

Patients often experience nausea and vomiting when they are receiving palliative care and thorough assessment is necessary to achieve the best possible treatment

Nausea and vomiting in palliative care

In this article...

- › Advice for assessing causes of nausea and vomiting
- › Pathophysiology behind these symptoms
- › Simple measures that can reduce the impact of symptoms

Authors Brendan Kelly and Kate Ward are clinical nurse specialists, Trinity Hospice, London.

Abstract Kelly B, Ward K (2013) Nausea and vomiting in palliative care. *Nursing Times*; 109: 39, 16-19.

Nausea and vomiting in patients with advanced disease are debilitating symptoms that reduce the quality of life for patients, their families and carers. These symptoms are common in patients with both malignant and non-malignant disease. Palliative care intervention has been shown to improve them significantly, thereby improving patient experience of end-of-life care.

This article discusses systematic and thorough assessment of patients to identify possible causes, and how these can be corrected where possible. Simple measures to manage symptoms can be effective in improving nausea and vomiting without the need for medication, and these should be considered in the first instance. We also explain the pathophysiology of nausea, including the neurotransmitters involved, to help guide appropriate prescribing.

In patients with progressive, incurable conditions, quality of life is of the utmost importance. Nausea and vomiting are debilitating symptoms that cause discomfort, distress and have a detrimental impact on patients' quality of life, as well as increasing distress and anxiety for family members and other carers (Mannix, 2011).

End-of-life care policy focuses increasingly on patients with both malignant and non-malignant disease (Department of Health, 2008). Studies have compared

symptom burden in different disease groups; prevalence of symptoms is often experienced similarly in each group (Solano et al, 2006).

Nausea and vomiting is experienced by 17-49% of patients with advanced non-malignancy, with nausea in heart disease being as high as 48%, and in Aids 43-48% (Solano et al, 2006). In patients with end-stage renal failure, this figure is 33% (Murtagh et al, 2007). Similarly, prevalence in advanced malignancy ranges from 6-68% (Solano et al, 2006), with the highest rates being among patients with gastrointestinal, gynaecological and breast cancers. Nausea is common in some haematological malignancies (Pace, 2004). Prevalence of nausea and vomiting appears to increase as the disease progresses, rising as high as 70% in the last week of life (Twycross et al, 2009).

Uncontrolled nausea and vomiting can lead to:

- » Dehydration and electrolyte imbalance – if unresolved, metabolic acidosis can develop, which may prove fatal;
- » Poor oral intake resulting in nutritional deficiencies;
- » Aspiration pneumonia;
- » Oesophageal tears;
- » Inability to perform activities of daily living;
- » Poor quality of life (National Institute for Health and Clinical Excellence, 2012).

Palliative care

Improving quality of life is a fundamental aim of palliative care. Although there are many available definitions, the one provided by the World Health Organization is most widely accepted and used:

“Palliative care is an approach that improves the quality of life of patients and

5 key points

1 Many patients experience nausea and vomiting when they are receiving palliative care

2 Nausea and vomiting are two different symptoms and should be treated accordingly

3 Assessment should look at patient history and examine all possible causes

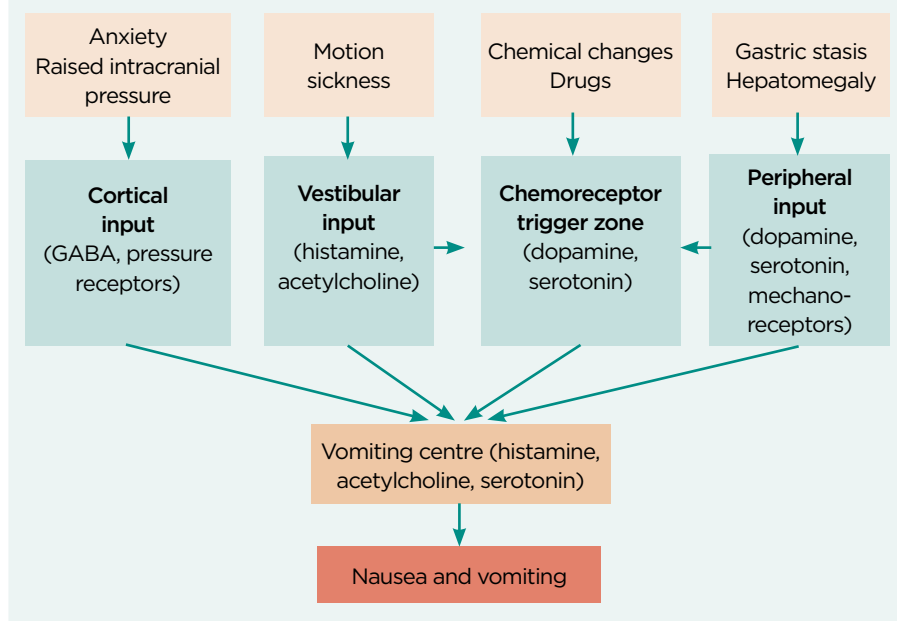
4 Treatment should focus on the underlying causes, rather than on the symptom itself

5 Antiemetics should be reviewed regularly, and other treatments considered



Interventions can improve nausea

FIG 1. THE EMETIC PATHWAY



their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems – physical, psychosocial and spiritual” (WHO, 2009).

