patients with co-existing medical problems
 - patients living in geographic isolation or with limited access to medical care
 - inability of caring adult to assess deterioration of child due to tiredness/ intellectual disability/ mind altered state
 - inability to return due to lack of transport or distance
 - re-presentations during the same illness.

Moderate dehydration

These children should either be referred to a centre offering paediatric care or specialist advice should be sought.

Decide on the method of rehydration:

Oral Rehydration

Oral rehydration using a standard, hypo-osmolar oral rehydration solution (ORS) should be used as a first-line therapy. It is as effective as intravenous fluids in children with severe dehydration and is associated with significantly fewer adverse events and a shorter hospital stay.

This may need to be explained to parents or carers, as misunderstandings about the place and importance of intravenous therapy are common.

Fluid can be given in frequent, small amounts using a cup, syringe or spoon.



Nasogastric Rehydration

This should be used when oral rehydration is not possible or fails, and before intravenous hydration. Most children stop vomiting after NG fluids are started. If vomiting continues, slow the infusion rate and give a dose of ondansetron, if this has not already been given. Check that the Nasogastric tube is in the stomach before commencing fluid.

Nasogastric Infusion Rate and Volume

Rapid rehydration is suitable for most children, although a slower rate may be preferred for infants under 6 months and those with comorbidities.

Give 25ml/kg/hr ORS for 4 hours either orally or via NGT using a kangaroo pump for constant infusion. **Do not add maintenance fluid to this volume.**

Intravenous Rehydration

Although enteral rehydration is preferred IV therapy is indicated if there is:

- > Ongoing frequent vomiting of enteral fluids
- > Shock
- > Dehydration with altered level of consciousness
- > Worsening dehydration or failure to improve despite oral or NG therapy
- > Severe abdominal distension and ileus.

IV rehydration rates

Rapid rehydration, aiming to replace the fluid deficit and complete rehydration in 3-6 hours (WHO recommendation), is now the favoured method by many experts, as opposed to slow rehydration over 24 hours. Rapid replacement of extracellular fluids improves gastro-intestinal and renal perfusion, allows earlier feeding and results in a shorter duration of hospitalization.

Rapid rehydration is suitable for most patients but should not be used if:

- > The patient is less than 6 months old
- > The patient is severely dehydrated (10%) or shocked
- > The patient has an altered level of consciousness
- > The serum sodium, if known, is <130 or >145 mmol/L.

Commence IV [0.9% sodium chloride +5% glucose]* at 10ml/kg/hr for **4-5 hours** then **stop** the infusion and reassess the patient. *[See Appendix 3](#) for how to make up this solution. **Do not add maintenance fluid to this volume.**

Although this volume of replacement fluid represents a 5% deficit without the inclusion of maintenance fluids or ongoing losses it is usually sufficient to allow improvement.

During the infusion oral fluids can be offered and, once tolerated, the intravenous fluids should be ceased, with rehydration continuing orally.

Slow Rehydration

Patients who do not fit the criteria for rapid rehydration should be rehydrated over 24 hours. Calculate the sum of: **Deficit + maintenance + ongoing losses.**

The fluid deficit is calculated using the formula:

$$\text{Fluid deficit in ml} = \% \text{ dehydration} \times \text{weight in kg} \times 10$$

Replace the Fluid deficit over eight hours or more slowly in consultation with the relevant specialist unit.

[See Appendix 3](#) for maintenance rates and fluid.



Ongoing losses can be estimated to be 2ml/kg/hour in acute rotavirus.

ORS either orally or via NGT is preferable but IV [0.9% sodium chloride + 5% glucose] may be used if ORS is not tolerated.

Once the child is tolerating oral fluids IV therapy should be discontinued and rehydration completed orally.

Severe dehydration

These children should be referred to a centre offering paediatric care for assessment or seek specialist advice using the 13STAR (137 827) number.

