



The ANZCA Essential Medications List (ANZCA EML) describes medicines which are considered key to safe and effective provision of anaesthesia and pain medicine care in Australia and New Zealand and where disruption of supply would require alternative sources of the same drug, use of an alternative medicine with similar effects, or alteration of clinical care.

This list is ordered by medication class and then generic name.

Classification

1a Essential - no real alternative (anaes/crit care)

Medications used predominantly in anaesthesia or critical care environments for which there is effectively no alternative. Supply maintenance is critically important.

1b Essential - no real alternative (Use widespread)

Medications used in many clinical situations outside of critical care environments. Supply maintenance is critically important.

2 Essential - compromise with alternative

Medications whose class is critical and alternatives require some compromise in optimal care or change in clinical management. Supply maintenance is important.

3 Essential class - preferred but some suitable alternatives

Medications whose class is critical and the medication is preferred over an existing alternative. Supply maintenance of this medication is highly desirable but ensuring at least one member of this class is important.

4. Essential class - all alternatives largely equal

Medications whose class is critical but a number of suitable alternatives exist. Supply maintenance of at least one member of this class is an option.

9. Not graded

Medications that have some unique properties but are not considered essential.

[Click here for the link to the original webpage.](#)

Dexmedetomidine

Essential (WHO) Necessary (FDA) Critical ANZCA PS55 A1 Essential (UK-NEADL) Reportable (TGA)

ANZCA Grade

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

Sedation and mild analgesia without respiratory depression (iv)
Especially suitable for use in elderly patients

Primarily anaes/critcare:

Priority indication:

Alternative drug

Propofol infusion - not analgesic
IV opioids - risk respiratory depression
Clonidine - not titratable nor as selective an alpha-2 agonist.

Alternative technique

Comments

Dexmedetomidine may decrease delirium risk in the elderly, especially in ICU patients
Off-label use is growing in paediatric anaesthesia and critical care

Sevoflurane

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

For the maintenance of general anaesthesia (P)
Induction of anaesthesia as an alternative to intravenous induction

Primarily anaes/critcare:

Priority indication:

Alternative drug

Isoflurane
Desflurane
Propofol (1 or 2%)
Thiopentone (for induction)

Alternative technique

TIVA (propofol)
Ketamine
Etomidate (induction)

Comments

Desflurane availability (and use) decreasing due to cost and greenhouse risk
Volatile agents are contraindicated in patients with Malignant Hyperpyrexia risk

Etomidate

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4 - Essential class - all alternatives largely equal

Clinical indication:

Availability:

Induction of anaesthesia (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Propofol (1% or 2%)
Thiopentone
Ketamine
Volatile anaesthetic agents

Alternative technique

Inhalational induction of anaesthesia (not suitable for many patients including those with agitation or aspiration risk)

Comments

Stress response inhibition may increase risk over first 24h

Ketamine

Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
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ANZCA Grade	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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1a - Essential - no real alternative (anaes/crit care)

Clinical indication:

Availability:

Induction of anaesthesia (P)
 Maintenance of general anaesthesia (P)
 Sedation for critically ill patients being mechanically ventilated (P)
 Sedation for procedures
 Pain management

Primarily anaes/critcare:

Priority indication:

Alternative drug

Propofol (1% or 2%)
 Etomidate (NZ only)
 Thiopentone
 Volatile anaesthetic agents

Alternative technique

Inhalational induction of anaesthesia (not suitable for many patients including those with agitation or aspiration risk).

Comments

Haemodynamic stability in critically ill on induction is superior to Propofol, Thiopentone and volatile agents.

Propofol (1%)

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

1a - Essential - no real alternative (anaes/crit care)

Clinical indication:

Availability:

Induction of anaesthesia (P)
Maintenance of general anaesthesia
Sedation for critically ill patients being mechanically ventilated (P)
Sedation for procedure

Primarily anaes/critcare:

Priority indication:

Alternative drug

Propofol 2% (20mg/mL) (Not available currently in A&NZ)
Etomidate (NZ only)
Thiopentone
Ketamine
Volatile anaesthetic agents

Alternative technique

Inhalational induction of anaesthesia (not suitable for many patients including those with agitation or aspiration risk).
Reserve for induction and selective use of TIVA techniques if in short supply.