This definition places emphasis on quality, rather than quantity, of life and dying is seen as a normal process rather than a medical disease. A palliative care approach to symptom management – and to nausea and vomiting, in particular – has been shown to improve symptoms significantly (Goldschmidt et al, 2005).

Definitions

Definitions of nausea and vomiting enable us to remember that the two are separate symptoms and do not always co-exist (Twycross et al, 2009):

“Nausea is an unpleasant feeling of the need to vomit, often accompanied by autonomic symptoms (such as pallor, sweating, salivation, tachycardia).”

“Vomiting (emesis) is the forceful expulsion of gastric contents through the mouth.”

Each can be experienced differently. Constant nausea can be more debilitating than the occasional bout of vomiting. Patients may use the term “vomiting” to describe a range of symptoms they may be experiencing, including expectoration and regurgitation; a careful history must be taken (Harris, 2010).

Pathophysiology

The pathophysiology of nausea and vomiting is complex, but it is thought there are two main centres involved. These are the:

- » Chemoreceptor trigger zone (CTZ);
- » Vomiting centre.

Both are located at brain-stem level. These areas are a series of interconnecting neural networks rather than distinct structures (Harris, 2010).

The CTZ is stimulated by chemicals in the cerebrospinal fluid and blood, and by input from vagus and vestibular nerves. It contains receptors for dopamine, serotonin, acetylcholine and opioids.

The vomiting centre receives input from a wide range of sources, including the CTZ, the cerebral cortex, hypothalamus, the glossopharyngeal and splenic nerves, and the vagus nerve, which is stimulated by activation of mechanoreceptors and serotonin receptors in the gut. This is known as the emetic pathway (Fig 1).

Causes

It is important to understand the cause of symptoms to address the problem as effectively as possible. Causes of nausea and vomiting can be broadly divided into six categories (Table 1) (National Institute for Health and Clinical Excellence, 2012); sometimes causes are multifactorial, especially in palliative care (Pace, 2004), and several approaches may be needed.

Assessment

Thorough assessment is key to effective symptom management (Box 1). Questions

about the nature of the nausea and vomiting can give an indication of what is causing the symptoms:

- » Large volumes of vomit and relief of nausea after vomiting could indicate gastric stasis or gastric outflow obstruction;
- » Vomiting soon after eating or drinking could suggest oesophageal blockage;
- » Vomiting in the morning may suggest raised intracranial pressure, especially if this is associated with headache;
- » Nausea and vomiting suddenly on movement indicates motion sickness;
- » Intermittent nausea is relieved by distraction could be related to anxiety;
- » If nausea is constant, with or without vomiting, this is likely to be related to chemical imbalance such as hypercalcaemia (NICE, 2012; Pace, 2004).

Accompanying symptoms, such as constipation or malaise, may also point to the cause of nausea and vomiting (Glare et al, 2011). It is useful to find out what methods or treatments the patient has already tried to relieve the symptoms and whether anything has helped.

Current or recent medical treatment, such as radiotherapy to the upper abdomen or brain irradiation, may contribute to symptoms so should be asked about during assessment. A discussion about previous medical history may also elicit information about any underlying gastric pathology that may be contributing.

It is important to find out the extent to which nausea and vomiting has impacted on the patient’s nutritional status and overall quality of life. A short spell of nausea and vomiting may be tolerable but continuous low-grade nausea is likely to have detrimental impact on multiple aspects of the patient’s life (Pace, 2004).

A physical examination should also be carried out; this should include:

- » Looking for signs of dehydration, infection, confusion or drowsiness;
- » An oral assessment, looking for thrush or a possible tumour;
- » An abdominal examination for signs of obstruction, constipation and/or ascites;
- » Looking for signs of anxiety such as tachycardia or facial expression;
- » A rectal examination to assess for constipation (Glare et al, 2011).