- > Dehydration with shock constitutes a medical emergency
- > Once the airway and breathing have been assessed and supported as required, with high-flow oxygen being given, IV or IO access should be secured
- > Take blood for EUC, venous gas, and Glucose
- > Consider other causes for shock and manage accordingly
- > Give a fluid bolus of 20ml/kg of IV 0.9% sodium chloride solution (do not use solutions containing glucose or potassium for boluses). Reassess. If shock persists; repeat the fluid bolus. Once the circulation is restored commence rehydration, assuming a fluid deficit of 10% (see guidance above for slow rehydration). Although this is usually done over 24 hours it need not be solely by the intravenous route. If there is no improvement seek specialist advice
- > The patient should be weighed at least daily.

Monitoring of Rehydration

Given that the degree of dehydration, and therefore fluid deficit, is an estimate which is prone to inaccuracy, careful review is essential.

Review the patient at 4-6 hours and once the rehydration volume has been given. Look particularly for:

- > Weight change
- > Clinical signs of dehydration
- > Urine output
- > Ongoing losses &
- > Signs of fluid overload, such as puffy face and extremities

Clinical improvement is expected after 4-6 hours so if this has not occurred careful consideration of the accuracy of the diagnosis and consultation with a paediatrician is recommended.

Once the child **is rehydrated** continue fluids orally (this is preferable) **or at maintenance + ongoing losses**. Potassium may be added to IV solutions once the child has passed urine and the serum potassium is known.

Monitor electrolytes regularly if IV rehydration is being used.

Discharge considerations

- > If the child is rehydrated and tolerates oral fluids (aim for 6mL/kg/hr) then discharge home with advice sheet and LMO follow-up. Consider referral for a home nursing review with Metropolitan Referral Unit tel: 1300 110 600/ Country Referral Unit tel: 1800 003 307
- > If living circumstances indicate limited access to medical attention should child's condition deteriorate, caution is recommended. Consider further observation and monitoring
- > If the rapid rehydration finishes late at night and the child has improved clinically it is reasonable to continue observations and allow the child to sleep, with oral fluids commencing in the morning



- > If dehydration persists the child will need overnight admission and continued rehydration. Commence maintenance fluids as ORS [or 0.9% sodium chloride + 5% glucose] (for rates [see Appendix 3](#)), plus fluid to correct the remaining deficit over the next 4 hours, plus 2mL/kg/hr to replace ongoing diarrhoeal losses. Reassess again once the deficit volume has been given.

Feeding may commence once oral fluids are tolerated or once the child is hungry. Full-strength milk/formula may be given to infants.

Electrolyte Disturbances

Hypertonaemic dehydration (Na > 145mmol/L) is potentially dangerous and close monitoring is critical.

If Na > 145mmol/L speak to a specialist. Aim to replace deficit slowly (over 48 hours) to minimise risk of cerebral oedema. Admission to a unit where the patient can be closely monitored is preferable and sodium levels need to be measured 4 hourly. Fluid choice (usually 0.9% sodium chloride +/- 5% Glucose) and rate should be in discussion with a Paediatric specialist. Nasogastric rehydration using ORS is a safe option in many cases.

Medication

Avoid the use of unnecessary medication in gastroenteritis

Antiemetics

- > Oral Ondansetron in wafer or syrup form is available and has been shown to be safe and effective for children with gastroenteritis down to 6 months of age. IV ondansetron is **not** recommended and arrhythmias have been reported with repeat IV dosing.
- > Ondansetron can reduce admission rates and improve the success of oral rehydration. It also relieves nausea, which facilitates feeding. Only one dose is required. Ondansetron can increase the volume and frequency of diarrhoea. Conditions in appendix 1 should be excluded prior to administering Ondansetron. [See Appendix 5](#) for dosage schedule.
- > Metoclopramide (Maxolon®) and Prochlorperazine (Stemetil®) are **not** recommended as there is a risk of extra-pyramidal side-effects and they are often ineffective in children with gastroenteritis.

