

Management of Nausea and Vomiting



Health Education England

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Outstanding ☆



LIVERPOOL HEART AND CHEST HOSPITAL
ENTRANCE

By the end of this session you will be able to:

- Name some reversible factors that can be treated to alleviate nausea and vomiting in patients with advanced illness
- List non-drug measures useful in nausea and vomiting
- List the main drug options used in symptom management of nausea and vomiting in patients with advanced illness
- Outline the site and mode of action of the different drugs
- Match the use of a drug with the probable underlying cause of nausea and vomiting to provide the best initial management
- Describe the usefulness and limitations of different routes of administration

Overview

Nausea and vomiting are common in patients with end-stage diseases (cancer or non-cancer), but both symptoms can be effectively treated.

There are several possible causes of nausea and vomiting, some of which are reversible.

Examples include gastric stasis and dysmotility (in which stomach contents remain, rather than being pushed through to the small bowel), intestinal obstruction and raised intracranial pressure.

Worries about the future can often make nausea worse, so it is important to address other concerns too.



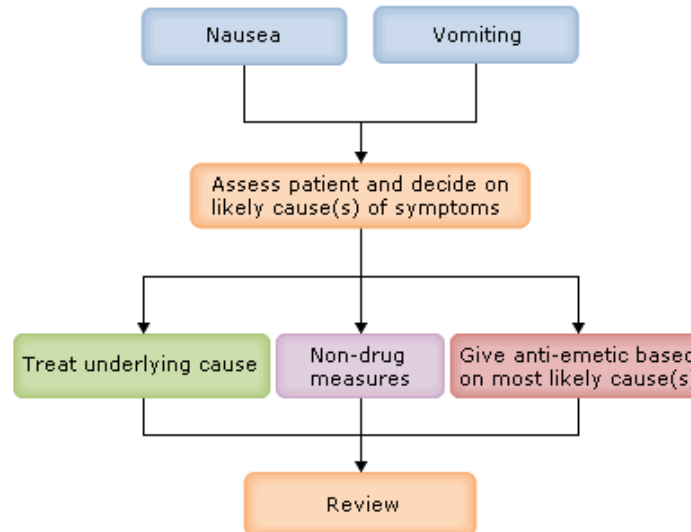
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Treatment to relieve nausea and vomiting is guided by an assessment of the most likely cause (or causes) of the symptoms and understanding the processes and neurotransmitters involved in these causes helps to identify which anti-emetics are most likely to work.

Drug management is often started alongside treatment of specific causes of nausea and vomiting, to provide immediate symptom control.

If the underlying cause cannot be resolved, or if the burden of further investigations or treatment outweighs the potential benefits to the patient, anti-emetic drugs may be the mainstay of treatment.

Before we look at drug management of nausea and vomiting, we will review some of the non-drug measures that can also be helpful.



There are a number of non-drug measures for treating nausea and vomiting and managing associated symptoms.

- Mouth care
- Hydration
- Nutrition
- Bowel care
- Acupuncture
- Hypnosis
- Anxiety

Mouth care

A dry mouth is common and can be distressing for patients. Management includes:

- A review of medication which may contribute to a dry mouth, for example: reduce anticholinergics if possible
- Moist sponges and/or crushed ice
- Artificial saliva products
- Oral rinses



Hydration

When suffering from nausea or vomiting, the patient and their family may be very concerned about the risk of dehydration. Dehydration very often accompanies nausea and vomiting because of:

- Reduced oral intake. The patient doesn't feel like drinking (because of nausea), or they are scared to drink because they will vomit and bring it back up
- Excessive fluid losses due to vomiting

Management includes:

- Offering sips of water or crushed ice
- Looking for evidence of dehydration
- Reviewing the need for diuretics and antihypertensives
- Determining whether parenteral rehydration, intravenous (IV) or subcutaneous, may be helpful

The decision to use parenteral fluids in the last days of life can be complex. Placing an intravenous cannula can be painful and IV fluids contribute to oedema and may worsen respiratory secretions. IV fluids are not usually recommended in the last few days of life, but one should consider the clinical circumstances, the patient's wishes and his or her prognosis.

Decisions should be made on an individual basis, and it is good practice to involve the multi-disciplinary team and the patient's family/carers.

Nutrition

Patients and their families may be particularly concerned about nutrition. Management includes:

- Finding out whether certain foods trigger nausea or vomiting
- Reassuring patients and families that the priority is to control the symptoms
- Reassuring patients and families that the patient may feel able to eat small amounts once the symptoms of nausea and vomiting are well-controlled
- Advising patients and families that hydration is more important than nutrition

Parenteral nutrition is not routinely indicated in patients with advanced cancer, end-stage cardiac, respiratory or renal failure. There is no evidence that parenteral nutrition improves survival or quality of life in these patients.



Bowel care

Unless there is a diagnosis of bowel obstruction, constipation may contribute to nausea and it is easily treated with laxatives. Macrogols (such as Movicol[®] , Laxido Orange[®]) are a type of osmotic laxative. They are dissolved with fluid, which may reduce the dehydrating effect that can occur with osmotic laxatives.

