

# CLiP

15 minute Worksheet



Helping patients with symptoms other than pain

## 5: Nausea and vomiting

Intermediate level

Produced by  
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### Aim of this worksheet

To learn how to assess and manage nausea and vomiting.

### How to use this worksheet

- You can work through this worksheet by yourself, or with a tutor.
- Read the case study below, and then turn to the Work page overleaf.
- Work any way you want. You can start with the exercises on the Work page using your own knowledge. The answers are on the Information page - this is not cheating since you learn as you find the information. Alternatively you may prefer to start by reading the Information page before moving to the exercises on the Work page.
- This CLiP worksheet should take about 15 minutes to complete, but will take longer if you are working with colleagues or in a group. If anything is unclear, discuss it with a colleague.
- If you think any information is wrong or out of date let us know.
- Take this learning into your workplace using the activity on the back page.

### Case study

**John is a 54 year old man who had surgery for a carcinoma of the colon.**

**He asks to see you because he has started to feel nauseated with occasional vomiting.**

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## Nausea and vomiting

This is common, occurring in 62% of patients with advanced cancer.

You need to ask the patient about the following:

- **Nausea** -how often, how long, precipitating and relieving factors, and whether it is accompanied by vomiting.
- **Vomiting**- how often, how long, how much, content, precipitating/relieving factors, whether it is accompanied by nausea.

## Current treatment

The treatment is based on blocking the effects of specific neurotransmitters:

Haloperidol blocks central dopamine receptors (D<sub>2</sub>) in the interoceptive cortex and chemoreceptor trigger zone (CTZ)

Cyclizine blocks histamine receptors (H<sub>1</sub>) and muscarinic receptors in the vomiting centre and vestibular system.

Domperidone and metoclopramide act on the stomach to restore motility to normal. Domperidone blocks dopamine (D<sub>2</sub>) receptors and metoclopramide blocks 5HT<sub>4</sub> receptors.

Other antiemetics

*Levomepromazine* is a broader acting antiemetic but is sedative. It blocks muscarinic and 5HT<sub>2</sub> receptors in the vomiting centre and vestibular centre, and D<sub>2</sub> receptors in the interoceptive cortex and CTZ.

*Olanzapine* acts on a wide range of receptors and comes in a useful buccal 'melt' preparation. It has fewer movement-related adverse effects than levomepromazine.

*Ondansetron* and *granisetron* block 5HT<sub>3</sub> receptors in the autonomic nuclei in the brainstem and gut. They have been disappointing in palliative care despite their obvious success in chemotherapy vomiting and in post-operative nausea and vomiting.

*Prochlorperazine* (Stemetil): is a weak antiemetic acting on (H<sub>1</sub>, D<sub>2</sub> and muscarinic and 5HT<sub>2</sub> receptors).

*Octreotide* acts on somatostatin receptors in the stomach

## Drug doses and routes

Haloperidol is used in very low doses, 0.5-1.5mg once at night SC or PO (can be titrated up to 10mg). Continuous SC infusion is unnecessary as it has a 16 hour half life. At these doses, adverse effects are very uncommon.

Cyclizine is given as 25-50mg 8-hourly PO or PR, or 75 - 150mg per 24 hours as a continuous SC infusion.

Domperidone can be given PR or PO, metoclopramide PO or SC. Metoclopramide and domperidone are equally effective and either can be used. Domperidone is very unlikely to cause movement disorders.

Levomepromazine can be given PO or SC 2.5 mg once at night (can be titrated up to 25mg/24hrs. Olanzapine is an alternative at doses of 2.5mg PO 12-hourly (can be titrated up to 10mg)

## Acupuncture and acupressure

There are 33 randomised controlled trials (12 of high quality) that support the use of the P6 acupuncture point for relieving vomiting due to chemotherapy, morphine or post-operative nausea and vomiting.

The P6 point is on the middle of the inner wrist, two finger breadths up the arm from the wrist crease. It can be stimulated with pressure or an acupuncture needle.

