



Regionálna Anestézia vs Celková Anestézia

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Konflikt záujmov

- **Honorary Senior Lecturer**
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- **EDRA (člen skúšobnej komisie)**
(European Society of Regional Anaesthesia - ESRA)
- **Prezident SKARA**
(Slovenská Asociácia Regionálnej Anestézie pri SSAIM)
- **Prezident NIRAS**
(Northern Ireland Society of Regional Anaesthesia)
- **Žiaden komerčný konflikt záujmov** ↯

Vnútoraná dilema (pro – con)

Dr. Jekyll & Mr. Hyde

Dr. Jekyll ani Mr. Hyde nereprezentujú oficiálne stanovisko žiadnej z organizácií s ktorými v súčasnosti som, alebo som v minulosti bol spojený

Dr. Jekyll ani Mr. Hyde nereprezentujú moje vlastné oficiálne stanovisko

Úlohou je vytvorenie pôdy na odbornú diskusiu

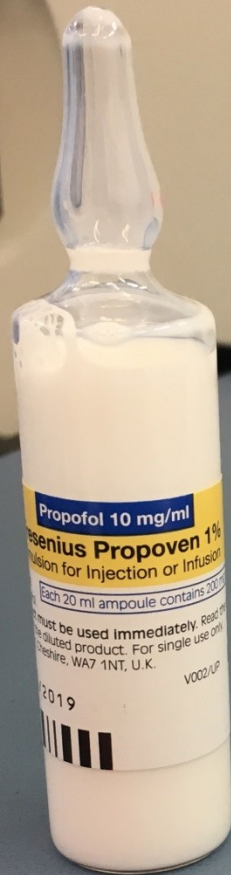


Dr.Jekyll

**CELKOVÁ ANESTÉZIA JE PREFEROVANÁ
PRED REGIONÁLNOU ANESTÉZIOU**

Celková Anestézia

- CA je jednoduchá a lacná
- CA je vždy efektívna
- CA môže byť použitá pre všetkých pacientov
- CA môže byť použitá pre akúkoľvek operáciu
- CA je bezpečná a navyše čoraz bezpečnejšia



Jednoduchá a lacná



10 €

Chirocaine® 5 mg/ml



35.000 €

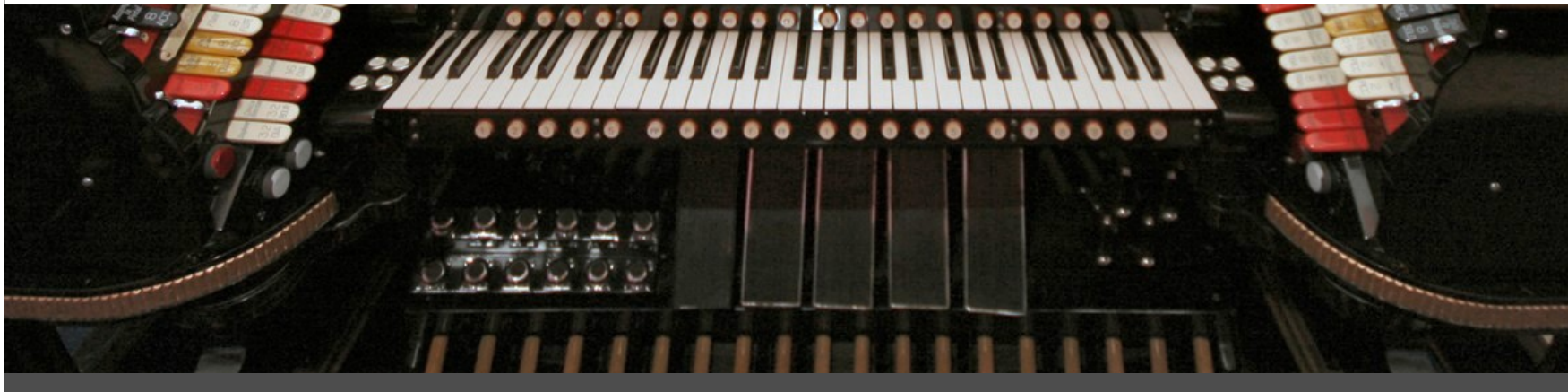


1200 €



*World leader and specialist
in hand-carried ultrasound.*

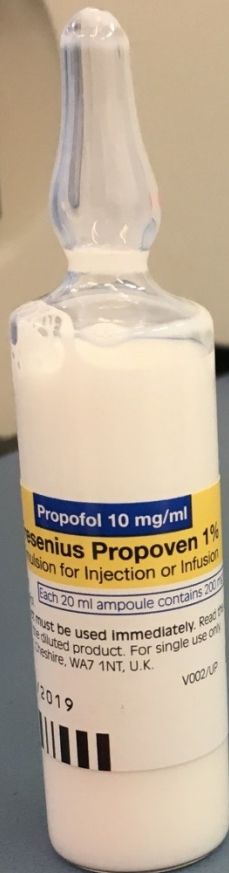
**RA je komplikovaná a
drahá**



Jednoduchá

Lacná

Efektívna





- Napriek modernému vybaveniu nedokážu aplikovať LA na správne miesto!
- Incidencia blokov na nesprávnej strane v UK stúpa ...

NHS

STOP before you block

Notice for anaesthetists and anaesthetic assistants



- A STOP moment must take place immediately before inserting the block needle
- The anaesthetist and anaesthetic assistant must double-check:
 - the surgical site marking
 - the site and side of the block

NHS
National Patient Safety Agency



SAFE ANAESTHESIA LIAISON GROUP



Nottingham University Hospitals **NHS**
NHS Trust

**Celkovu anestéziu nie je možné podať na
nesprávnu stranu !**



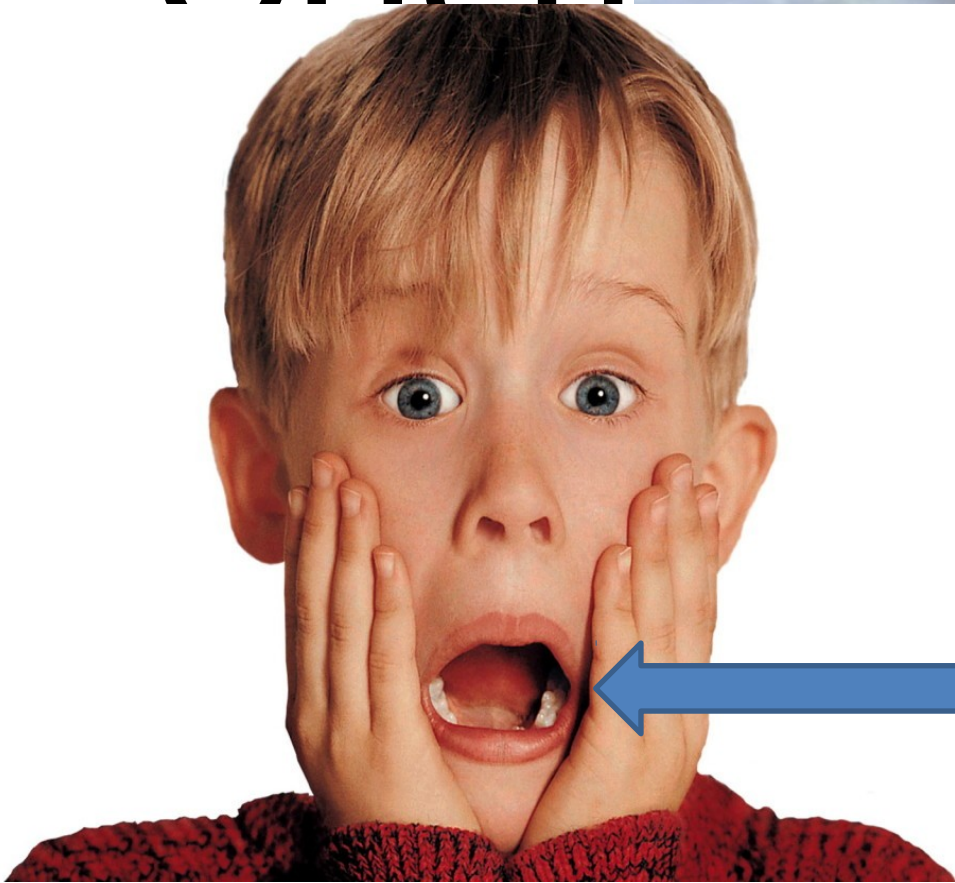
Bezpečnost'

=

Jednoduchost'

**Používejte jednoduché
orietačné body**

Orien



ziu



Orientačné body pre RA





Celková anestézia je efektívna Úspešnosť?