Other laxatives may be easier for patients to take if they are very nauseated. For example:

Stimulants such as bisacodyl

Softeners such as magnesium hydroxide or docusate

Combinations of stimulant and softener such as codanthramer

It is usually recommended that both a stimulant and stool softener are used if the patient is not able to take a macrogol-based laxative.



Acupuncture

There is some evidence that acupuncture can help with nausea and vomiting after surgery [1].

Results for patients undergoing chemotherapy are mixed – there is evidence that electroacupuncture (in which an electrical current is passed through acupuncture needles) helps acute vomiting, but not nausea, and that acupressure (pressure over acupuncture points) can help acute nausea but not vomiting [2].



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Hypnosis

There is some evidence that hypnosis can be effective for some people in the management of nausea, especially chemotherapy related nausea [3]. Hypnosis can also be very useful in reducing anxiety.

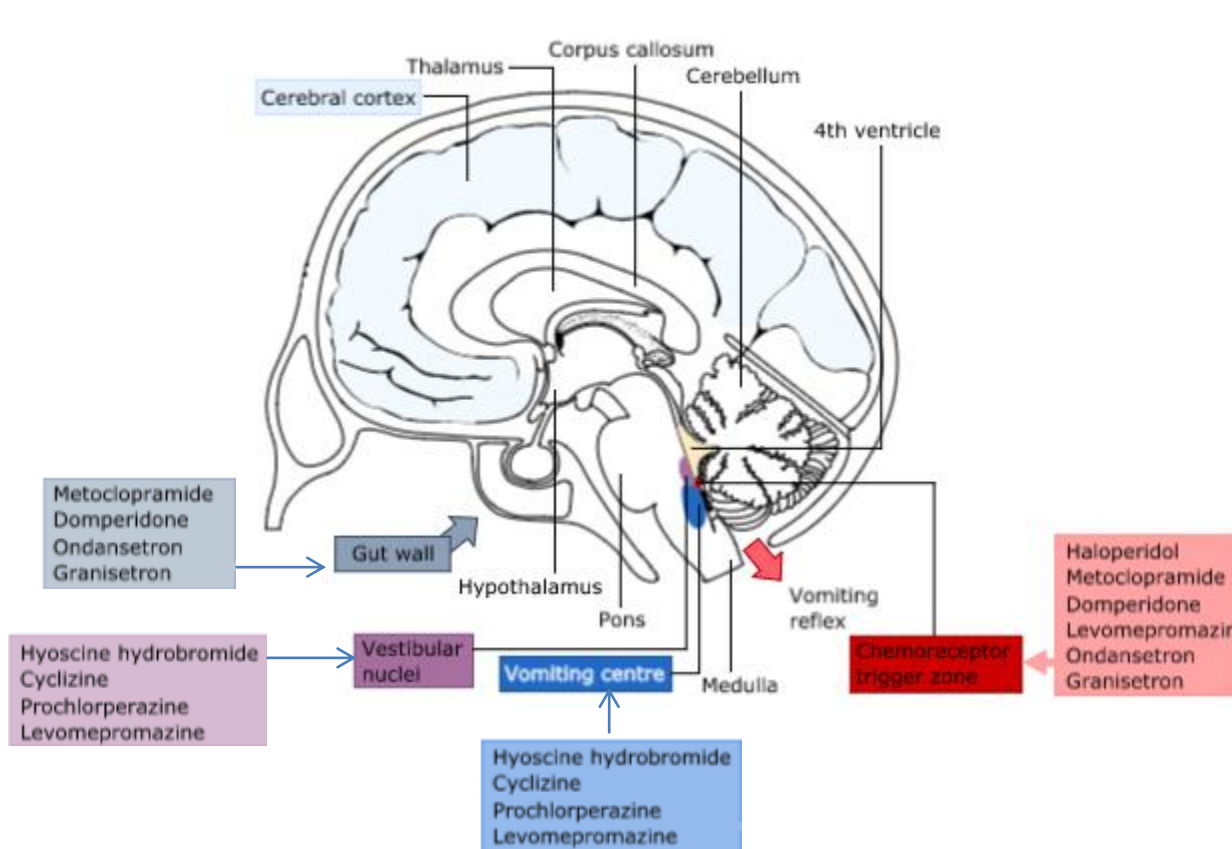
Anxiety

Anxiety is a potent trigger for nausea in some people. Exploring this as a potential factor is in itself therapeutic and may give clues as to how anxiety can be diminished. For example, many people's anxiety is relieved through having more information or correction of misunderstandings or fears of things that are incorrect.

Some people will need more intensive management of their anxiety and this might involve relaxation therapies, other complimentary therapies, including hypnosis, or the use of anxiolytic medication.

Sites of Action

The vomiting centre receives stimuli from various sources, including the gut wall, chemoreceptor trigger zone (CTZ) and the vestibular nuclei. These are the sites of action for the anti-emetic drugs used to treat nausea and vomiting. The cerebral cortex also mediates nausea and vomiting related to emotions, such as anxiety and fear.



Useful anti-emetics

The following drugs are commonly used to manage nausea and vomiting in patients with advanced illness.

