DIREKTE LARYNGOSKOPI VERSUS VIDEOLARYNGOSKOPI

OG EN LILLE SMULE MERE

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Anæstesilæge

Afdeling for Bedøvelse, Operation og Opvågning

TraumeCenter og Akutmodtagelse

HovedOrtoCentret

Rigshospitalet

INDHOLD

Baggrund

Gennemgang af guidelines for forventet og uventet vanskelig intubation

Overvejelser omkring

- Direkte laryngoskopi versus videolaryngoskopi

The Royal College of Anaesthetists

The Difficult Airway Society

NAP4

4th National Audit Project of
The Royal College of Anaesthetists and The Difficult Airway Society

Major complications of airway management in the United Kingdom

Report and findings
March 2011

Editors
Dr Tim Cook, Dr Nick Woodall and Dr Chris Frerk

http://w

The National Patient Safety Agency
Patient Safety Division

The Intensive Care Society

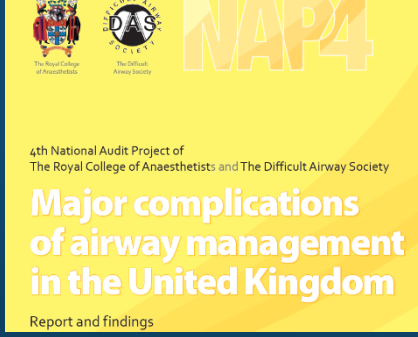
The College of Emergency Medicine

133 reports,
16 deaths,
3 brain damage
– minimum figures could be 4 times as high

Airway management was good in 19% of cases

Poor care in ¾ of cases

http://www.rcoa.ac.uk/nap4



Poor airway assessment and poor planning contributed to poor airway outcomes.

Numerous cases where awake fibreoptic intubation (AFOI) was indicated but was not used.

Problems arose when difficult intubation was managed by multiple repeat attempts at intubation

Supraglottic airway devices were used inappropriately.

SADs were used to avoid tracheal intubation in some patients with a recognised difficult intubation.

Failure to plan for failure.

Failure to correctly interpret a capnograph trace led to several oesophageal intubations going unrecognised in anaesthesia.

Aspiration was the single commonest cause of death in anaesthesia events.

http://www.rcoa.ac.uk/nap4

The proportion of obese patients in case reports submitted to NAP4 was twice that in the general population

One third of events occurred during emergence or recovery and obstruction was the common cause in these events

At least one in four major airway events reported to NAP4 was from ICU or the emergency department.

Anaesthesia for head and neck surgery featured frequently in cases reported to NAP4.

Management of the obstructed airway requires particular skill and co-operation between anaesthetist and surgeon

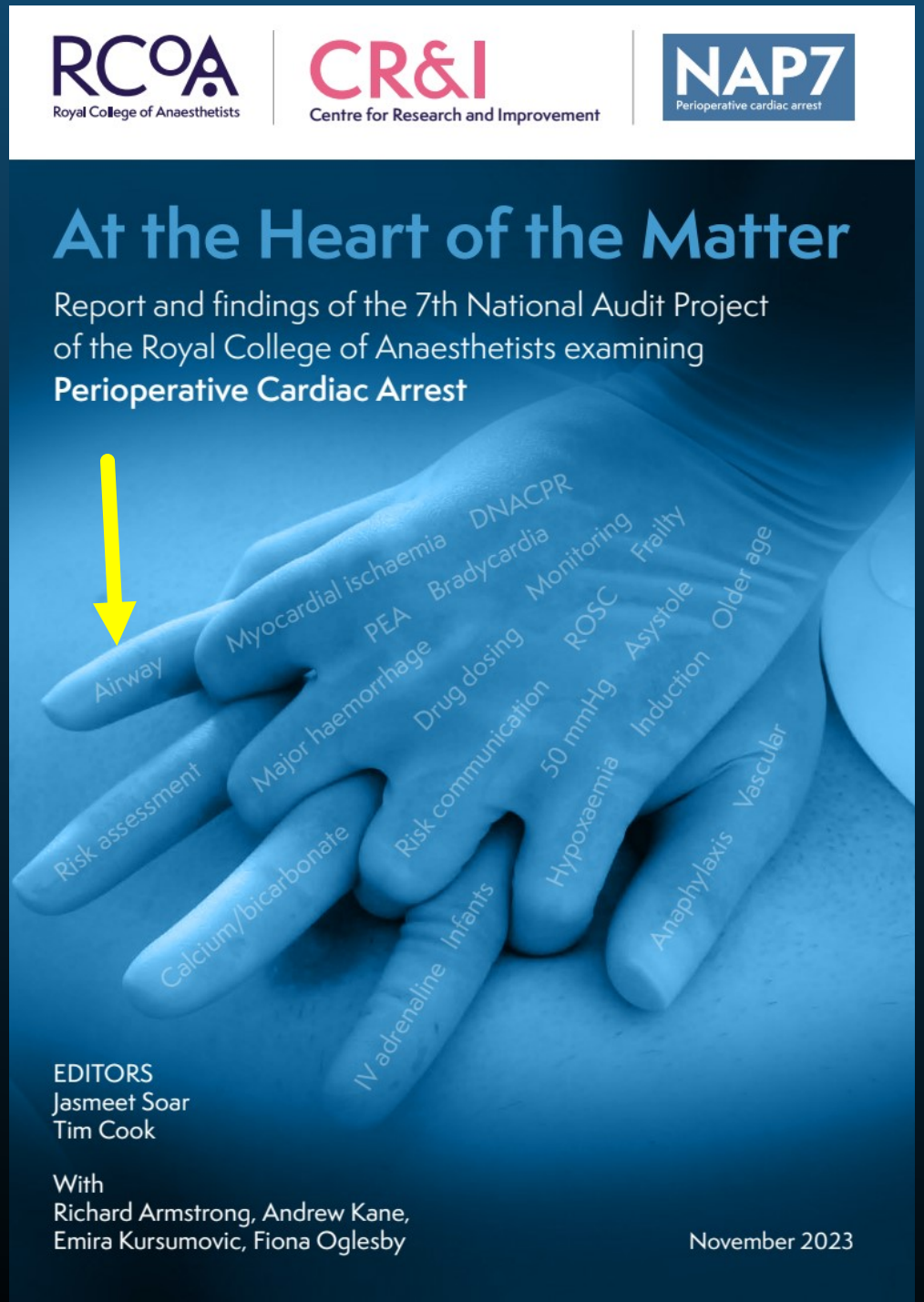
http://www.rcoa.ac.uk/nap4

CHAPTER 2

Evidence-based medicine and airway management: are they incompatible?

- success of any technique is very much based on user experience and preference.[22]

- when events do occur they do so most frequently in patients who are already anaesthetised and therefore unable to consent to take part in research
- if events occur or are predicted in those who are not anaesthetised, the clinical setting means the patient is often not in a position to give informed consent
- clinicians who attend these emergencies need to act swiftly and decisively to minimise harm and likely have little or no time to consider the possibility of performing research
- success of any technique is very much based on user experience and preference.[22]


RCoA
Royal College of Anaesthetists
CR&I
Centre for Research and Improvement
NAP7
Perioperative cardiac arrest
At the Heart of the Matter
Report and findings of the 7th National Audit Project of the Royal College of Anaesthetists examining
Perioperative Cardiac Arrest
Airway
Myocardial ischaemia
DNACPR
PEA
Bradycardia
Monitoring
Frailty
Major haemorrhage
Drug dosing
ROSC
Asystole
Older age
Risk assessment
Risk communication
50 mmHg
Induction
Hypoxaemia
Vascular
Calcium/bicarbonate
Infants
IV adrenaline
Anaphylaxis
EDITORS
Jasmeet Soar
Tim Cook
With
Richard Armstrong, Andrew Kane,
Emira Kursumovic, Fiona Oglesby
November 2023

prominent

NAP 7

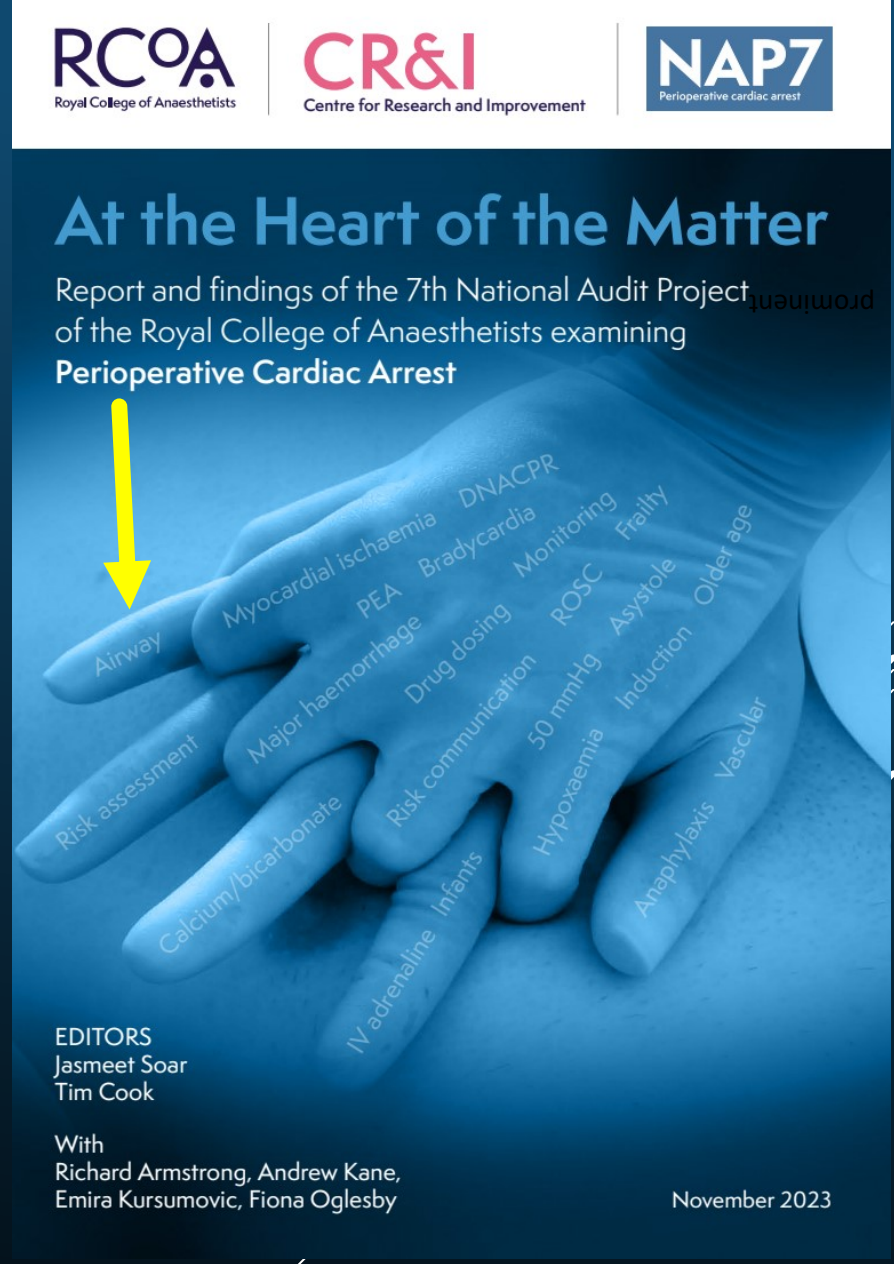
Airway management accounted for 1 in 7 cases and 9.2% deaths