- SA 95-98%
- EA 94-95%
- PNB 92-95%

CA - 100% !!!

S propofolom nikdy nebudete mať škvrnitý blok!

Celková Anestézia

Môže byť podaná:

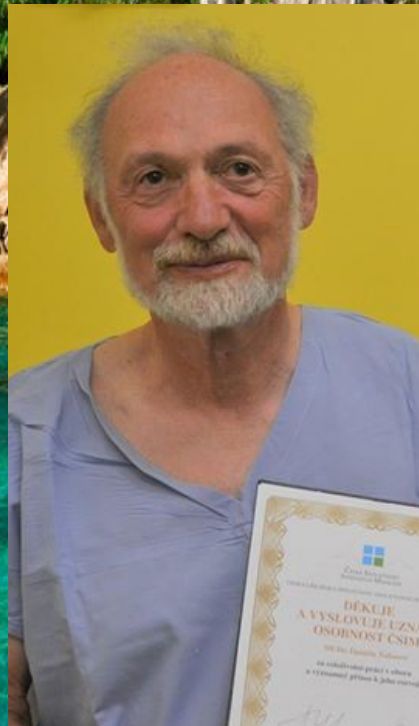
- Pre všetkých pacientov
- Pre všetky operácie
- Môžeme ju použiť u novorodencov
- Môžeme ju použiť u malých detí
- Môžeme ju použiť u dementných geriatrických pacientov
- Môžeme ju použiť u malých dementných detí geriatrických rodičov
- Môžeme ju použiť u

AKÉHOHOKOĽVEK a KTORÉHOKOĽVEK pacienta

Regionálna Anestézia

Ako samostatná technika

- U starších (spolupracujúcich) detí
- U dospelých (primerane kooperujúcich)
- A
- ... to je vlastne všetko
- Inak im musíte dať CELKOVÚ ANESTÉZIU!
- Alebo takú silnú sedáciu, že im v podstate môžete dať CELKOVÚ ANESTÉZIU!



Celková anestézia je bezpečná

- Mortalita v priamej súvislosti s CA vo vyspelých krajinách je približne
- 1:250.000
- A bude naďalej klesať

Regionálna anestézia pridáva riziko

- Svrbenia
- Retencie moča
- Hypotenzie
- Postpunkčných bolestí
- Respiračnej depresie
- Lokálnej/Systémovej infekcie
- Pneumothoraxu
- Poškodenia nervov
- Paraplégie
- Systémovej toxicity LA
- Smrti

International Journal of Endless Optimism 114 (5): 728–45 (2018)

Dalšia drahá randomizovaná prospektívna štúdia u pacientov podstupujúcich chirurgický výkon v celkovej alebo regionálnej anestézii, ktorá preukázala, že regionálna anestézia má negatívny vplyv na závažnú morbiditu a mortalitu. Štúdia naznačuje, že napomáha ku rýchlejšiemu zotaveniu a unikaniu vetrov po operácii ($p < 0.05$).



A. Fruštovaný¹, J. Zahorknutý²

REGIONAL ANAESTHESIA

Does regional anaesthesia really improve outcome?

S. C. Kettner, H. Willschke and P. Marhofer*

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Summary. In recent decades, a number of studies have attempted to determine whether regional anaesthesia offers convincing benefits over general anaesthesia. However, today we interpret meta-analyses more carefully, and it remains unclear whether regional anaesthesia reduces mortality. However, regional anaesthesia offers superior analgesia over opioid-based analgesia, and a significant reduction in postoperative pain is still a worthwhile outcome. Recent developments in technical aspects of regional anaesthesia have the potential to provide significant advantages for many patients in all age groups. Moreover, studies focusing on specific outcomes have shown benefits for regional anaesthesia used for surgery and postoperative analgesia.

Keywords: economy; outcome; regional anaesthesia

Záver

- CA bola, je a bude fundamentálnym pilierom našej každodennej praxe
- CA je jednoduchá
- CA je bezpečná
- CA je efektívna (všetkých pacientov/operácii)
- CA ponúka univerzálne riešenie pre anestéziu
- Žijeme vo svete, kde musíme zvažovať nielen úspešnosť a bezpečnosť ale aj ekonomiku ...
- ... CA predstavuje najlepšie riešenie pre zdravie našich občanov a financie nášho zdravotného systému

Ďakujeme Dr.Jekyll

Privítajme Mr.Hyde



AKUTNE.CZ®

Mr.Hyde

REGIONÁLNA ANESTÉZIA JE PREFEROVANÁ PRED CELKOVOU ANESTÉZIOU

**... V PRÍPADE, ŽE OBIDVE TECHNIKY SÚ
VHODNÉ PRE PACIENTA A DANÝ CHIRURGICKÝ
VÝKON ...**

Argumenty Dr.Jekylla

-
-
-
-



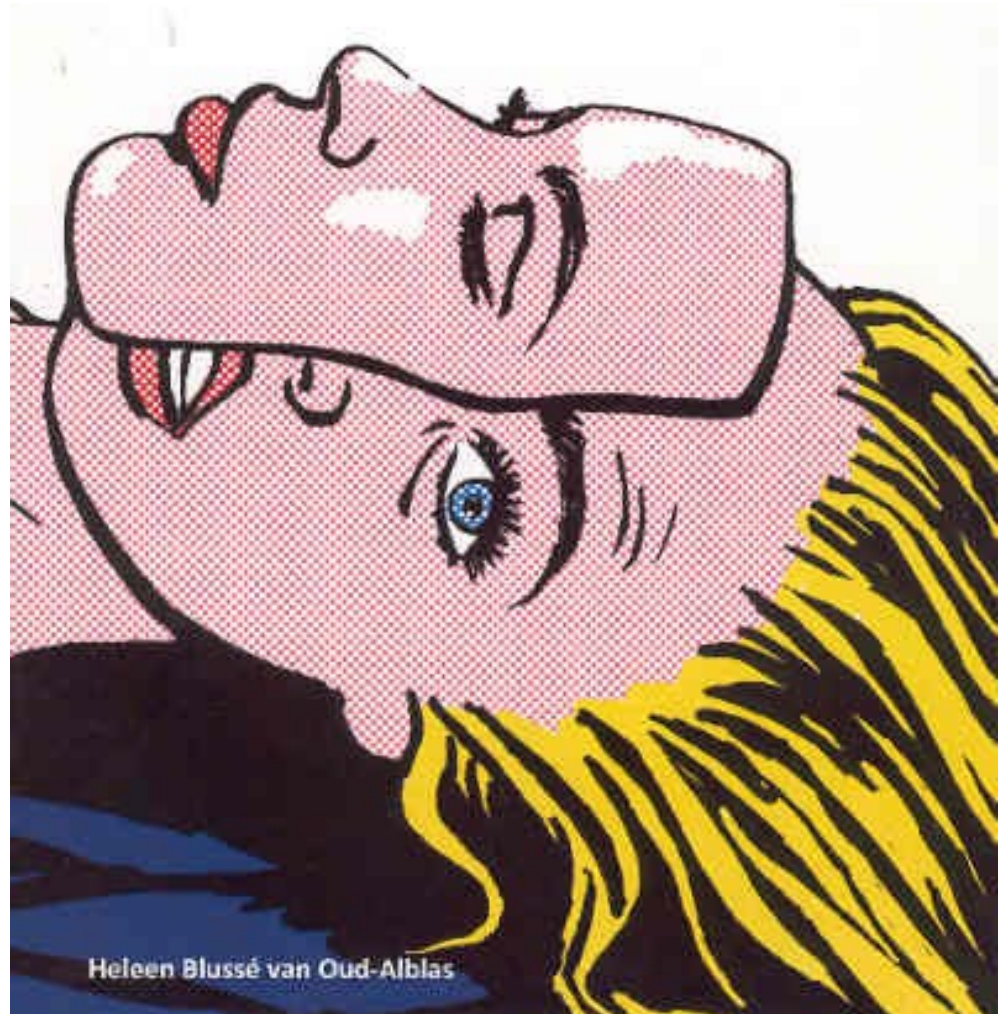
CA je vždy efektívna

NAP5

5th National Audit Project of
The Royal College of Anaesthetists and the
Association of Anaesthetists of Great Britain and Ireland