## Clinical decisions and treatment

### • Is the patient mainly troubled by vomiting?

If the vomits are large volume and the patient dehydrating rapidly, consider gastric outflow obstruction as a cause.

If the vomits are large volume but hydration is reasonable, this could be gastric stasis. It is usually accompanied by early satiation, epigastric fullness and pain, flatulence, hiccup, large volume vomiting, or heartburn.

Metoclopramide or domperidone should help, but they need to start SC or PR to be effective.

If the volume of vomit is small consider regurgitation due to dysphagia, stomach paralysis or a 'squashed stomach syndrome' (caused by external pressure on the stomach from tumour, ascites or a large liver).

### • Could the cause be drugs, toxins or biochemical? eg. drugs (morphine, metronidazole, trimethoprim) bacterial toxins, hypercalcaemia or uraemia.

Haloperidol should help with levomepromazine or olanzapine as second line.

### • Is the nausea or vomiting worse on movement?

For motion sickness try hyoscine hydrobromide; otherwise cyclizine or cinnarizine may help.

### • Is gastritis present?

Treat the cause if known. Metoclopramide may help reduce nausea and vomiting.

### • Could fear or anxiety be contributing?

See CliP worksheet on *Anxiety*.

### • Is the nausea and vomiting persisting?

Start levomepromazine 3-6mg PO or 2.5-5mg SC at bedtime.

Other antiemetics that occasionally help are low dose olanzapine and dexamethasone. Ondansetron is rarely of help in non-chemotherapy nausea and vomiting, and is very constipating.

**WORK PAGE: Nausea and vomiting**

Consider the mechanisms involved in the vomiting reflex in the diagram below. The neurotransmitters involved at the peripheral and central sites vary. By selectively blocking receptors with drugs, it is possible to control symptoms in most patients.

This diagram shows a simplified mechanism for nausea and vomiting.

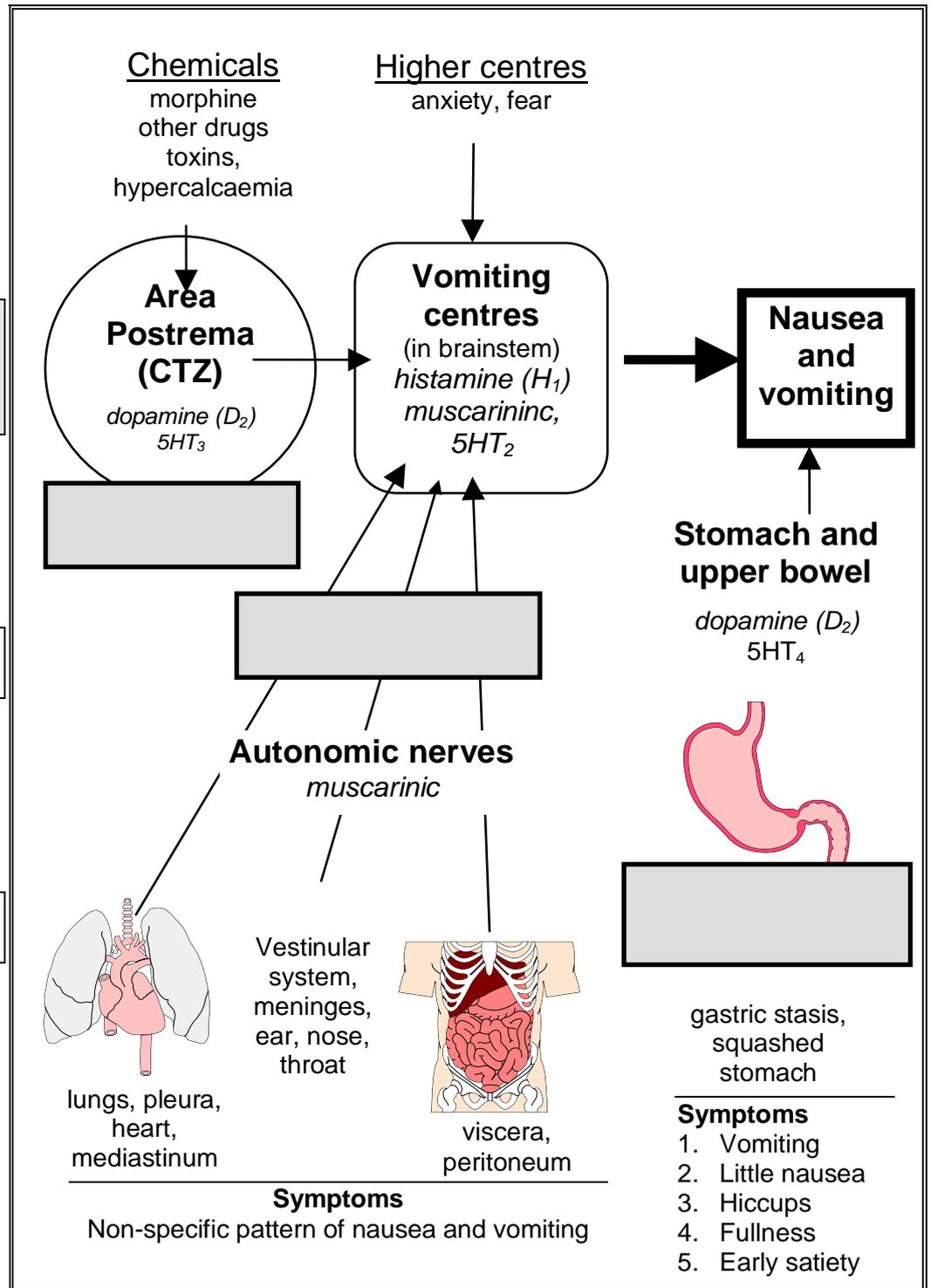
The receptors involved are written in *italics>*