High risk patient groups were

- infants and critically ill children
- the obese
- patients undergoing head and neck surgery
- those cared for out of hours

airway complications were the second most frequent complication (incidence 1.7%, 22% of all complications)

- with laryngospasm (38%) and
- airway failure (30%) prominent



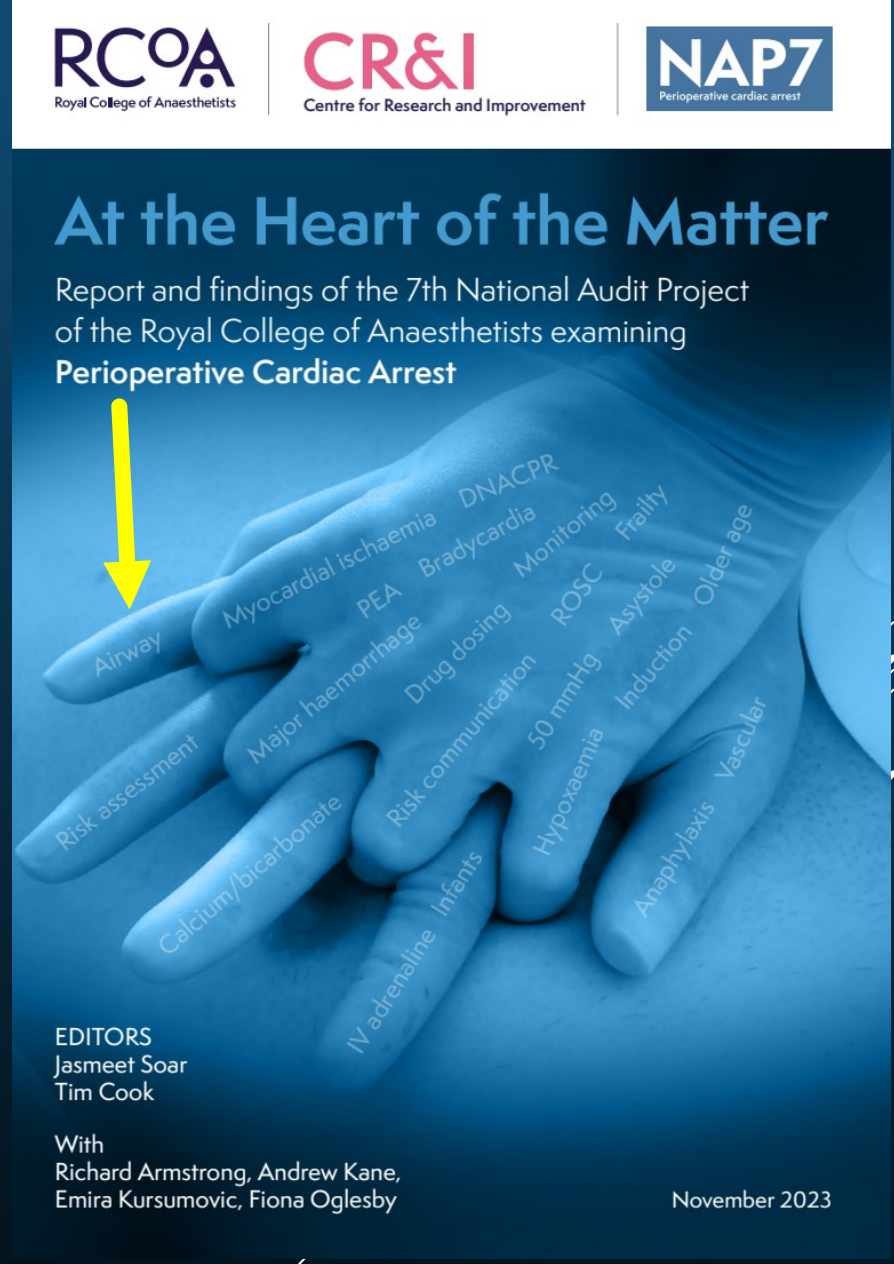
NAP 7

Compared to NAP4, there were slightly increased rates of tracheal intubation,

notably more use of second generation supraglottic airways

reduced rates of

- pulmonary aspiration and of
- cannot intubate cannot oxygenate (CICO)
- emergency front of neck airway (eFONA)

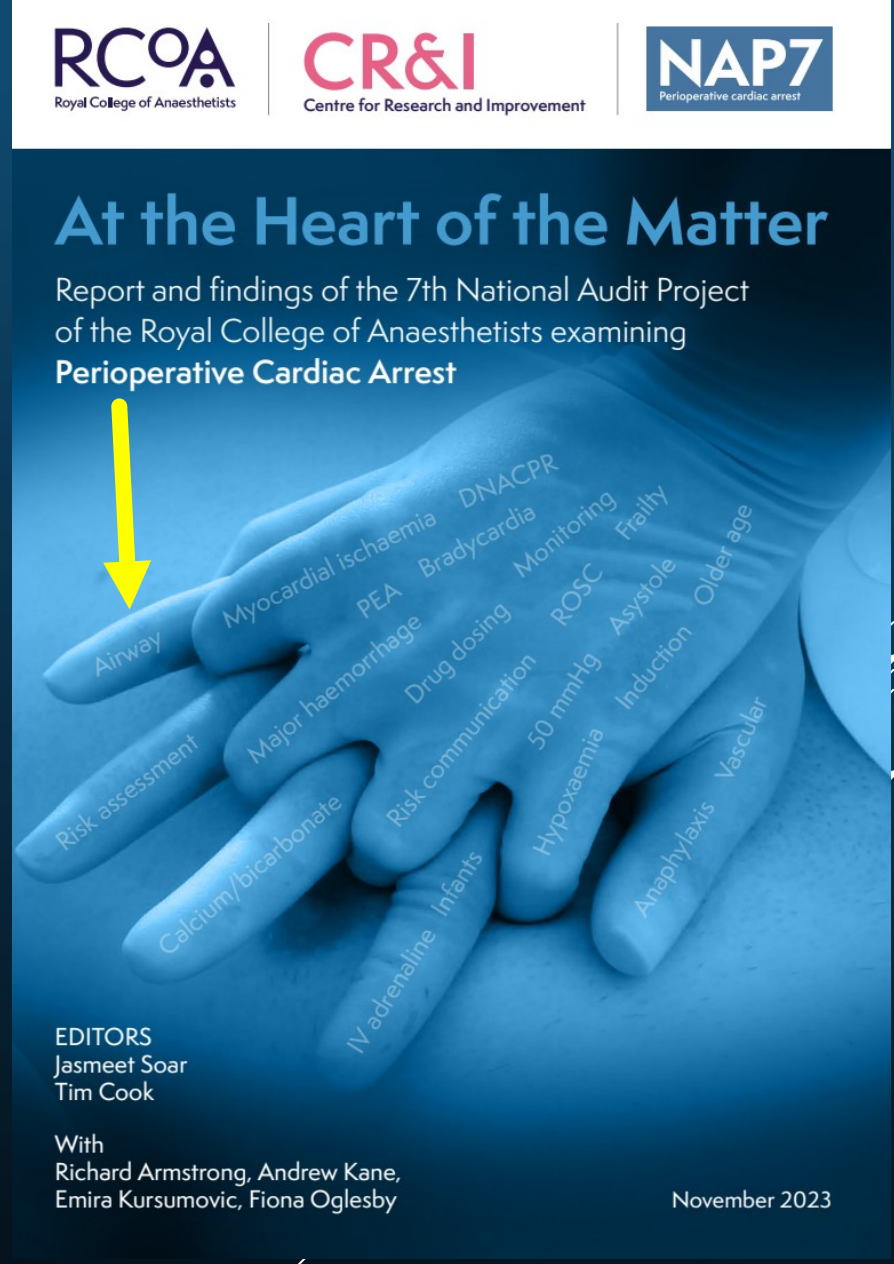


NAP 7

There were six cases of unrecognised oesophageal intubation reported to NAP7!

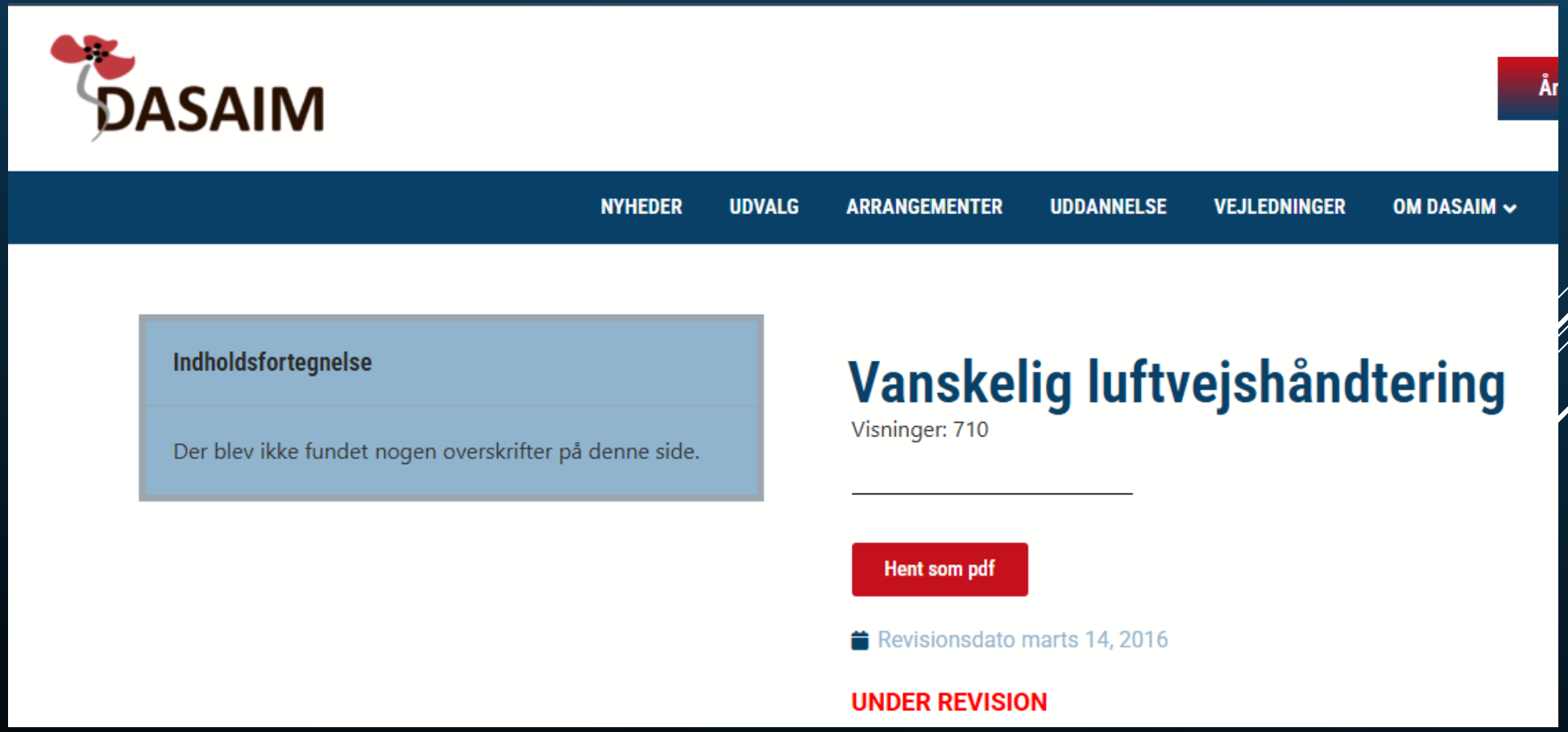
Sidespring:

Hvordan tester man en kapnograf?