Accidental Awareness during General Anaesthesia in the United Kingdom and Ireland

- AAGA
1:19.000
- Cisársky rez 1:670
- RA 0 %



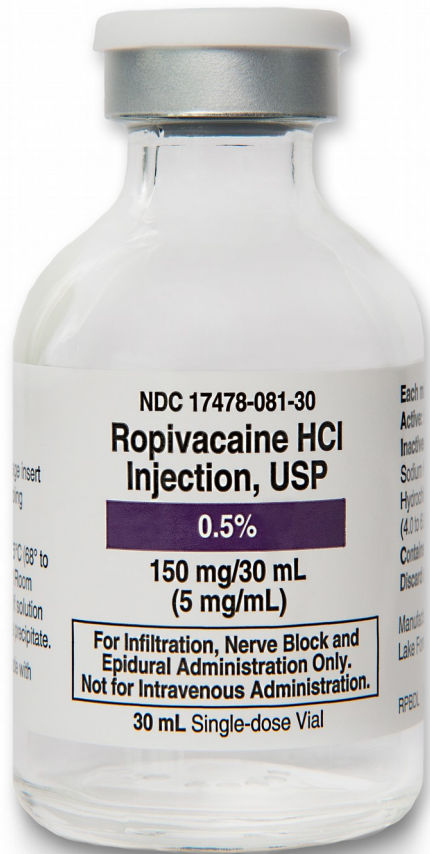
CA je vždy jednoduchá



CA je vždy jednoduchá

- Propofol
- Fentanyl
- Rocuronium
- Sevofluran
- Ondansetron
- Dexametason
- Paracetamol
- NSAIDs
- Morfín
- Metaraminol
- Atropín
- Neostigmín
- Glykopyrolát

Regionálna anestézia







Unanticipated difficult tracheal intubation - during rapid sequence induction of anaesthesia in non-obstetric adult patient

Direct laryngoscopy → Any problems → Call for help

Plan A: Initial tracheal intubation plan

Pre-oxygenate

Cricoid force: 10N awake → 30N anaesthetised

Direct laryngoscopy - check:

- Neck flexion and head extension
- Laryngoscopy technique and vector
- External laryngeal manipulation - by laryngoscopist
- Vocal cords open and immobile

If poor view:

- Reduce cricoid force
- Introducer (bougie) - seek clicks or hold-up and/or Alternative laryngoscope

succeed

Tracheal intubation

Not more than 3 attempts, maintaining:
(1) oxygenation with face mask
(2) cricoid pressure and
(3) anaesthesia

Verify tracheal intubation
(1) Visual, if possible
(2) Capnograph
(3) Oesophageal detector
"If in doubt, take it out"

failed intubation

Plan C: Maintenance of oxygenation, ventilation, postponement of surgery and awakening

Maintain 30N cricoid force

Plan B not appropriate for this scenario

Use face mask, oxygenate and ventilate
1 or 2 person mask technique
(with oral ± nasal airway)
Consider reducing cricoid force if ventilation difficult

succeed

failed oxygenation
(e.g. SpO₂ < 90% with FIO₂ 1.0) via face mask

Postpone surgery and awaken patient if possible or continue anaesthesia with LMA™ or ProSeal LMA™ - if condition immediately life-threatening

LMA™
Reduce cricoid force during insertion
Oxygenate and ventilate

succeed

failed ventilation and oxygenation

Plan D: Rescue techniques for "can't intubate, can't ventilate" situation



Unanticipated difficult tracheal intubation - during rapid sequence induction of anaesthesia in non-obstetric adult patient

Direct laryngoscopy → Any problems → Call for help

Plan A: Initial tracheal intubation plan

Pre-oxygenate
Cricoid force: 10N awake → 30N anaesthetised
Direct laryngoscopy - check:
Neck flexion and head extension
Laryngoscopy technique and vector
External laryngeal manipulation - by laryngoscopist
Vocal cords open and immobile
If poor view:
Reduce cricoid force
Introducer (bougie) - seek clicks or hold-up and/or Alternative laryngoscope

succeed → Tracheal intubation

Not more than 3 attempts, maintaining:
(1) oxygenation with face mask
(2) cricoid pressure and
(3) anaesthesia

Verify tracheal intubation
(1) Visual, if possible
(2) Capnograph
(3) Oesophageal detector
"If in doubt, take it out"

Plan C: Maintenance of oxygenation, ventilation, postponement of surgery and awakening

Use face mask, oxygenate and ventilate 1 or 2 person mask technique (with oral ± nasal airway)
Consider reducing cricoid force if ventilation difficult

failed intubation

failed oxygenation (e.g. SpO₂ < 90% with FiO₂ 1.0) via face mask

LMA™
Reduce cricoid force during insertion
Oxygenate and ventilate

failed ventilation and oxygenation

succeed → Postpone surgery and awaken patient if possible or continue anaesthesia with LMA™ or ProSeal LMA™ if condition immediately life-threatening

Plan B not appropriate for this scenario

Plan D: Rescue techniques for "can't intubate, can't ventilate" situation

Difficult Airway Society Guidelines Flow-chart 2004 (use with DAS guidelines paper)



Unanticipated difficult tracheal intubation - during routine induction of anaesthesia in an adult patient

Direct laryngoscopy → Any problems → Call for help

Plan A: Initial tracheal intubation plan

Direct laryngoscopy - check:
Neck flexion and head extension
Laryngoscopy technique and vector
External laryngeal manipulation - by laryngoscopist
Vocal cords open and immobile
If poor view: Introducer (bougie) - seek clicks or hold-up and/or Alternative laryngoscope

Not more than 4 attempts, maintaining:
(1) oxygenation with face mask and
(2) anaesthesia

succeed → Tracheal intubation

Verify tracheal intubation
(1) Visual, if possible
(2) Capnograph
(3) Oesophageal detector
"If in doubt, take it out"

failed intubation

Plan B: Secondary tracheal intubation plan

ILMA™ or LMA™
Not more than 2 insertions
Oxygenate and ventilate

failed oxygenation (e.g. SpO₂ < 90% with FiO₂ 1.0) via ILMA™ or LMA™

Confirm: ventilation, oxygenation, anaesthesia, CVS stability and muscle relaxation - then fiberoptic tracheal intubation through IMLA™ or LMA™ - 1 attempt
If LMA™, consider long flexometallic, nasal RAE or microlaryngeal tube
Verify intubation and proceed with surgery

failed intubation via ILMA™ or LMA™

Plan C: Maintenance of oxygenation, ventilation, postponement of surgery and awakening

Revert to face mask
Oxygenate and ventilate
Reverse non-depolarising relaxant
1 or 2 person mask technique (with oral ± nasal airway)