**Place the drugs below into the correct shaded boxes to show their site of action**

- metoclopramide
- cyclizine
- haloperidol
- domperidone

**What other antiemetics do you know?**

**What other treatments do you know?**



**Q** What are the possible causes of John's vomiting?

## FURTHER ACTIVITY: Nausea and vomiting

Find a patient who is troubled with nausea and/or vomiting.

- can you identify a pattern suggesting gastric stasis?
- what possible causes are there in this patient?

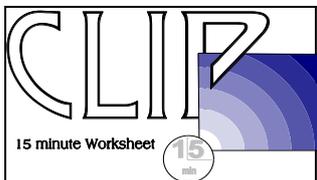
## FURTHER READING: Nausea and vomiting

### Journal articles

- Braude D, Crandall C. Ondansetron versus promethazine to treat acute undifferentiated nausea in the emergency department: a randomized, double-blind, noninferiority trial. *Academic Emergency Medicine*. 2008; **15**(3): 209–15.
- Bruera E, *et al.* A double-blind, crossover study of controlled-release metoclopramide and placebo for the chronic nausea and dyspepsia of advanced cancer. *Journal of Pain & Symptom Management*. 2000; **19**(6):427-35.
- Buttner M, *et al.* Is low-dose haloperidol a useful antiemetic?: A meta-analysis of published and unpublished randomised trials. *Anesthesiology*. 2004; **101**(6): 1454–63.
- Critchley P, *et al.* Efficacy of haloperidol in the treatment of nausea and vomiting in the palliative patient: a systematic review. *Journal of Pain & Symptom Management*. 2001; **22**(2): 631-4.
- Eisenclas JH, Garrigue N, Junin M, De Simone GG. Low-dose levomepromazine in refractory emesis in advanced cancer patients: an open-label study. *Palliative Medicine*. 2005; **19**(1): 71–5.
- Ezzo J, Streitberger K, Schneider A. Cochrane systematic reviews examine P6 acupuncture-point stimulation for nausea and vomiting. *Journal of Alternative and Complementary Medicine*. 2006; **12**(5): 489–95.
- Hiyama T. *et al.* Effectiveness of prokinetic agents against diseases external to the gastrointestinal tract. *Journal of Gastroenterology & Hepatology*. 2009; **24**(4): 537-46.
- Kennett A, Hardy J, Shah S, A'Hern R. An open study of methotrimprazine in the management of nausea and vomiting in patients with advanced cancer. *Supportive Care in Cancer*. 2005; **13**(9): 715–21.
- Mannix KA. Palliation of nausea and vomiting. In: Hanks G, Cherney NI, Christakis NA, Fallon M, Kaasa S, Portenoy RK. *The Oxford Textbook of Palliative Medicine*, 4th ed. Oxford: Oxford University Press, 2010, p801-12.
- Nystrom E, Ridderstrom G, Leffler AS. Manual acupuncture as an adjunctive treatment of nausea in patients with cancer in palliative care: a prospective, observational pilot study. *Acupuncture in Medicine*. 2008; **26**(1): 27–32.
- Passik SD, Lundberg J, Kirsh KL, Theobald D, *et al.* A pilot exploration of the antiemetic activity of olanzapine for the relief of nausea in patients with advanced cancer and pain. *Journal of Pain and Symptom Management*. 2002; **23**(6): 526–32.