GUIDELINES

DK

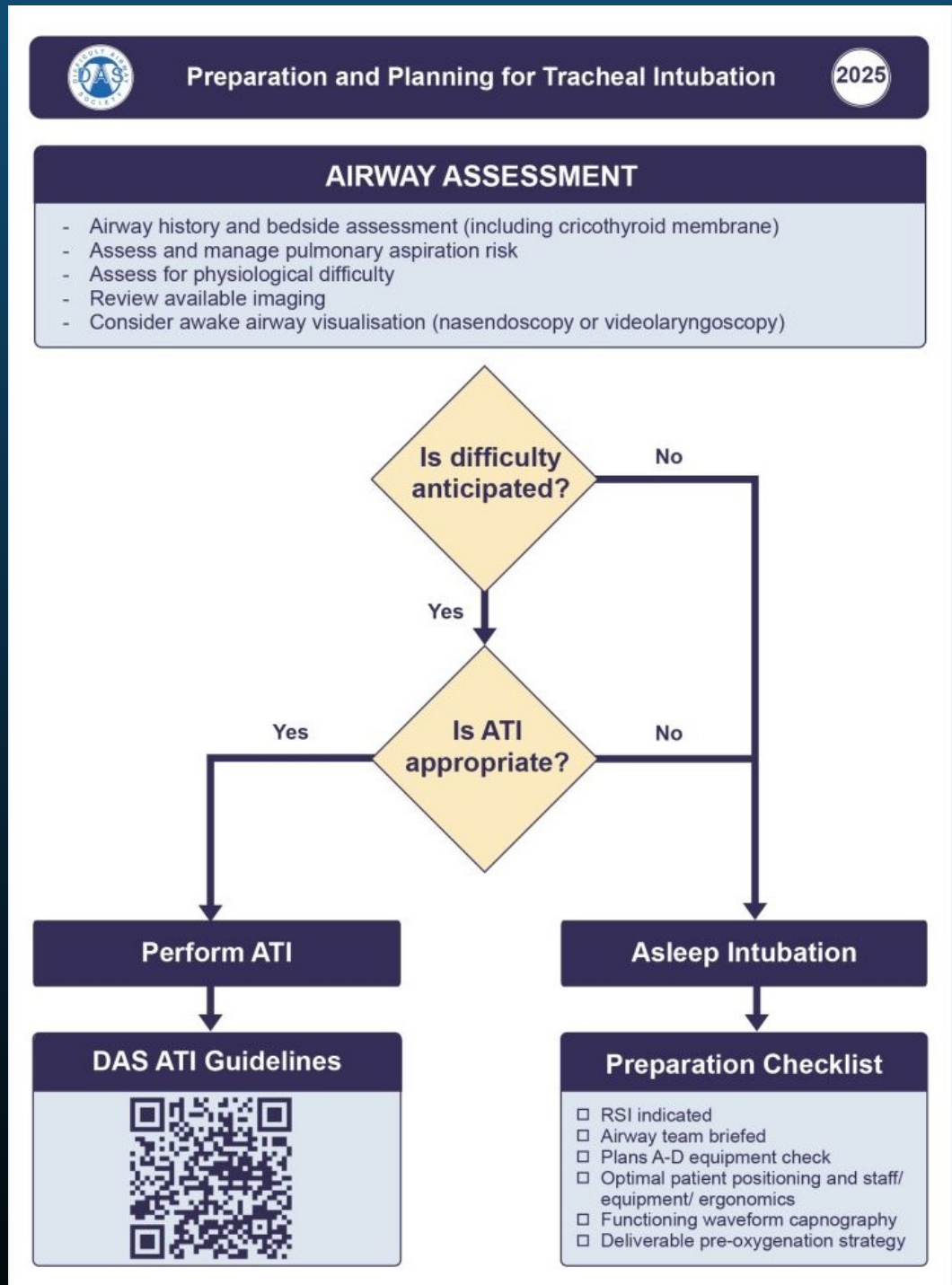


GUIDELINES

UK

Anbefaler videolaryngoskop som første valg

Guidelines for både uventet og forventet vanskelig luftvej



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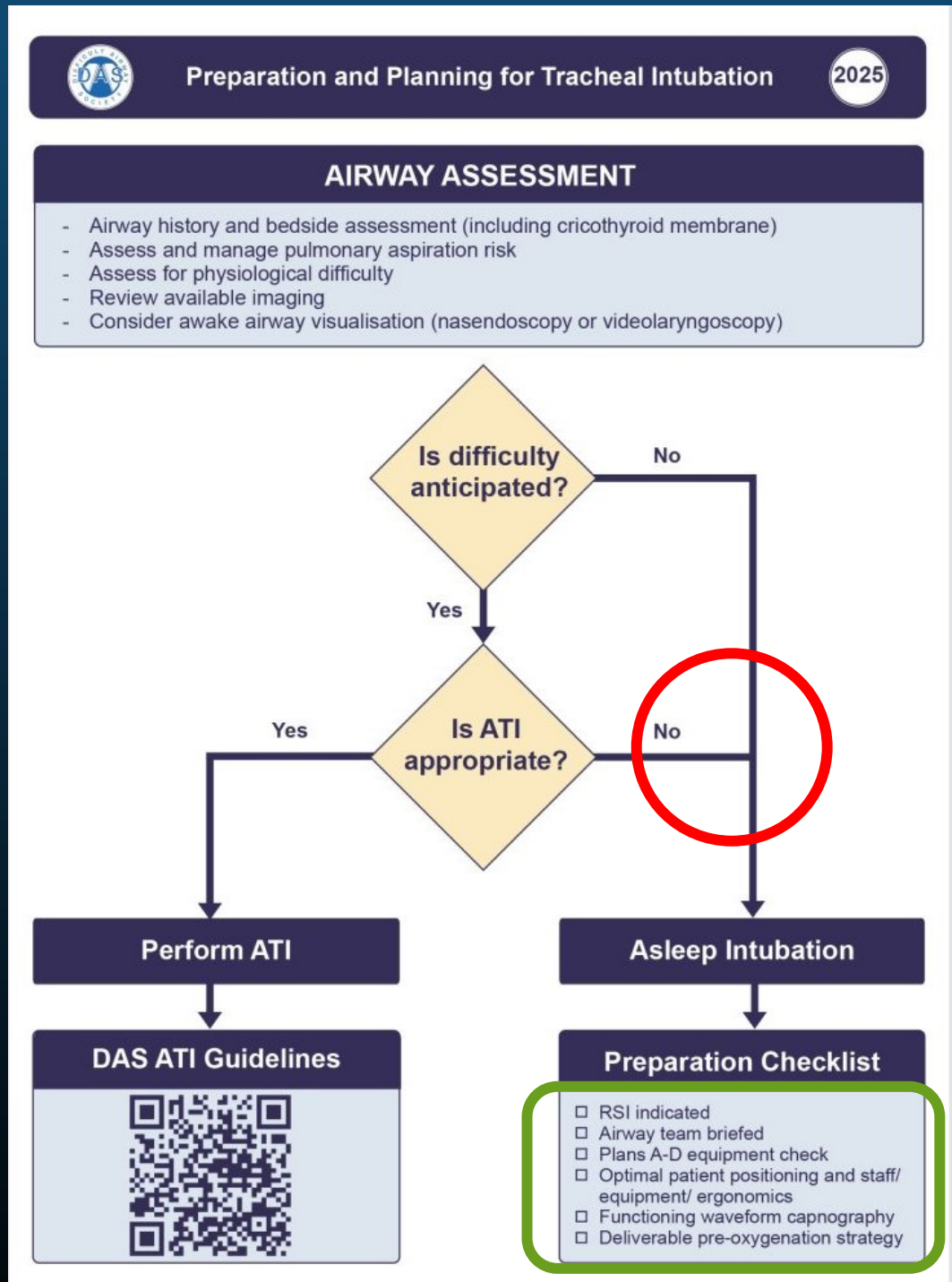
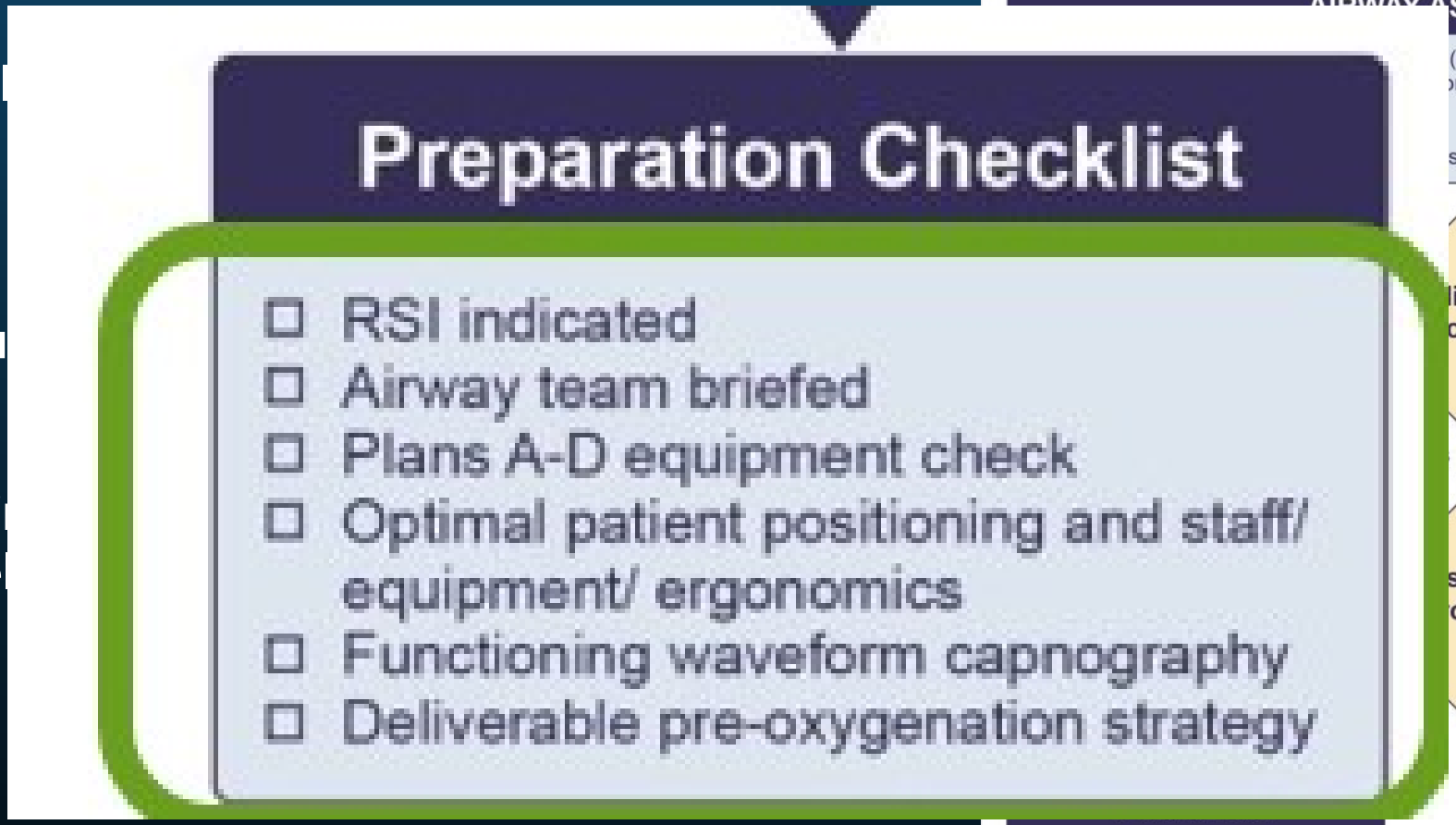