Comments

Thiopentone (thiopental)

Essential (WHO) Necessary (FDA) Critical ANZCA PS55 A1 Essential (UK-NEADL) Reportable (TGA)

ANZCA Grade

3 - Essential class - preferred but suitable alternatives

Clinical indication:

Availability:

Induction of general anaesthesia
Acute anticonvulsant

Primarily anaes/critcare:

Priority indication:

Alternative drug

Propofol
Etomidate
Ketamine

Alternative technique

Inhalational anaesthesia induction

Comments

Bupivacaine

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3 - Essential class - preferred but suitable alternatives

Clinical indication:

Availability:

Regional anaesthesia - peripheral (P)
Neuraxial local anaesthesia (0.5%) (P)
Post-operative analgesia

Primarily anaes/critcare:

Priority indication:

Alternative drug

Ropivacaine
Bupivacaine heavy (0.5%) - spinal analgesia (UK-NEADL)
Levobupivacaine

Alternative technique

Comments

Available in combination with vasoconstrictors, which increases maximum safe dose and increases duration of action.
Lipid emulsion should be immediately available wherever potentially toxic volumes are used in order to treat the occurrence of local anaesthetic systemic toxicity.

Anaesthetics - local - long acting

Ropivacaine (0.75-1.0%)

Essential (WHO) Necessary (FDA) Critical ANZCA PS55 A1 Essential (UK-NEADL) Reportable (TGA)

ANZCA Grade

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

Regional anaesthesia - peripheral (P)
Neuraxial local anaesthesia
Post-operative analgesia

Primarily anaes/critcare:

Priority indication:

Alternative drug

Bupivacaine (0.5%)
Levobupivacaine

Alternative technique

General anaesthesia for surgical procedures
Systemic analgesics postoperatively

Comments

Lipid emulsion should be immediately available wherever large volumes are used to treat the occurrence of local anaesthetic systemic toxicity.
Both bupivacaine and ropivacaine can be diluted for paediatric and regional anaesthesia use if required

Lidocaine

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

Regional anaesthesia (esp. 2%)(P)
Local infiltration anaesthesia (P)
Topical mucosal anaesthesia, including for awake fiberoptic intubation
Arrhythmia management

Primarily anaes/critcare:

Priority indication:

Alternative drug

Short acting:
Prilocaine
Long acting:
Bupivacaine
Levobupivacaine
Ropivacaine

Alternative technique

For awake fiberoptic intubation other topical agents and techniques are possible (e.g. cocaine, co-phenylcaine).

Comments

Lidocaine 2% often needed for epidural and some regional perineural blockage.
Combination with vasoconstrictors (WHO essential) increases maximum safe dose and increases duration of action
Lidocaine is available in a variety of strengths and formulations, which are utilised in the performance of awake fiberoptic intubation.

Ibuprofen (and other NSAIDs)

ANZCA Grade

Essential (WHO)

Necessary (FDA)

Critical

ANZCA PS55 A1

Essential (UK-NEADL)

Reportable (TGA)

4 - Essential class - all alternatives largely equal

Clinical indication:

Availability:

Analgesia
Anti-inflammatory

Primarily anaes/critcare:

Priority indication:

Alternative drug

A range of oral and IV NSAIDs exist including:

Ketorolac (Oral / IV)

Celecoxib (oral)

Parecoxib (IV)

Diclofenac (IV-NZ)

Other analgesics

Alternative technique

For analgesia, other routes instead of IV include oral / rectal

Opioid analgesic technique

Comments

Effective non-opioid analgesics

Main risk GI intolerance or renal impairment

Ibuprofen available oral, IV

Paracetamol

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

1c - Essential - no real alternative (use widespread)

Clinical indication:

Availability:

Analgesic (P)
Antipyretic (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Alternatives for analgesia (not antipyretic)
Aspirin (oral)
Diclofenac (oral, ?IV NZ)
Ibuprofen (oral/IV)
Ketorolac (IV)
Nefopam (IV) (NZ)
Parecoxib (IV)
Celecoxib (oral)

Alternative technique

For analgesia, other routes instead of IV include oral / rectal

Comments

For analgesia, any other oral NSAIDs are available.
Paracetamol has no substitute for antipyretic effect.
Paracetamol is available IV, oral, rectal.

