Community Pharmacy Minor Ailments Service (MAS): Dehydration and diarrhoea

July 2023

Eligibility Criteria:

Eligible Service Users presenting with diarrhoea and/or dehydration associated with gastroenteritis or other viral illnesses, and are:

- Children aged over 6 months and under 14 years.
- Whānau of the children with the same condition.
- Any patients who meet at least one of the following:
    - Identify as Māori or Pasifika ethnicity.
    - Have a Community Services card (CSC).
    - Have been physically displaced or isolated due to Cyclone Gabrielle.
    - Live in a R2 or R3 rural community. See classifications here.

Background

Dehydration from vomiting and diarrhoea associated with gastroenteritis or other viral illness is common. It is often mild and can be managed by supportive measures and oral rehydration. However, in more severe cases dehydration can cause reduced blood perfusion to the kidneys leading to Acute Kidney Injury (AKI), confusion and seizures requiring hospital management. Management of dehydration requires considering patient's risk factors such as concurrent medical conditions.

'Red Flag' gastroenteritis symptoms

If a patient presents with any of the below signs of symptom, they should be referred to a GP or urgent care:

- A high fever (over 38 degrees).
- Shock.
- Coffee ground coloured vomit.
- Bloody diarrhoea.
- Severe stomach or abdominal pain.
- Vomiting for more than 24 hours and unable to keep anything down.
- Diarrhoea in elderly or children that lasts longer than 2 days, and in adults that lasts longer than 7 days.
- Signs of severe dehydration such as: sunken eyes and cheeks, changed breathing, little or no urine passed for 10 hours, skin stays up when pinched, cold clammy skin.

In babies and children also refer the following:

- Any children aged <6 months.
- Bilious (dark green) coloured vomit.
- Lethargy, or child looks very unwell ('floppy' child).
- Little or no urine passed for 2-3 hours for babies and young children.

Managing patients with gastroenteritis

1. Use appropriate infection prevention and control when managing possible infectious gastroenteritis.

2. Replacing fluid and electrolytes is the mainstay of gastroenteritis treatment: See NZF and medications funded for use in the MAS pathway below. Loperamide may be considered in the management of acute uncomplicated diarrhoea in adults for short term relief of symptoms of acute diarrhoea.
3. **Consider whether any regular medicines need to be withheld or monitored.**
4. Advise the patient about restrictions and exclusions; All patients should be symptom free for:
    - 48 hours before returning to work, school or preschool.
    - 2 weeks before swimming in a swimming pool.
5. Advise patient when to see GP if diarrhoea persist for more than one week and is not improving.
6. Cases of acute gastro enteritis need to be reported to the Public Health Unit where (see details of how to do this on Health Pathways):
    - There is a suspected outbreak from a common source or from a person in a high risk category (for example, a food handler, an early childhood service worker).
    - A single cases of chemical, bacterial, or toxic food poisoning such as botulism, toxic shellfish poisoning (any type).

Medications funded for use in the MAS pathway:

As part of the Minor Ailment Service, pharmacists are able to supply the following medications at no cost to the patient:

- Oral rehydration powder sachets (Electral®) box of 50
- Oral rehydration liquid (Pedialyte® - Bubblegum) 2 x 500mL

In patients 12 years of age or older:

- Loperamide 2mg tablets (20 tablets maximum)
- Loperamide 2mg capsules (20 capsules maximum)

When to use loperamide

Indications	Acute diarrhoea in people 12 years of age or older in situations where short term symptom relief is required.
Dispensing information	Maximum of 20 tablets/capsules may be supplied.
Dosage and instructions	Initially 4mg followed by 2mg after each loose stool to a maximum of 16mg daily.
Exclusions	• Conditions where inhibition of peristalsis should be avoided. • Where abdominal distension develops or in conditions such as active ulcerative colitis or antibiotic-associated colitis • Children under 12 years
Precautions	Only use for short term symptomatic management and ensure fluid and electrolyte replacement in addressed.
Advice to patient	See: Patient Information - Loperamide (mymedicines.nz)
Additional Information	NZF Loperamide

Dehydration and regular medicines

- Few medications truly have direct toxic effects on the kidneys, but several have the potential to impair renal function if the patient is severally unwell or dehydrated.
- Many medications that are cleared via the kidneys can accumulate during an AKI. The result of this may be a further deterioration in kidney function or other adverse effects.

