

# DRUG INTERACTION

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# ISSUES FOR SURGERY (LITHIUM)



## **Elective Surgery:**

Check urea and electrolytes, thyroid function and ECG



## ***Minor Surgery:***

Continue



## ***Major Surgery:***

**Stop 24 hours before operation**



## **Emergency Surgery:**

Adequate hydration and monitor renal function closely

# POST-OPERATIVE ADVICE (LITHIUM)

Restart post-operatively when next dose due providing Renal Function stable

Monitor Electrolytes closely and ensure adequate Hydration

# LITHIUM (Interaction With Common Anaesthetic Agents)

## Neuromuscular blocking drugs (NMBDs)

Lithium possibly prolongs the effects of both depolarizing and non-depolarizing NMBDs

## Barbiturates

A prolonged hypnotic effect in barbiturate-based anaesthesia in patients who are taking lithium (Reduced anaesthetic requirements)

## Central Nervous System (CNS) Excitation (Serotonin Syndrome)

Fentanyl / Methadone / Pentazocine / Pethidine / Tapentadol / Tramadol

Patients should be monitored closely and the possibility of serotonin toxicity considered if patients experience altered mental state, autonomic dysfunction or neuromuscular adverse effects with concomitant treatment

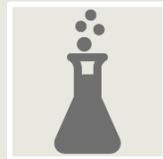
## Seizure threshold

Lithium can lower the seizure threshold; concurrent use with other medications that lower the seizure threshold (e.g. anaesthetic agents, tramadol) may have an additive effect on the risk of seizure

# ISSUES FOR SURGERY (VALPROATE)



**Elective and Emergency Surgery :**  
continue



Check full blood count and ensure no undue potential for bleeding pre-operatively



***Epilepsy:***  
take their regular medications on the day of surgery

## (Interaction With Common Anaesthetic Agents)

### **Propofol**

Cautious dosing of propofol is advised as valproate potentially increases the concentration of propofol in the plasma

### **Benzodiazepines**

Sodium valproate leading to increased lorazepam and diazepam concentrations and increased sedative effects.

# ISSUES FOR SURGERY (CARBAMAZEPINE )



**Elective and Emergency Surgery :**  
continue



- Check Sodium Levels Pre-operatively (**SIADH**)
- Patients should be advised to take their regular medications on the day of surgery



***Epilepsy:***  
Abrupt withdrawal of any anticonvulsant drug should be avoided

# INTERACTION(S) WITH COMMON ANAESTHETIC AGENTS

## NEUROMUSCULAR BLOCKING DRUGS (NMBDs)

For patients who have been taking carbamazepine for longer than one week: the activity of competitive NMBDs is reduced by carbamazepine – a rapid recovery from neuromuscular blockade is possible

NB: if carbamazepine is given acutely (e.g. during surgery) the effects of NMBDs may be increased.

## Alfentanil / Fentanyl

Carbamazepine is predicted to decrease the exposure to alfentanil / fentanyl. Patients may require increased doses.

## Benzodiazepines

Carbamazepine is an inducer of hepatic drug-metabolising enzymes; therefore, metabolism of benzodiazepines may be enhanced. This has been noted with diazepam in particular.

# ISSUES FOR SURGERY (LAMOTRIGINE )



**Elective and Emergency Surgery :**  
continue



Patients should be advised to take their regular medications on the day of surgery



***Epilepsy:***  
Abrupt withdrawal of any anticonvulsant drug should be avoided

# INTERACTION(S) WITH COMMON ANAESTHETIC AGENTS

## Central Nervous System (CNS) Depression:

Lamotrigine has CNS depressant effects which may be additive with:

- Benzodiazepines
- Inhalational Anaesthetics And Intravenous Anaesthetics
- Local Anaesthetics
- Opioids

# ISSUES FOR SURGERY (SSRIS)



**Elective and Emergency Surgery :**  
continue



Check Sodium Levels Pre-operatively

# SSRIS

## CNS Excitation (Serotonin Syndrome)

(Fentanyl, Hydromorphone, Oxycodone, Pentazocine, Pethidine, Tramadol and possibly Morphine)

## QT-Interval Prolongation:

Citalopram and escitalopram are known to cause QT-interval prolongation. Co-administration with other medicines known to prolong the QT-interval must be based on careful assessment of the potential risks and benefits for each patient. (desflurane, isoflurane, sevoflurane, domperidone, droperidol, haloperidol, ondansetron)

## Increased risk of hyponatraemia:

Concomitant use of SSRIs with NSAIDs may increase the risk of hyponatraemia

### **Increased risk of bleeding:**

Concomitant use of SSRIs with other medications that can increase the risk of bleeding e.g. Non-Steroidal Anti-inflammatory Drugs (NSAIDs)

### **Codeine:**

Fluoxetine and Paroxetine (but not other SSRIs) are potent CYP2D6 inhibitors so are predicted to decrease the metabolism of codeine to morphine, possibly reducing its analgesic efficacy.

### **Tramadol:**

- lower the seizure threshold
- Increase the risk of serotonin syndrome
- Reduced analgesic efficacy due to CYP2D6 inhibition

# ISSUES FOR SURGERY (TRICYCLIC ANTIDEPRESSANTS )



**Elective and Emergency Surgery :**  
continue



Due to increased risk of arrhythmias and interactions with vasopressor drugs inform anaesthetist on the day of surgery if patient is taking a TCA

# TCA: INTERACTION(S) WITH COMMON ANAESTHETIC AGENTS

## General Anaesthetics:

TCAs may increase risk of cardiac arrhythmias and hypotension during general anaesthesia.