Parecoxib (and other Coxibs)

ANZCA Grade	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
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3 - Essential class - preferred but suitable alternatives

Clinical indication:

Availability:

Analgesia
Anti-inflammatory

Primarily anaes/critcare:

Priority indication:

Alternative drug

Paracetamol (not anti-inflammatory)
A range of oral and IV NSAIDs exist including:
Ketorolac (Not a selective coxib, Oral / IV)
Celecoxib (oral)

Alternative technique

Opioid analgesic techniques
For analgesia, other routes instead of IV include oral / rectal

Comments

Fentanyl

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

1a - Essential - no real alternative (anaes/crit care)

Clinical indication:

Availability:

Potent IV analgesia - intraoperative / postoperative (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Intravenous opioids:
Alfentanil (closest alt)
Hydromorphone, Methadone, Morphine, Oxycodone, (Pethidine), Remifentanil, Tramadol

Alternative technique

Oral opioid analgesia (where appropriate)
premedication and postoperatively

Comments

Fentanyl and alfentanil have a short duration of effect when used in low doses.
Fentanyl is suitable for use in patients with renal impairment.
Remifentanil is highly potent and must be administered by infusion techniques.

Morphine

Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
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ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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3 - Essential class - preferred but suitable alternatives

Clinical indication:

Availability:

Potent IV analgesia - intraoperative / postoperative (P)
 Morphine is used for sedation as an infusion in critical care, especially neonatal and paediatric units. (P)
 Treatment of severe acute and chronic pain by various routes and under patient control

Primarily anaes/critcare:

Priority indication:

Alternative drug

Intravenous opioids:
 Oxycodone (closest alt)
 Alfentanil, Hydromorphone, Fentanyl, Methadone, (Pethidine), Remifentanil, Tramadol
 Oral/enteral opioids:
 Buprenorphine, Codeine, Hydromorphone, Methadone, Oxycodone Tramadol, Tapentadol (AU)

Alternative technique

Intraoperative 'opioid free' techniques (not always appropriate)
 Consider enteral routes when IV formulations are unavailable

Comments

Morphine is a well understood and widely used opioid. The closest comparator for potency and pharmacokinetics is oxycodone. Not indicated in renal failure.

Oxycodone

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3 - Essential class - preferred but suitable alternatives

Clinical indication:

Availability:

Potent IV analgesia - intraoperative / postoperative. (P)
 Morphine is used for sedation as an infusion in critical care, especially neonatal and paediatric units. (P)
 Treatment of severe acute and chronic pain by various routes and under patient control.

Primarily anaes/critcare:

Priority indication:

Alternative drug

Intravenous opioids:
 Morphine (closest alt)
 Alfentanil, Hydromorphone, Fentanyl, Methadone, (Pethidine), Remifentanil, Tramadol
 Oral/enteral opioids:
 Buprenorphine, Codeine, Hydromorphone, Methadone, Morphine Tramadol, Tapentadol (AU)

Alternative technique

Intraoperative 'opioid free' techniques (not always appropriate)
 Consider enteral routes when IV formulations are unavailable

Comments

Oxycodone is a well understood and widely used opioid. The closest comparator for potency and pharmacokinetics is morphine. Not indicated in renal failure.

Amiodarone (IV)

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

Supraventricular and ventricular arrhythmias (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Antiarrhythmic class drugs (second line)

Alternative technique

DC Cardioversion

Comments

Anticholinergic - Antimuscarinic drugs

Atropine

ANZCA Grade Essential (WHO) Necessary (FDA) Critical ANZCA PS55 A1 Essential (UK-NEADL) Reportable (TGA)

1c - Essential - no real alternative (use widespread)

Clinical indication:

Availability:

Treatment and prevention of intra-operative bradycardia. (P)
An antisialagogue.
Control of the muscarinic side effects of neostigmine.

Primarily anaes/critcare:

Priority indication:

Alternative drug

Glycopyrrolate (Glycopyrronium bromide)
Hyoscine
Adrenaline (for bradycardia)
Isoprenaline (for bradycardia)

Alternative technique

Sugammadex for neuromuscular block reversal instead of neostigmine+anticholinergic
transvenous pacing for severe bradycardia

Comments

Adrenaline and isoprenaline are very potent and may provoke arrhythmias.

Anticholinergic - Antimuscarinic drugs

Glycopyrrolate

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3 - Essential class - preferred but suitable alternatives

Clinical indication:

Availability:

Treatment and prevention of intra-operative bradycardia. (P)
An antisialagogue.
Control of the muscarinic side effects of neostigmine.