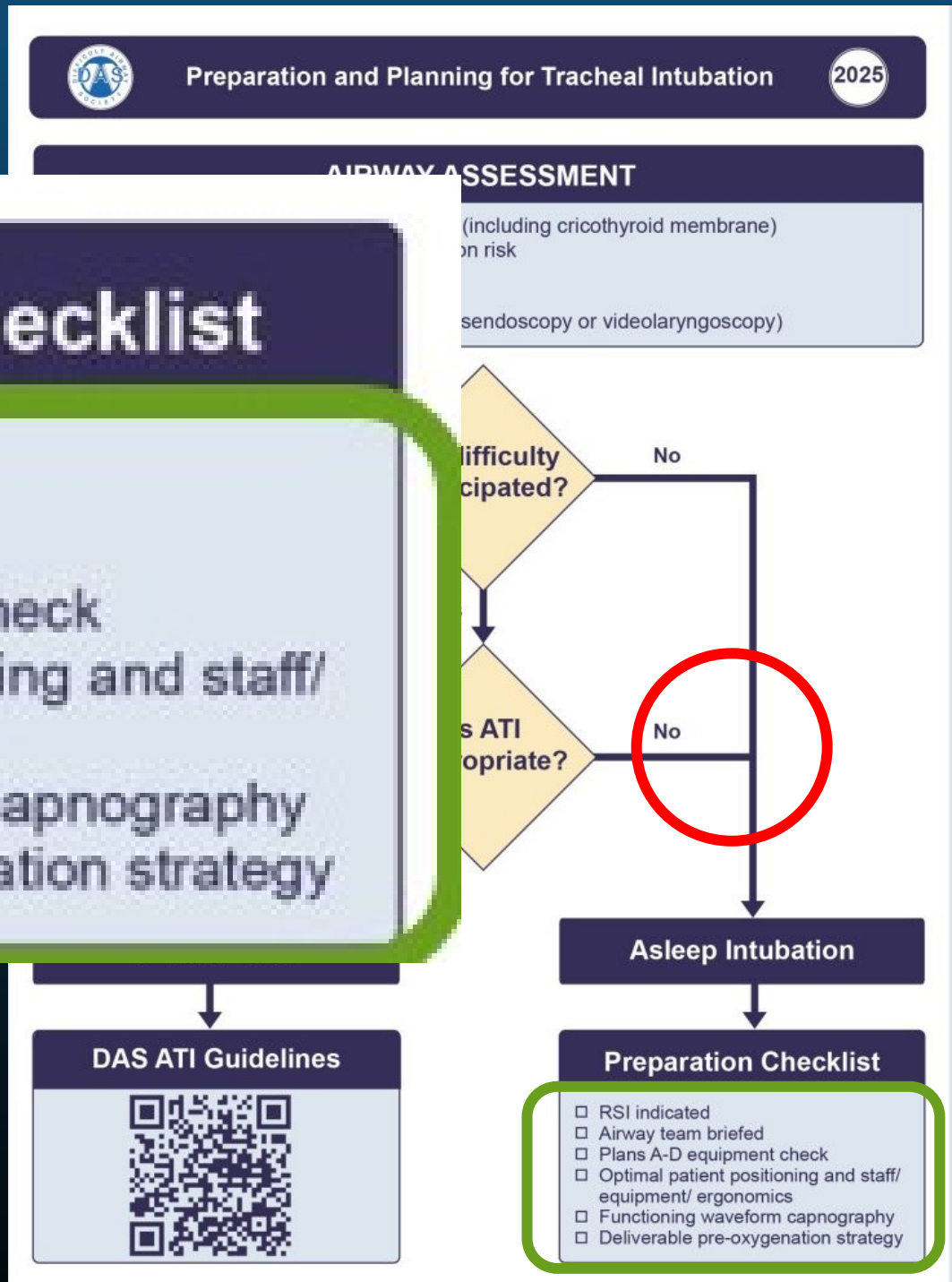
GUIDEL

UK

Anbefa

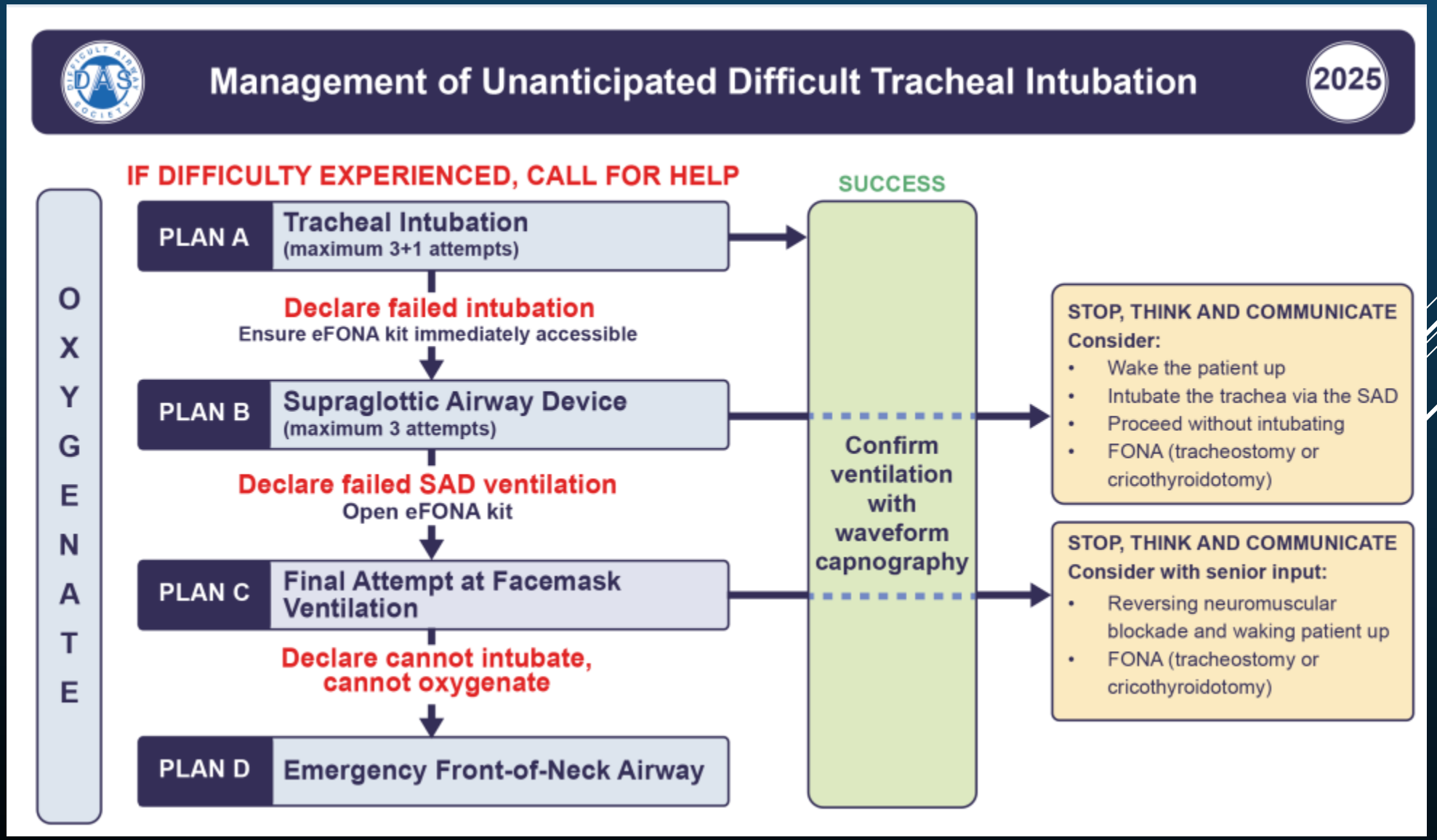
Guideli
vanske





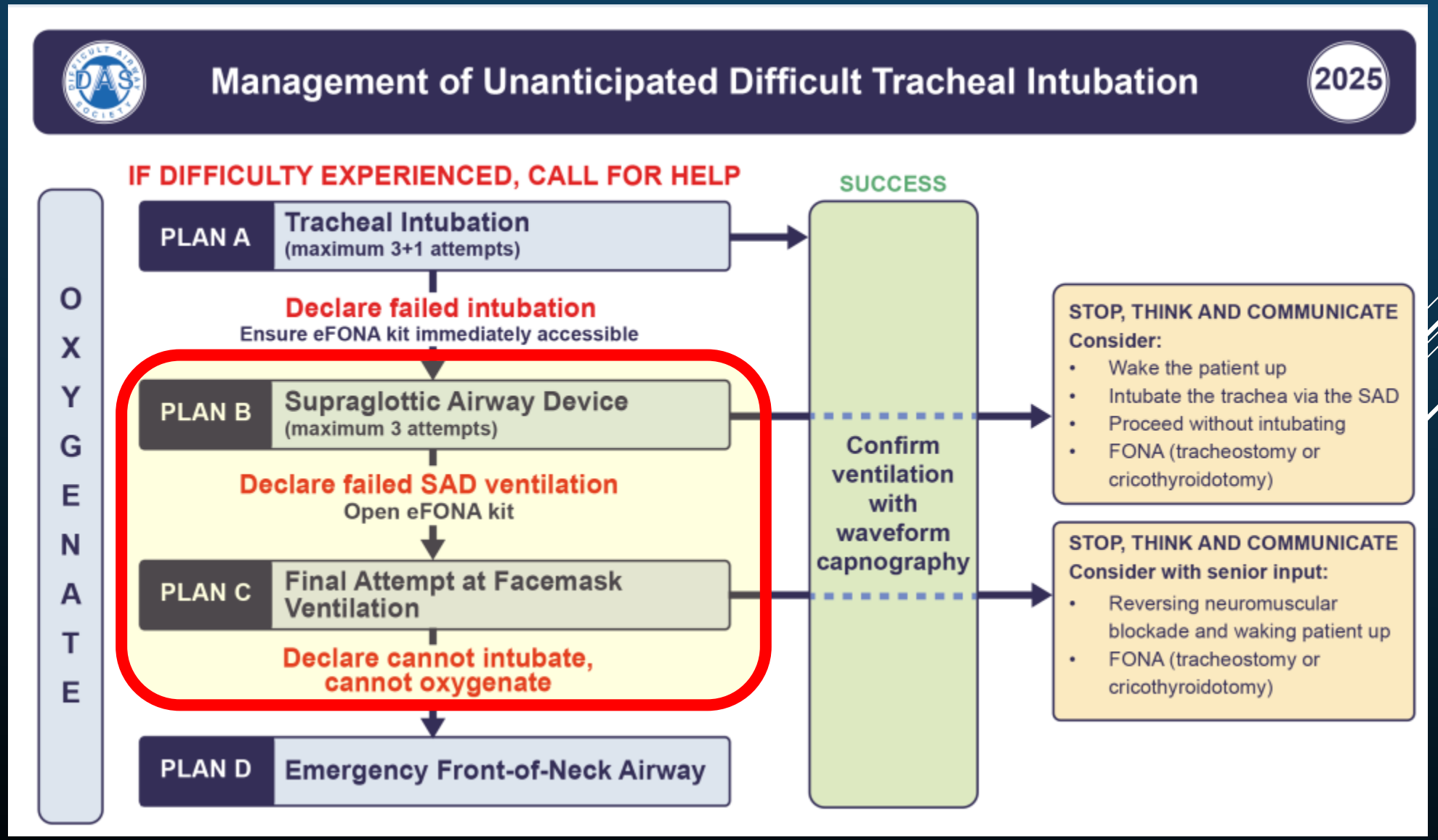
GUIDELINES

UK



GUIDELINES

UK

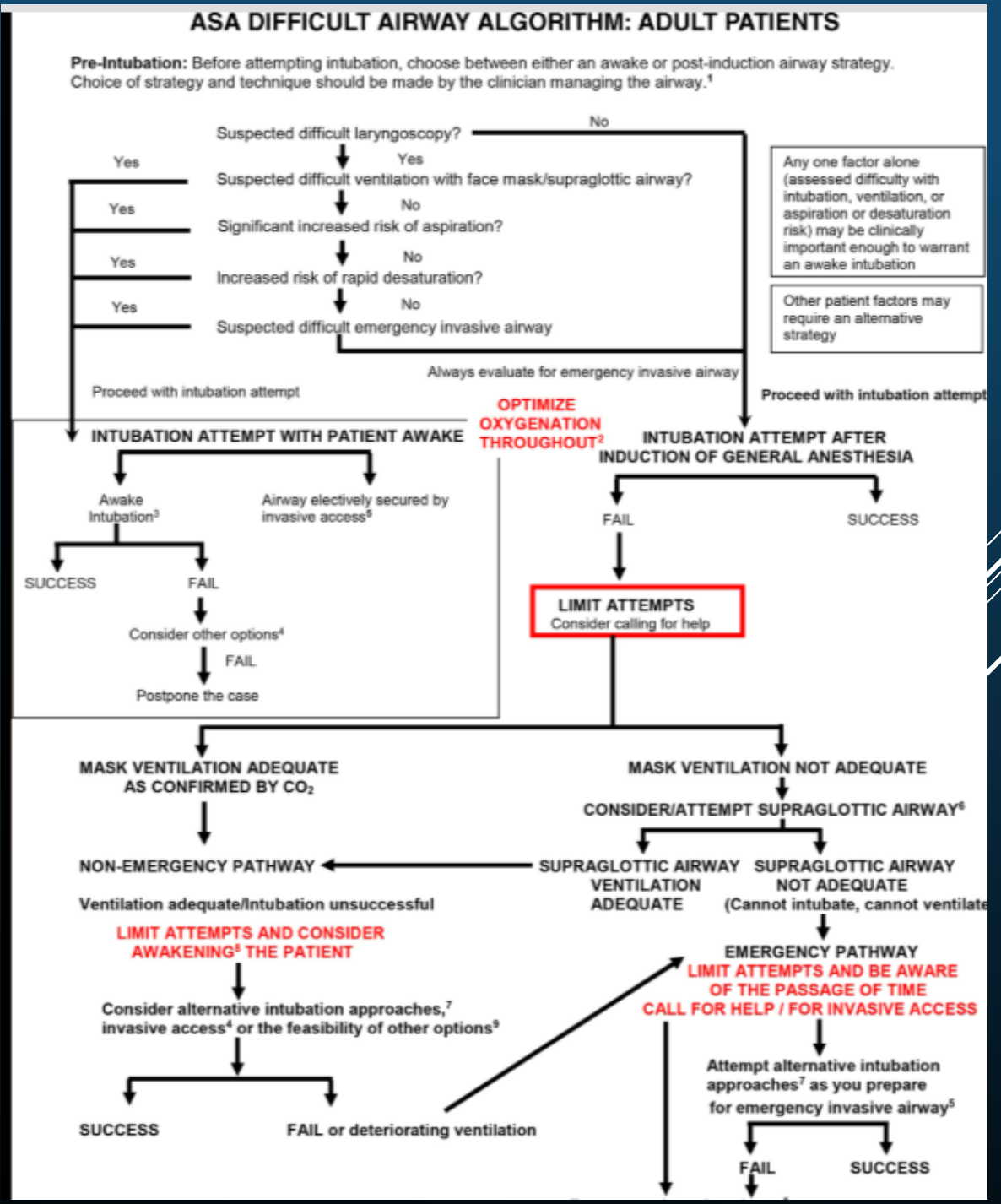


GUIDELINES

USA

