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Day Stay Surgery

- requires co-ordination and a MDT approach
- anaesthesia and surgery must be performed @ a high standard for day surgery to run smoothly
- 70% surgeries = day stay

Advantages:

- To patient:
  - Recover in own home
  - Less change of cancellations
  - Less hosp infections
  - Less VTE

- To hosp:
  - Efficient use of beds
  - Less cost
  - Less hosp wait times

Issues

- patient
- social
- anaesthetic
- surgical

Patient selection

- should be preassessed by a specially trained nurse with adequate access to anaesthetic/medical staff for advice
- older patients will need preassessment earlier to allow time for investigations to be organized
- patients must agree to not drive, cycle, operate machinery, drink ET-OH for a minimum of 24 hrs after their anaesthetics
- moderate obesity increases anaesthetic risk and can make surgery difficult -> and can unpredictably lead to complications, thus need to be adequately assessed

- Health status:
  - ASA 1 or 2
  - no potential resp complications
  - BMI now only relative contraindication ie <35. (most complications occur 3-4hrs post op)
  - OSA
    - only if mild & treated esp if no opioids ie regional
    - should have 1 hr extended PACU observation
  - D/C criteria home:
    - 2 hr obs
    - no PACU apnoea
    - min opioid needed
    - no other concern
  - (specifically not haematology, DM, neuromuscular disorder)
- Age: older than 6 months -> elderly should be assessed with regard to physiological reserve

Complexity of surgery:

- operations should be less than 60min and risk of major complication unlikely
- no massive fluid shifts/risk of major haemorrhage

Transport: escort home

Home conditions:

- adequate facilities (toilet and bed and phone)
- telephone available in case of emergency
- supervision for 24 hours post op must be available

Geography: should live within 1 hour of medical attention
Fasting
- 6 hours food
- 2 hours clear fluid

Preoperatively
- commonly telephone preoperative assessment
  ‣ structured questionnaire
  ‣ written instructions about plan for DOS
- avoid premedication if possible -> if required oral midazolam 0.5mg/kg, raniditine 300mg or omeprazole 40mg
- paracetamol 20m/kg, diclofenac 50-100mg PO

Intraoperatively
- must address common complications:
  ‣ bleeding
  ‣ pain
  ‣ nausea
- IV propofol -> TIVA or sevo
- incremental fentanyl 2-4mcg/kg in divided doses
- LA
- LMA preferable
- PONV prophylaxis as indicated

Post operatively
- opioids, LA, NSAIDS
- treat pain early
- hot water bottles following gynaecological surgery

Regional anaesthesia
Spinals
- perform spinals early in list -> allow complete resolution of block & ambulation before discharge (use 0.25% heavy bupivacaine -> decreases block duration + 10-25mcg of fentanyl, should pass urine and ambulate before discharge)
- risk of Regionals
  - arms blocks -> patients need education about protection of limb (some block regression before discharge allowed)
  - leg blocks -> some block regression should be observed, adequate mobility with crutches must be demonstrated
  - single shot blocks:
    ‣ advs: ↓opioids use, ↓PONV, good initial analgesia
    ‣ disadv: wear off at home ⇒ ↑pain, time consuming, ↑motor block (falls risk), sensory block - neurochemical damage, risk of dislocation
  - pre-d/c need good written info and plan B for return/help

Discharge
CRITERIA
- stable vital signs for 1hr
- fully awake and orientated
- able to drink and eat
- if sig risk of urine retention (eg after spinal/caudal) then must PU
- ambulant
- pain and nausea controlled

ORGANISATION
- IV out
- discharge papers
- discharge prescription for analgesia +/- antiemetics
- plan for readmission if concerned or develops troublesome symptoms
- surgical follow up plan
- GP letter
- contact telephone number
- collected and monitored by responsible adult

**Admission required**
- don’t fulfill discharge criteria
- complications
- unexpected extensive surgery
- inadequate social circumstances