Primarily anaes/critcare:

Priority indication:

Alternative drug

Atropine
Hyoscine
Adrenaline (for bradycardia)
Isoprenaline (for bradycardia)

Alternative technique

Sugammadex for neuromuscular block reversal instead of neostigmine + anticholinergic
Transvenous pacing for severe bradycardia

Comments

Adrenaline and isoprenaline are very potent and may provoke arrhythmias

Protamine

Essential (WHO) Necessary (FDA) Critical ANZCA PS55 A1 Essential (UK-NEADL) Reportable (TGA)

ANZCA Grade

1a - Essential - no real alternative (anaes/crit care)

Clinical indication:

Availability:

A&NZ

Reversal of heparin anticoagulation

Primarily anaes/critcare:

Priority indication:

Alternative drug

none

Alternative technique

Comments

Reversal is immediate and indicated following cardiopulmonary bypass or other surgical procedures requiring heparin, or in emergency surgery where the patient has been given heparin.
Less effective against low molecular weight heparins.

Heparin

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1a - Essential - no real alternative (anaes/crit care)

Clinical indication:

Availability:

Anticoagulation during surgery. (P)
Thromboprophylaxis after surgery.

Primarily anaes/critcare:

Priority indication:

Alternative drug

direct thrombin inhibitors:

*bivalirudin

*argatroban

*danaparoid

short sequence heparin:

*fondaparinux

Alternative technique

Comments

Uniquely reversible with protamine.
Bivalirudin has shortest half-life of the direct thrombin inhibitors.
Contraindicated in heparin-induced thrombocytopenia.

Dexamethasone (IV)

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

Prevention of postoperative nausea and vomiting. (P)
Suppression of inflammatory and allergic disorders (see steroid indication) (P)
Treatment of cerebral oedema (see steroid indication). (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

*As anti-emetics:
Ondansetron
Cyclizine
Domperidone
Droperidol
Granisetron
Hyoscine hydrobromide
Metoclopramide
Prochlorperazine

Alternative technique

TIVA decreases risk of PONV in high-risk patients.

Comments

Dexamethasone also prolongs the duration of local anaesthetic blocks.
Dexamethasone has no mineralocorticoid activity and is not suitable for steroid replacement/stress dosing in primary adrenal insufficiency.

Anti-emetic drugs

Ondansetron

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3 - Essential class - preferred but suitable alternatives

Clinical indication:

Availability:

The prevention and treatment of PONV (oral/sublingual/IV)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Dexamethasone
Cyclizine
Domperidone
Droperidol
Granisetron
Hyoscine hydrobromide
Metoclopramide
Prochlorperazine

Alternative technique

Non-inhalational anaesthesia techniques

Comments

Ondansetron can lead to the prolongation of the QT interval – caution is advised in susceptible patients.

Glyceryl trinitrate (GTN)

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

Hypertension
Myocardial ischaemia
Tocolysis (acute)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Sodium nitroprusside
Labetalol (IV)
Hydralazine (IV)

Alternative technique

GTN via topical or sublingual routes

Comments

Sodium nitroprusside is very potent and requires extremely close blood pressure monitoring. Alternatives depend on circumstances (OR / ICU / CCU).

Hydralazine (IV)

Essential (WHO) Necessary (FDA) Critical ANZCA PS55 A1 Essential (UK-NEADL) Reportable (TGA)

ANZCA Grade

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

Hypertension (suitable in perioperative obstetric hypertension)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Glycerol trinitrate (GTN)
Sodium nitroprusside
Labetalol (incl. obstetric hypertensive disorders)

Alternative technique

Comments

Sodium nitroprusside is very potent and requires extremely close blood pressure monitoring.

Labetalol (IV)

Essential (WHO) Necessary (FDA) Critical ANZCA PS55 A1 Essential (UK-NEADL) Reportable (TGA)

ANZCA Grade

3 - Essential class - preferred but suitable alternatives

Clinical indication:

Availability:

Treatment of refractory tachycardia (P)
Tachyarrhythmias.
Obstetric hypertensive disorders.

