



NSW  
Therapeutic  
Advisory  
Group Inc.

Advancing  
quality use  
of medicines  
in NSW

## Group Discussion: Sugammadex usage

Date: April 2018

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### Question:

NSW TAG received an enquiry from a member about the current use of sugammadex in other NSW Hospitals.

NSW TAG and TAGNet members were asked to provide the following information:

1. Have NSW Hospitals identified an increase in usage of sugammadex in the past 1 to 2 years?
2. Have any formal DUEs been undertaken on sugammadex?
3. Are there any specific factors that have contributed to an increase in its use you are aware of (i.e. new evidence, literature)?
4. Are there any specific restrictions in place for use of sugammadex at any hospitals and if so, how is meeting of the restricted criteria monitored?

### Background

NSW TAG has received queries regarding sugammadex use since at least 2010. Hospitals have conducted DUEs at various times and been reported at the specialist DUE group (now MedSMART) meetings. Queensland Health and South Australian formulary listings for sugammadex are shown on page 6. A Queensland Health guideline for sugammadex can be found at [https://www.health.qld.gov.au/\\_data/assets/pdf\\_file/0033/638835/qh-gdl-442.pdf](https://www.health.qld.gov.au/_data/assets/pdf_file/0033/638835/qh-gdl-442.pdf) Some articles written by anaesthetists at Royal Perth Hospital regarding their experience with sugammadex have been brought to NSW TAG's attention (see page 6).

### Responses:

9 responses were received from Calvary Mater Newcastle, Canterbury Hospital, Concord Repatriation General Hospital (Concord RGH), Liverpool Hospital, Port Macquarie & Kempsey Hospitals, Royal Prince Alfred Hospital (RPAH), South East Sydney Local Health District (SESLHD), St Vincent's Hospital and Tamworth Rural Referral Hospital (Tamworth RRH).

#### 1. Have NSW Hospitals identified an increase in usage of sugammadex in the past 1 to 2 years?

##### Yes

- a. Calvary Mater Newcastle - Between 01/03/16 – 28/02/17 5 x 10's sugammadex were used and between 01/03/17 – 23/11/17 9 x 10's sugammadex were used.
- b. Canterbury Hospital - we are noting an increase in usage despite our best attempts to restrict its use (we try to restrict supply to 6-7 boxes a month and this has crept up from 2-3 a couple of years ago).
- c. Liverpool Hospital - locally the increase started more than 2 years ago and has remained steady.

- d. Port Macquarie & Kempsey Hospitals - we are now using about 1000 vials every six months making it the most expensive drug each month on my top ten list.
- e. SESLHD
- f. St Vincent's Hospital

No

- a. Concord RGH - use has remained consistent in last 2 years.
- b. RPAH - No, just a variable trend.

**2. Have any formal DUEs been undertaken on sugammadex?**

Yes

- a. Concord RGH - In 2010, theatres used a drug register and audited use against approved indications. Compliance was high and restrictions were lifted.
- b. SESLHD - In November 2015 a rationalisation project revealed a greater than ten-fold increase in use over 3 years with inconsistency in use between facilities within SESLHD.
- c. Tamworth RRH - an audit back in 2015, reviewing usage rates between 2013 to 2015 revealed usage trending upwards. Pharmacy offered to assist to study sugammadex use (compared to atropine and neostigmine) and patient's theatres/recovery 'stay time', to assist with the collection of evidence to support or disprove the perception about throughput. This offer was declined. District QUM wrote a brief to restrict its use to 'Can't intubate / can't oxygenate', 'reversal of profound blockade' or 'reappearance of roc-induced blockade in PACU', this however was not supported by the GM at the time.

No

- a. Calvary Mater Newcastle
- b. Canterbury Hospital – JMO audit underway. Routinely ask anaesthetists to complete the usage audit form. Audit results to follow and audit form available upon request.
- c. Liverpool Hospital - we have thought about it but haven't had time to do it.
- d. Port Macquarie & Kempsey Hospitals - I would really like to audit this due to the antidote nature of the drug and the need to technically use less of the drug that you need the antidote for and especially because theatres is a pharmacist free zone currently.
- e. RPAH - Monthly review of expenditure, and reported on a quarterly basis to the DTC.
- f. St Vincent's Hospital - A usage report will be undertaken in April 2018 to review use since the expansion in clinical areas approved for use.

