<table>
<thead>
<tr>
<th>Title of Guideline (must include the word “Guideline” (not protocol, policy, procedure etc))</th>
<th>Guideline for the prevention and treatment of Postoperative Nausea and Vomiting (PONV) in adults</th>
</tr>
</thead>
</table>
| Contact Name and Job Title (author) | Dr. John Vernon  
Dr. Jo Fitz-Henry  
Consultant anaesthetists, NUH |
| Directorate & Speciality | Anaesthesia, Clinical Support |
| Date of submission | 22 June 2017 |
| Date on which guideline must be reviewed (this should be one to three years) | December 2020 |
| Explicit definition of patient group to which it applies (e.g. inclusion and exclusion criteria, diagnosis) | Adult patients at NUH who will be having, or have had, a procedure involving an anaesthetic.  
Excluding: paediatric patients, obstetric patients, palliative care patients, oncology patients where speciality guidelines are already in use. |
| Version | Version 5. (Replaces version 4, June 2016) |
| Abstract | This guideline describes the peri-operative management of Post Operative Nausea and Vomiting (PONV) in adult patients |
| Key Words | post-operative, nausea, vomiting, anti-emetics |
Statement of the evidence base of the guideline – has the guideline been peer reviewed by colleagues?
Evidence base: (1-6)

<table>
<thead>
<tr>
<th></th>
<th>Evidence base</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NICE Guidance, Royal College Guideline, SIGN (please state which source).</td>
</tr>
<tr>
<td>2a</td>
<td>meta analysis of randomised controlled trials</td>
</tr>
<tr>
<td>2b</td>
<td>at least one randomised controlled trial</td>
</tr>
<tr>
<td>3a</td>
<td>at least one well-designed controlled study without randomisation</td>
</tr>
<tr>
<td>3b</td>
<td>at least one other type of well-designed quasi-experimental study</td>
</tr>
<tr>
<td>4</td>
<td>well–designed non-experimental descriptive studies (ie comparative / correlation and case studies)</td>
</tr>
<tr>
<td>5</td>
<td>expert committee reports or opinions and / or clinical experiences of respected authorities</td>
</tr>
<tr>
<td>6</td>
<td>recommended best practise based on the clinical experience of the guideline developer</td>
</tr>
</tbody>
</table>

Consultation Process
Version 5, 2017: no guidance changes, minor dosing changes to reflect current drug purchasing at NUH.

Target audience
Anaesthetists, recovery staff, ward staff on peri-operative wards, clinical pre-operative assessment unit staff.

This guideline has been registered with the trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt contact a senior colleague or expert. Caution is advised when using guidelines after the review date.

**Level 1**

Consensus Guidelines for the Management of Postoperative Nausea and Vomiting
Society for Ambulatory Anesthesiology
(Published in Anesthesia and Analgesia Jan 2014 v118:1 85-113)

**Level 2b**
Guideline for the prevention and treatment of Postoperative Nausea and Vomiting (PONV) in adults

Dr John Vernon and Dr Jo Fitz-Henry on behalf of the NUH Department of Anaesthesia
Version 5: June 2017

Application. This guideline applies to the prevention and treatment of postoperative nausea and vomiting (PONV) in adults at the Nottingham University Hospitals.
It is not intended for use in the following circumstances / patient groups:
1. Obstetrics
2. Paediatrics
3. Medical patients
4. Oncology patients (unless for post-operative use)
5. Palliative care

Aim. To reduce the incidence and severity of PONV in the first 48 hours after surgery. PONV is common, distressing for the patient and leads to delays in post-operative recovery and discharge from hospital.

This is guideline only. The interpretation and application of clinical guidelines will remain with the responsibility of the individual clinician. If in doubt contact a senior colleague or expert.
Contents

1. Prevention

   1.1 Risk assessment
   1.2 Reducing the baseline risk
   1.3 Pre-operative anti-emetics
   1.4 P6 acupuncture
   1.5 Intra-operative anti-emetics

2. Treatment of PONV in theatre recovery areas

3. Treatment of PONV on the ward and other areas.

4. Treatment of Acute Dystonic Reactions

Appendix 1 - NUH Adult Postoperative Nausea and Vomiting (PONV) label

Appendix 2 - Equality Impact Assessment Report

This guideline is updated from Version 4 (2016).

This version retains the same advice as in version 4, with the addition of the advice to avoid dexamethasone in patients with lymphoma. The changes to the doses of dexamethasone reflect current drug purchasing strategy at NUH.
1. Prevention

1.1 Risk Assessment

Patients should be asked about previous operations and anaesthetics, and their experiences of PONV. Patients with a history of PONV should be flagged up to the anaesthetist. Patients should be encouraged to report PONV and expect to receive prompt effective treatment.