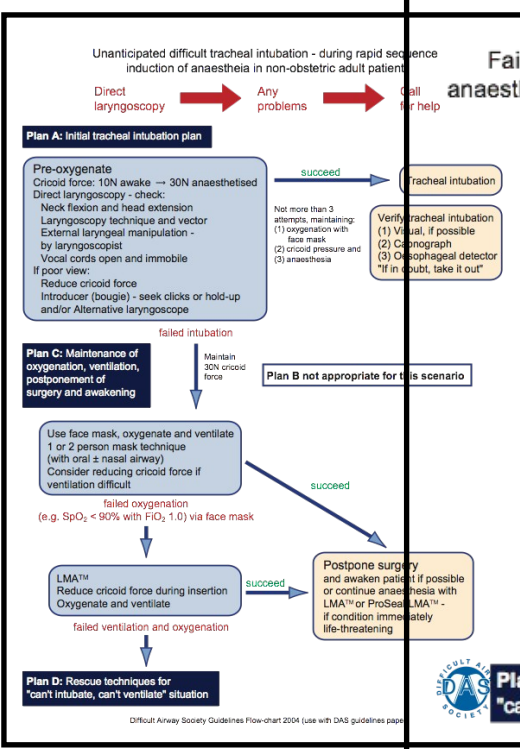
failed ventilation and oxygenation

succeed → Postpone surgery
Awaken patient

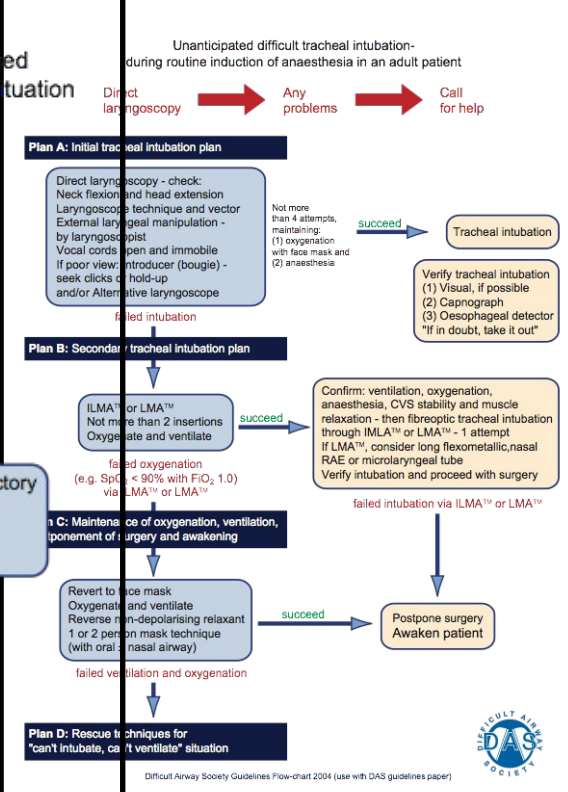
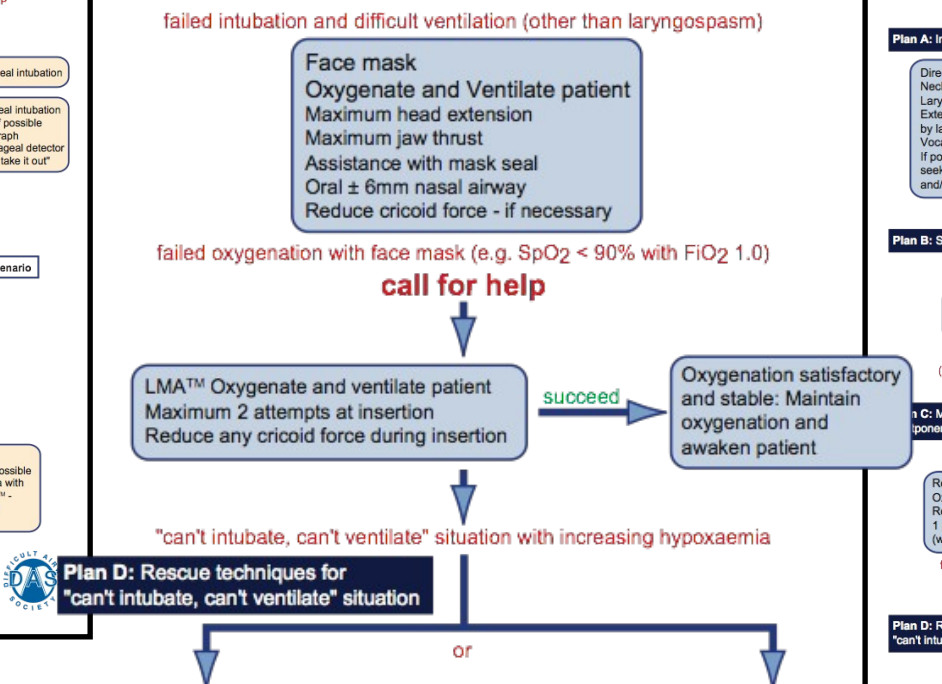
Plan D: Rescue techniques for "can't intubate, can't ventilate" situation

Difficult Airway Society Guidelines Flow-chart 2004 (use with DAS guidelines paper)





Failed intubation, increasing hypoxaemia and difficult ventilation in the paralysed anaesthetised patient: Rescue techniques for the "can't intubate, can't ventilate" situation



Master algorithm – obstetric general anaesthesia and failed tracheal intubation

Algorithm 1 Safe obstetric general anaesthesia

Pre-induction planning and preparation
Team discussion

Rapid sequence induction
Consider facemask ventilation ($P_{max} 20 \text{ cmH}_2\text{O}$)

Laryngoscopy
(maximum 2 intubation attempts; 3rd intubation attempt only by experienced colleague)

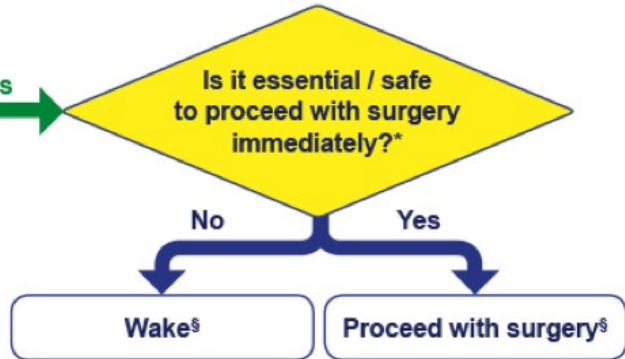
Verify **successful** tracheal intubation and proceed
Plan extubation

Algorithm 2 Obstetric failed tracheal intubation

Declare failed intubation
Call for help
Maintain oxygenation
Supraglottic airway device (maximum 2 attempts) or facemask

Algorithm 3 Can't intubate, can't oxygenate

Declare CICO
Give 100% oxygen
Exclude laryngospasm – ensure neuromuscular blockade
Front-of-neck access



*See Table 1, §See Table 2

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Algorithm 1– safe obstetric general anaesthesia

Pre-theatre preparation

Airway assessment
Fasting status
Antacid prophylaxis
Intrauterine fetal resuscitation if appropriate

Plan with team

WHO safety checklist / general anaesthetic checklist
Identify senior help, alert if appropriate
Plan equipment for difficult / failed intubation
Plan for / discuss: wake up or proceed with surgery (Table 1)

Rapid sequence induction

Check airway equipment, suction, intravenous access
Optimise position – head up / ramping + left uterine displacement
Pre-oxygenate to $F_{ET}O_2 \geq 0.9$ / consider nasal oxygenation
Cricoid pressure (10 N increasing to 30 N maximum)
Deliver appropriate induction / neuromuscular blocker doses
Consider facemask ventilation ($P_{max} 20 \text{ cmH}_2\text{O}$)

1st intubation attempt

If poor view of larynx optimise attempt by:

- reducing / removing cricoid pressure
- external laryngeal manipulation
- repositioning head / neck
- using bougie / stylet

Fail

Ventilate with facemask
Communicate with assistant

Success

Verify successful tracheal intubation

Proceed with anaesthesia and surgery
Plan extubation

2nd intubation attempt

Consider:

- alternative laryngoscope
- removing cricoid pressure

3rd Intubation attempt only by experienced colleague

Fail

Follow Algorithm 2 – obstetric failed tracheal intubation



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Notes
1. The
2. Consider to definitive airway as soon as possible
3. Postoperative management - see other difficult airway guidelines and flowcharts
4. Firm cannula with low pressure ventilation may be successful, in patient breathing spontaneously



Algorithm 2 – obstetric failed tracheal intubation

Plan A: Initial

- Pre-oxygenate
- Cricoid fontanelle
- Direct laryngoscopy
- Neck flexion
- Laryngoscopy
- External laryngoscopy
- Vocal cord
- If poor view
- Reduce cricoid pressure
- Introduce laryngoscope and/or APL

Plan C: Maintain oxygenation postoperative surgery and

- Use facemask 1 or 2 person (with cricoid)
- Consider ventilation
- (e.g. SpO2)

Plan D: Resuscitation can't intubate

- LMA
- Reduce cricoid pressure
- Oxygenate

Plan D: Resuscitation can't intubate

Failed in anaesthesia

Plan D: Resuscitation can't intubate

Cannula cricoid

Equipment: Kit

1. Insert cricoid

2. Maintain position

3. Confirm tracheal position

4. Attach ventilation

5. Commence ventilation

6. Confirm ventilation through scope

7. If ventilation other complications to surgical

Notes:

- These techniques can have serious complications - use only in life-threatening situations
- Convert to definitive airway as soon as possible
- Postoperative management - see other difficult airway guidelines and flowcharts
- Insert cricoid with low pressure ventilation may be successful in patient breathing spontaneously

Difficult Airway Society guidelines Flow-chart 2004 (use with DAS guidelines paper)



Declare failed intubation
Theatre team to call for help
Priority is to maintain oxygenation

Supraglottic airway device
 (2nd generation preferable)
 Remove cricoid pressure during insertion
 (maximum 2 attempts)

Facemask +/- oropharyngeal airway
 Consider:

- 2-person facemask technique
- Reducing / removing cricoid pressure



Is adequate oxygenation possible?