Metoclopramide and Domperidone

Metoclopramide and domperidone	Haloperidol	Cyclizine and prochlorperazine	Levomepromazine	Hyoscine hydrobromide	Ondansetron and granisetron	Octreotide	Dexamethasone
Drug	Site of action	Description of use/action	Formulations	Some side-effects and contraindications			
Metoclopramide	Antidopaminergic effect at chemoreceptor trigger zone in the brain and gastrointestinal system.	The prokinetic effect is through the release of the dopaminergic 'brake' on nerves supplying the smooth muscle of the bowel. Metoclopramide also acts through stimulation of 5HT ₄ receptors, potentiating acetylcholine-mediated smooth muscle contraction.	Tablets. Oral solution. Injection.	Crosses the blood-brain barrier (the barrier which protects the brain from toxins in the blood). Therefore there is a risk of extrapyramidal side-effects including parkinsonism (resting tremor, slow movements, rigidity) and akathisia (restlessness). Can cause acute dystonia (muscle spasms) especially in young women. Avoid in complete bowel obstruction as prokinetics may make colic pain worse or may cause perforation.			
Domperidone		Prokinetics are useful in gastric dysmotility (to promote emptying of the stomach).	Tablets. Oral solution. Suppositories.	Negligible amounts of domperidone cross the blood brain barrier, so there is less risk of extrapyramidal side effects than seen with metoclopramide. Small increased risk of cardiac arrhythmia and sudden death - avoid using in conditions with impaired cardiac conduction or with other drugs which increase the QT interval or inhibit the metabolism of domperidone.			

Note that the information given on this table is not complete. You should consult the BNF or Palliative Care Formulary for full details and discussion for the use of medication off-licence in palliative and end of life care.

Useful anti-emetics

Haloperidol

Metoclopramide and domperidone	Haloperidol	Cyclizine and prochlorperazine	Levomepromazine	Hyoscine hydrobromide	Ondansetron and granisetron	Octreotide	Dexamethasone
Drug	Site of action	Description of use/action	Formulations	Some side-effects and contraindications			
Haloperidol	Antidopaminergic effect at chemoreceptor trigger zone in the brain.	<p>Used for nausea and vomiting associated with drugs, infection, uraemia and hypercalcaemia. There is evidence for its effectiveness in nausea and vomiting associated with surgery, chemotherapy and palliative care.</p> <p>Note that the treatment of nausea and vomiting falls outside of the marketing licence for haloperidol (an antipsychotic). However it is commonly used at low doses as an anti-emetic in palliative care.</p>	<p>Tablets.</p> <p>Capsules.</p> <p>Oral solution.</p> <p>Injection.</p>	<p>Risk of extrapyramidal side-effects including parkinsonism (resting tremor, slow movements, rigidity), akathisia (restlessness) and sedation.</p> <p>Can lower seizure threshold (so use with caution in patients at risks of fits).</p> <p>May increase the risk of cardiac arrhythmias, especially at higher doses and when given intravenously. The intravenous route is not recommended.</p>			

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Drugs Used to Manage Nausea and Vomiting

Useful anti-emetics

Cyclizine and Prochlorperazine

Metoclopramide and domperidone	Haloperidol	Cyclizine and prochlorperazine	Levomepromazine	Hyoscine hydrobromide	Ondansetron and granisetron	Octreotide	Dexamethasone
Drug	Site of action	Description of use/action	Formulations	Some side-effects and contraindications			
Cyclizine	Antihistamine and anticholinergic effect at the vomiting centre and vestibular nuclei in the brain.	Raised intracranial pressure. Motion sickness. Intestinal obstruction.	Tablets. Oral solution. Injection.	Given subcutaneously it can cause site reactions where the skin becomes red and inflamed. Can cause euphoria if given intravenously. Sedation. Dry mouth.			
Prochlorperazine			Tablets (oral or buccal). Syrup. Injection.				

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Drugs Used to Manage Nausea and Vomiting

Useful anti-emetics

Levomepromazine

Metoclopramide and domperidone	Haloperidol	Cyclizine and prochlorperazine	Levomepromazine	Hyoscine hydrobromide	Ondansetron and granisetron	Octreotide	Dexamethasone
Drug	Site of action	Description of use/action	Formulations	Some side-effects and contraindications			
Levomepromazine	<p>Acts at several receptor sites in the brain:</p> <ul style="list-style-type: none"> • Dopamine • Alpha-adrenergic • Cholinergic • 5HT₂ • Histamine <p>It is therefore potentially effective at chemoreceptor trigger zone, vestibular nuclei, vomiting centre.</p>	<p>Broad spectrum anti-emetic used for several causes of nausea and vomiting, or when other anti-emetic drugs have failed.</p> <p>For instance, can be used in bowel obstruction, raised intracranial pressure, metabolic causes of nausea or vomiting, or where several causes are relevant.</p>	<p>Tablets.</p> <p>Injection.</p>	<p>Sedation.</p> <p>Dry mouth.</p> <p>Postural hypotension.</p>			

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Drugs Used to Manage Nausea and Vomiting

Useful anti-emetics

Hyoscine Hydrobromide

Metoclopramide and domperidone	Haloperidol	Cyclizine and prochlorperazine	Levomepromazine	Hyoscine hydrobromide	Ondansetron and granisetron	Octreotide	Dexamethasone
Drug	Site of action	Description of use/action	Formulations	Some side-effects and contraindications			
Hyoscine hydrobromide	Antimuscarinic (anticholinergic) at the vestibular nuclei and vomiting centre.	Effective in motion sickness.	Tablets (sublingual or chewable). Transdermal patch. Injection.	At low doses it is well-tolerated but may cause: Dry mouth Sedation At high doses, it may cause the above as well as agitation.			