The extent of investigations undertaken will depend on the severity of the symptoms, the stage of the disease, and patient and family preferences. Blood tests to rule out hypercalcaemia and uraemia can be performed in the community, but more invasive investigations such as X-rays or

TABLE 1. CAUSES OF NAUSEA AND VOMITING

Causes	Mechanism leading to nausea and vomiting
Chemical <ul style="list-style-type: none"> ● Drugs (opioids, cytotoxics, antibiotics) ● Metabolic (organ failure, hypercalcaemia, hyponatraemia) 	Stimulation of receptors in chemoreceptor trigger zone
Gastrointestinal stretch or irritation <ul style="list-style-type: none"> ● Drugs (NSAIDs, iron supplements, antibiotics, steroids, cytotoxics) ● Constipation ● Intestinal obstruction ● Liver metastases ● Retroperitoneal cancer 	Stimulation of mechanoreceptors cause stimulation of vagus nerve, which in turn acts on vomiting centre
Gastric stasis <ul style="list-style-type: none"> ● Drugs (anticholinergics, opioids, tricyclics) ● Ascites ● Hepatomegaly ● Peptic ulcer ● Gastritis (caused by stress, drugs or radiotherapy) ● Autonomic failure 	Stimulation of gastric receptors cause stimulation of vagus nerve which in turn acts on vomiting centre
Raised intracranial pressure <ul style="list-style-type: none"> ● Bleeding ● Cerebral oedema ● Meningeal tumour ● Skull metastases 	Higher cortical receptors stimulate the vomiting centre
Movement-related <ul style="list-style-type: none"> ● Opioids ● Gut distortion ● Gastroparesis 	Opioids increase the sensitivity of vestibular receptors. Mechanoreceptors in the gut stimulate vagus nerve, which acts on vomiting centre
Anxiety-related <ul style="list-style-type: none"> ● Anxiety ● Anticipatory vomiting (for example pre-chemotherapy) 	Stimulation of receptors in cerebral cortex acts on the vomiting centre

BOX 1. ASSESSMENT QUESTIONS

Nausea

- When did it start, duration, intensity?
- Does anything help/make it worse?
- Is it accompanied by vomiting?

Vomiting

- How much vomit is there and what is its colour, force, volume, timing?
- Is vomiting preceded by nausea?

Other symptoms

- Are there other symptoms, for example dyspepsia, heartburn, early satiety, constipation, diarrhoea, flatus, headache, confusion?

Treatment history

- What has the patient tried to treat nausea, and how effective was this?
- What is the patient's current medication?
- Have there been any recent changes and can these be related to the start of symptoms?
- What is the current treatment for disease (for example chemotherapy, radiotherapy)?

Medical history

- Note medical history, for example gastric ulcers, bowel surgery

Nutritional status

- Note nutritional status, weight loss, dehydration, oral intake in past 24 hours

Quality of life

- How does this affect the patient's quality of life, for example social isolation, lethargy, depression, anxiety?

Source: NICE (2012); Twycross et al (2009)

scans require a hospital visit, which may not be appropriate for some patients.

Management

Thorough assessment and effective management require a consistent, systematic approach. In palliative care, the current management guidance is based on knowledge of the pathophysiology of the likely cause and the pharmacology of antiemetics.

General principles of management are as follows:

- » Comprehensive and regular reassessment is crucial;
- » There are usually multiple causes of symptoms;
- » Treat reversible causes, for example rehydration and bisphosphonates for hypercalcaemia, or antibiotics for urinary tract infections;
- » Give drugs regularly (not as required) and by the appropriate route. For

example, if absorption is compromised or the patient is unable to swallow, subcutaneous administration by continuous infusion in a syringe pump would be more appropriate than oral administration;

- » If an underlying cause has been resolved and symptoms are controlled, review the need for regular antiemetics;
- » Consider non-pharmacological measures, for example management of distress and anxiety with psychological support or relaxation techniques (Watson et al, 2011).

Simple measures

Pharmacological management is not always necessary for nausea and vomiting, simple measures and good nursing care may address the situation sufficiently:

- » Make sure the patient has access to a large bowl, tissues and water;

- » Offer regular mouthcare;
- » Remember that the sight and smell of certain foods can bring on nausea;
- » Offer small, simple meals – this approach is likely to feel less overwhelming;
- » Carbohydrate-based meals are often better tolerated;
- » Cool, fizzy drinks are often more palatable than still or hot drinks;
- » Consider parenteral hydration;
- » Consider the use of complementary therapies – relaxation and acupressure bands may be useful to help relieve symptoms;



“Work out how to support yourself in the tough times”

Anne Nash ▶ p26

- » Consider cognitive behavioural therapy for anticipatory nausea or vomiting (NICE, 2012; Watson et al, 2011; Mannix, 2011; Pace, 2004).

Drug management

It is essential to treat the underlying cause of the symptom, rather than the symptom itself. A simple knowledge of the neurotransmitters involved in the pathophysiology of the various causes of nausea and vomiting can help guide choice of antiemetic and improve effectiveness of treatment (Mannix, 2010) (Table 2).

In renal disease, dose reduction of haloperidol and levomepromazine may be necessary.