Pre-operative fasting

All patients should be managed according to the NUH pre-operative fasting guidelines to minimise the period without food or drink, unless there are specific instructions to the contrary from the anaesthetist.

All pre-operative patients should be assessed for their PONV risk, taking into account the patient risk factors and the type of surgery and anaesthetic which they will receive.

Patient factors according to the Apfel scoring system:

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>1</td>
</tr>
<tr>
<td>Non smokers</td>
<td>1</td>
</tr>
<tr>
<td>History of PONV and/or motion sickness</td>
<td>1</td>
</tr>
<tr>
<td>Post-operative opioid administration</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Points score</th>
<th>% risk of PONV</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>Low Risk*</td>
</tr>
<tr>
<td>1</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>40</td>
<td>High Risk</td>
</tr>
<tr>
<td>3</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>

* Consider the patient to be at high risk of PONV if any opioid, other than remifentanil, is used by any route (including spinal and epidural). Post-operative opioids are more likely to cause PONV than opioids administered intra-operatively.
*Laparoscopic and gynaecological surgery are associated with a high risk of PONV.

Patients who are having day case procedures or are scheduled for early ambulation should be managed particularly carefully to avoid PONV.

Patients having procedures where it would be dangerous for them to vomit should be managed as though they were a high risk patient. These include jaw wiring procedures, diaphragmatic hernia repair and oesophageal anastomoses (this list is not exhaustive).

1.2 Reducing the baseline risk

The baseline risk of PONV is reduced by:

- using local or regional anaesthetic techniques rather than general anaesthesia.
- keeping the patient well hydrated pre and intra-operatively.
- using Total Intravenous Anaesthesia (TIVA).
- avoiding volatile anaesthetic agents.
- avoiding the use of nitrous oxide.
- minimising the use of peri-operative opioids. Post-operative opioids cause more nausea than intra-operative opioids.
1.3 Pre-operative anti-emetics
Patients at high risk of PONV, or those managed as though they were high risk, should receive at least two anti-emetics with different mechanisms of action. One of these should be ondansetron (unless there is a contra-indication to ondansetron).

Pre-operative anti-emetics are usually given orally, but they can also be given IV if a patient already has an indwelling cannula (use the intra-operative doses in this case).

These drugs should be prescribed on the “once only” section of the NUH prescription chart, or on an appropriate pre-printed peri-operative drug chart.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ondansetron</td>
<td>8 -16 mg</td>
<td>oral</td>
</tr>
<tr>
<td>Cyclizine</td>
<td>50 mg</td>
<td>oral</td>
</tr>
<tr>
<td>Prochlorperazine (Buccastem ®)</td>
<td>3 – 6 mg</td>
<td>buccal</td>
</tr>
<tr>
<td>Prochlorperazine tablets</td>
<td>5mg</td>
<td>oral</td>
</tr>
</tbody>
</table>

Consider pre-operative gabapentin 600-900mg orally 1-2 hours before surgery both for nausea and when neuropathic pain may be an issue.

1.4 P6 acupuncture / Acupressure
Stimulation of the P6 acupuncture point at the wrist is an effective non-pharmacological technique for preventing PONV. It is used at NUH under the guidance of the Acute Pain Service, who should be contacted for advice about its use.
1.5 Intra-operative anti-emetics

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dexamethasone</td>
<td>3.3 – 6.6mg</td>
<td>IV</td>
<td>Give at induction</td>
</tr>
<tr>
<td>Ondansetron</td>
<td>4 mg</td>
<td>IV</td>
<td>Give at the end of the procedure.</td>
</tr>
<tr>
<td>Cyclizine</td>
<td>25 – 50 mg</td>
<td>IV or S/C</td>
<td></td>
</tr>
<tr>
<td>Droperidol</td>
<td>625 micrograms – 1.25 mg</td>
<td>IV</td>
<td></td>
</tr>
</tbody>
</table>

Combinations of two or more anti-emetics are more effective in preventing PONV than one medicine given alone. One of these should be ondansetron unless there is a contraindication to its use.

Caution must be used if administering ondansetron to patients with risk factors for QT interval prolongation or cardiac arrhythmias.

**Dexamethasone** should not be administered to patients with lymphoma or suspected lymphoma because of the risk of Tumour Lysis Syndrome (unless the administration has been specifically agreed with a haematology consultant in advance).

The smaller doses of cyclizine and droperidol are appropriate for elderly patients.

Intra-operative midazolam 2mg has an anti-emetic effect, especially when used in combination with dexamethasone.

The administration of intra-operative anti-emetics must be recorded on the NUH prescription chart. The NUH Adult PONV label (hereafter called “the PONV label”, see Appendix 1) facilitates this process. If the PONV label is used, it is attached to the “As required” section of the NUH prescription chart to cover two sections.