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Drugs Used to Manage Nausea and Vomiting

Useful anti-emetics

Ondansetron and Granisetron

Metoclopramide and domperidone	Haloperidol	Cyclizine and prochlorperazine	Levomepromazine	Hyoscine hydrobromide	Ondansetron and granisetron	Octreotide	Dexamethasone
Drug	Site of action	Description of use/action	Formulations	Some side-effects and contraindications			
Ondansetron	5HT ₃ antagonists, act at chemoreceptor trigger zone and gut wall.	Effective in controlling acute vomiting (e.g. after chemotherapy or radiotherapy), but are less effective for nausea or for chronic symptoms.	Tablets (oral or orodispersible).	Headache. Constipation.			
Granisetron			Oral syrup. Injection. Suppository.				
			Tablets. Injection.				

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Drugs Used to Manage Nausea and Vomiting

Useful anti-emetics

Octreotide

Metoclopramide and domperidone	Haloperidol	Cyclizine and prochlorperazine	Levomepromazine	Hyoscine hydrobromide	Ondansetron and granisetron	Octreotide	Dexamethasone
Drug	Site of action	Description of use/action	Formulations	Some side-effects and contraindications			
Octreotide	Somatostatin analogue (an inhibitory hormone).	Used in bowel obstruction to reduce gastrointestinal secretions, therefore improving vomiting. Commonly used off-licence in specialist palliative care for bowel obstruction - particularly with high volume vomiting, and also for intractable diarrhoea	Injection. Depot injection.	Can reduce blood sugar in patients with insulinoma, and insulin dose may need to be significantly reduced in patients with diabetes. Caution in cirrhosis and patients on ciclosporin.			

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Drugs Used to Manage Nausea and Vomiting

Useful anti-emetics

Dexamethasone

Metoclopramide and domperidone	Haloperidol	Cyclizine and prochlorperazine	Levomepromazine	Hyoscine hydrobromide	Ondansetron and granisetron	Octreotide	Dexamethasone
Drug	Site of action	Description of use/action	Formulations	Some side-effects and contraindications			
Dexamethasone	Site of action unclear, but anti-emetic effect may be due to a reduction in permeability at the chemoreceptor trigger zone which is therefore less sensitive to toxins.	Dexamethasone is a corticosteroid – It is not an anti-emetic as such, but can be useful. For example: when nausea and vomiting are accompanied by a profound loss of appetite, or in specific clinical situations such as raised intracranial pressure or chemotherapy.	Tablets. Oral solution. Injection.	Physiological side-effects can include: <ul style="list-style-type: none"> • Cushingoid facies ('moon face') • Weight gain • Fluid retention • Skin thinning • Proximal myopathy • Osteoporosis • Raised blood sugar (may unmask diabetes) Mental disturbance including: <ul style="list-style-type: none"> • Euphoria • Depression • Insomnia • Psychosis Infection.			

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Gastric Stasis and Dysmotility

Causes and Possible Solutions

Now let's look at some common causes of nausea and vomiting, beginning with gastric stasis.

Gastric stasis or dysmotility (in which the stomach contents stay there rather than being pushed through to the small bowel) can cause nausea and vomiting.

It can arise for a number of different reasons, three of which are represented on the diagram on the right.

Cause 1

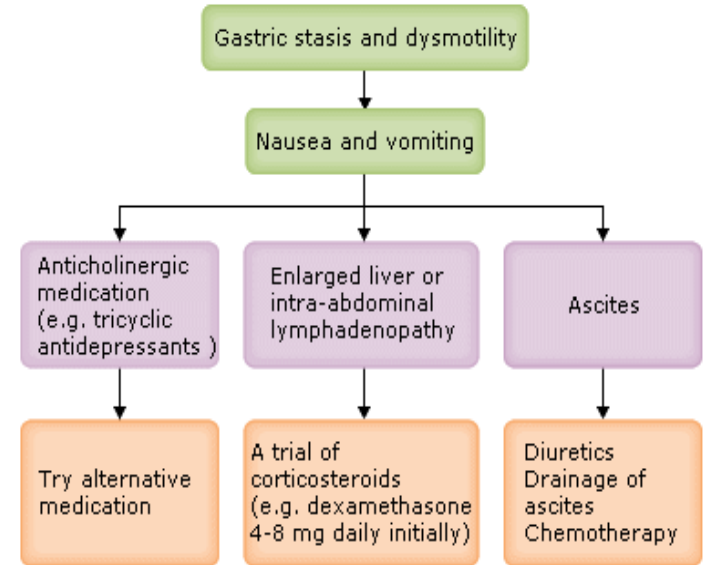
Gastric stasis may be a side effect of anticholinergic medication such as tricyclic antidepressants. If this is the case, it is worth reviewing the patient's medication and trying an alternative.