No

Yes

Follow Algorithm 3
Can't intubate, can't oxygenate

Is it essential / safe to proceed with surgery immediately?*

No

Yes

Wake[§]

Proceed with surgery[§]

*See Table 1, §See Table 2

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*See Table 1, §See Table 2
 © Obstetric Anaesthetists' Association / Difficult Airway Society (2015)



Algorithm 3 – can't intubate, can't oxygenate

Declare emergency to theatre team
 Call additional specialist help (ENT surgeon, intensivist)
 Give 100% oxygen
 Exclude laryngospasm – ensure neuromuscular blockade

Perform front-of-neck procedure

Is oxygenation restored?

Maternal advanced life support
Perimortem caesarean section

Is it essential / safe to proceed with surgery immediately?*

Wake[§]

Proceed with surgery[§]

*See Table 1, §See Table 2

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Plan A: Initial trach

Pre-oxygenate
 Cricoid force: 10N
 Direct laryngoscopy
 Neck flexion and
 Laryngoscopy by
 External laryngoscopy
 by laryngoscopy
 Vocal cords open
 If poor view:
 Reduce cricoid
 Introducer (bougie
 and/or Alternative

Plan C: Maintenance of oxygenation, ventilation, positioning of surgery and awake

Use face mask
 1 or 2 person
 (with oral + nasal)
 Consider reduced
 ventilation difficult

LMA™
 Reduce cricoid
 Oxygenate as

Plan D: Rescue for "can't intubate, can't oxygenate"

Failed intubation anaesthetised patient

Failed

LMA™
Maximally
Reduce

Plan D: Rescue for "can't intubate, can't oxygenate"

Cannula cricothyrotomy
 Equipment: Kink-resistant
 Puff (Cook) or Ravioli
 High-pressure ventilator
 Technique:
 1. Insert cannula through
 2. Maintain position of
 3. Confirm tracheal position
 4. Attach ventilation system
 5. Commence ventilation
 6. Confirm ventilation of
 through upper airway
 7. If ventilation fails, or if
 other complication develops
 do surgical cricothyrotomy



Notes:
 1. These techniques can have serious complications - use only in life-threatening situations
 2. Convert to definitive airway as soon as possible
 3. Postoperative management - see other difficult airway guidelines and flowcharts
 4. Firm cannula with low-pressure ventilation may be successful in patient breathing spontaneously



intubation

intubation possible
al detector
e it out"

single intubation
pt
c,nasal
surgery

or LMA™



on

ery[§]



Difficult mask ventilation (MV) – during routine induction of anaesthesia in a child aged 1 to 8 years



Difficult MV



Give 100% oxygen



Call for help

Step A Optimise head position

Consider:

- Adjusting chin lift/jaw thrust
- Inserting shoulder roll if <2 years
- Neutral head position if >2 years
- Adjusting cricoid pressure if used
- Ventilating using two person bag mask technique

Check equipment

Consider changing:

- Circuit
 - Mask
 - Connectors
- If equipment failure is suspected, change to self-inflating bag and isolate from anaesthetic machine promptly

Depth of anaesthesia

- Consider deepening anaesthesia
- Use CPAP

Step B Insert oropharyngeal airway

Assess for cause of difficult mask ventilation

- Light anaesthesia
- Laryngospasm
- Gastric distension – pass OG/NG tube

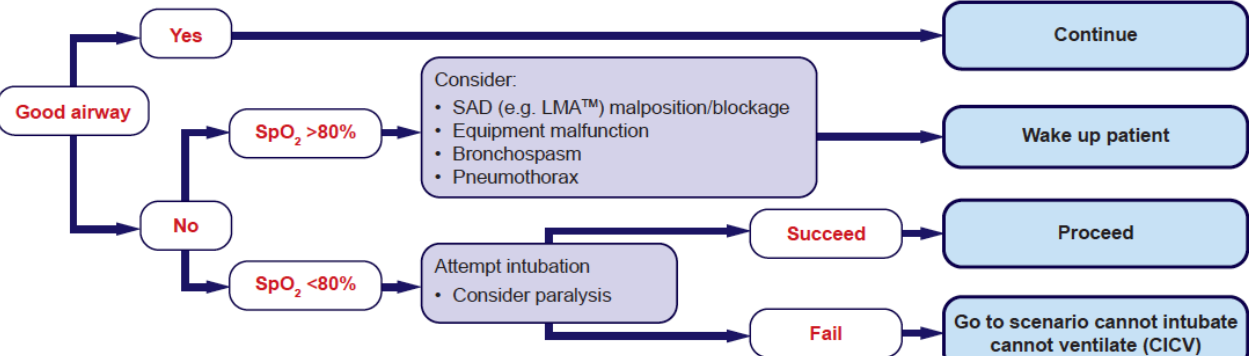
Call for help again if not arrived

Maintain anaesthesia/CPAP

- Deepen anaesthesia (Propofol first line)
- If relaxant given – intubate
- If intubation not successful, go to unanticipated difficult tracheal intubation algorithm

Step C Second-line: Insert SAD (e.g. LMA™)

- Insert SAD (e.g. LMA™) – not > 3 attempts
- Consider nasopharyngeal airway
- Release cricoid pressure



SAD = supraglottic airway device

Notes:
1. This flowchart is a summary of the current guidelines.
2. Convert to definitive airway as soon as possible.
3. Postoperative management – see other difficult airway guidelines and flowcharts.
4. Firm cricoid with low pressure ventilation may be successful in patient breathing spontaneously.





Unanticipated difficult tracheal intubation – during routine induction of anaesthesia in a child aged 1 to 8 years



Difficult direct laryngoscopy



Give 100% oxygen and maintain anaesthesia



Call for help

Step A Initial tracheal intubation plan when mask ventilation is satisfactory

Ensure: Oxygenation, anaesthesia, CPAP, management of gastric distension with OG/NG tube

Direct laryngoscopy – not > 4 attempts

Check:

- Neck flexion and head extension
- Laryngoscopy technique
- External laryngeal manipulation – remove or adjust
- Vocal cords open and immobile (adequate paralysis)

If poor view – consider bougie, straight blade laryngoscope* and/or smaller ETT

Succeed

Tracheal intubation

- Verify ETT position
- Capnography
 - Visual if possible
 - Auscultation

If ETT too small consider using throat pack and tie to ETT

If in doubt, take ETT out

Failed intubation with good oxygenation

Step B Secondary tracheal intubation plan

Call for help again if not arrived

Insert SAD (e.g. LMA™) – not > 3 attempts

- Oxygenate and ventilate
- Consider increasing size of SAD (e.g. LMA™) once if ventilation inadequate

Succeed

- Consider modifying anaesthesia and surgery plan
- Assess safety of proceeding with surgery using a SAD (e.g. LMA™)

Unsafe

Safe

Postpone surgery
Wake up patient

Proceed with surgery

Safe

- Consider 1 attempt at FOI via SAD (e.g. LMA™)
- Verify intubation, leave SAD (e.g. LMA™) in place and proceed with surgery

Succeed

Failed intubation via SAD (e.g. LMA™)