- Medications which can cause adverse events either by direct cause of AKI or accumulation are identified using the SADMANS-DOG acronym.
- Sick day rules, including stopping medicines that increase the risk of AKI, can help prevent adverse outcomes in patients with gastrointestinal diseases. However, underlying conditions influence the risk of a patient experiencing an AKI and adverse events from medications.
- Always ensure that patients know when to restart their medications if they have been stopped.

Patient factors to consider when stopping medicines:

1. What AKI risk factors does this patient have?

Underlying conditions which influence the risk of a patient experiencing an AKI and adverse event(s) from medication(s) include:

- Chronic kidney disease eGFR <60ml/min/1.73m^2 OR urinary tract obstruction
- Cardiac conditions, e.g. Heart Failure
- Diabetes
- Liver disease
- Malignancy
- Major surgery or trauma or medical procedure (e.g. contrast based imaging)
- Age over 65 years (likely younger for Māori and Pacific)

2. What are the risks to the patient and their medical conditions if the medicine is stopped?

For patients with Heart Failure or Diabetes, there may be severe consequences if a medication is stopped; this must be weighed against the risk of an AKI.

Chronic Kidney Disease is complex and medication management requires advice from a renal physician. Contact the renal physician for transplant or dialysis patients or those with an eGFR of less than 30mL/min/1.73m^2.

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SADMANS DOG Sick Day Rules Table

Medication	Risk in dehydration	Advice to a patient if they have vomiting and diarrhoea or fever over 38°C and sweating, reduced oral intake of fluids and nutrition		
		No Risk factors for AKI	Risk factors for AKI – No Heart Failure	Risk factors for AKI – Heart Failure
SGLT2 inhibitors	Increased risk of dehydration, particularly when taken with diuretics. Increased risk of euglycaemic ketoacidosis if a patient is unwell and not eating and drinking normally.	**Stop while unwell and restart 48 hours after feeling better and eating and drinking normally.**		
ACE-inhibitors/ Angiotensin-II Receptor Blockers/ Entresto®	Increase the risk of AKI by reducing glomerular perfusion.	N/A	**Stop while unwell and restart 48 hours after feeling better and eating and drinking normally.**	**Continue in mild disease. If patient is becoming dehydrated (signs such as lightheaded on standing): Call GP or Heart failure nurse for management advice.**
Diuretics	Increase the risk of AKI by reducing glomerular perfusion	N/A	**Stop while unwell and restart 48 hours after feeling better and eating and drinking normally.**	**Stop spironolactone. Consult patient's Heart Failure action plan. See specific advice to patients with heart failure below.**
Metformin	Accumulates in renal impairment. Combined with dehydration and inflammatory response to infection, increased risk of lactic acidosis.	**Stop while unwell and restart 48 hours after feeling better and eating and drinking normally.**		
Non-steroidal anti-inflammatory drugs (NSAIDs)	May impair kidney function by inhibiting prostaglandin-mediated vasodilatation of the afferent arteriole and may increase the risk of AKI.	**Stop while unwell and restart 48 hours after feeling better and eating and drinking normally. Do not use NSAIDs for pain or fever relief, use paracetamol as an alternative.**		
Sulfonylureas	Risk of accumulation for glibenclamide and significant hypoglycaemia. Risk of hypoglycaemia if the patient is not eating.	N/A	**Monitor for hypoglycaemia+ but DO NOT ROUTINELY STOP. If the patient is on glibenclamide, contact GP to recommend an alternative agent such as gliclazide or insulin.**	
Direct-Acting Oral Anticoagulants	Might accumulate because of reduced kidney function in AKI, increasing the risks of adverse effects.	**Monitor for bleeding+ but DO NOT ROUTINELY STOP.**		
Opioids		**Monitor for respiratory depression or CNS depression (confusion, over sedated or restless)+ but DO NOT ROUTINELY STOP.**		
Gabapentinoids		**Monitor for confusion, over sedated or restless+ but DO NOT ROUTINELY STOP.**		

+ patient to contact GP. Alternatively, pharmacist to send ISBAR to GP

Specific advice for patients with diabetes

The aims of managing a person with diabetes during intercurrent illness are to:

1. Manage blood glucose levels.

Blood glucose levels can rise during illness even if the person is not eating. Advise patients to increase blood glucose monitoring to at least four times a day if the person has access to a meter. Advise the patient to NEVER stop insulin or sulfonylureas without seeking advice from the Diabetes Clinical Nurse Specialist or a GP. Sulfonylureas and insulin doses may need to be increased temporarily during illness to manage these raised glucose levels.