Primarily anaes/critcare:

Priority indication:

Alternative drug

*Beta-blocking drugs
propranolol
metoprolol
esmolol
*Others
adenosine (paroxysmal atrial tachycardia)
nifedipine (obstetrics)

Alternative technique

cardioversion in rapid AF

Comments

Alternative beta blockers - suitable equivalents depend on indication (rate control vs hypertension)
Labetalol (IV) useful in pregnancy

Benzodiazepine antagonists

Flumazenil

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

1a - Essential - no real alternative (anaes/crit care)

Clinical indication:

Availability:

Reversal of benzodiazepine-induced sedation (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

none

Alternative technique

Comments

IV use only

Metoprolol (IV)

ANZCA Grade Essential (WHO) Necessary (FDA) Critical ANZCA PS55 A1 Essential (UK-NEADL) Reportable (TGA)

3 - Essential class - preferred but suitable alternatives

Clinical indication:

Availability:

treatment of refractory tachycardia (P)
Tachyarrhythmias

Primarily anaes/critcare:

Priority indication:

Alternative drug

*propranolol
*labetalol
*esmolol
adenosine (paroxysmal atrial tachycardia)

Alternative technique

cardioversion in AF

Comments

alternative betablockers suitable equivalents
labetalol (IV) useful in pregnancy

Bronchodilators

Salbutamol

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

relief of bronchospasm (inhaler/IV) (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

severe bronchospasm - adrenaline (nebulised/IV)
other metered dose bronchodilator inhalers

Alternative technique

Comments

Isoprenaline

ANZCA Grade Essential (WHO) Necessary (FDA) Critical ANZCA PS55 A1 Essential (UK-NEADL) Reportable (TGA)

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

Severe bradycardia / heart block (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Adrenaline
Atropine
Glycopyrrolate

Alternative technique

transvenous pacemaker insertion

Comments

Atropine / Glycopyrrolate only effective for vagal induced bradycardia

Insulin

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1c - Essential - no real alternative (use widespread)

Clinical indication:

Availability:

control hyperglycaemia (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

none (for intravenous route)

Alternative technique

Comments

Widespread use in diabetes management.

Local anaesthetic toxicity treatment

Lipid emulsion (Intralipid 20%)

ANZCA Grade

Essential (WHO)



Necessary (FDA)



Critical



ANZCA PS55 A1



Essential (UK-NEADL)



Reportable (TGA)



1a - Essential - no real alternative (anaes/crit care)

Clinical indication:

Availability:

Severe local anaesthetic toxicity with cardiovascular or neurological impairment. (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Preferred solution is 20%

10% solution of lipid emulsion

30% solution of lipid emulsion

Alternative technique

cardiovascular supportive therapies

Comments

A unique agent for management of severe local anaesthetic toxicity, which can be life saving. It should, therefore, be immediately available whenever higher dose local anaesthetic is being administered.

Dantrolene (IV)

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

1a - Essential - no real alternative (anaes/crit care)

Clinical indication:

Availability:

Malignant hyperpyrexia (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

none

Alternative technique

supportive therapies

Comments

MHANZ recommends a minimum of 720mg of dantrolene be immediately available wherever volatile anaesthetic agents are administered or suxamethonium is routinely used

Air (medical gas supply)

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

1c - Essential - no real alternative (use widespread)

Clinical indication:

Availability:

Carrier gases for anaesthetic agents. (P)
Air is used to drive medical equipment including ventilators and surgical tools.

Primarily anaes/critcare:

Priority indication:

Alternative drug

Oxygen as sole carrier gas.

Alternative technique

- A self-inflating bag-valve-mask or draw-over system can be used to ventilate the lungs with air from the atmosphere
- Electric surgical tool drivers and ventilators

Comments

Air and oxygen are necessary for the safe administration of anaesthesia.
Use of 100% oxygen during shortage of air risks oxygen toxicity and collapse of the lung (atelectasis).
The need for high-flow oxygen (e.g. high flow nasal oxygen) should be carefully considered during times of shortage.

Oxygen

Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
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ANZCA Grade	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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1c - Essential - no real alternative (use widespread)

Clinical indication:

Availability:

Oxygenation during anaesthesia, sedation or where medically indicated
 Carrier gases for anaesthetic agent
 Respiratory failure

Primarily anaes/critcare:

Priority indication:

Alternative drug

None

Alternative technique

Reduced gas flows (NB still require oxygen)

Comments

Oxygen flow rates can be reduced in many circumstances. Consider indications for High Flow oxygenation techniques.
 ■Use of 100% oxygen during shortage of air risks oxygen toxicity and collapse of the lung (atelectasis).