Postpone surgery
Wake up patient

Go to scenario cannot intubate cannot ventilate (CICV)

Failed oxygenation e.g. SpO₂ <90% with FiO₂ 1.0

- Convert to face mask
- Optimise head position
- Oxygenate and ventilate
- Ventilate using two person bag mask technique, CPAP and oro/nasopharyngeal airway
- Manage gastric distension with OG/NG tube
- Reverse non-depolarising relaxant

Succeed

Failed ventilation and oxygenation

Following intubation attempts, consider • Trauma to the airway • Extubation in a controlled setting

*Consider using indirect laryngoscope if experienced in their use

SAD = supraglottic airway device

Notes:

1. These techniques can have serious complications - use only in life-threatening situations
2. Convert to definitive airway as soon as possible
3. Postoperative management - see other difficult airway guidelines and flowcharts
4. Firm cupula with low pressure ventilation may be successful in patient breathing spontaneously





Cannot intubate and cannot ventilate (CICV) in a paralysed anaesthetised child aged 1 to 8 years



**Failed intubation
inadequate ventilation**



Give 100% oxygen



Call for help

Step A Continue to attempt oxygenation and ventilation

- FiO₂ 1.0
- Optimise head position and chin lift/jaw thrust
- Insert oropharyngeal airway or SAD (e.g. LMA™)
- Ventilate using two person bag mask technique
- Manage gastric distension with an OG/NG tube

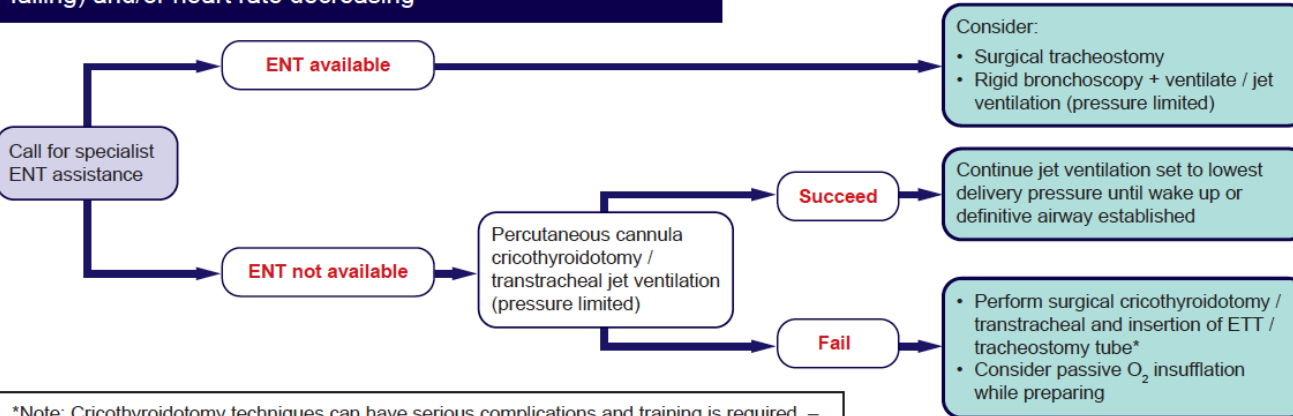
Step B Attempt wake up if maintaining SpO₂ >80%

If rocuronium or vecuronium used, consider suggamadex (16mg/kg) for full reversal

Prepare for rescue techniques in case child deteriorates

Step C Airway rescue techniques for CICV (SpO₂ <80% and falling) and/or heart rate decreasing

Call for help again if not arrived



Cannula cricothyroidotomy

- Extend the neck (shoulder roll)
- Stabilise larynx with non-dominant hand
- Access the cricothyroidotomy membrane with a dedicated 14/16 gauge cannula
- Aim in a caudad direction
- Confirm position by air aspiration using a syringe with saline
- Connect to either:
 - adjustable pressure limiting device, set to lowest delivery pressure
- or
- 4Bar O₂ source with a flowmeter (match flow l/min to child's age) and Y connector
- Cautiously increase inflation pressure/flow rate to achieve adequate chest expansion. Wait for full expiration before next inflation
- Maintain upper airway patency to aid expiration

SAD = supraglottic airway device

*Note: Cricothyroidotomy techniques can have serious complications and training is required – only use in life-threatening situations and convert to a definitive airway as soon as possible

Plan A
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Notes

1. These
2. Conve
3. Postoperative management: Set on cricothyroidotomy and tolerate
4. Firm cannula with low pressure ventilation may be successful in patient breathing spontaneously



DAS Extubation Guidelines: Basic algorithm

Step 1
Plan extubation

Plan
Assess airway and general risk factors

Airway risk factors
Known difficult airway
Airway deterioration (trauma, oedema or bleeding)
Restricted airway access
Obesity / OSA
Aspiration risk

General risk factors
Cardiovascular
Respiratory
Neurological
Metabolic
Special surgical requirements
Special medical conditions

Step 2
Prepare for extubation

Prepare
Optimise patient and other factors

Optimise patient factors
Cardiovascular
Respiratory
Metabolic / temperature
Neuromuscular

Optimise other factors
Location
Skilled help / assistance
Monitoring
Equipment

Risk Stratify

Low risk
Fasted
Uncomplicated airway
No general risk factors

'At risk'
Ability to oxygenate uncertain
Reintubation potentially difficult
and/or general risk factors present

Step 3
Perform extubation

Low risk algorithm

'At risk' algorithm

Step 4
Postextubation care

Recovery or HDU / ICU

Safe transfer
Handover / communication
O₂ and airway management
Observation and monitoring
General medical and surgical management

Analgesia
Staffing
Equipment
Documentation



DAS Extubation Guidelines: Low risk algorithm

Step 1
Plan extubation

Plan
Assess airway and general risk factors

Low risk extubation
Fasted
Uncomplicated airway
No General risk factors

Step 2
Prepare for extubation

Prepare
Optimise patient and other factors

Optimise patient factors
Cardiovascular
Respiratory
Metabolic / temperature
Neuromuscular

Optimise other factors
Location
Skilled help / assistance
Monitoring
Equipment

Select deep or awake extubation

Step 3
Perform extubation

Deep Extubation

Awake Extubation

Perform Awake Extubation
Preoxygenate with 100% oxygen
Suction as appropriate
Insert a bite block (e.g. rolled gauze)
Position the patient appropriately
Antagonise neuromuscular blockade
Establish regular breathing
Ensure adequate spontaneous ventilation
Minimise head and neck movements
Wait until awake (eye opening/obeying commands)
Apply positive pressure, deflate the cuff & remove tube
Provide 100% oxygen
Check airway patency and adequacy of breathing
Continue oxygen supplementation

Advanced technique
Experience essential
Vigilance until fully awake

Step 4
Postextubation care

Recovery and follow up

Safe transfer
Handover / communication
O₂ and airway management
Observation and monitoring
General medical and surgical management

Analgesia
Staffing
Equipment
Documentation

The technique described for awake extubation is a suggested approach.
Practice may vary in experienced hands.