If antiemetics are used, they should be:

- » Appropriate for cause;
- » Given via the most appropriate route;
- » Prescribed regularly and as required;
- » Reviewed every 24 hours;
- » Continued unless symptoms have resolved.

Many of the analgesic agents used in palliative care cause nausea, and this often lasts several days. Current guidelines recommend routine prescription of an antiemetic when starting opioids (Watson et al, 2011). This should be given regularly for patients who have a previous history of nausea secondary to opioids and as required for others.

Management of nausea and vomiting at the end of life

How a patient's symptoms are managed will depend on how well symptoms were controlled previously. If nausea is well controlled on a patient's current regimen, the same drugs should be converted to the subcutaneous route.

If the symptoms are new, the same principles of management should be employed, with reversal of any known cause if possible. For new or uncontrolled nausea and vomiting, subcutaneous levomepromazine is the drug of choice, because it acts at many different levels and drowsiness is less of an issue.

Conclusion

Nausea and vomiting are common symptoms experienced by patients who are receiving palliative care. Successful management of these distressing symptoms requires thorough assessment to identify underlying causes and treating the symptom with non-pharmacological measures as well as appropriate antiemetics.

Management should be tailored to the individual and attention paid to

TABLE 2. DRUG MANAGEMENT*

Cause	Drug, receptor site affinities and site of action	Dose/administration route
Impaired gastric emptying	Metoclopramide (D2 antagonist, prokinetic)	10-20mgs TDS
	Domperidone (D2 antagonist)	10-20mg TDS
Radiotherapy to abdomen	Ondansetron (5HT3 antagonist, acts centrally and in gut)	8mg BD
	Granisetron	1mg BD
	Haloperidol (D2 antagonist in CTZ)	1.5mg nocte/BD
Intestinal obstruction	Cyclizine (H1 antagonist, ACH antagonist, acts on vestibular and vomiting centres)	150mg over 24 hours via syringe pump
	+/- haloperidol	3-5mg over 24 hours via syringe pump
	Levomepromazine (D2 antagonist, serotonin antagonist, histamine antagonist, ACH antagonist, acts in vomiting centre and CTZ) (second line)	6.25-25mg over 24 hours via syringe pump
Chemical metabolic	Haloperidol	1.5mg nocte-BD
	Levomepromazine	6.25mg -25mg nocte
Raised Intracranial pressure	Cyclizine	50mg TDS
Movement related	Cyclizine	50mg TDS
Cortical	Consider benzodiazepines	
Unknown		Haloperidol 1.5mg +/-
		Cyclizine 50mg

*This table features the main causes of symptoms, the neurotransmitters involved and the common drugs used to treat them. This list is not exhaustive.

5HT3 = serotonin receptor. ACH = acetylcholine receptor. CTZ = chemoreceptor trigger zone D2 = dopamine receptor. Source: NICE (2012); Glare et al (2011)

treating any other exacerbating reversible coexisting conditions such as constipation or hypercalcaemia. **NT**

References

Department of Health (2008) *End of Life Care Strategy: Promoting High Quality Care for All Adults at the End of Life*. London: DH. tinyurl.com/DH-EoL-strategy

Glare P et al (2011) Treating nausea and vomiting in palliative care: a review. *Clinical Interventions in Aging*; 6, 243-259.

Goldschmidt D et al (2005) Cooperating with a palliative home-care team: expectations and evaluations of GPs and district nurses. *Palliative Medicine*; 19: 3, 241-250.

Harris DG (2010) Nausea and vomiting in advanced cancer. *British Medical Bulletin*; 96: 1, 175-185.

Mannix K (2011) Palliation of nausea and vomiting. In: Hanks G et al (eds) *Oxford Textbook of Palliative Medicine*. Oxford University Press.

Murtagh F et al (2007) Symptoms in advanced

renal disease - a cross sectional survey of symptom prevalence in stage 5 chronic kidney disease managed without dialysis. *Journal of Palliative Medicine*. 10, 6: 1266-1276.

National Institute for Health and Clinical Excellence (2012) *Palliative Cancer Care - Nausea and Vomiting*. London: NICE. tinyurl.com/NICE-Palliative-Nausea

Pace V (2004) Nausea and vomiting. In: Sykes N et al (eds) *Management of Advanced Disease*. Boca Raton, FL: CRC Press.

Solano JP et al (2006) A comparison of symptom prevalence in far advanced cancer, AIDS, heart disease, chronic obstructive pulmonary disease and renal disease. *Journal of Pain and Symptom Management*; 31: 58-69.

Twycross RG et al (2009) *Symptom Management in Advanced Cancer*. Nottingham: Palliativedrugs.com Ltd.

Watson M et al (2011) *Palliative Care Guidelines Plus*. book.pallcare.info

World Health Organization (2009) *WHO Definition of Palliative Care*. www.who.int/cancer/palliative/definition