Theatre and recovery administration (the white upper half of the label)
- Ensure that anti-emetics which have been given in theatre have been signed for in the “Prescribed by”, the “Given by” and the “Time given” boxes (including selecting the dose given).
- Prescribe any anti-emetics to be given as rescue drugs in recovery on the PONV label, by signing the “Prescribed by” box and selecting the required dose.
• Cross though the anti-emetics that are not appropriate for that patient in recovery.

Ensure that the PRN dosing part of the label (the orange area) has been completed for the ward by deleting any of the three drugs which are not suitable for that patient and signing the bottom of the label.

It is the responsibility of the anaesthetist to ensure that intra-operative anti-emetics are recorded and post-operative anti-emetics are prescribed before transferring the patient's care to the recovery staff.

If a patient is being managed as high risk for PONV regular anti-emetics should also be prescribed for ward use.

If ondansetron, cyclizine or prochlorperazine are prescribed regularly, the corresponding “As required” section for these drugs must be crossed through on the PONV label section for ward administration.
2. Treatment of PONV in theatre recovery areas

Regular assessment allows for early detection and rapid treatment of moderate and severe nausea and vomiting. This must be treated unless the patient does not want treatment.

Mild nausea and/or infrequent vomiting may be tolerated if the patient does not want active treatment and there is no medical risk from vomiting.

Exclude medical and surgical causes:

- hypotension
- hypovolaemia
- temperature – hypothermia, or patient feels too warm
- infection

Recovery staff may administer the appropriate anti-emetics prescribed on the PONV label (both the white and orange areas).

If there are no appropriate anti-emetics to administer, advice must be sought from an anaesthetist.

The patient should not be returned to the ward while moderate/severe PONV is uncontrolled.

Additional rescue anti-emetics include:

- Midazolam 1-2mg IV
- Low dose propofol 20mg IV (short duration of action)

Do not repeat a dose of ondansetron within 4 hours.

Do not repeat a dose of dexamethasone within 8 hours.
3. **Treatment of PONV on the ward and other areas.**

Anti-emetics which are prescribed for regular dosing must be given. Patients should be strongly encouraged not to decline the medication just because they are not feeling sick at the time. If a patient is experiencing unacceptable side effects from prescribed anti-emetics, an alternative should be prescribed.

If the patient is experiencing nausea and/or vomiting despite regular anti-emetics, select a different anti-emetic from the white area of the PONV label as rescue medication.

If no regular anti-emetics have been prescribed, immediately give a combination of two anti-emetics from the PONV label. Both ondansetron and cyclizine should be given intravenously (rather than orally) if the patient has an indwelling IV cannula. Cyclizine may also be given subcutaneously, although this is an unlicensed route of administration.

Oral and buccal administration is only acceptable in cases of mild to moderate nausea, and tablets should not be given in preference to IV or S/C administration when there is active vomiting. Ondansetron may be given every 6 hours, Cyclizine every 8 hours and Buccal prochlorperazine every 12 hours.

The patient must be reassessed and appropriate action taken not later than 60 minutes after treatment. This must be recorded on their observation chart. If the patient continues to experience moderate or severe nausea and/or vomiting, give a third antiemetic (if possible) and seek medical advice immediately if this is ineffective (see below).

Make sure that the following have been assessed and managed appropriately:
- Dehydration or hypovolaemia
- Hypotension
- Infection
- Inadequate oxygenation
- Pain
- Patient is too warm or too cold
- Hunger
- Mouth hygiene
• Foul or upsetting smells in the vicinity of the patient

Ensure that the IV cannula is present and patent. Give intravenous fluids to maintain hydration.

If these measures have been initially successful but nausea and/or vomiting is a persistent problem, ensure that the effective anti-emetics are prescribed for regular administration.

Consider the following treatments, which must be prescribed before administration:

• Give IV droperidol 625 micrograms - 1.25mg, particularly if nausea is a problem. Use the smaller dose first.

• Give IV dexamethasone 3.3 - 6.6mg if not given within the last 8 hours. Use with caution in concurrent infection (immunosuppression) and diabetes (glycaemic control).

If opioid medication is considered a contributing factor then consider the following:

• reducing the dose of opioid by assessing the analgesic regimen (optimise paracetamol and NSAID use, consider adding a regional technique).
• changing the opioid or its delivery regimen (e.g. decrease rate of PCA bolus delivery) This may require consultation with either the Acute Pain Service or an on-call anaesthetist.

