

## 4.4.2 Topical anaesthesia

There is strong evidence that the numbing the skin with topical anaesthesia reduces procedural pain and distress and can halt the development of needle fears. Topical anaesthetics are local anaesthetics consisting of creams, gels or patches that block the transmission of pain signals to the skin [3].

### 4.4.2.1 When to use topical anaesthesia

Due to the effectiveness of topical anaesthesia in reducing procedural pain, it is an expectation that it is offered for every needle procedure [24]. The only contradictions to this are:

- A child or adolescent appropriately declines the use of topical anaesthesia.
- Life threatening situations where there is no time for the topical anaesthesia to work.
- The child or adolescent has a confirmed allergy to all available local anaesthetic agents.
- Establish that a reported allergy is not blanching or erythema of the skin which is an expected outcome of topical anaesthesia

### 4.4.2.2 Uses for topical anaesthetics

Topical anaesthesia is typically used when a venipuncture or vascular access is required.

Other uses of topical anaesthesia include:

- Sub cutaneous injection
- Insuflon insertion
- Port access
- Botox injections
- Joint injections
- Vaccination sites
- Laser sites
- Lumbar punctures

Do not use topical anaesthesia on:

- Broken skin

- Eyes
- Ears
- Inflamed skin
- Mucous membranes

#### 4.4.2.3 Choosing a topical anaesthetics

The effectiveness of topical anaesthesia is dependent on:

- Optimal application time
- Application technique
- The volume of topical anaesthesia applied to the skin.

Refer to the table below comparing the characteristics of the 2 topical anesthetic agents used at RCH [27-29].

Topical anaesthesia agent	Amethocaine 4%	Lignocaine 2.5% & Prilocaine 2.5%
<b>Description</b>	Angel®	EMLA®
<b>Recommended for children</b>	> 1 month (corrected age)	> 37 weeks (corrected age)
<b>RCH practice points</b>	Preferred drug of choice at RCH due to a more rapid onset of action and extended duration of action [27, 29].	Use on children with allergies to Angel®
<b>Application time</b>	60 minutes	60 minutes
<b>Max time on skin</b>	1 hour Remove topical anaesthesia @ 60 mins	1 hour Remove topical anaesthesia @ 60 mins
<b>Duration of anaesthesia</b>	4-6 hours	2-4 hours
<b>Expected response</b>	Mild transient erythema (redness) and itching are common due to the vasodilatory effects of Angel®	Emla® may also cause a transient local blanching followed by local redness or erythema.
<b>Adverse reactions</b>	Severe erythema, oedema, itching or blistering should be treated by removing the gel immediately.	Severe erythema, oedema, itching or blistering should be treated by removing the gel immediately.

	Always record and report adverse events.	Always record and report adverse events.
<b>Storage</b>	<p>Angel® deteriorates if not stored correctly.</p> <p>Refrigerate unopened tubes to maintain shelf life (up to 6 months).</p> <p>Do not freeze.</p> <p>Upon opening, mark the tube with date of opening</p> <p>Keep at room temperature once opened</p> <p>Discard 30 days after opening</p>	Store below 25° C, do not freeze or refrigerate
<b>Cautions</b>	<p>Angel® should not be used on:</p> <ul style="list-style-type: none"> <li>• Premature infants and full term infants less than one month of age</li> <li>• Patients with known hypersensitivity to ester type local anaesthetics or hydroxybenzoates</li> </ul>	<p>Methaemoglobinaemia related to Prilocaine may occur with high doses.</p> <ul style="list-style-type: none"> <li>• Do not exceed the recommended dose or application time especially for infants &lt;3 months as they are more susceptible</li> </ul> <p>EMLA® is ineffective as anaesthesia for capillary sampling including heel lancing in neonates</p>

#### 4.4.2.4 Recommendations for the dosage of topical anaesthesia

##### Angel®[30]:

There is no recommended maximum dosage of Angel®. The standard dose of Angel for all ages is 0.5 grams.

To measure a 0.5 gram dose of Angel® apply a thick layer of gel as approximately the size of a 2 dollar coin or a jelly bean.