**Planning a New Unit**
- consider yourself as a patient and work through process systematically

**TIVA Advantages**
- rapid recovery
- low rate of behavioural disorders
- ↓PONV
- avoid risk of failure of regionals
- avoid risk of residual NMB relaxation (if using remi)
- avoids MH
- cheap
- avoids need for scavenging equipment
- ↓environmental

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**PONV**

**PONV: guidelines**

Society of Ambulatory Anaesthesia guidelines for the Management of PONV (SAMBA, 2014)

**Guideline 1: Identify Patients’ Risk for PONV**

**Guideline 2: Reduce Baseline Risk Factors for PONV**

**Guideline 3: Administer PONV Prophylaxis Using One to Two Interventions in Adults at Moderate Risk for PONV**

**Guideline 4: Administer Prophylactic Therapy with Combination (≥2) Interventions/Multimodal Therapy in Patients at High Risk for PONV**

**Guideline 5: Administer Prophylactic Antiemetic Therapy to Children at Increased Risk for PONV; as in Adults, Use of Combination Therapy Is Most Effective**

**Guideline 6. Provide Antiemetic Treatment to Patients with PONV Who Did Not Receive Prophylaxis or in Whom Prophylaxis Failed**
PONV risk factors

Overall PONV incidence ~50%
  ↓ can be up to 80 % in high risk

Major risk factor in red.

Patient
- female
- <50yrs old
- non-smoker
- history of motion sickness
- previous history of PONV
- concomitant disease associated with nausea and vomiting (bowel obstruction, posterior fossa tumour, gastroenteritis, vertigo, nystagmus, gastric dysmotility, pregnancy)
- DM
- emetogenic medications; NSAIDS, chemotherapy

Anaesthetic
- N2O use
- opioid use (any rather than specific agent) (post op rather than intra-op opioid)
- volatile anaesthesia
- inadequate analgesia
- no prophylactic use of anti-emetics
- tramadol bolus when awake
- some antibiotics (cephazolin bolus)
- etomidate
- (ketamine - only in high doses ie no prob with analgesic dosing)
- reversal agents; neostigmine and atropine

Surgical (general rather than pertaining to this patient)
- duration of surgery (OR 1.47/hr)
- laparoscopy, laparotomy, breast, strabismus, plastic, maxillo-facial, gynaecological, abdominal, neurologic, urologic, ophthalmologic

APFEL Score
Baseline risk of PONV general incidence = 10% (Apfel criteria)

+ 1 factor = 20%
+2 factors = 40%
+3 factors = 60%
+ 4 factors = 80%

- female
- non smoker
- Hx PONV
- Postop opioids anticipated

Disproven Risk Factors
Not assoc:
- BMI
- Anxiety
- NG tube
- O2
- Periop fasting

Conflicting evidence:
- ASA
- Menstrual cycle
- Level anaesthetist experience
- Mm relaxant antagonists

**Paeds PONV**
- RFs:
  - surgery >30min
  - age >3
  - strabismums
  - Hx of PONV or Hx in FH

**Post Discharge Nausea & Vomiting (PDNV)**
- RFs:
  - female
  - age < 50
  - Hx PONV
  - Opioid in PACU
  - nausea in PACU

**Management Strategies**

**PreOp**
- avoid GA ie regional
- propofol & TIVA (NNT: 5)
- avoid N2O
- avoid volatiles
- minimise intraop opioids & post op ie multimodal analgesia
- adequate hydration
- neostigmine - only >2.5mg
- low dose propofol:
  - end of case
  - PACU rescue
- prophylaxis:
  - low risk - nothing
  - medium risk - 1 or 2 drug interventions from diff classes
  - high - >2 drug interventions from diff classes