Anti-diarrhoeal agents and anti-motility agents

These are **not** recommended as their efficacy is not proven and there is a risk of adverse effects

Antibiotics

These are rarely required, even in bacterial gastroenteritis. Choice of antibiotic depends on the organism isolated ([See Table 2](#)).

Consultation with a paediatrician or infectious diseases specialist is recommended.



Table 2: Pathogens and recommended treatments

Pathogen	Indication for Treatment	Rationale for Treatment	Recommended Agent
Shigella	Culture proven dysentery	Reduces length of illness	Azithromycin for 5 days
Salmonella	Infants < 3 months, Immunodeficiency	Reduce risk of bacteremia and extra-intestinal focal infection	Ceftriaxone 50-100mg/kg/day
Campylobacter	Culture proven dysentery	Reduce transmission in child care centres and institutions	Azithromycin 10mg/kg/day for 3 days or 30mg/kg as single dose
Clostridium Difficile	Moderate to severe cases	Reduce duration of illness	Metronidazole 30mg/kg/day for 10 days

Probiotics and Zinc

Zinc has not been shown to be of benefit in developed countries, where zinc deficiency is rare.

Probiotics containing *Lactobacillus rhamnosus* GG or *S. boulardii* may reduce the duration of diarrhoea and could be considered as an adjunct to rehydration therapy.



References

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9. The Royal Children's Hospital Melbourne, Clinical practice guidelines: Gastroenteritis
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Several Guideline sites were consulted for existing guidelines regarding “diarrhoea”, “vomiting” and “gastroenteritis” including:

- > National Guideline Clearing House www.guideline.gov
- > National Institute for Health and Clinical Excellence (NICE) www.nice.org.uk/guidance/published
- > UK NHS www.evidence.nhs.uk/search?q=guidelines+finder
- > National Institute of Clinical Studies www.nhmrc.gov.au/guidelines/search
- > National Health and Medical Research Council www.nhmrc.gov.au/publications/index.htm

The following guidelines were found to be suitable for adaptation using the AGREE tool <https://www.agreetrust.org/?s=agree+instrument&submit=Go>

- > The Greater Eastern and Southern NSW Child Health Network Clinical Practice Guidelines for Gastroenteritis www1.health.nsw.gov.au/pds/ActivePDSDocuments/GL2014_024.pdf
- > The NICE guideline: *Diarrhoea and vomiting caused by gastroenteritis*: diagnosis, assessment and management in children younger than 5 years www.nice.org.uk/guidance/cg84

Information for parents

Women's and Children's Health Network: Parenting and Child Health (2017):[Sited 12/17]
URL: www.cyh.com/HealthTopics/HealthTopicDetails.aspx?p=114&np=303&id=1845



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Appendices

APPENDIX 1 - Differential diagnoses and warning signs of serious conditions mimicking gastroenteritis

Vomiting alone although a common presenting feature in early gastroenteritis is a symptom of many other illnesses.

Beware - very young children or malnourished children are likely to be more severely ill or have another diagnosis.

Some of the **differential diagnoses** to consider are:

Surgical	<ul style="list-style-type: none">> intestinal obstruction (e.g. Volvulus or intussusception)> acute appendicitis> raised intracranial pressure
Medical	<ul style="list-style-type: none">> urinary tract infection> FPIES (food protein-induced enterocolitis syndrome)> pneumonia> meningitis> sepsis> metabolic (e.g. Diabetes mellitus, urea cycle defects)

WARNING SIGNS that should be recognised and prompt further investigation include:

- > Abdominal distension
- > Localised abdominal tenderness or severe abdominal pain
- > Bile-stained vomiting
- > Fever >39°C
- > Blood or mucus in stool
- > Headache
- > Neck stiffness
- > Bulging fontanelle
- > Non-blanching rash
- > Shortness of breath