##### Emla® [29]

The table below provides recommendations for the dosage of Emla®. Dosage is important with Emla® due to the risk of Methaemoglobinaemia [30].

To measure 1 gram of EMLA, the Cream should be gently squeezed out of the tube as a narrow strip that is 4cm long and 0.5cm wide. This is approximately the size of a 2 dollar coin or a jelly bean.

Age	Dosage	Maximum dosage
<b>37 weeks (corrected age)</b>	Use a syringe to measure 1 g = 1 mL	Maximum 1 g for up to 1 hour No more than 1 dose in 24 hours
<b>Babies (at term) – 3 months of age</b>	Apply 0.5–1 g of cream	Maximum 1 g for up to 1 hour No more than 1 dose in 24 hours
<b>4-12 months</b>	Estimate a 1 g dose by applying a thick layer of cream the size of a \$2 coin	Maximum 2 g for up to 4 hours No more than 2 doses (separated by at least 12 hours) in 24 hours.
<b>1-6 years</b>	Estimate a 1 g dose by applying a thick layer of cream the size of a \$2 coin	Maximum 10 g for up to 4 hours No more than 2 doses (separated by at least 12 hours) in 24 hours.
<b>7-12 years</b>	Estimate a 1 g dose by applying a thick layer of cream the size of a \$2 coin	Maximum 20 g for up to 4 hours No more than 2 doses (separated by at least 12

		hours) in 24 hours.
<b>13-18 years</b>	Estimate a 1 g dose by applying a thick layer of cream the size of a \$2 coin	The usual maximum dose is 60 g on intact skin for up to 5 hours.

#### 4.4.2.7 Prescription of topical anaesthetics

Topical anaesthetic agents are able to be order as a Nurse Initiated Medication.

Please refer to the recommendations for dosing of topical anaesthesia in this CPG.

#### Inpatients

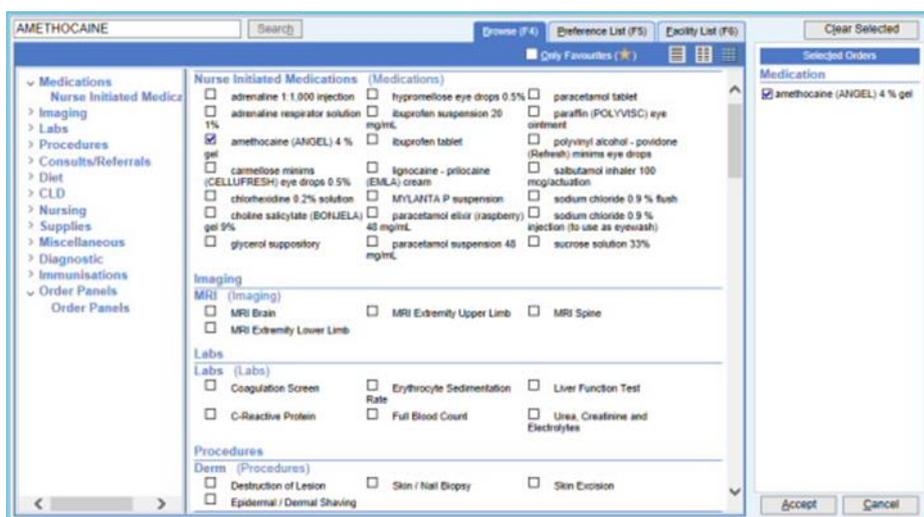
The prescribing of topical anaesthesia as a Nurse Initiated Medication will be captured on the MAR.

Pathology Collectors managing inpatients in A6 require the Registered Nurse to order topical anaesthesia as a Nurse Initiated Medication.

#### Outpatients

For children presenting as an outpatient to the pathology department, the pathology Collectors are endorsed by the Director of Laboratory Services to apply *AnGel*, as requested by *carers*.