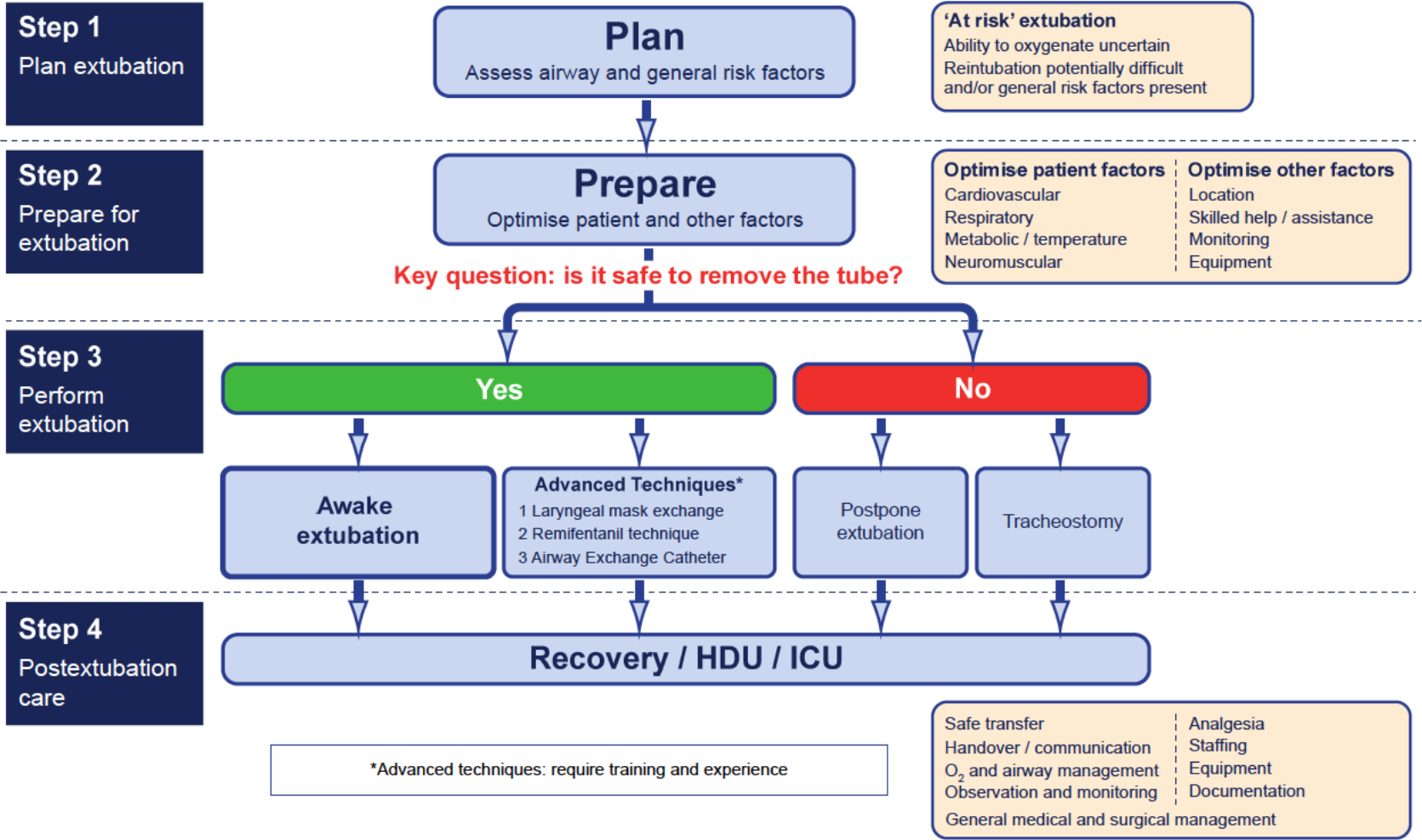


Difficult Airway Society Extubation Algorithm 2011

Notes:
1. These techniques can have serious complications - use only in life-threatening situations
2. Convert to definitive airway as soon as possible
3. Postoperative management - see other difficult airway guidelines and flowcharts
4. Firm cannula with low-pressure ventilation may be successful in patient breathing spontaneously



DAS Extubation Guidelines: 'At risk' algorithm



Difficult Airway Society Extubation Algorithm 2011

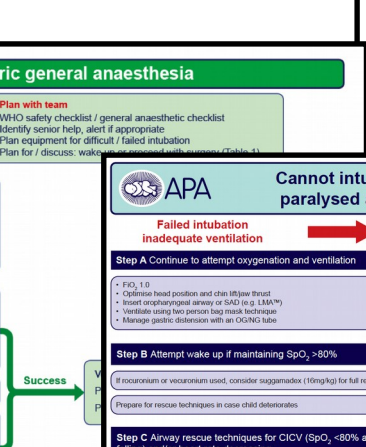
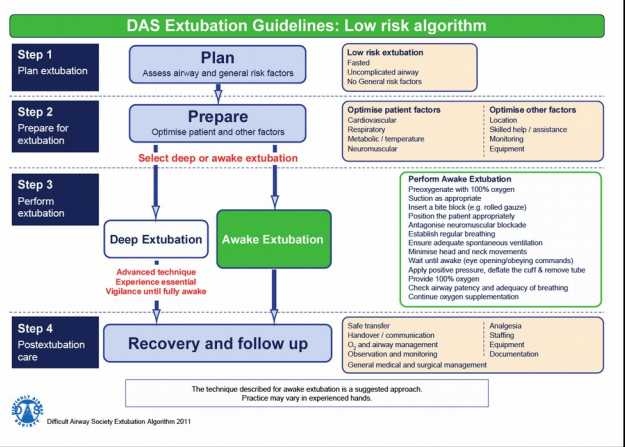


Unanticipated difficult tracheal intubation during routine induction of anaesthesia in non-obese patient

Direct laryngoscopy → Any problems → Call for help

Plan A: Initial tracheal intubation plan

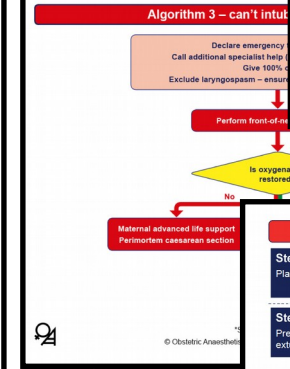
Pre-oxygenate
Cricoid force: 10N awake → 30N anaesthetised
Direct laryngoscopy - check:
Neck flexion and head extension
Laryngoscopy technique and vector
External laryngeal manipulation - by laryngoscopist
Vocal cords open and immobile if poor view.
Reduce cricoid force
Introducer (bougie) - seek clicks or hold-up and/or Alternative laryngoscopy



Unanticipated difficult tracheal intubation during routine induction of anaesthesia in an adult patient

Direct laryngoscopy → Any problems → Call for help

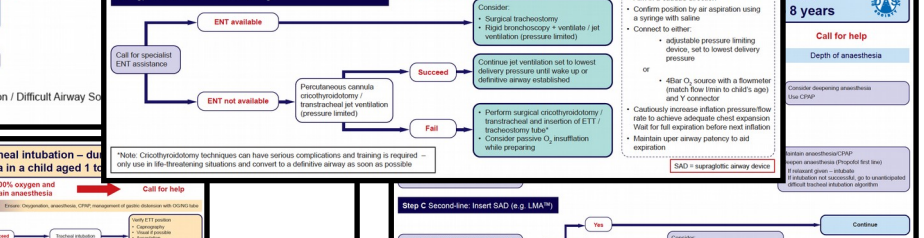
Plan A: Initial tracheal intubation plan



The technique described for awake extubation is a suggested approach. Practice may vary in experienced hands.

Difficult Airway Society Extubation Algorithm 2011

removing cricoid pressure
3rd Intubation attempt only by experienced colleague
Follow Algorithm 2 - obstetric failed tracheal intubation