Cause 2

An enlarged liver (hepatomegaly) or intra-abdominal lymphadenopathy may impair gastric emptying. If these are present, consider a trial of corticosteroids such as dexamethasone (4-8 mg daily to begin with).

Cause 3

Ascites may also be associated with impaired gastric motility, and may well respond to diuretics, drainage of ascites (paracentesis), or chemotherapy for the underlying cancer if the patient is well enough



Gastric Stasis and Dysmotility

Additional Treatment Options

The symptoms of gastric stasis and dysmotility can often also be improved by one of the following:

Prokinetics, such as metoclopramide or domperidone, can improve symptoms caused by gastric dysmotility, including: bloating, heartburn, acid reflux, early satiety (feeling full and bloated after eating small amounts) and nausea and vomiting

Ranitidine (150 mg twice daily) reduces the volume of gastric secretions

Proton pump inhibitors (PPIs) reduce the acidity but not the volume of gastric secretions

In some instances, switching from a PPI to ranitidine can improve symptoms of acid reflux and bloating



Intestinal Obstruction

Conservative and Palliative Management

Symptoms of intestinal obstruction, including nausea and vomiting, can be managed in several ways.

Conventional (or 'conservative') management of intestinal obstruction includes 'drip and suck', i.e. intravenous fluid and a nasogastric tube.

Nausea and vomiting can also be improved using anti-emetics.

Palliative management can also help with other symptoms of intestinal obstruction. Examples of this can be seen on the right. However not all measures will necessarily be required – symptom control medications will be decided on an individual basis.

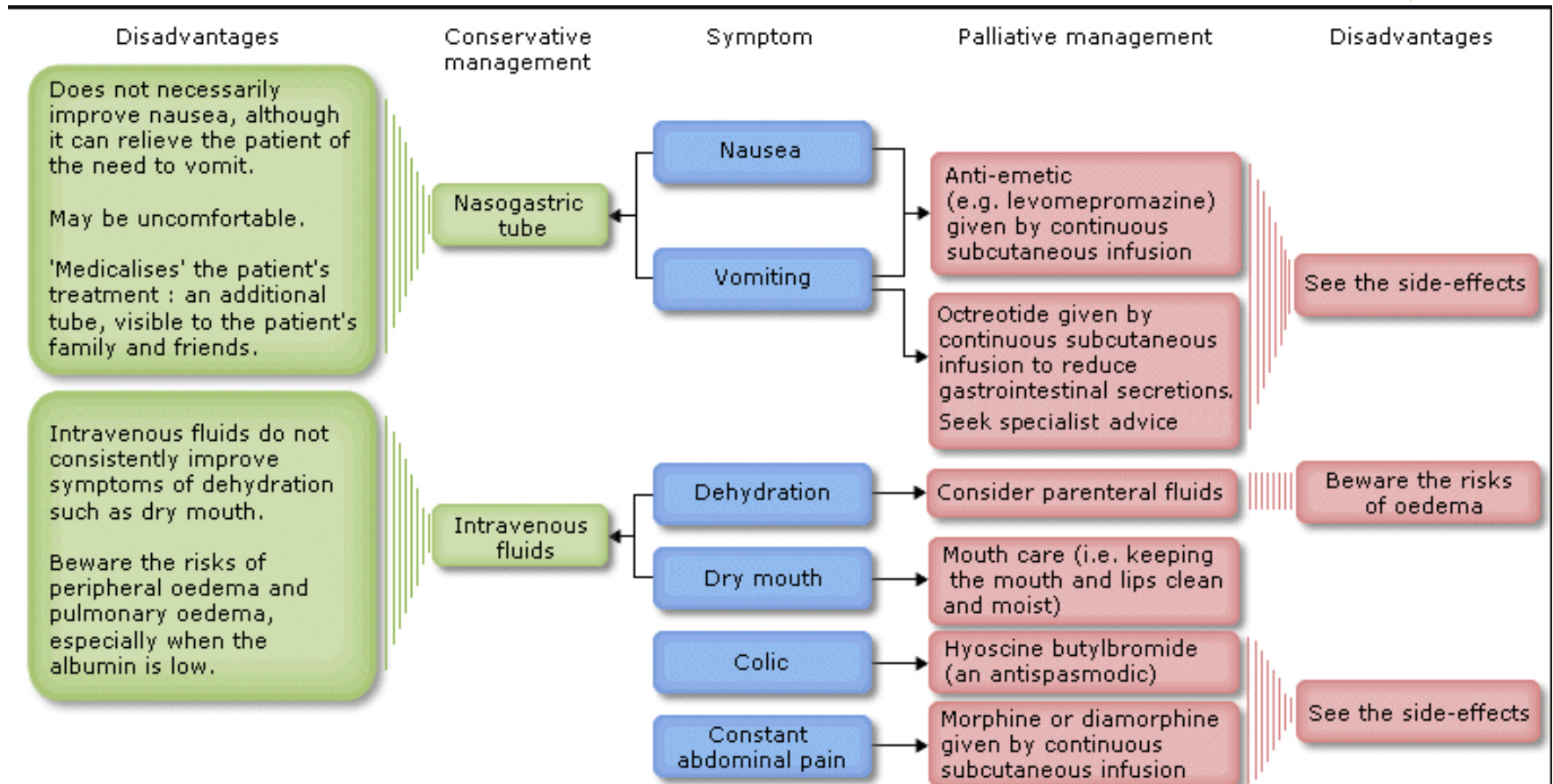
Although a nasogastric tube is not routinely used, some patients do find it useful – for example, if faeculent vomiting persists despite anti-emetics.