TCAs are expected to prolong the duration of barbiturate anaesthesia

## Sympathomimetics:

TCAs inhibit the uptake of noradrenaline into adrenergic neurones, increasing the concentration outside the neurone. If direct-acting inotropes or vasopressors are given to a patient taking TCAs a grossly exaggerated response including hypertension and cardiac arrhythmias is observed

# TCA: INTERACTION(S) WITH COMMON ANAESTHETIC AGENTS

## Central Nervous System (CNS) depression

Concomitant use of TCAs with anaesthetic agents, benzodiazepines or opioids

## CNS Excitation (Serotonin Syndrome)

Clomipramine and imipramine are predicted to have serotonergic effects; amitriptyline has also been associated with serotonin syndrome

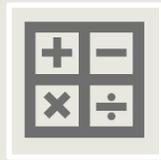
## QT-Interval Prolongation

TCAs may cause QT-interval prolongation. This is most notable with clomipramine; the risk with other TCAs is largely in overdose

## Bleeding

Clomipramine has significant serotonergic activity and therefore may increase the risk

# ISSUES FOR SURGERY (ATYPICAL ANTIPSYCHOTICS)



**Elective and Emergency Surgery :**  
continue



Ensure the Ophthalmologist / Cataract Surgeon is aware the patient is taking paliperidone or risperidone, which has **alpha-adrenoceptor blocker activity**

# AAP: INTERACTION(S) WITH COMMON ANAESTHETIC AGENTS

## Central Nervous System (CNS) Depression

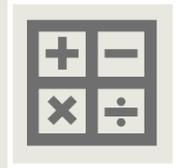
### Hypotension

Atypical antipsychotics can increase the risk of hypotension when used concomitantly with inhalational and intravenous anaesthetics

### QT-Interval Prolongation

Amisulpride, paliperidone and risperidone are known to cause QT-interval prolongation

# ISSUES FOR SURGERY (CLOZAPINE)



## Elective Surgery:

**Stop 12 hours before operation** to minimise the sedative and hypotensive effects without risking relapse



Consider checking clozapine levels



## Emergency Surgery:

Inform Anaesthetist about potential for intraoperative hypotension

# POST-OPERATIVE ADVICE (CLOZAPINE)

Restart post-operatively when next dose due providing Blood Pressure normal (12 hours after)

If More Than 48-hour Gap in treatment clozapine dose will need **Re-titrating**

If concerns regarding enteral absorption – consider checking Clozapine Levels

# CLOZAPINE: INTERACTION(S) WITH COMMON ANAESTHETIC AGENTS

## Hypotension

## Lower the Seizure Threshold

## Risk of Ileus / Constipation

Clozapine is associated with constipation, intestinal obstruction, faecal impaction and paralytic ileus so patients may be more likely to develop post-operative ileus.

(Opioids and anticholinergic medications)

## Patients newly started on clozapine

the manufacturers advise avoiding surgery during the first 3 months of clozapine treatment (titration period) because hypotension, sedation and tachycardia are most prominent during clozapine titration.

# ISSUES FOR SURGERY (BENZODIAZEPINES)



**Elective and Emergency Surgery :**  
continue



Inform Anaesthetist on day of admission of type and dose of benzodiazepine the patient usually takes so anaesthesia can be adjusted accordingly if necessary



***Epilepsy:***  
Take their regular medications on the day of surgery



Discontinuation of benzodiazepines in psychiatric patients with **Panic Disorders** should be avoided

# POST-OPERATIVE ADVICE (BZD)

If patient cannot resume their usual oral medication post-operatively and is at **Risk Of Withdrawal**, consider using a suitable intravenous preparation

## Central Nervous System (CNS) Depression:

Giving benzodiazepines with opioids during anaesthesia may reduce the dose required of both drugs (inhalational and intravenous anaesthetics, local anaesthetics, opioids, other benzodiazepines)

# ISSUES FOR SURGERY (METHYLPHENIDATE)



## **Elective Surgery:**

Omit dose(s) on day of operation



## **Emergency Surgery:**

If dose(s) already taken on day of operation warn session Anaesthetist to avoid halogenated anaesthetics



Methylphenidate is an **Indirectly-acting Sympathomimetic**, and might be expected to increase the risk of **hypertension** and **arrhythmias** if used with inhalational anaesthetics



Monitor blood pressure (BP) closely

## POST-OPERATIVE ADVICE (METHYLPHENIDATE)

Restart on first post-operative day

**Patients with Dysphagia or Restricted Gastrointestinal Lumen:**

Prolonged-release preparations are not suitable

## **Antagonism of Sedative Drugs:**

Methylphenidate increases the analgesic effects of opioids, including morphine, hydromorphone and oxycodone, but reduces the sedative and respiratory depressant effects

## **Seizure threshold**

Methylphenidate may lower the seizure threshold; concurrent use with other drugs that lower the seizure threshold (e.g. tramadol) might result in additive effects

## **CNS Excitation (Serotonin Syndrome)**

Serotonin syndrome has been reported when methylphenidate has been co-administered with serotonergic medications

# ISSUES FOR SURGERY (CLONIDINE)



## **Elective and Emergency Surgery :**

continue including the following combination products

Do not hold prior to surgery

## POST-OPERATIVE ADVICE (CLONIDINE)

Restart post-operatively when next dose is due (unless the patient has undergone ophthalmology surgery and the Ophthalmologist requests for them to be withheld)



**THANK  
YOU**