Magnesium sulphate (IV)

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

1c - Essential - no real alternative (use widespread)

Clinical indication:

Availability:

Seizure prevention and control when caused by pre-eclampsia or eclampsia (P)
Fetal neuroprotection
Antihypertensive in phaeochromocytoma / pre-eclampsia
Antiarrhythmic (esp hypomagnesemia and torsades de points) (P)
Acute severe asthma.

Primarily anaes/critcare:

Priority indication:

Alternative drug

Magnesium chloride (central administration)
No other agent can treat hypomagnesemia
Other muscle relaxants or antiarrhythmics

Alternative technique

Comments

Useful in atrial fibrillation treatment

Neostigmine

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

Neostigmine can be used for competitive reversal of all non-depolarising neuromuscular blockade, primarily at the end of anaesthesia. (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Sugammadex (for vecuronium and rocuronium only).

Edrophonium

Alternative technique

Allow time for block resolution, with monitoring of neuro-muscular block depth.

Comments

Must be used with an anti-cholinergic drug (atropine or glycopyrrolate).

Edrophonium is a shorter-acting anticholinesterase. When used as an alternative to neostigmine, there is a risk of re-occurarisation.

Neuromuscular blockade reversal drugs

Sugammadex

Essential (WHO) Necessary (FDA) Critical ANZCA PS55 A1 Essential (UK-NEADL) Reportable (TGA)

ANZCA Grade

3 - Essential class - preferred but suitable alternatives

Clinical indication:

Availability:

Reversal of neuromuscular blockade with aminosteroid muscle relaxants (rocuronium, vecuronium)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Neostigmine (with glycopyrrolate or atropine)

Alternative technique

Suxamethonium for rapid sequence induction

Comments

Sugammadex has unique properties which make it the preferred reversal agent in many circumstances

Neuromuscular blocking drugs - depolarising

Suxamethonium

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

The establishment of neuromuscular blockade to facilitate a variety of anaesthetic interventions. (P)
Tracheal intubation, including rapid sequence intubation.
Relief of laryngospasm.
To modify the seizure activity associated with electroconvulsive therapy (suxamethonium at lower doses).

Primarily anaes/critcare:

Priority indication:

Alternative drug

Rocuronium (high dose)

Alternative technique

Other non-depolarising neuro-muscular relaxants

Comments

Short duration of blockade may not occur in patients with plasma cholinesterase deficiency.
Rocuronium can emulate short blockade duration when sugammadex is used for reversal.
Suxamethonium has many side effects not shared with non-depolarising neuro-muscular relaxants.

Neuromuscular blocking drugs - non-depolarising

Atracurium

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

The establishment of neuromuscular blockade to facilitate a variety of anaesthetic interventions. (P)
Tracheal intubation.
Maintenance of mechanical ventilation.
Relief of laryngospasm.

Primarily anaes/critcare:

Priority indication:

Alternative drug

Cisatracurium (AU)
Mivacurium
Vecuronium
Rocuronium

Alternative technique

Suxamethonium for rapid paralysis e.g. RSI or laryngospasm

Comments

Slower onset than rocuronium.
Reversal neostigmine/glycopyrrolate (if needed).
Does not require hepatic or renal function for elimination.

Neuromuscular blocking drugs - non-depolarising

Cisatracurium

Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ANZCA Grade

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

The establishment of neuromuscular blockade to facilitate a variety of anaesthetic interventions. (P)
Tracheal intubation.
Maintenance of mechanical ventilation.
Relief of laryngospasm.

Primarily anaes/critcare:

Priority indication:

Alternative drug

Atracurium (in NZ / UK-NEADL)
Mivacurium
Vecuronium
Rocuronium

Alternative technique

Suxamethonium for rapid paralysis e.g. RSI or laryngospasm

Comments

Slower onset than rocuronium
Reversal neostigmine/glycopyrrolate (if needed)
Does not require hepatic or renal function for elimination.

Neuromuscular blocking drugs - non-depolarising

Rocuronium

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

The establishment of neuromuscular blockade to facilitate a variety of anaesthetic interventions. (P)
Tracheal intubation, including rapid sequence intubation (suxamethonium and rocuronium).
Maintenance of mechanical ventilation.
Relief of laryngospasm.