**3. Are there any specific factors that have contributed to an increase in its use you are aware of (i.e. new evidence, literature)?**

Yes

- a. Liverpool Hospital - Extensive marketing by company. Anaesthetists driven; most seem to use it routinely at private hospitals. Some legitimate increase in use is probably warranted in cases where complete reversal can be achieved over a much shorter time –

- everything is driven by length of stay and moving patients through quickly. Also the number of obese patients having surgery accounts for legitimate increased use.
- b. Port Macquarie & Kempsey Hospitals - I would say anaesthetists like it so it is clinician based. I think that there is a marker on operative effectiveness on how long it takes people to wake up after certain operations and the figures look good if the sugammadex is used.
  - c. SESLHD - Following discussion with Directors of Anaesthetics, it was found that the formulary restriction (urgent reversal only) was misaligned with current clinical practice. Clinical basis for the current usage and costs vs benefits (patient safety and outcomes, improved use of theatre time etc.) were extensively discussed and justified. As a result the SESLHD formulary listing was revised in early 2016 to "reversal of rocuronium/vecuronium induced neuromuscular blockade". The investigations also revealed significant inconsistency in the prices being paid for sugammadex between our facilities (\$50 per vial up to \$176 per vial). We were able to negotiate a consistent and satisfactory price for the LHD with the manufacturer based on increased usage.
  - d. St Vincent's Hospital - There have been increased instances of high risk patients requiring full general anaesthetic in Cath Lab and Recovery and the likelihood of the need for rapid extubation requiring sugammadex.
  - e. Tamworth RRH - Rates of use had escalated rapidly over that time due to 'perceptions' that sugammadex use permitted 'increased throughput' in theatres, with fewer adverse effects (compared to atropine and neostigmine).

No

- a. Calvary Mater Newcastle
- b. Canterbury Hospital - Not sure, some anaesthetists like to use it more than others.
- c. Concord RGH - Use has remained consistent in last 2 years.
- d. RPAH

**4. Are there any specific restrictions in place for use of sugammadex at any hospitals and if so, how is meeting of the restricted criteria monitored?**

Yes

- a. Canterbury Hospital restrictions:
  - "Can't intubate, can't ventilate"
  - Rapid Sequence Intubation (RSI) with suxamethonium contraindications in short procedure
  - Reversal in patient with neuromuscular disorder
  - Unexpected termination of procedure
  - Unexpected incomplete reversal after neostigmine
  - We also keep an eye on how many vials are being ordered by theatres a month and remind them if they seem to be ordering too many. But if we suggest reducing

supply they threaten an IIMS if they have a patient and they can't use it due to no stock. So a bit of an impasse.

- b. Concord RG Hospital restrictions:
  - Bariatric patients only - very rarely ordered.
  - There is only an ICU guideline and our Head of Anaesthetics who is an active member and regular attendee of the DTC meetings, is very mindful of drug costs and expenditure in theatres - I believe this to be a significant factor in the judicious use.
- c. Liverpool Hospital - We have 24 Theatres so we don't have much success in ensuring the restrictions below are adhered to. We only have 2 vials available on each of the anaesthetic trolleys and more stock locked up in the central safe in OT, issued if specifically requested.
  - Incomplete reversal of muscle paralysis with rocuronium after neostigmine/glycopyrrolate
  - Reversal after short duration of full muscle relaxation (e.g. microlaryngoscopy, oesophagoscopy)
  - Patients with myasthenia gravis
  - Morbidly obese patients who require full muscle relaxation for facilitation of surgery/ventilation and need to be reversed fully and completely to ensure adequate ventilation (e.g. laparotomy)
  - Allergy to neostigmine/atropine/glycopyrrolate
  - Patients with significant airway/lung disease to ensure adequate ventilation after extubation
- d. RPAH - Formulary restricted medication, and the restricted criteria is monitored by monthly reporting of drug distribution.
  - Formulary indication: Supply to JL Theatres, QE Theatres; RPAH Radiology, Cardiac Catheter Lab. Prescriber/s: RPAH Anaesthetics.
  - 200mg/2mL is on Formulary at Sydney Dental Hospital
- e. St Vincent's Hospital - Restricted to Theatres, the Emergency Department, Cardiac Cath Lab and Recovery. Sugammadex is on imprest in these areas. A usage report will be undertaken in April 2018 to review use since the expansion in clinical areas approved for use.

No

- a. Calvary Mater Newcastle
- b. Port Macquarie & Kempsey Hospitals
- c. Tamworth RRH – unrestricted use