In all instances, mouth care is important to relieve dryness.

Chart on next slide

Intestinal Obstruction

Conservative and Palliative Management



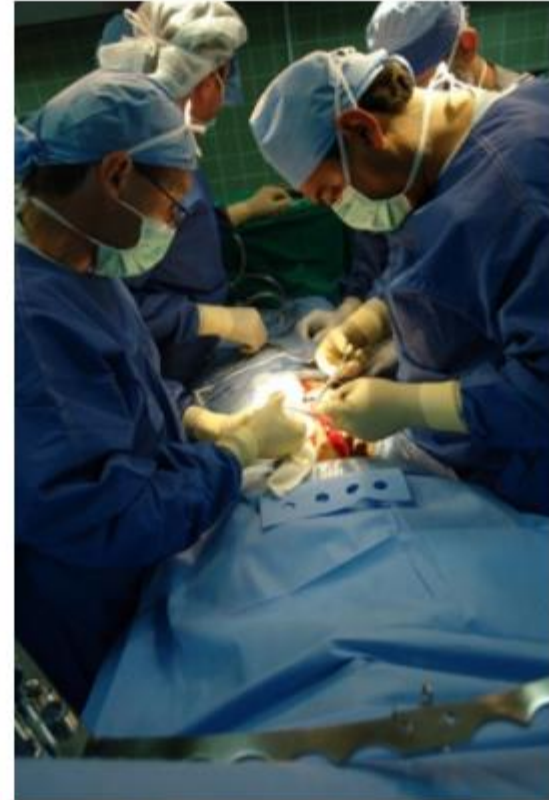
Intestinal Obstruction

Surgical Treatment

It is also worthwhile considering surgery to relieve the bowel obstruction.

Even if there is no chance of resecting the tumour, bypass surgery or formation of a stoma may be possible and these can be useful palliative procedures.

However, surgery is not always possible – for instance if the bowel is obstructed in several places (e.g. when there is widespread peritoneal disease), or if the patient is not fit enough to have an operation.



This photo is for illustrative purposes only and the people depicted are models.

When managing intestinal obstruction with medication, it is essential to consider each of the following aspects:

Route of administration

Suitable anti-emetics

Side-effects and contraindications of prokinetics

Route of administration

In general it is preferable to:

- Avoid oral medications as they may not be well absorbed
- Give an anti-emetic parenterally (e.g. by continuous subcutaneous infusion by syringe driver)



Fig 1: Syringe driver

Suitable anti-emetics

Suitable medications in bowel obstruction include:

- **Levomepromazine** – can be administered subcutaneously and its anticholinergic effects will reduce gastrointestinal secretions
- **Cyclizine** – is a suitable alternative to levomepromazine and can also be administered subcutaneously
- **Octreotide** – reduces gastrointestinal secretions so it is useful to reduce large volume vomits
- **Hyoscine butylbromide** – an anticholinergic drug that reduces spasm in bowel muscle. It is useful in reducing painful colic
- **Ranitidine** – a histamine (H₂) antagonist that is also used in the treatment of gastro-oesophageal reflux. It reduces the volume of gastric secretions



Side-effects and contraindications of prokinetics

Prokinetics (such as metoclopramide):

- Can be used in incomplete bowel obstruction, but are contraindicated in complete obstruction, or if colic is already present
- Can cause colicky pain and there is a risk of causing bowel perforation in complete obstruction
- May also worsen existing nausea and vomiting in complete obstruction



For nausea and vomiting due to biochemical causes, haloperidol is often used as it is effective at the chemoreceptor trigger zone.

Specific treatments for the underlying cause may also be indicated.

- Hypercalcaemia (high levels of calcium in the blood)
- Hyperglycaemia (high levels of glucose in the blood)
- Hypoglycaemia (low levels of glucose in the blood)

Hypercalcaemia (high levels of calcium in the blood)

Unless the patient's prognosis is extremely limited, consider intravenous rehydration (IV fluids) and bisphosphonates (e.g. pamidronate or zoledronic acid). The dose of bisphosphonate depends on the adjusted calcium level and renal function. It can take two to five days for bisphosphonates to have their maximum effect.

Side-effects of bisphosphonates include fever and flu-like symptoms.

Pamidronate and zoledronic acid can cause osteonecrosis of the jaw (destruction of the bone in the jaw), especially in patients with poor dentition (unhealthy teeth) or who undergo dental treatment.



This photo is for illustrative purposes only and the person depicted is a model.

Hyperglycaemia (high levels of glucose in the blood)

In patients with diabetes, it is essential to review steroid medication which may predispose them to hyperglycaemia.

The treatment of diabetes will be influenced by the patient's anticipated prognosis – it is not necessary to aim for strict blood glucose control if the patient is expected to die before the development of complications of diabetes, but hypoglycaemia and symptomatic hyperglycaemia should be avoided.