Har kun guidelines for forventet vanskelig luftvej

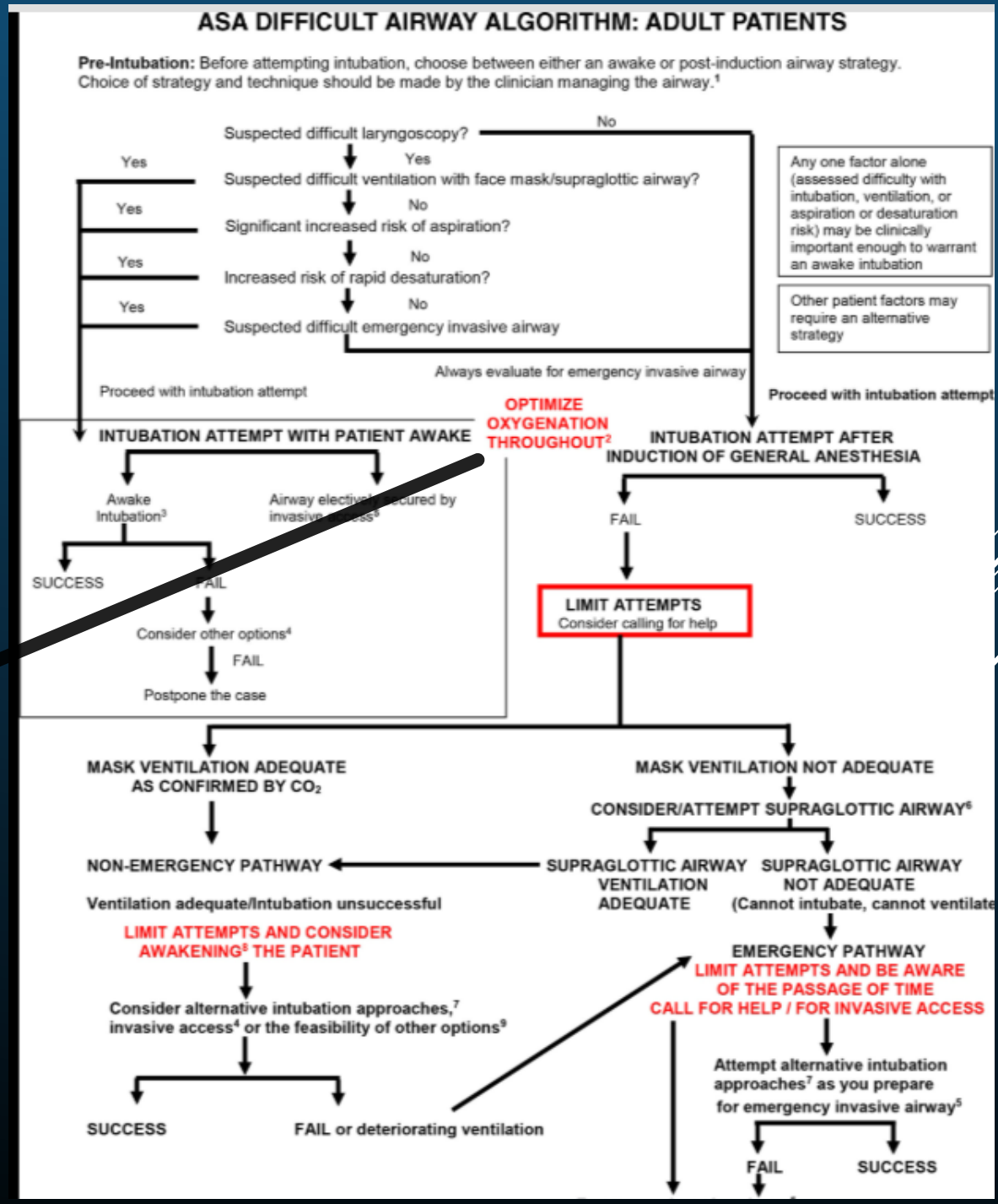
Anbefaler videolaryngoskop som 1. valg ved forventet vanskelig intubation



GUIDELINES

USA

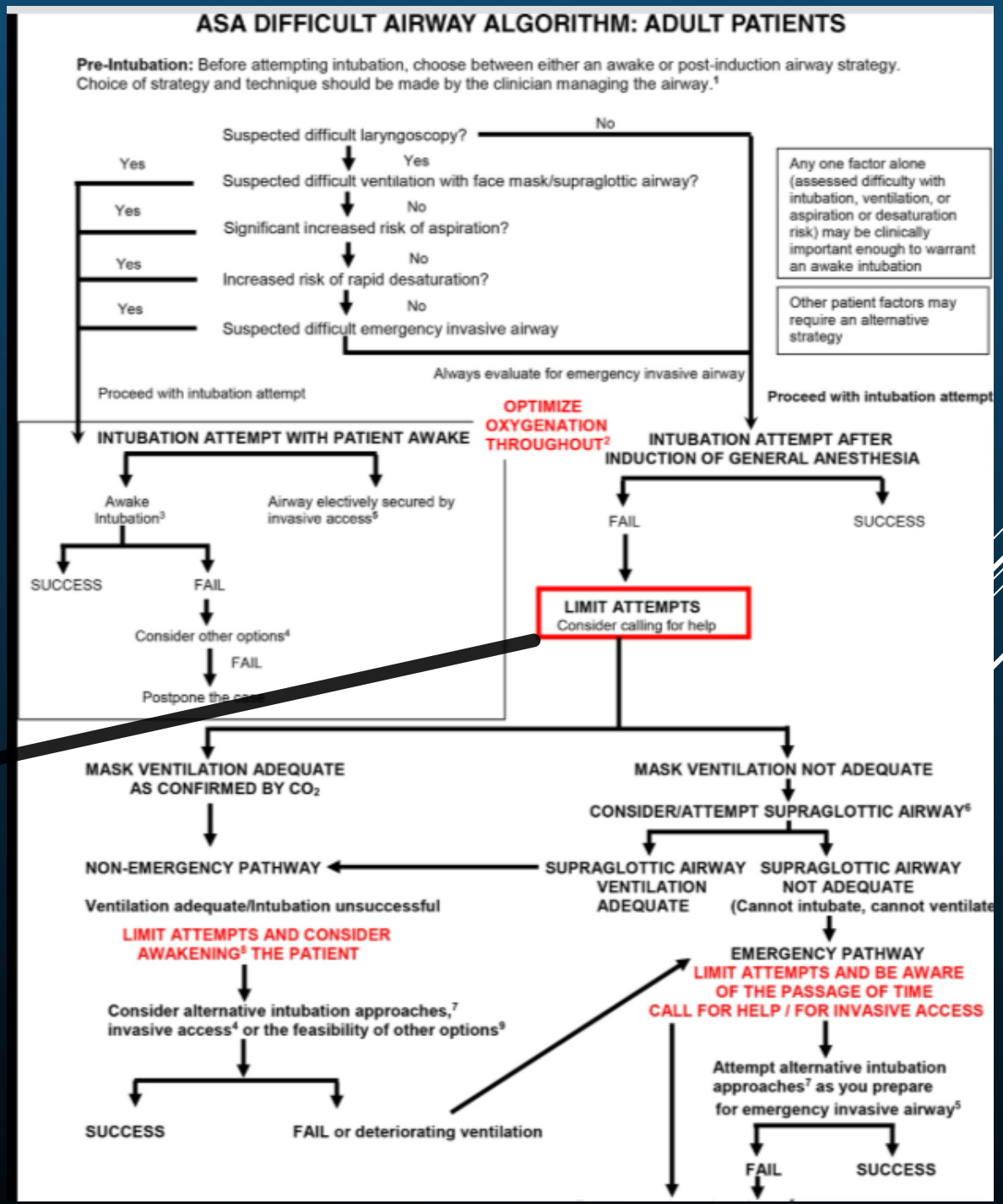
OPTIMIZE OXYGENATION THROUGHOUT[2]