Insulin doses may need to be increased during illness, especially if ketones are present. The patient may have a plan or seek guidance from Diabetes Clinical Nurse Specialist or GP.

2. Ensure adequate calorie intake and hydration with fluid replacement.

Ensure the person maintains hydration and carbohydrate intake. If suffering from vomiting or diarrhoea, replace with one glass of fluid every hour. Taking small sips frequently (10-20mL every 5 minutes) will help keep fluid down.

- If blood glucose levels are high >11mmol/L, maintain fluid intake with sugar-free fluids such as water, soda water or mineral water.
- If blood glucose levels are low, encourage regular intake of sugary fluids such as fruit juice or flat fizzy drinks.

If the patient has diarrhoea, avoid dairy products.

3. Test for and manage (if present) ketones.

The signs and symptoms of ketoacidosis included nausea, vomiting, shortness of breath, generalised tiredness, loss of appetite, malaise, lethargy, abdominal pain, confusion and excessive thirst.

Type 1 diabetics:

- Advise patients of the signs or symptoms of ketoacidosis.
- Advise patients to drink plenty of water to maintain hydration and flush through ketones.
- Advise to check for ketones every 4–6 hours. If present, check every 2 hours.
- Check the patient has a plan for extra rapid-acting insulin doses (in addition to regular doses) based on the total daily insulin dose if ketones are present.

Type 2 diabetics on SGLT2 inhibitors:

- Advise patients of the signs or symptoms of ketoacidosis.
- Patients who experience signs and symptoms of ketoacidosis should stop their empagliflozin or dapagliflozin immediately and seek guidance from the Diabetes Clinical Nurse Specialist or a GP.

4. Manage medicines that increase the risk of adverse outcomes if the patient becomes dehydrated.
5. Recognise when further medical attention is required.

Advise the patient to seek guidance from the Diabetes Clinical Nurse Specialist or a GP.

Specific advice for patients with Heart Failure

- Oral rehydration solution may be used if needed but at the recommended dose. Use with caution if the patient is on a salt-restricted diet.
- Discuss if a patient is on a fluid restriction – if so, contact the GP to seek advice on reducing or stopping the restriction until the patient is well.
- If the patient has a HF Action Plan, advise them to monitor weight daily. Reduce or stop loop diuretic and stop spironolactone if weight has reduced by 2kg over 2 days. Alternatively, contact GP or Heart Function nurse for advice. Heart Function nurses: (call 878 8109 and ask for Villa 2, then Heart Function Nurse)

- Ensure the patient knows to increase or restart diuretics 48 hours after feeling better and eating and drinking normally.
- If patient is becoming dehydrated (signs such as lightheaded on standing), they should contact a GP.

Tools available:

- **ISBAR communication framework between health care workers.**
- **Patient fact sheet: Managing Insulin when you are sick**
- **Diabetes Canada: Stay Safe When You Have Diabetes and Are Sick or At Risk of Dehydration**
- **Healthify: Gastroenteritis**
- **Healthify: Gastroenteritis in children**
- **Healthify: Diarrhoea**
- **Healthify: Loperamide**
- **Health Pathways: Gastroenteritis in Adults**
- **Health Pathways: Gastroenteritis in Children**
- **Ministry of Health: Diarrhoea**
- **Health Ed: Baby and Children sickness danger signs leaflet**

References:

1. The Renal Association. Renal Association Clinical Practice Guideline Acute Kidney Injury (AKI). August 2019, accessed online 12th March 2022, from: https://ukkidney.org/sites/renal.org/files/FINAL-AKI-Guideline.pdf
2. Down S (2020) How to advise on sick day rules. Diabetes & Primary Care 22: 47–8.

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Version control

Version	Date	Summary of changes
1	6 June 2023	
2	25 June 2023	Addition of Māori or Pasifika criteria.
3	10 July 2023	Addition of loperamide.