Fig 1: Glucose meter

Hypoglycaemia (low levels of glucose in the blood)

Patients with hypoglycaemia can be given a sweet biscuit or glucagon. Antihyperglycaemic medications lower blood glucose, so you will need to review (reduce or stop) these medications to reduce the risk of further episodes of hypoglycaemia.



Fig 2: Glucose meter

Drug-related Nausea and Vomiting Treatment Options

Drugs typically associated with causing nausea and vomiting include:

- Antibiotics
- Aspirin
- Carbamazepine
- Steroids
- Digoxin
- Iron
- Lithium
- NSAIDs (Non-steroidal anti-inflammatory drugs)
- Opioids
- Theophyllines

Radiotherapy and chemotherapy (e.g. cisplatin) can also cause nausea and vomiting.



Treating drug-related nausea and vomiting

In a patient with drug-related nausea and vomiting:

- Review the need for each medication
- Determine whether there are acceptable alternatives which may be better tolerated
- Haloperidol can be used to control nausea and vomiting secondary to drugs such as opioids, as it is effective at the chemoreceptor trigger zone

Opioid-associated nausea and vomiting affects one third of patients when they first start taking opioids, but this usually only lasts for two or three days.

You could provide an anti-emetic to be taken 'as needed' to cover this period.

Drug-related Nausea and Vomiting Treatment Options

Treating nausea and vomiting associated with chemotherapy and radiotherapy
Where patients are receiving chemotherapy or radiotherapy, anti-emetics should be provided by the oncology team providing the treatment.

Examples include:

- Metoclopramide
- Ondansetron
- Dexamethasone is often given with chemotherapy and continues for three days after treatment



This photo is for illustrative purposes only and the person depicted is a model.

The most likely causes for raised intracranial pressure in patients near the end of life are related to brain tumours or stroke.

Nausea and vomiting tend to be associated with the acute phase of a stroke (when the stroke first occurs). They are not usually an ongoing problem following a stroke.

There are several options for treating nausea and vomiting associated with raised intracranial pressure secondary to a brain tumour.

Drug treatment

If the raised intracranial pressure is due to either a primary brain tumour or secondary to spread from elsewhere in the body (metastases), the following drug treatment options may be useful:

High dose corticosteroids (e.g. dexamethasone 16mg/day) can provide relief from symptoms within the first few days of treatment

Cyclizine or levomepromazine are useful for nausea or vomiting associated with raised intracranial pressure if there is no improvement with steroids

Note: steroids should be given in the morning if possible (before 14:00) to avoid insomnia. There is no need to spread the dose across the day even when high doses (e.g. 16 mg/day) are required.

Radiotherapy treatment

Dependent on the patient's prognosis and the patient's wishes for intervention.

Consider referral to an oncologist for consideration of radiotherapy or systemic anti-cancer treatment.

Surgery

For some patients who have fewer than three small volume metastases, a prognosis of greater than six months and a reasonable performance status, referral to a neurosurgeon for consideration of resection of the metastases may be indicated. Removing the metastases can give very prompt improvement in symptoms for selected patients.

Oral candida (thrush) can cause nausea through pharyngeal stimulation, but it can be easily treated with an antifungal such as nystatin or fluconazole.

It is important that all areas of candida come into contact with nystatin as it works directly on cell surface membranes. Fluconazole may be easier for patients to take if they are unable to coat all areas of their mouth with nystatin.

Nebulized saline or oral carbocysteine may help patients to shift thick, sticky sputum.



Fig 1 Severe oral candida.

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Several treatment options are available where patients experience nausea and vomiting associated with their sense of smell.

Try to minimise strong smells

For example, avoid strong smelling foods.

Manage wounds and anaerobic infections

Use an absorbent dressing (e.g. charcoal) for offensive-smelling wounds.

Consider an antibiotic (e.g. systemic or topical metronidazole) for anaerobic infections - but note that systemic metronidazole itself can cause nausea).



When the patient experiences nausea or vomiting associated with fear or anxiety, encourage them to talk about their concerns. Anxiety may be generalised or there may be specific fears about various issues such as the process of dying, uncontrolled pain, loss of dignity and unfinished business.

It can be very helpful to explore the patient's experiences of death and dying of family members and friends, as these can have a profound impact on their expectations of their own death.

It can be useful to discuss particular fears. Most patients can be reassured that there is no reason to expect escalating pain. The discussion may also be helpful in coming to an agreement about priorities for the patient's care at the end of his or her life, including where he or she would prefer to be cared for.

If non-drug measures do not have any effect on anxiety, several drug treatment options exist.

Question: What drugs do you think can help nausea and vomiting caused by anxiety?

Answer:

Where non-drug treatment measures have not been successful, consider medications such as:

Benzodiazepine (e.g. lorazepam)

Levomepromazine (a sedative anti-emetic, with anxiolytic properties)



When treating patients with nausea and vomiting, it is important to consider the uses and limitation of each of the routes of administration.

If the patient's symptoms do not settle within 48 hours (assuming appropriate anti-emetics have been prescribed and given), then it is worth asking for advice from a local specialist palliative care team.

This part of the session will look at each of the routes of administration in more detail.