Contact the Pain Management Service for consideration of other strategies (other drugs, acupuncture and psychological strategies).
4. Treatment of Acute Dystonic Reactions

Dystonic reactions are very rare. They may occur after the administration of metoclopramide, cyclizine, prochlorperazine, droperidol and ondansetron.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oculogyric crisis</td>
<td>Spasm of the extraorbital muscles, causing upwards and outwards deviation of the eyes. Blephorospasm</td>
</tr>
<tr>
<td>Torticollis</td>
<td>Head held turned to one side</td>
</tr>
<tr>
<td>Opisthotonus</td>
<td>Painful forced extension of the neck. When severe, the back is involved and the patient arches off the bed</td>
</tr>
<tr>
<td>Macroglossia</td>
<td>The tongue does not swell, but it protrudes and feels swollen</td>
</tr>
<tr>
<td>Buccolingual crisis</td>
<td>May be accompanied by trismus, risus sardonicus, dysarthria and grimacing</td>
</tr>
<tr>
<td>Laryngospasm</td>
<td>Uncommon but frightening</td>
</tr>
<tr>
<td>Spasticity</td>
<td>Trunk muscles and less commonly limbs can be affected</td>
</tr>
</tbody>
</table>

Do not ignore these symptoms – they may be extremely frightening for the patient.

If acute dystonia is suspected, call an anaesthetist or other suitably experienced doctor.

The treatment is **IV procyclidine 5 - 10 mg** as a single dose. Symptoms often disappear within 5 - 10 minutes. Occasionally patients may require further doses, and may take up to 30 minutes to obtain relief (for further information, refer to the BNF).

When the episode is treated,
- inform the patient which drug caused the acute dystonia (if known)
- document this in the notes and on the prescription chart
- discontinue the prescription for the offending drug
- For further advice consult the Medicines Information Unit at NUH pharmacy (ext. 64185 or 61200, Monday to Friday 0900-1700).
- This reaction may need to be formally reported to the MHRA through the “Yellow Card” scheme on-line (available online [here](#) or via [www.mhra.gov.uk](#))
Appendix 1

NUH Adult Postoperative Nausea and Vomiting (PONV) label
Version 5: June 2017
Medicines Management Committee order code: NUH00420S
Review date June 2020

Attach to the NUH general prescription chart in the “As required” section.

Dimensions: length 19cm, height 7.5cm
Appendix 2
Equality Impact Assessment Report

1. **Name of Policy or Service**
   Guideline for the prevention and treatment of Postoperative Nausea and Vomiting (PONV) in adults

2. **Responsible Manager**
   Dr. Mike Bennett (Head of services, Theatres and Anaesthesia, NUH)

3. **Name of person Completing EIA**
   Dr. Jo Fitz-Henry, consultant anaesthetist

4. **Date EIA Completed**
   22 June 2017

5. **Description and Aims of Policy/Service**
   To reduce the incidence and severity of PONV in the first 48 hours after surgery. PONV is common, distressing for the patient and leads to delays in post-operative recovery and discharge from hospital.

6. **Brief Summary of Research and Relevant Data**
   As presented on the guideline frontsheet.

7. **Methods and Outcome of Consultation**
   Consultations have been carried out with the following for version 3 (2014):
   Consultant and trainee anaesthetists NUH
   Pharmacy (Dr Roger Knaggs)
   Acute Pain Service
   Recovery staff NUH (version 2, 2012) Comments from the above consultations were received and incorporated where appropriate.

   Version 4, 2016: A consultation process was not required for this version, as the policy has not changed except for the doses of dexamethasone to reflect current purchasing at NUH.

   Version 5, 2017: A consultation process was not required for this version, as the policy has not changed except for the doses of dexamethasone to reflect current purchasing at NUH.
8. **Results of Initial Screening or Full Equality Impact Assessment:**

<table>
<thead>
<tr>
<th>Equality Group</th>
<th>Assessment of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>No Impact Identified – there is a separate age-appropriate guideline for paediatric anaesthesia</td>
</tr>
<tr>
<td>Gender</td>
<td>No Impact Identified</td>
</tr>
<tr>
<td>Race</td>
<td>No Impact Identified</td>
</tr>
<tr>
<td>Sexual Orientation</td>
<td>No Impact Identified</td>
</tr>
<tr>
<td>Religion or belief</td>
<td>No Impact Identified</td>
</tr>
<tr>
<td>Disability</td>
<td>No Impact Identified</td>
</tr>
<tr>
<td>Dignity and Human Rights</td>
<td>No Impact Identified</td>
</tr>
<tr>
<td>Working Patterns</td>
<td>No Impact Identified</td>
</tr>
<tr>
<td>Social Deprivation</td>
<td>No Impact Identified</td>
</tr>
</tbody>
</table>

9. **Decisions and/or Recommendations (including supporting rationale)**

From the information contained in the procedure, and following the initial screening, it is my decision that a full assessment is not required at the present time.

10. **Equality Action Plan (if required)**
    N/A

11. **Monitoring and Review Arrangements**
    Review June 2020