Primarily anaes/critcare:

Priority indication:

Alternative drug

Vecuronium
Cisatracurium
Atracurium (UK-NEADL)
Mivacurium

Alternative technique

Suxamethonium for rapid paralysis e.g. RSI or laryngospasm

Comments

Rocuronium in high doses provides rapid intubating conditions equivalent to suxamethonium.
Rocuronium and vecuronium are reversible with sugammadex.

Naloxone

Essential (WHO) Necessary (FDA) Critical ANZCA PS55 A1 Essential (UK-NEADL) Reportable (TGA)

ANZCA Grade

1c - Essential - no real alternative (use widespread)

Clinical indication:

Availability:

Reversal of opioid induced respiratory depression and sedation.

Primarily anaes/critcare:

Priority indication:

Alternative drug

none

Alternative technique

Mechanical ventilatory support

Comments

Naloxone has an extremely high affinity for μ -opioid receptors and can produce rapid onset of withdrawal symptoms if not carefully titrated to effect.
It can be given intravenously, intramuscularly, intranasally and as an infusion.
Repeated doses may be required.

Diazepam (IV)

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4 - Essential class - all alternatives largely equal

Clinical indication:

Availability:

Sedation/anxiolysis
Anticonvulsant (acute)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Diazemuls (equiv)(NZ)
Lorazepam (IV)(NZ)
Midazolam
Remimazolam
Propofol

Alternative technique

Oral agents such as lorazepam or temazepam may be used for premedication

Comments

Benzodiazepines can be antagonised with flumazenil

Midazolam

Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
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ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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2 - Essential - compromise with alternatives

Clinical indication:

Availability:

- Premedication.
- Procedural sedation.
- Sedation in intensive care(P)
- Emergency treatment of status epilepticus(P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

- Diazepam
- Diazemuls (?NZ)
- Propofol
- Remimazolam

Alternative technique

- Oral alternatives - Lorazepam (oral A&NZ; IV NZ);
- Temazepam (oral).
- Intranasal alternative – dexmedetomidine.

Comments

Benzodiazepines can be antagonised with flumazenil.

Dexamethasone (IV)

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

Anti-inflammatory agent (allergy, asthma, tumor related) (P)
 Treatment of cerebral oedema (P)
 Stress dosing for adrenal insufficiency (secondary)
 Anti-emetic (see Anti-emetics)

Primarily anaes/critcare: Priority indication:

Alternative drug

Hydrocortisone (as anti-inflammatory and stress dosing)
 Ondansetron (as anti-emetic)
 Cyclizine (as anti-emetic)
 Droperidol (as anti-emetic)
 Other anti-emetics

Alternative technique

Comments

Dexamethasone has no mineralocorticoid activity and is not suitable for steroid replacement/stress dosing in primary adrenal insufficiency.

Steroid

Hydrocortisone (IV)

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1c - Essential - no real alternative (use widespread)

Clinical indication:

Availability:

Stress-induced steroid supplementation. (P)
Anti-inflammatory agent (allergy, asthma, tumor related).

Primarily anaes/critcare:

Priority indication:

Alternative drug

Dexamethasone – noting that dexamethasone has no mineralocorticoid activity, so is not a substitute for adrenal support in primary adrenal insufficiency.

Alternative technique

Comments

Ergometrine

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

Induction of uterine contraction (post-partum) (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Oxytocin / carbetocin
Carboprost (PPH)

Alternative technique

Prostin E (Gel) - induction only

Comments

Prostin F2 alpha (NZ) (C/I asthma) abortefactant

Uterine stimulants

Oxytocin

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2 - Essential - compromise with alternatives

Clinical indication:

Availability:

Induction of uterine contraction (in labour and post-partum) (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Ergometrine (C/I Hypertension)

Carbetocin

Carboprost (PPH)

Alternative technique

Prostin E (Gel) - induction only.