GUIDELINES

USA

Anbefaler videolaryngoskop som 1. valg ved forventet vanskelig intubation



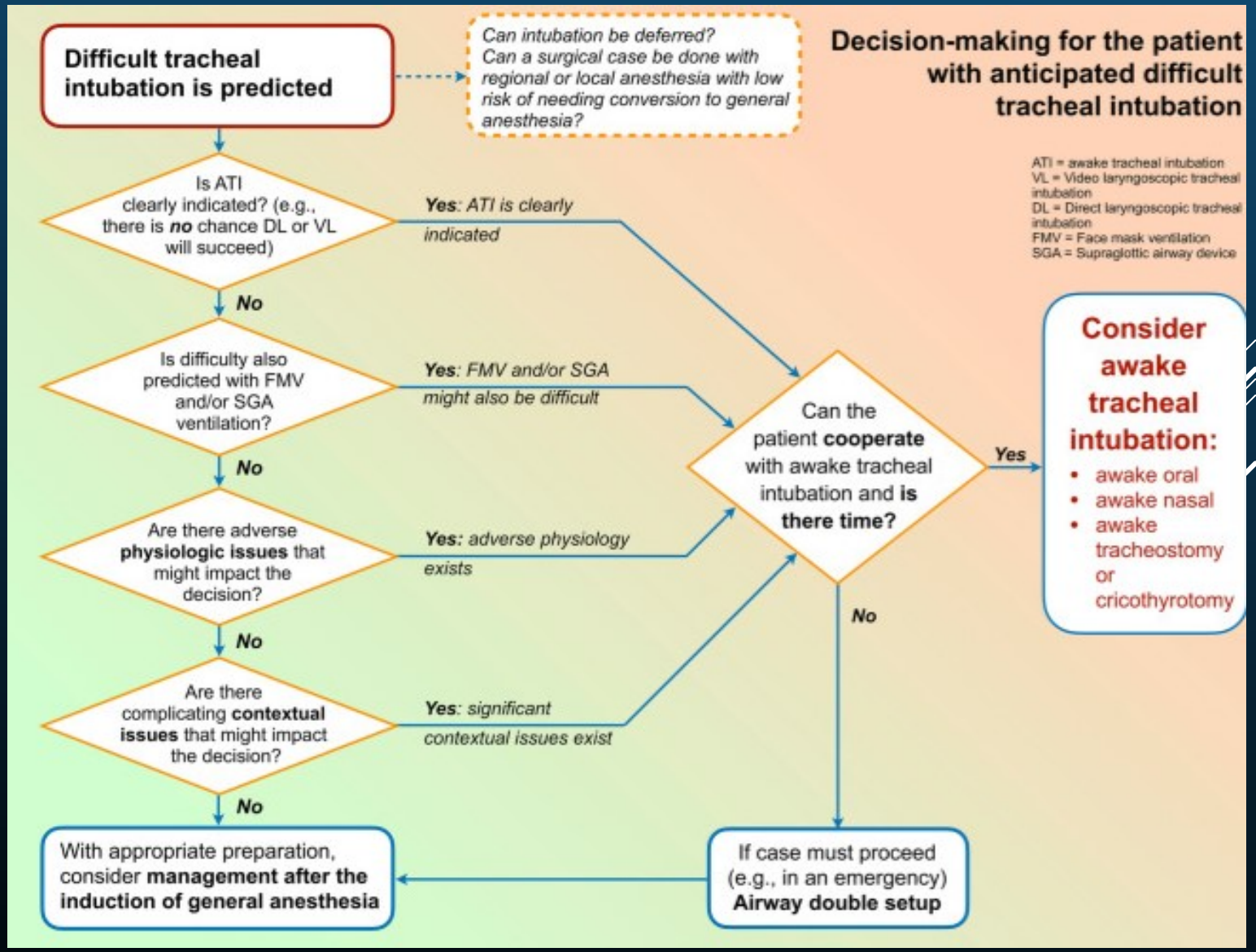
GUIDELINES

CANADA

Guidelines for både

- uventet vanskelig luftvej
- forventet vanskelig luftvej
- Ekstubation

Vurderer ikke at litteraturen kan bære en entydig anbefaling af videolaryngoskoper (endnu).



GUIDELINES

CANADA

GUIDELINES

CANADA

KONTEKST

KONTEKST

Vi har hver især vores egen virkelighed

To observationer og en oplevelse.

I takt med at videolaryngoskopet er blevet mere og mere udbredt:

- har vi observeret at vores (og vores kursisters) evne til at foretage direkte laryngoskopi er faldet.
- har vi observeret at fokus på de gamle dyder som lejring og god teknik er reduceret.

Min oplevelse er, at ovenstående gør at man mangler et ekstra gear, når intubationer bliver rigtigt svære, også med videolaryngoskopet.

DIREKTE LARYNGOSKOPI VERSUS VIDEOLARYNGOSKOPI

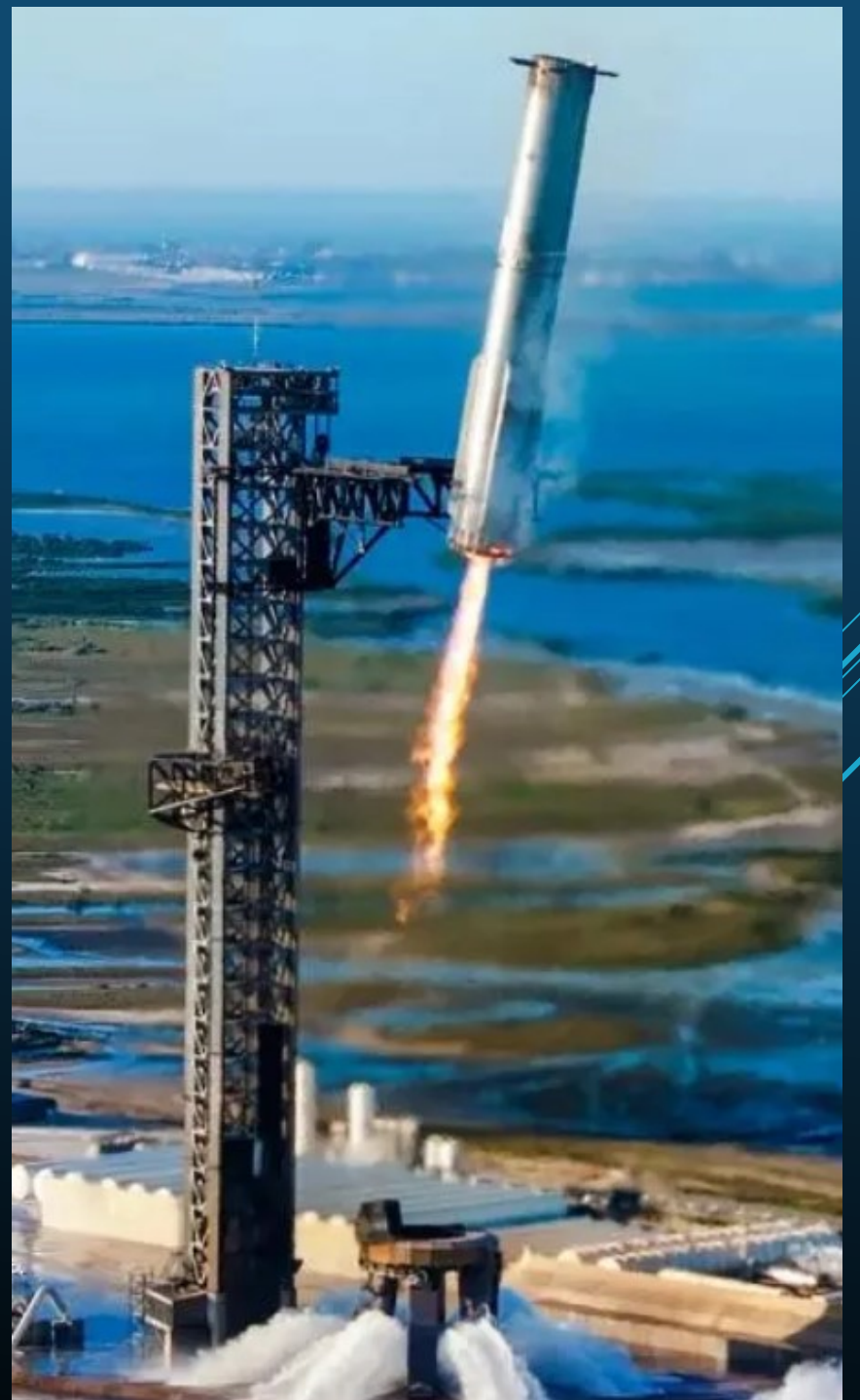
Hvorfor skal vi overhovedet bruge tid på det?

Det er jo for Søren, ikke rocket science at intubere!

Guidelines er entydige!

Alle kan intuberes med et videolaryngoskop!

Man kan jo bare bruge sit videolaryngoskop til direkte laryngoskopi, hvis der er blod på linsen.



1.

Ho AM-H, Mizubuti GB, Camiré D, et al.

Do not stop teaching anaesthesia trainees direct laryngoscopy.

Anaesthesia and Intensive Care. 2025;0(0). doi:10.1177/0310057X251364278

Abstract

Videolaryngoscopy is superior to direct laryngoscopy in difficult intubation and is quicker to master.

Some anaesthesiologists have advocated for videolaryngoscopy as the primary tool for endotracheal intubation.

We argue that while prioritising videolaryngoscopy allows earlier success and skill retention for novices and doctors who only occasionally intubate, anaesthesiology residents must achieve proficiency in both techniques since not only do they have ample opportunity, but there are situations in which direct laryngoscopy can be either a rescue or even the primary technique.

VIGTIGT! Vi taler om to meget forskellige patientpopulationer

Elektive patienter med normal luftvejsvurdering

Patienter med unormal luftvejsvurdering og/eller akutte patienter

Elektive patienter med normal luftvejsvurdering

KIT

KIM KIT

VL

DL

Akutte og vanskelige patienter

DIRECT LARYNGOSCOPY REMAINS AN IMPORTANT SKILL - A SERIES OF CASES

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PROBLEM

Videolaryngoscopes have been widely implemented and suggested as the primary tool for intubation (1,2). We are concerned that anaesthestetists might lose important skills in direct laryngoscopy as a result of this shift in clinical practice.

We present three cases in which the airway was saved with a traditional laryngoscope after unsuccessful intubation attempts with a video-laryngoscope, emphasizing the importance of maintaining proficiency in direct laryngoscopy.

INSIGHTS

Videolaryngoscopy may fail for various reasons, a back-up plan for failure should always be established.