APPENDIX 2 - Oral rehydration solutions

Fig 1: Oral Rehydration Solution Composition

Name	Sodium mmol/L	Potassium mmol/L	Chloride mmol/L	Citrate mmol/L	Glucose mmol/L	Osmolarity mOsm/L
Glucose-electrolyte solutions						
WHO	90	20	80	10	111	311
Gastrolyte® powder	60	20	60	10	90	240
Hydralyte®	45	20	45	30	80	240
Repalyte®/ ChemmartORS®/ Restore ORS®	60	20	60	10	90	240
Pedialyte®	45	20	35	10	126	246
Rice-based solutions						
Gastrolyte® R	60	20	50	10	6g pre-cooked rice/L	226
European Society of Paediatric Gastroenterology, Hepatology and Nutrition recommendation						
	60	20	Not <30	10	74-111	200-250

Fig 2: Composition of other Oral Fluids

	Sodium mmol/L	Carbohydrate mmol/L	Osmolarity mOsm/L
Apple Juice	3	690	730
Soft Drinks	~2	~700	~750
Sports drinks	~20	~255	~330



APPENDIX 3 – Fluid requirements and recommendations

Maintenance Fluids

0-6months: 120-140 ml/kg/day

> 6months:

<u>Body Weight</u>	<u>Fluid requirement ml/day</u>	<u>Fluid requirement ml/hr</u>
First 10kg	100ml/kg	4ml/kg/hr
Second 10kg	+ 50ml/kg	+2ml/kg/hr
Subsequent kg	+ 20ml/kg	+1ml/kg/hr

E.g. 25kg child: maintenance rate is 40+20+5 = 65 ml/hr.

Rehydration Fluids

- > Oral Rehydration Solution
- > IV 0.9% sodium chloride for resuscitation
- > IV 0.9% sodium chloride for IV rehydration (with or without 5% glucose)*
- > IV 0.9% sodium chloride + 5% glucose for **maintenance**

N.B. Do not give 4% glucose + 0.18% sodium chloride or 5% glucose

* Note: 0.9% sodium chloride with 5% glucose is a commercially available solution.

If unavailable: to make 0.9% sodium chloride with 5% glucose:

- > Remove 100ml of 0.9% sodium chloride from a 1000ml bag of 0.9% sodium chloride and add 100ml of 50% glucose



APPENDIX 4 - Management decisions in gastroenteritis in children

When to treat at home:

- > Family able to cope
- > Absence of dehydration
- > Vomiting not interfering with fluid intake

When to consult:

- > Diagnosis in doubt
- > Therapy in doubt
- > Infant under six months of age
- > Severe dehydration present
- > Electrolyte disturbance present
- > Failure to respond to therapy
- > Pre-existing disease
 - Diabetes
 - Cyanotic heart disease
 - Chronic renal disease
 - Previous bowel resection
 - Malnutrition

When not to treat at home

- > Moderate Dehydration
- > Diagnosis in doubt
- > Family unable to cope
- > Deterioration
- > Persistent vomiting
- > Profuse diarrhoea



APPENDIX 5 - Ondansetron dosage guidelines

Oral Ondansetron is recommended for children over 2 years of age with frequent vomiting likely to be due to gastroenteritis to assist in oral rehydration and relief of nausea.

Some studies have used the medication safely for children from 6 months of age. Dose is 0.15 mg/kg as mixture

If wafers are used:

- > 2mg (½ wafer) for children 8-15kg
- > 4mg for children 15-30kg
- > 8mg for children >30kg