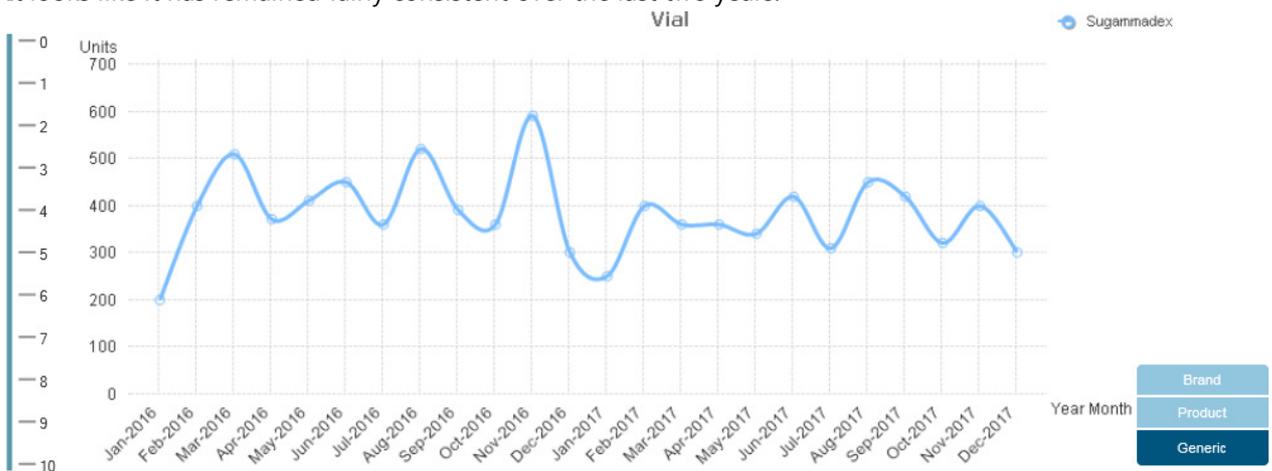
**Other comments:**

**Canterbury Hospital**

We have a JMO who is in the process of looking at our usage of sugammadex. We have made the team complete audit forms here per use but the information is sketchy – so the JMO is looking at it in some more depth. We have noted a creeping up in its use despite our trying to keep a tight hold on it. The anaesthetists are now arguing that it saves a lot of money for the hospital in terms of theatre costs/time. I've attached our audit form for your reference. (available on request to TAG ) It's probably due for an update, so I've asked the JMO to look into this too. Technically these are the indications/restrictions governing its use. Additionally we currently try to restrict supply to 6-7 boxes a month. This has crept up from 2-3 a couple of years ago.

**Concord RGH**

It looks like it has remained fairly consistent over the last two years.



Responses received as at 4<sup>th</sup> April 2018

*Please note that all information and policies are only current at the time the response is sent and individual hospitals should be contacted to ascertain current policies and practices. The responses received are only representative of the hospitals participating in the discussion at the time and do not necessarily indicate a complete picture of current practices. Information sharing occurs on the understanding that due acknowledgement will be given to the original source and that the information will not be quoted or used out of the context of the discussion. Permission should be sought from the original source before any policy, protocol or guideline is used or applied in another setting.*

## Queensland Health Formulary Listing

### SUGAMMADEX

Anaesthetics - Drugs for reversing neuromuscular blockade

Injection 200mg in 2mL

**LAM Restriction(s) on use:** For paediatric use by credentialed anaesthetists and Emergency Physicians for emergency reversal of rocuronium in patients who cannot be intubated and cannot be oxygenated. [Only limited stock may be held outside pharmacy - on the difficult intubation trolley]. All other use of sugammadex must be on an Individual Patient Approval basis, with approval by the Director of Anaesthetics, the Director of Emergency Medicine or nominated representative, and in line with the SWAPNET guideline. When medicines are used in ways other than as specified in the TGA approved product information, documentation and evaluation should be undertaken with reference to QHMAC's note in the introductory pages of the LAM and the CATAG guiding principles for the quality use of off-label medicines ([www.catag.org.au](http://www.catag.org.au))

Injection 500mg in 5mL

**LAM Restriction(s) on use:** For use by credentialed anaesthetists and Emergency Physicians for emergency reversal of rocuronium in patients who cannot be intubated and cannot be oxygenated. [Only limited stock may be held outside pharmacy - on the difficult intubation trolley]. All other use of sugammadex must be on an Individual Patient Approval basis, with approval by the Director of Anaesthetics, the Director of Emergency Medicine or nominated representative, and in line with the SWAPNET guideline.

## South Australian Formulary Listing

### Sugammadex

*Class:* Other agents used in anaesthesia

200mg/2mL Injection

*Restrictions on use:* As rescue therapy in "can't intubate, can't ventilate" situations OR Operations terminated prematurely OR Intubated or extubated patients who are not adequately reversed with neostigmine OR Contraindications to other reversal agents OR Where a deliberate deep neuromuscular block has been maintained during the case to facilitate surgery OR When significant comorbidities requiring an unequivocal reversal of neuromuscular blockade (e.g. myasthenia gravis, morbid obesity, significant COAD or restrictive lung disease, major cardiovascular disease)

### Some articles brought to NSW TAG's attention

-T. Ledowski, J.S. Ong, T. Flett. Neuromuscular monitoring, muscle relaxant use, and reversal at a tertiary teaching hospital 2.5 years after introduction of sugammadex: changes in opinions and clinical practice. *Anesthesiology Research and Practice* 2015.

<http://dx.doi.org/10.1155/2015/367937>

-T. Ledowski. Sugammadex: what do we know and what do we still need to know? A review of the recent (2013 to 2014) literature. *Anaesth Intensive care* 2015. 43 (1): 14-22.