There is insufficient evidence regarding the effectiveness of videolaryngoscopes in facilitating the transition to direct laryngoscopy; particularly in cases involving an airway with excessive bleeding or secretions (3).

Citat DAS.

“You are the canary in the coal mine.”

Kontekst.

I DK, som er et rigt land, er vi cirka ti år foran andre lande med at indføre videolaryngoskoper.

Guidelines fra lande, hvor der stadig er afdelinger uden videolaryngoskoper, er tiltænkt en anden virkelighed end vores.

Succesfuld intubation

=

Cuffet tube i trachea

-placeret uden desaturation

-med acceptabelt tidsforbrug

-uden læsion af luftvej

-uden aspiration

Succesfuld intubation

Patient

Anatomi (mundåbning tænder)

Patologi (tumor, infektion)

Luftvejens indhold (aspirat, blod)

Fysiologi (BMI, metabolisme)

Aspirationsrisiko

Intubatør

Viden

Erfaring

Teknisk kunnen

Situationsbevidsthed

Samarbejdsevne

Antal

Udstyr

Visualiseringsmetode (VL / DL)

Lyskilde

Bladtype

Materiale

Ergonomi

Stiletbehov

Sug

Teknik

Lejring

Manipulation af underkæben

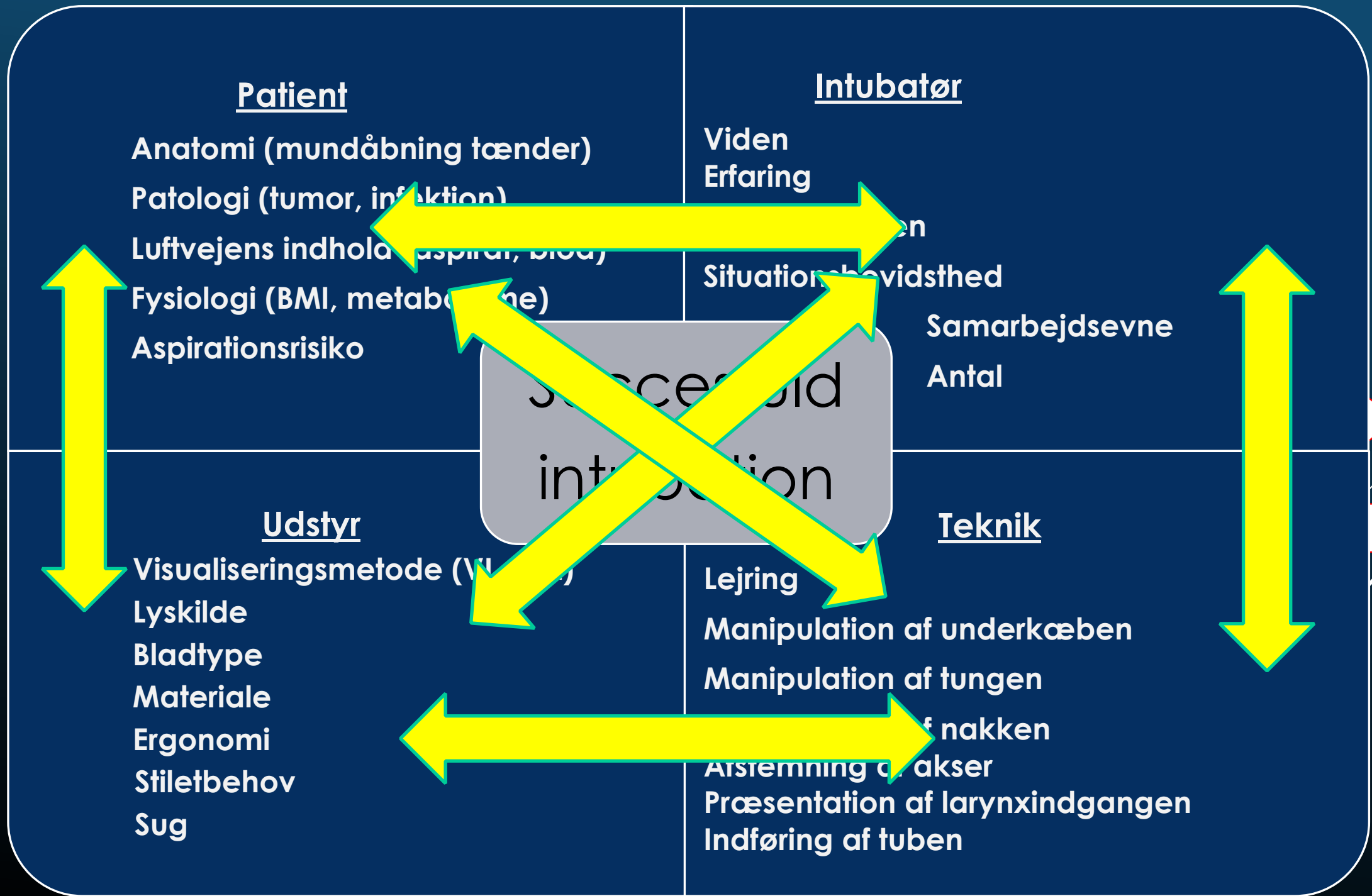
Manipulation af tungen

Manipulation af nakken

Afstemning af akser

Præsentation af larynxindgangen

Indføring af tuben


Patient
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Patologi (tumor, in
Luftvejens indhold
Fysiologi (BMI, metab
Aspirationsrisiko
Intubatør
Viden
Erfaring
Situation
vidsthed
Samarbejdsevne
Antal
Succesfuld
intubation
Udstyr
Visualiseringsmetode (V
Lyskilde
Bladtype
Materiale
Ergonomi
Stiletbehov
Sug
Teknik
Lejring
Manipulation af underkæben
Manipulation af tungen
nakken
Præsentation af larynxindgangen
Indføring af tuben

Obligatorisk for både DL + VL

Intubation

- Indføring af tuben
- Præsentation af larynxindgangen

Obligatorisk for DL

Afstemning af akser

- Manipulation af nakken
- Manipulation af tungen
- Manipulation af underkæben

Lejring

Regelmæssig brug af DL giver rutine i:

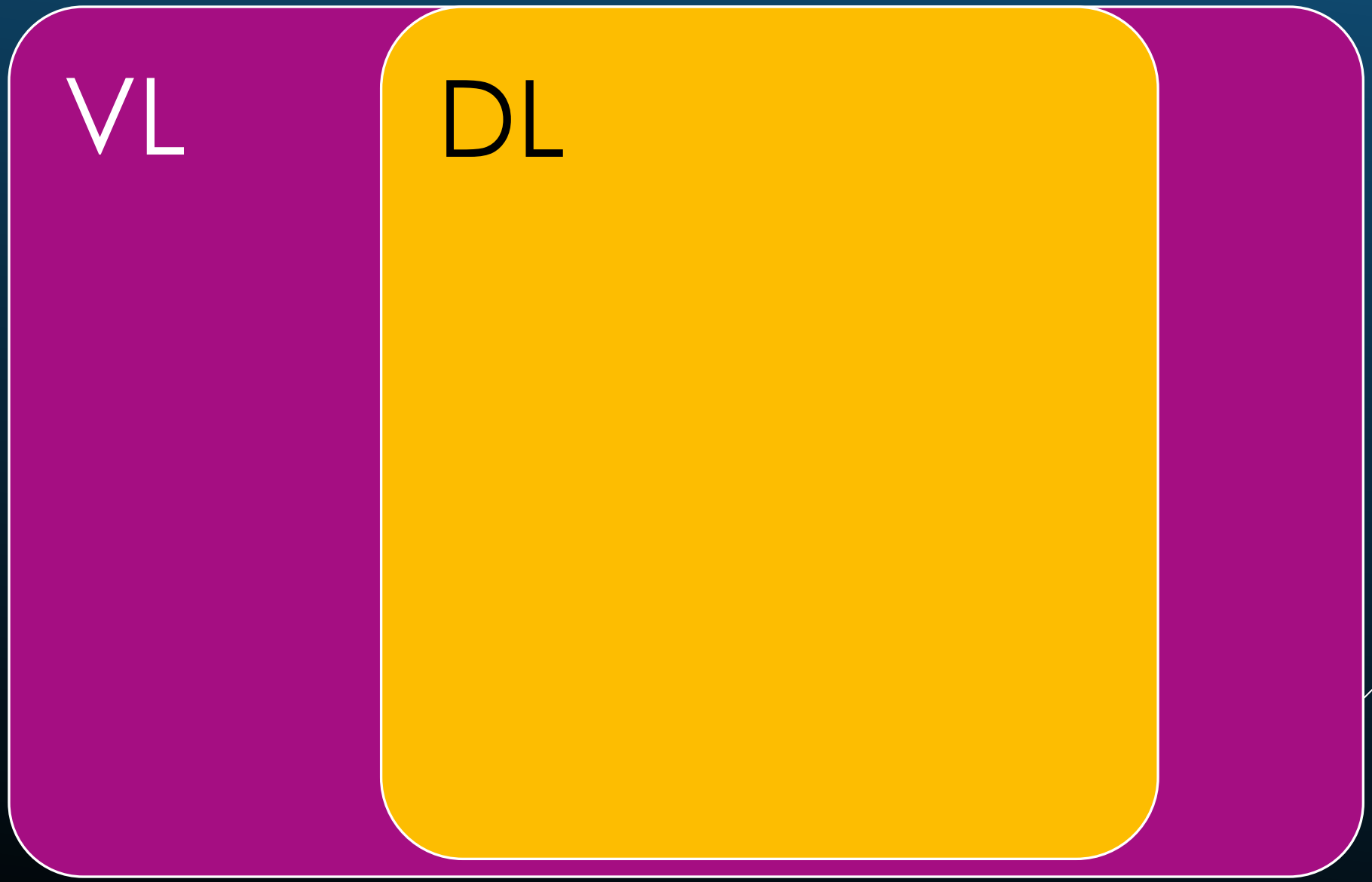
- **Optimal lejring**
- **Afstemning af luftvejsakserne**
- **Refleksion over luftvejsplanen**
- **Mulighed for at følge bladet og tuben hele vejen.**

Resultatet er den bedst mulige intubatør,
også når luftvejen er vanskelig.