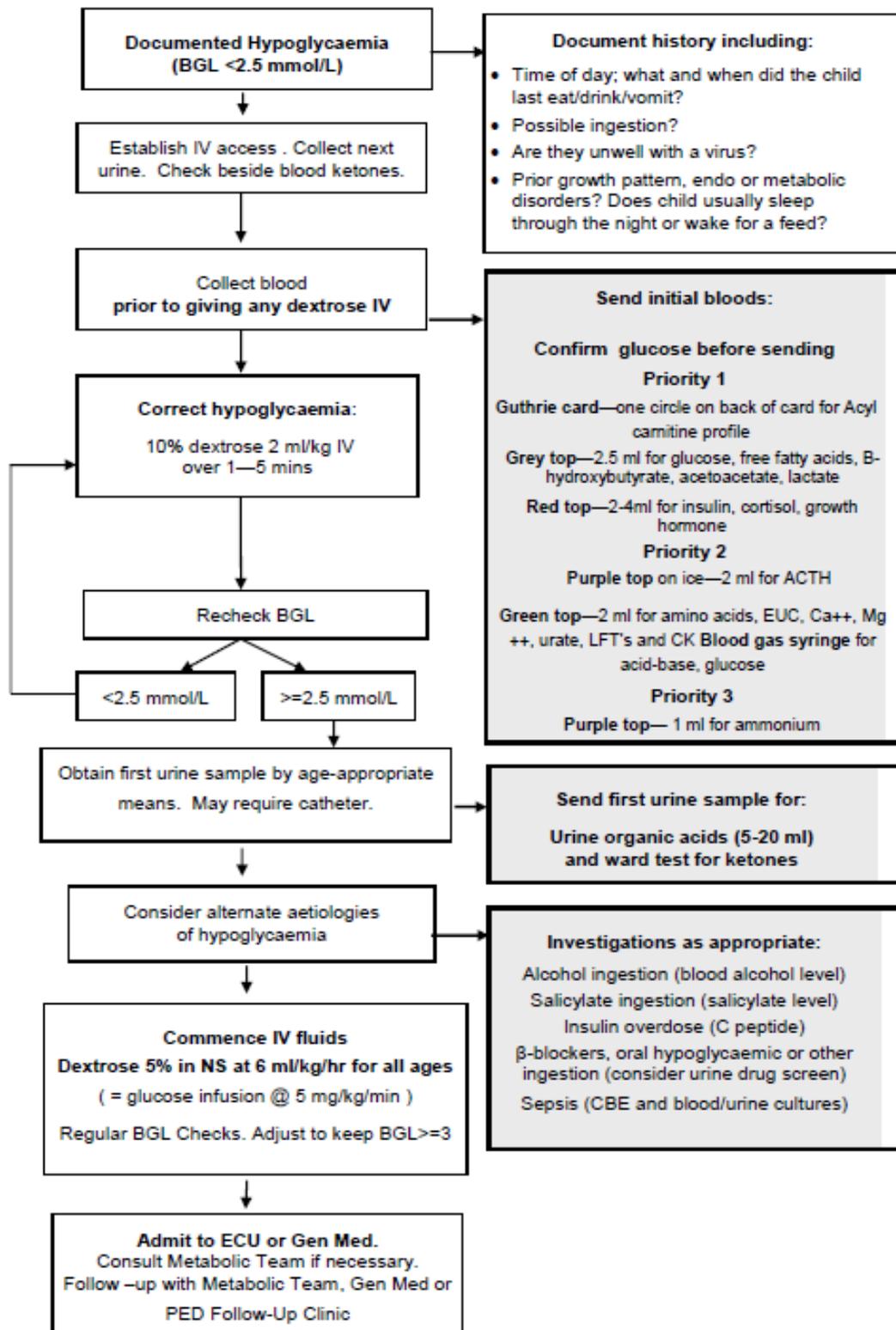
Adverse effects are unusual but some studies suggest that its use may prolong the duration of diarrhoea. Ondansetron should not be used in children with prolonged QT syndrome



APPENDIX 6 – Management of Hypoglycaemia in the Paediatric Emergency Department

MANAGEMENT OF HYPOGLYCAEMIA IN THE PAEDIATRIC EMERGENCY DEPARTMENT

(NON-DIABETIC and NON-NEONATAL PATIENTS)



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