#### Example of how to prescribe topical anaesthesia as a Nurse Initiated Medication



amethocaine 4 % gel ✓ Accept ✕ Cancel

Route:  Topical

Frequency:  PRN

PRN reasons:  prior to procedure

PRN comment:

For:   Doses  Hours  Days

Starting: 9/05/2016 Today Tomorrow At: 17:31 Show Additional Options

Starting: **Today 17:31** Until Discontinued

There are no scheduled times based on the current order parameters.

Admin. Inst.: [Apply 60-90 min before procedure.](#)

Prod. Admin. Inst.: (none)

Priority:  Routine

▶ Additional Order Details

Next Required ✓ Accept ✕ Cancel

lignocaine-prilocaine (EMLA) cream ✓ Accept ✕ Cancel

Reference Links: 1. Australian Medicines Handbook - Children's Dosing Companion 2. RCH Pharmacy Medicines Information

Route:  Topical

Frequency:  Once PRN

PRN reasons:  prior to procedure

PRN comment:

For:   Doses  Hours  Days

Starting: 9/05/2016 Today Tomorrow At: 17:29 Show Additional Options

Starting: **Today 17:29** Until Discontinued

There are no scheduled times based on the current order parameters.

Admin. Inst.: [Apply 45-60 min before procedure.](#)

Prod. Admin. Inst.: [Apply at least 60 minutes prior to procedure](#)

Priority:  Routine

▶ Additional Order Details

Next Required ✓ Accept ✕ Cancel

#### 4.4.2.8 Application of topical anaesthetics

Topical anaesthesia agents are typically applied as a thick layer of gel or cream then secured with an occlusive dressing to facilitate absorption by the skin

#### Blood sampling or vascular access

	<p>Identify the site of the medical procedure and the correct dose of topical anaesthesia</p>
---	---

	<p>Apply the topical anaesthesia to the skin</p> <p>For venipuncture:</p> <ul style="list-style-type: none"> <li>• Select one or two sites over a visible vein under intact and healthy skin</li> <li>• Apply in a strip like manner</li> </ul> <p>For injections:</p> <ul style="list-style-type: none"> <li>• Apply topical anaesthesia to the injection site approximately the size of a \$2 coin or jelly bean</li> </ul>
	<p>Cover with an occlusive dressing.</p> <p>The most common dressing is tegaderm.</p> <p>Write the application time on the dressing to flag if the topical anaesthetic has been applied for an appropriate duration.</p>

For use other than venipuncture and vascular access, check with the proceduralist that you are applying cream to the correct site.

**Clinical tip**

- For some children the removal of the tegaderm dressing can be the most painful and distressing aspect of the medical procedure
- Ensure children don't rub their eyes with hands that have had topical anaesthesia applied as it may cause local irritation.

If a child has aversions or anxiety related to the removal of the occlusive dressing or an allergy to the dressing, you can consider these alternative dressings:

- Topical anaesthetic + gauze square + cling wrap - secure with paper tape
- Topical anaesthetic + gauze square + secure with crepe bandage

- Topical anaesthetic + gauze square + Glad Press n Seal

#### **4.4.2.9 Alternatives to topical anaesthetic agents**

The use of cold and vibration can reduce procedural pain through competition with painful stimuli from medical procedures within the central nervous system [31, 32]. There is currently insufficient evidence for the use of skin-cooling techniques, such as vapocoolants and ice, over topical anaesthesia to reduce needle pain[24]. Yet this may offer an important alternative if:

- Time to numbing is urgent
- The child dislikes or is allergic to topical anaesthetics

Some examples of this at the Royal Children’s Hospital are:

1. Coolsense
2. Buzzy Bee™

#### **Coolsense**

Coolsense is a hand-held device that anaesthetises the site of injections with cryotherapy

#### **Buzzy Bee™**

Buzzy™ is a handheld device available at The RCH that combines the use of cold and vibration to help block pain and provide distraction to children during needle related medical procedures.

#### ***Clinical tip***

- It is advisable where appropriate to use Buzzy™ in conjunction with topical anaesthesia to enhance comfort during medical procedures.
- Buzzy™ and Coolsense devices are available to loan through the Comfort Kids Program.