- Oral route
- Buccal route
- Rectal route
- Subcutaneous route
- Continuous subcutaneous infusion (syringe driver)
- Transdermal route
- Intramuscular route
- Intravenous route

Oral route

Uses

Oral anti-emetics can be used if nausea is mild or intermittent.

Limitations

If vomiting is persistent, oral medication will not be absorbed reliably.

Oral medications may not be well absorbed in cases of bowel obstruction.



Uses

May be useful depending on the cause of nausea and vomiting.

Drugs such as prochlorperazine can be taken via this route.

Limitations

It is unlikely that this route of administration will be well-tolerated if there is severe vomiting or the patient's mouth is dry.



Rectal route

Uses

Domperidone suppositories can be used if the patient is unable to take oral medication.

Limitations

Not all patients will find suppositories acceptable.



Subcutaneous route

Uses

A subcutaneous route of administration is particularly effective when the patient is unable to swallow or keep down oral medication, or where absorption is poor (for example, in bowel obstruction).

Several anti-emetics can be given via this route and they are usually very well absorbed:

Haloperidol

- Levomepromazine
- Ondansetron, granisetron
- Octreotide
- Cyclizine – can be administered subcutaneously, but it stings, and may cause inflammation
- Metoclopramide – can be administered subcutaneously but 10 mg is a relatively large volume for subcutaneous injection (2 mL), making it uncomfortable unless given by syringe driver

Limitations

Anti-emetics may not be well absorbed if the patient is very oedematous or has very poor perfusion (e.g. if the patient is profoundly hypotensive from a large gastrointestinal bleed).

Some patients do not like injections and it may be helpful to leave a subcutaneous cannula in place for further treatment.

Whilst the subcutaneous route is off-licence for several anti-emetics, it is accepted and widespread practice in end of life care (see the British National Formulary (BNF) and the Palliative Care Formulary (PCF3)).

Continuous subcutaneous infusion (syringe driver)

Uses

A continuous subcutaneous infusion (CSCI) is given by a small battery operated pump known as a syringe driver.

A syringe driver is used when:

- The patient is unable to swallow or keep down oral medication
- Absorption is poor (e.g. in bowel obstruction)

A syringe driver is often used in end of life care, but its use is not confined only to the last few days or weeks.

- It can be used for a few days to regain control of nausea and vomiting before reintroducing oral medication
- It can be used for longer term (weeks or months)
- Syringe drivers do not limit mobility and patients can go about their daily lives carrying their syringe drivers in a pouch or holster

Limitations

Syringe drivers need to be refilled daily. For patients at home, this will usually be done by a district nurse.

It can take four to six hours for medication given by syringe driver to be absorbed and to take effect. A subcutaneous 'stat' dose of an anti-emetic should therefore be given straight away for effective symptom control.

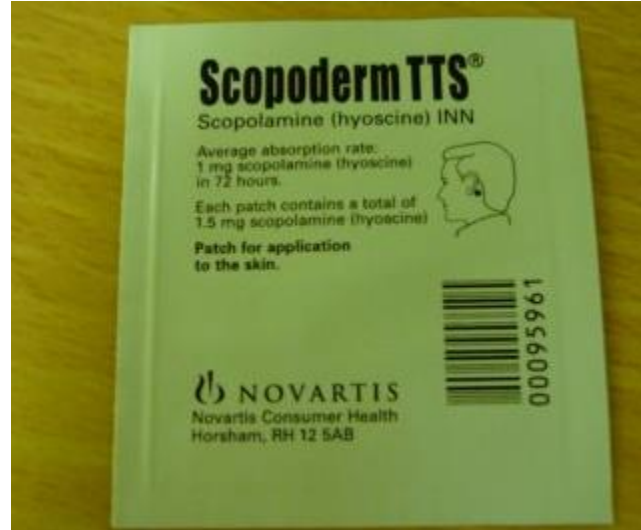
Transdermal route

Uses

Transdermal patches can be particularly useful in patients with motion sickness. For example: hyoscine hydrobromide can be administered via this route.

Limitations

It can take several hours for medication in a transdermal patch to be absorbed and to take effect. It is difficult to adjust the dose rapidly.



Intramuscular route

Uses

Usually there is no need to give intramuscular injections of anti-emetics. The subcutaneous route is preferable.

Limitations

Intramuscular injection of anti-emetics can be painful.



Intravenous route

Uses

If the patient already has an intravenous cannula it could be used to administer metoclopramide or cyclizine (for example). However, it is not usually necessary to insert a cannula to give anti-emetic medication since many anti-emetics can be given subcutaneously.

Limitations

Intravenous administration of anti-emetics is limited because:

- Cannula insertion may be technically difficult
- Repeated cannulation may be painful
- Intravenous access is not usually sustainable at home



- Thorough assessment, and rapid and effective management will help to minimise the distress of nausea and vomiting for patients with advanced illness
- Reversible factors and non-drug measures should be considered alongside drug options for symptom control
- Treatment of nausea and vomiting of different causes can be guided by the knowledge of how anti-emetics work, since different types of anti-emetic drug have an effect at different neurotransmitter receptor sites
- A syringe driver is a useful way of giving a continuous subcutaneous infusion of anti-emetics