Comments

Prostin F2 alpha (NZ) (C/I asthma) abortefactant

Vasopressin

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4 - Essential class - all alternatives largely equal

Clinical indication:

Availability:

Antihypotensive agent (infusion)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Vasopressor - sympathomimetics
Noradrenaline

Alternative technique

Comments

Primary use in ICU and as second/third line pressor following refractory hypotension during surgery

Ephedrine

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3 - Essential class - preferred but suitable alternatives

Clinical indication:

Availability:

Antihypotensive agent, especially anaesthesia-related (P)
Hypotension in obstetric anaesthesia (ephedrine) (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Metaraminol
Phenylephrine
Noradrenaline (dilute)
Vasopressin (infusion)
Adrenaline (dilute/infusion)

Alternative technique

Comments

- Ephedrine is a synthetic sympathomimetic with α -agonist and β -agonist properties, increasing heart rate, force of contraction and blood pressure. Exhibits tachyphylaxis as a result of its indirect effects, as stores of noradrenaline (norepinephrine) at nerve endings are depleted.
- Ephedrine is commonly used to treat hypotension in obstetric anaesthesia as it may maintain uterine and placental blood flow more efficiently than some other sympathomimetics. If in short supply, it should be reserved for this indication.
- Phenylephrine is slightly safer to use in the presence of monoamine oxidase inhibitors than indirectly acting sympathomimetics such as ephedrine and metaraminol, although caution should still be taken.
- Phenylephrine is most frequently used as a bolus or infusion in obstetric theatre after spinal anaesthesia and to treat epidural-related postoperative hypotension. Can be safely given as a short-term peripheral intravenous infusion.

Metaraminol

Essential (WHO) Necessary (FDA) Critical ANZCA PS55 A1 Essential (UK-NEADL) Reportable (TGA)

ANZCA Grade

3 - Essential class - preferred but suitable alternatives

Clinical indication:

Availability:

Antihypotensive agent, especially anaesthesia-related (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

- Ephedrine
- Phenylephrine
- Noradrenaline (dilute)
- Vasopressin (infusion)
- Adrenaline (dilute/infusion)

Alternative technique

Comments

Vasopressor - sympathomimetic

Noradrenaline (norepinephrine)

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

1a - Essential - no real alternative (anaes/crit care)

Clinical indication:

Availability:

Antihypotensive agent (by infusion) (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Vasoconstrictor - vasopressor class drugs:

Vasopressin

Adrenaline

Metaraminol

Ephedrine

Phenylephrine

Alternative technique

Comments

Alternatives also in combination with vasodilating inotropes, by infusion

Phenylephrine

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3 - Essential class - preferred but suitable alternatives

Clinical indication:

Availability:

Antihypotensive agent, especially anaesthesia-related (P)
Hypotension in obstetric anaesthesia (P)

Primarily anaes/critcare:

Priority indication:

Alternative drug

Metaraminol (closet alt)
Ephedrine
Noradrenaline (dilute)
Vasopressin (infusion)
Adrenaline (dilute/infusion)

Alternative technique

Comments

▪Phenylephrine is slightly safer to use in the presence of monoamine oxidase inhibitors than indirectly acting sympathomimetics such as ephedrine and metaraminol, although caution should still be taken.
▪Phenylephrine is most frequently used as a bolus or infusion in obstetric theatre after spinal anaesthesia and to treat epidural-related postoperative hypotension. Can be safely given as a short-term peripheral intravenous infusion.

Adrenaline (epinephrine)

	Essential (WHO)	Necessary (FDA)	Critical	ANZCA PS55 A1	Essential (UK-NEADL)	Reportable (TGA)
ANZCA Grade	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

1c - Essential - no real alternative (use widespread)

Clinical indication:

Availability:

Cardiac arrest situations as part of the Advanced Life Support algorithm. (P)
 For inotropic support in the critically ill with circulatory failure, either by intravenous bolus or infusion. (P)
 Anaphylaxis. (P)
 Nebulised to decrease symptoms associated with acute upper airway obstruction, post-intubation swelling and infectious croup.
 Prolongs the action of local anaesthetics by decreasing local blood flow.
 Topical haemostatic agent, e.g. used for peptic ulcers during endoscopy.

Primarily anaes/critcare:

Priority indication:

Alternative drug

None ideally for (P) indications - Noradrenaline closest
 Inotropy - Combination with milrinone/noradrenaline or dobutamine/noradrenaline
 Isoprenaline - chronotropy
 Vasoconstrictor - vasopressor class drugs

Alternative technique

Clinical / mechanical support measures

Comments

To provide an effective alternative for resuscitation, combinations of inotrope and vasopressors may be needed