**Post Op**
- drugs - use different classes. The more classes the better: ⤴ each class (& then additional classes) give 25% reduction of left over risk
  - droperidol -
    - only in children if to be admitted
    - equally effective as ondansetron (NNT: 5)
    - if used with ondansetron no super added effect on QtC prolongation
    - can place in PCA ⇒ NNT =3
- **ondansetron** -
  - 4mg NNT =
    - 5 for nausea
    - 7 for vomit
  - NNH = headache 36, ↑LFTs 31
  - QTc prolongation
- **dexamethasone 4mg (=25mg pred)**
- **scopoderm patch**:
  - NNT = 6
  - side effects - cholinergic ie dry mouth, dizziness
  - 2hrs onset of affect
- **metoclopramide**:
  - 10mg not effective; >20mg ok
  - shorter action
  - NNT:
    - 10mg = 30
    - 20mg = 16
    - 30 = 11
  - ↑extrapyramidal symptoms with ↑dose 0.5%
- **propofol**:
  - good for early PONV ie within 6hrs
  - 20mg rescue in PACU
  - ↓risk of PDNV
- **Gabapentin**:
  - 600mg 2hrs prior to surgery
  - as effective as dex 8mg
- **Midazolam**
  - 2mg 30min prior to end of surgery as effective as ondansetron
- **other**:
  - IV hydration
  - naloxone infusion
  - non pharmacological strategies:
    - acupuncture
    - happiness

**Impact Trial**

<table>
<thead>
<tr>
<th>Table 1. Risk of Postoperative Nausea and Vomiting According to Patients’ Randomly Assigned Interventions.</th>
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<tbody>
<tr>
<td><strong>Intervention</strong></td>
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<tr>
<td>Ondansetron (vs. no ondansetron)</td>
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<tr>
<td>Dexamethasone (vs. no dexamethasone)</td>
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<td>Droperidol (vs. no droperidol)</td>
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<tr>
<td>Propofol (vs. inhalational anesthetic)</td>
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<td>Nitrogen as carrier gas (vs. nitrous oxide)</td>
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<td>Remifentanil (vs. fentanyl)</td>
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* The baseline risk levels of 10 percent, 20 percent, 40 percent, 60 percent, and 80 percent reflect the presence of 0, 1, 2, 3, and 4 risk factors, respectively, according to a simplified risk score.²⁷
Implementing a Strategy
- Risk assessment
- algorithm
- implement
- compliance & audit
- assessment
PACU

- Anaesthetic Crises in PACU:
  - Oxford Handbook Emergencies
  - My crisis manual

- College Recommendations

Failure to Wake

1. Pharmacological
2. Metabolic
3. Hypothermia
4. Resp failure
5. Neurological
6. Uncommon

Pharmacological = Common causes:
- residual effects of
  - sedative agents (look @ dose and timing, give small dose of flumazenil if benzodiazepine used or naloxone if opioid use)
  - anaesthetic agents (look @ dose and timing, often these will wear off with time)
  - analgesic agents (if opioids used can look for small pupils and decreased RR, can wait for them to wear off or trial naloxone)
  - neuromuscular blockers (neuromuscular monitoring):

<table>
<thead>
<tr>
<th>Interactions with non-depolarising muscle relaxants</th>
<th>Volatile anaesthetic agents</th>
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<tr>
<td>Drug Interactions</td>
<td>Aminoglycosides</td>
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<td>Diuretics</td>
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<td>Calcium channel antagonists</td>
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<td>Metabolic Causes</td>
<td>Hypothermia</td>
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<td>Acidosis</td>
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<td>Hypokalaemia</td>
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<td>Hypermagnesuemia</td>
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<tr>
<td>Genetic</td>
<td>Myasthenia gravis</td>
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<tr>
<td></td>
<td>Eaton Lambert/Myasthenic syndrome</td>
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</tbody>
</table>

| Interactions with depolarising muscle relaxants   | Succinyloxoline apnoea |
| Genetic                                           | Myotonic Dystrophy |
| Acquired acetylcholinesterase deficiency           | Pregnancy |
|                                                   | Liver Disease |
|                                                   | Renal failure |
|                                                   | Cardiac failure |
|                                                   | Thyrotoxicosis |
|                                                   | Drugs (ecothiopate, ketamine, oral contraceptive pill (OCP), lidocaine, neostigmine, ester local anaesthetics) |
Metabolic
- causes incl:
  ‣ ↓BSL - check
  ‣ ↑BSL (would have to be severe and prolonged)
  ‣ ↓Na - <110 to cause seizure/coma (SIADH, TURP syndrome, cerebral salt wasting)
  ‣ ↑Na
  ‣ uraemia

