



Appendix 2 - Effect of anaesthesia on breastfeeding

ANZCA supports a culture of inclusion and diversity. This appendix applies to all patients who intend to provide breast milk for neonates, infants or children following anaesthesia/sedation, including procedures facilitating delivery, as well as those performed on patients who are already breastfeeding.

Scope: The purpose of this appendix is to support anaesthetists in providing contemporary pre-anaesthesia information and peri-operative care to patients intending to breastfeed following their procedure.

Background: The term “breastfeeding” is used to refer to both breastfeeding and the use of expressed breast milk (EBM) to tube feed or bottle feed infants. Breastfeeding has significant health benefits and is recommended from birth for 6-12 months or longer, according to preference¹. Previously, patients have been advised to delay breastfeeding after anaesthesia (“pump and dump”) for 24 hours, due to concerns regarding transfer of medication via breast milk. With further pharmacokinetic information and documented experience now available, this advice is no longer applicable. Interruption to breastfeeding carries short and long-term risks, including breast engorgement and mastitis, dehydration, and the health implications of earlier cessation of breastfeeding.

Most medications used in anaesthesia are transferred in small amounts to breast milk. Concerns about infant effects relate to four factors.

1. Amount transferred: The Relative Infant Dose (RID)² measures the percentage of any medication per day that results in the breastfed infant when the medication is administered to the breastfeeding patient. Medications are considered “safe” if the RID is <10%. Most medications used in anaesthesia have a very low RID³.

2. Oral bioavailability in the infant: of the medication or its metabolites once transferred via the breast milk.

3. Metabolism and clearance by the infant. Hepatic and renal medication metabolism and clearance systems are influenced by gestational age, postnatal age and body weight⁴.

4. Effects of medication/active metabolites on infants: Many medications used in anaesthesia may cause undesirable effects on infants, including sedation or respiratory depression, which can be exacerbated by large or repeated doses. Specific conditions (e.g. prematurity, a history of apnoeas, or duct dependent cardiac lesions) may create additional risk to the infant.

Recommendations: Peri-operative care and pre-anaesthesia advice for patients intending to breastfeed:

- i. Desirable structures and systems that support continuation of breastfeeding peri-operatively include: physical spaces to express breast milk; facilities to safely store breast milk; access to experts in infant feeding; institutional policies that limit periods of separation of the breastfeeding patient and infant and support a safe sleeping environment.
- ii. Practical points to consider include:
 - breastfeeding or expressing just prior to anaesthesia to prevent breast engorgement
 - if separation is anticipated to exceed the duration between feeds then breastmilk can be expressed and stored ahead of the procedure
 - following anaesthesia, breastfeeding can be facilitated once the patient is alert, stable and comfortable.
 - an alternative carer for the infant should be arranged in the post-operative period and when opioid analgesia is anticipated⁵.

- iii. Relative benefits of different anaesthesia techniques should be discussed with patients, aiming to optimise early return of consciousness; control of pain, nausea and vomiting; and facilitate same-day discharge if planned.
- iv. Patients should be advised that most medication used in anaesthesia and analgesia will pass in small amounts to the breast milk but are not likely to cause adverse effects on the infant.
- v. Provision of analgesia facilitates breastfeeding; however, post-procedural opioid administration should be minimised and consideration given to instituting multi-modal analgesia techniques. If required, short courses of opioids are preferable to poor analgesia. Where repeated doses of opioid medication are administered, hospital staff and carers should be advised to monitor infants for signs of sedation. Sedation in the breastfeeding patient should prompt assessment of their infant⁴. Those at risk of apnoeas include premature neonates, those with hypotonia and/or a history of apnoeas⁶. Infants of breastfeeding patients on long-term opioids as management of opioid-use disorder should be observed for neonatal abstinence syndrome⁷.
- vi. Table 1. Commonly-used anaesthesia medications and the current Therapeutic Guidelines (eTG) categorisation for use in breastfeeding⁸. For other medications refer to eTG (Australia)⁸, or the Drugs and Lactation Database (United States)⁹.

	Medication	eTG Categorization	Other references
Sedatives	Benzodiazepines	Compatible	Short-acting (midazolam) preferred over long-acting (diazepam)
Induction agents	Propofol Thiopentone	Compatible Compatible	
Inhaled agents	Volatile agents	*	Little information. Short adult serum half-life ¹⁰ .
Muscle relaxants and reversal	Suxamethonium	*	No information. Rapid adult metabolism. Poor lipid solubility, very low transfer to breast milk ¹¹ .
	Rocuronium	*	Rapidly metabolized in adult circulation, very low transfer to breast milk ¹² .
	Sugammadex	*	No information available. A large, highly polar molecule, low transfer to breast milk probable ¹³ .
Opioids	Morphine	Compatible, caution with slow-release preparations	
	Oxycodone	Use with caution	
	Codeine	Avoid	
	Tramadol	Compatible for short-term use	Product information recommends against use during breastfeeding ¹⁴ .

	Medication	eTG Categorization	Other references
			SPANZA and the Obstetric SIG supports the use of tramadol while breastfeeding ^{15,16} .
	Fentanyl	Avoid transcutaneous patch	
Co-analgesics	Paracetamol	Compatible	
	Ibuprofen	Compatible	Avoid in parents of infants with duct-dependent cardiac lesions. ⁶
	Diclofenac	Compatible	Avoid in parents of infants with duct-dependent cardiac lesions. ⁶
Local anaesthetics	Lignocaine	Compatible	
	Bupivacaine	Compatible	
Antiemetics	Metoclopramide	Compatible	
	Ondansetron	Compatible	
	Dexamethasone	Use with caution due to lack of data	Data on other steroids reassuring

* No Therapeutic Guideline recommendation provided.

Drugs with emerging pharmacokinetic information:

Dexmedetomidine: this drug does not have a Therapeutic Guidelines breastfeeding recommendation. A pharmacokinetic study published in 2017 suggested a RID of 0.034%¹⁷. Oral bioavailability in the feeding infant is poor and adverse effects would not be expected¹⁸.

Tapentadol: the Therapeutic Guidelines recommendation is to avoid tapentadol use during breastfeeding due to lack of data. Unlike tramadol and codeine, tapentadol is not converted to active metabolites. Further information is required¹⁹.

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