- Peroutka SJ, Snyder SH. Antiemetics: neurotransmitter receptor binding predicts therapeutic actions. *Lancet*. 1982; **i**(8273). 658–9.
- Richardson J, Smith JE, McCall G, *et al.* Hypnosis for nausea and vomiting in cancer chemotherapy: a systematic review of the research evidence. *European Journal of Cancer Care*. 2007; **16**(5): 402–12.
- Stephenson J, Davies A. An assessment of aetiology-based guidelines for the management of nausea and vomiting in patients with advanced cancer. *Supportive Care in Cancer*. 2006; **14**(4): 348–53.
- Twycross RG, *et al.* The use of low dose levomepromazine (methotrimprazine) in the management of nausea and vomiting. *Progress in Palliative Care*. 1997; **5**(2): 49–53.
- Vella-Brincat J, Macleod AD. Haloperidol in palliative care. *Palliative Medicine*. 2004; **18**(3): 195–201.
- Wang SM, Kain ZN. P6 acupoint injections are as effective as droperidol in controlling early postoperative nausea and vomiting in children. *Anesthesiology*. 2002; **97**(2): 359–66.
- Wilson J, Plourde JY, Marshall D, Yoshida S, *et al.* Long-term safety and clinical effectiveness of controlled-release metoclopramide in cancer-associated dyspepsia syndrome: a multicentre evaluation. *Journal of Palliative Care*. 2002; **18**(2): 84–91.

### Resource books and websites

- A Guide to Symptom Relief in Palliative Care*, 6<sup>th</sup> ed. Regnard C, Dean M. Oxford: Radcliffe Medical Press, 2010
- e-lfh: e-Learning for Healthcare* contains a range of online self-learning programmes, including several relating to end-of-life care (e-elca). Registration is required but is free. <http://www.e-lfh.org.uk/projects/e-elca/index.html>
- Oxford Textbook of Palliative Medicine* 4<sup>th</sup> ed. Hanks G, Cherny NI, Christakis NA, Fallon M, Kaasa S, Portenoy RK. eds. Oxford : Oxford University Press, 2010.
- PCF6- Palliative Care Formulary*, 6<sup>th</sup> ed. Twycross RG, Wilcock A, Howard P. [www.palliativedrugs.com](http://www.palliativedrugs.com)
- Symptom Management in Advanced Cancer*, 4<sup>th</sup> edition. Twycross RG, Wilcock A, Stark-Toller C. Oxford: Radcliffe Press, 2009



**Current Learning in Palliative care**  
An accessible learning programme for health care professionals

### 15 minute worksheets are available on:

- An introduction to palliative care
- Helping the patient with pain
- Helping the patient with symptoms other than pain
- Moving the ill patient
- Psychological and spiritual needs
- Helping patients with reduced hydration and nutrition
- Procedures in palliative care
- Planning care in advance
- Understanding and helping the person with learning disabilities
- The last hours and days
- Bereavement

Available online on  
[www.clip.org.uk](http://www.clip.org.uk)