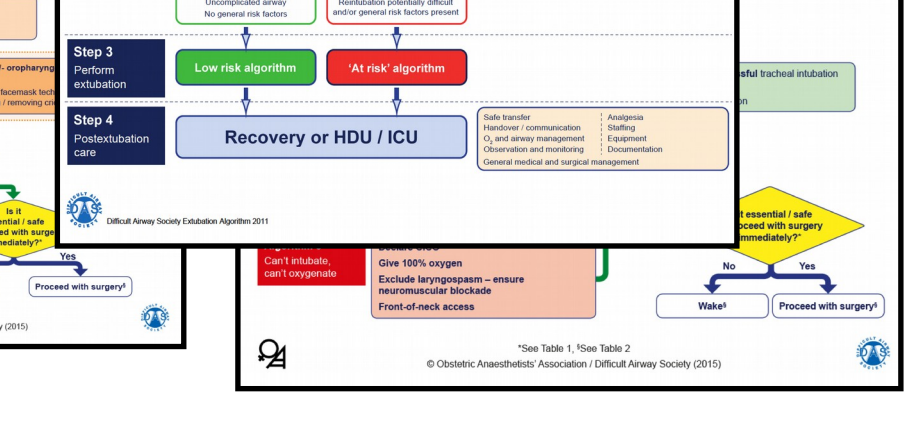
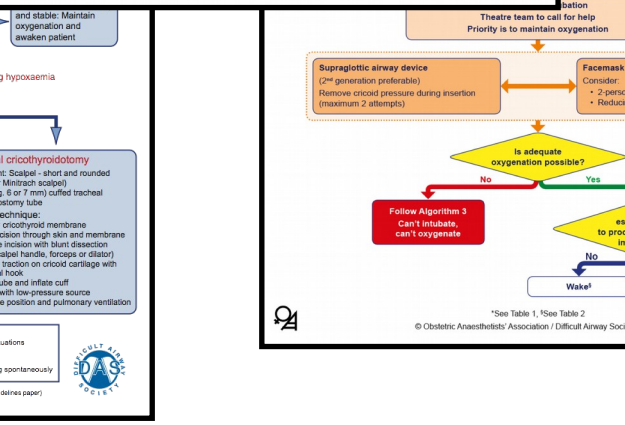
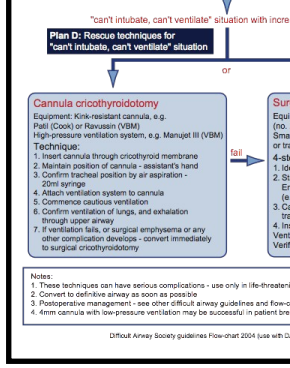
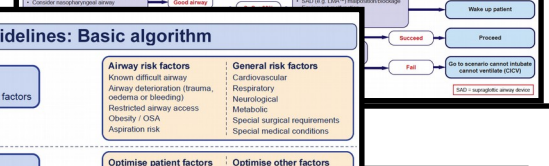
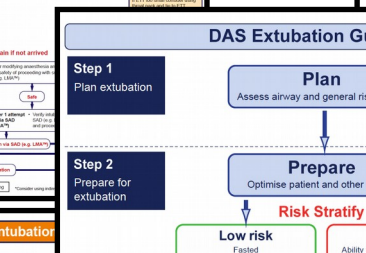
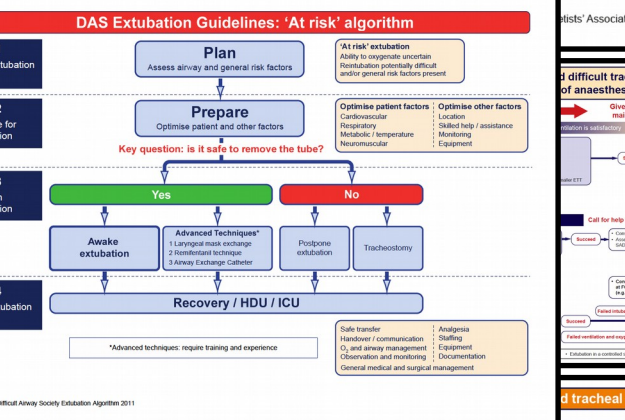


Failed intubation, increasing hypoxaemia in anaesthetised patient. Rescue techniques for failed intubation and difficult ventilation

Face mask
Oxygenate and Ventilate
Maximum head extension
Maximum jaw thrust
Assistance with mask
O₂ & 5mm nasal air
Reduce cricoid force

failed oxygenation with face mask → call for help

LMA™ Oxygenate and ventilate patient
Maximum 2 attempts at insertion
Reduce any cricoid force during insertion





Plan A

Plan B

Plan C

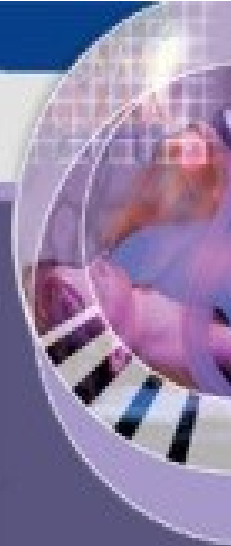
Plan D

Plan E



Lacná?

Flexible Intubation Video Endoscope F.I.V.E.

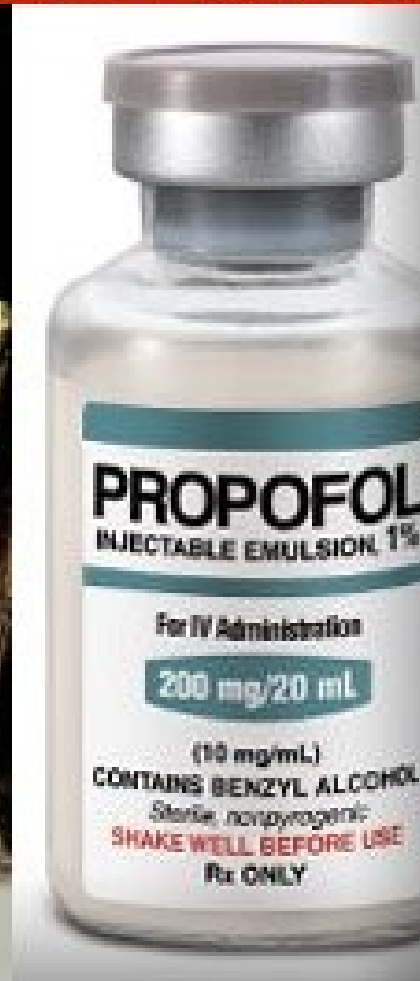




- Jednoduché
- Efektívne
- Lacné

Celková anestézia je vždy bezpečná

EXCLUSIVE DETAILS



Getty

Riziká?

Anaesthesia explained



People vary in how they interpret words and numbers.
This scale is provided to help.



Very common

Common

Uncommon

Rare

Very rare

1 in 10
Someone in
your family

1 in 100
Someone in
a street

1 in 1,000
Someone in
a village

1 in 10,000
Someone in
a small town

1 in 100,000
Someone in
a large town



Veľmi časté a časté riziká

- Nauzea & Zvracanie CA RA
- Bolesti hrdla CA
- Závraty a slabosť CA RA
- Triaška CA RA
- Bolesti hlavy CA RA
- Pľúcne infekcie CA
- Svrbenie CA RA
- Bolesti chrbta CA RA
- Bolesť pri injekcii CA
- Modrina CA RA
- Zmätenosť CA
- Strata pamäte CA
- Problém s močením CA RA

Zriedkavé & veľmi vzácne riziká

Zriedkavé

- Dýchacie obtiaže CA
- Poškodenie zubov CA
- Poranenie pier CA
- Poranenie jazyka CA
- Bdenie CA
- Poškodenie rohovky CA
- Nervové poškodenie CA RA
- Zhoršenie preexistujúcich komorbidít CA RA

Veľmi vzácne

- Závažná alergia CA RA
- Poškodenie spinálnych nervov CA RA
- Zlyhanie techniky CA RA
- Smrť CA RA

CA je použitelná u všech pacientov



Je třeba rozlišovat

“použitelná pro všechny”

a

“vhodná pro všechny”

Key points

- Regional anaesthesia (RA) reduces acute pain, chronic pain after some surgical procedures, postoperative nausea and vomiting, and pulmonary complications.
- RA can reduce length of stay and improve operating department throughput.
- Although RA confers short-term functional benefits, these are generally not sustained.
- Combined general anaesthesia and epidural analgesia may increase the incidence of adverse cardiac events.
- Some studies have shown RA to be associated with a reduction in cancer recurrence, blood-transfusion requirements, surgical site infections, ICU admission, and mortality; however, these associations must be treated cautiously.

Regiona

M. Hutton¹

¹Department of
Hospital, Toront

*Corresponding autho

omen's College

Chladná logika - tvrdé fakty

- Celková anestézia je preferovaná pre niektorých pacientov
- Regionálna anestézia je preferovaná pre niektorých pacientov
- Pre väčšinu pacientov a väčšinu operačných výkonov tu máme možnosť voľby



Záver

- Všetci regionálni anaesteziológovia su zruční aj v celkovej anestézii
- Celkoví anesteziológovia sú zruční len v celkovej anestézii
- Ktorého anesteziológa by ste VY chceli aby sa o Vás staral?

Záver

- Je to o tom, mať v rukáve spektrum rôznych zručností
- To znamená, že v praxi môžete prispôbiť anesteziologickú techniku pre potreby pacienta



Regionálni anesteziológovia
sú preferovaní pred
celkovými anesteziológmi

Ďakujeme
Mr. Hyde!