Hypothermia
- <30 ≈ unconsciousness

Resp failure
- hypoxaemia
- hypercapnia
  ↑central drive eg intracranial pathology, COPD, central apnoea,
  pulmon disease eg PE, atelectasis, ARDS
  musculature eg obesity, primary mm problem

Neuro Causes
- ischaemic brain cell death - low MAP & failed cerebral autoregulation intra op
- non-conusove status epilepticus (EEG) or post ictal
- haemorrhage
- thrombosis/infarct
- LAST

Uncommon
- central anticholinergic syndrome - reverse with a -stigmine which crosses bbb
- dissociative coma
- thyroid failure
- valproate tox

Agitation in PACU

Differential Diagnosis
- disorientation/emergence agitation in paeds
- pain
- stridor from obstructed airway:
  ‣ patient factors
  ‣ surgical factors
- hypoxaemia (check SpO2 and ABG)
- hypercarbia (check ETCO2 and ABG and look at WOB)
- hypotension:
  - hypovolaemia (blood loss, dehydration)
  - cardiogenic
  - distributive (anaphylaxis to agent administered late in OT or in recovery)
  - obstructive (may have undiagnosed tamponade or PE or fat embolism)
- electrolyte abnormality – severe hyponatraemia (iatrogenic administration of dextrose)
- hypoglycaemia (may have a liver injury be diabetic and given hypoglycaemic agents)
- ET-OH withdrawal (may have high ET-OH intake)
- nicotine withdrawal (see above)
- psychosis (psych medications may have been withheld)
- hypothermia (long operation with lots of body exposed)
- metabolic acidosis (check with ABG)
- MH (examine for rigidity, examine patient and interpret ABG)
- neuroleptic malignant syndrome (interactions with anaesthetic agents)
- serotonin syndrome (administration of tramadol with SSRI)
LMA in PACU

Arguments for:
- increased case turnover
- low frequency of airway complications when removing LMA
- LMA maintains a patent airway (removing while patient is deep may provoke laryngospasm or airway obstruction on lightening)
- able to apply high FiO2 concentration via an attached reservoir bag
- reservoir bag able to provide visual and auditory information of patients ventilation
- LMA provides some protection from aspiration as patient waking
- patient able to tolerate for until a very light degree of sedation therefore, once patient indicating removal patient protecting own airway

Arguments against:
- risk of laryngospasm when on lightening and removal of LMA (an unsupervised nurse may not have skills to manage the situation)
- if taken out too early may lead to loss of airway patency, laryngospasm, aspiration and consequential hypoxaemia.

PACU Discharge
- Scoring systems to facilitate readiness for d/c:
  ‣ SpO2 > 93%
  ‣ breathing
  ‣ BP
  ‣ LOC
  ‣ Movement
  ‣ Pain
  ‣ PONV
- If score >12 - can d/c without anaesthetist involved
- Normothermic
- Fluids & meds charted
- RR > 10 < 28
- lines flushed

Post Op Visit
- general purpose is to ensure morbidity & mortality of pt minimised
- feedback to self on quality of anaesthetic

Specific issues that should be addressed:

General information
- reassurance
- answering of questions
- assessment and adjustment of analgesia
- assessment of sensory or motor recovery from regional anaesthesia
- inform patient of complications and follow up
- feedback to anaesthetist regarding technique
- discharge check
- follow up if required

Day Stay_PONV_PACU - 11
Assess for Complications

RESP
- functional status
- oxygenation
- sore throat
- dental damage

CVS
- haemodynamic stability
- adjustment of fluid therapy according patients needs
- advice on management of patients medications (beta-blockers, statins)

GI
- PONV
- bowel function

RENAL
- urine output
- U+E

SKIN
- pruritus
- pressure areas
- integrity of epidural site

HAEM
- Hb (blood loss)
- coagulation (advice on when to remove epidural catheter)