Min påstand om systematisk brug af VL

KIT

KIM KIT



Elektive patienter med normal luftvejsvurdering

KIT

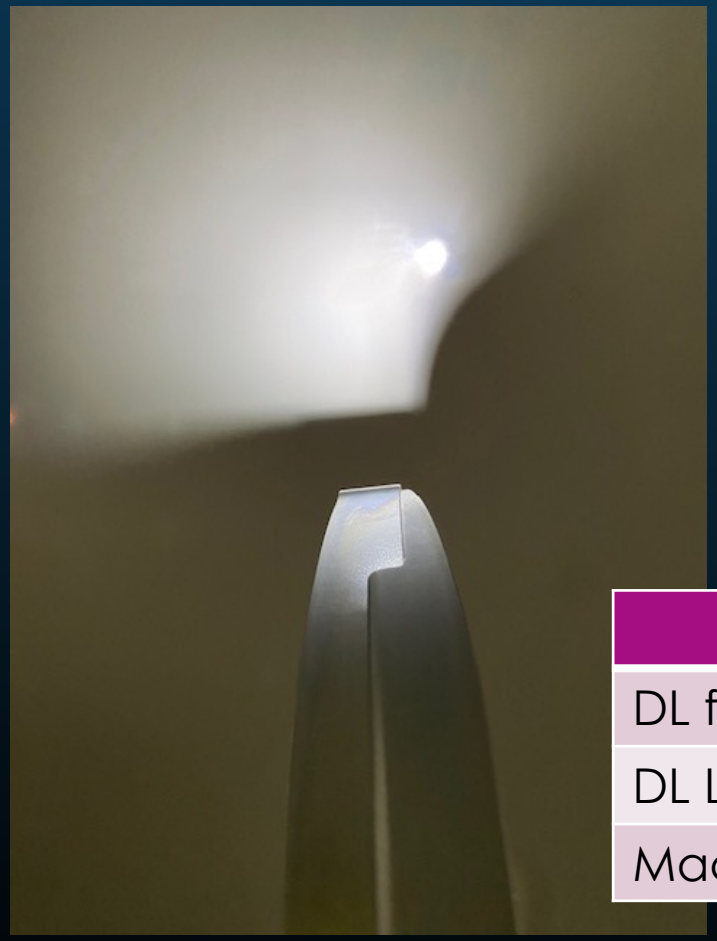
KIM KIT

VL

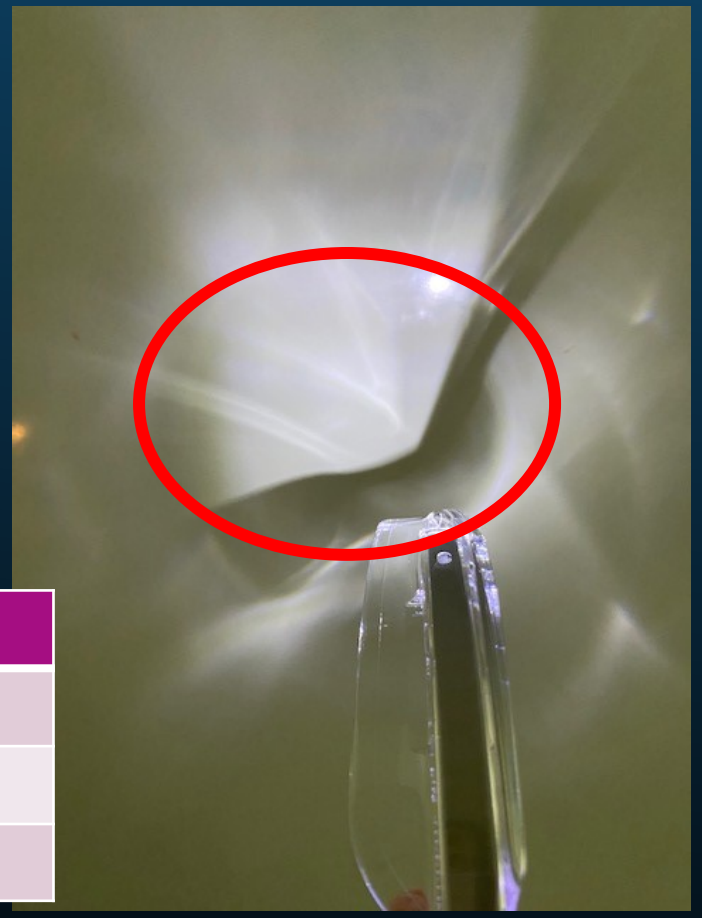
DL

KAN MAN IKKE BARE BRUGE VL MED MACBLAD TIL DL?

MACblad, fast



MACblad, løst



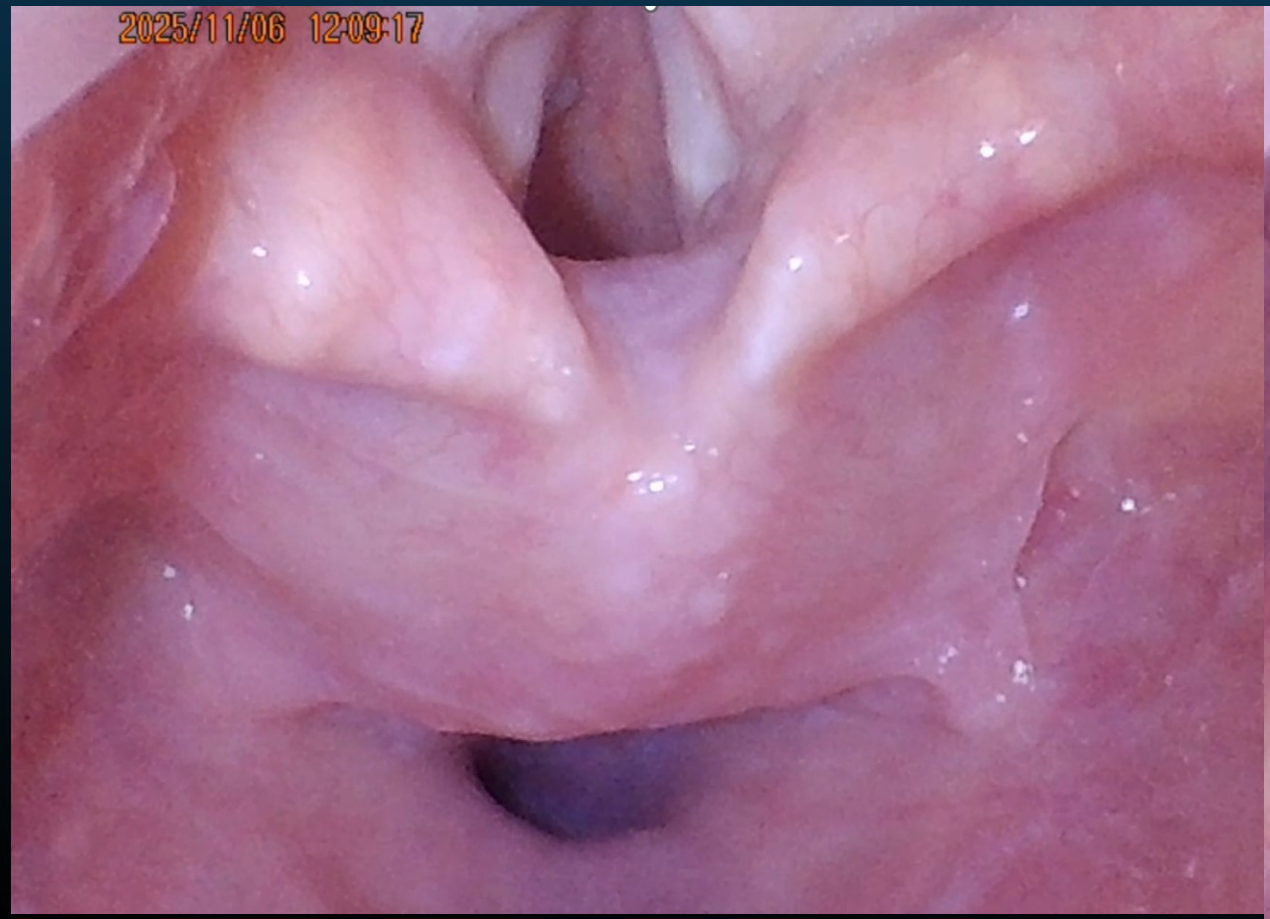
	Mac#3 blad
DL frisk	297 lumen
DL LED	379 lumen
Macgrath, MAC	291 lumen


2025/11/06 12:07:42

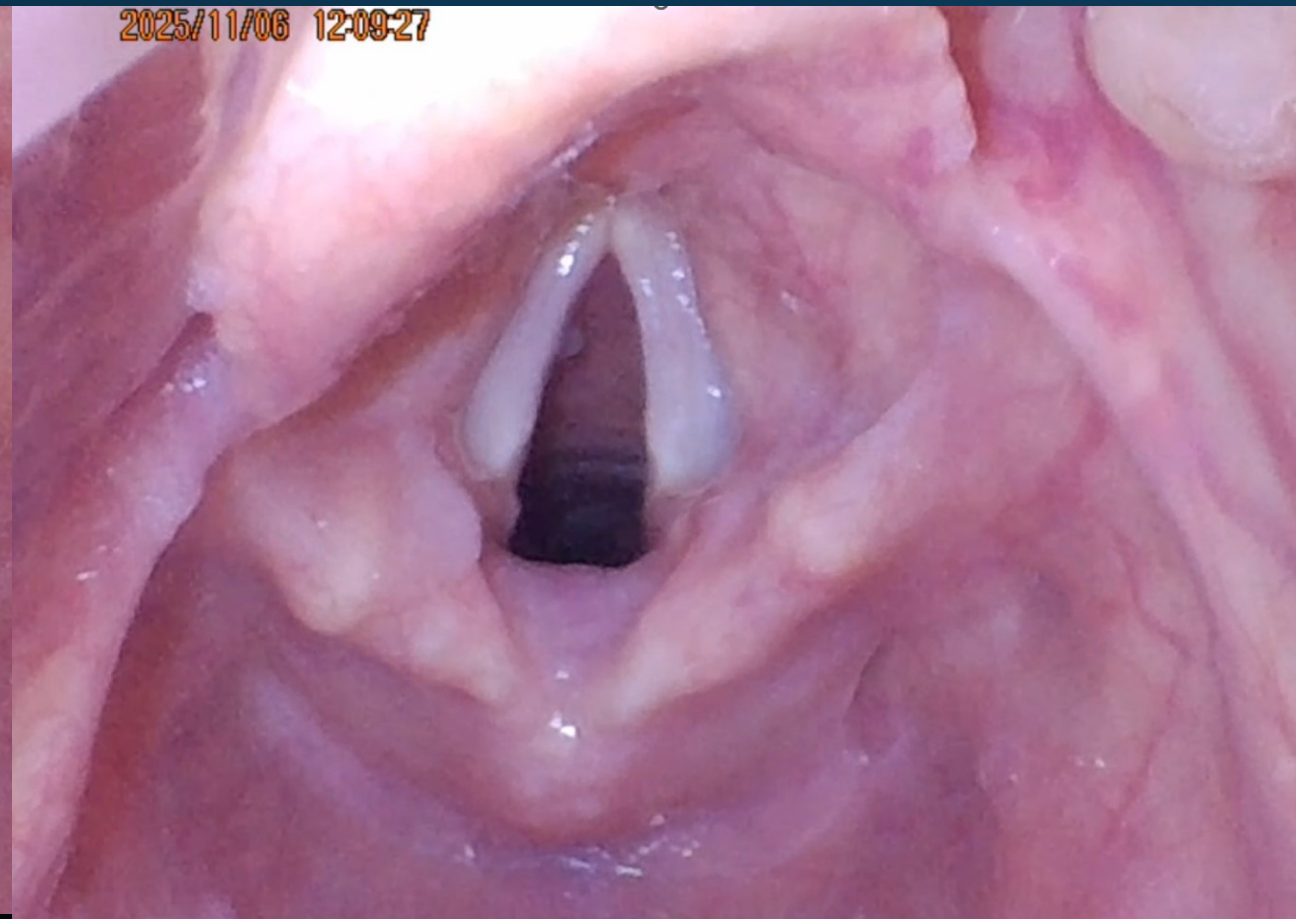
Hyppige uhensigtsmæssigheder observeret ved brug af videolaryngskoper.

- Fokus på skærmen
- Ingen refleksion om bladet er MAC-geometri eller hyperanguleret
  Ingen refleksion over placeringen af bladet i forhold til tungen
- Epiglottis fanges
- Tuben føres ned uden kontrol
- Problemer med at få tuben ind
- Stilletten formes meget variabelt

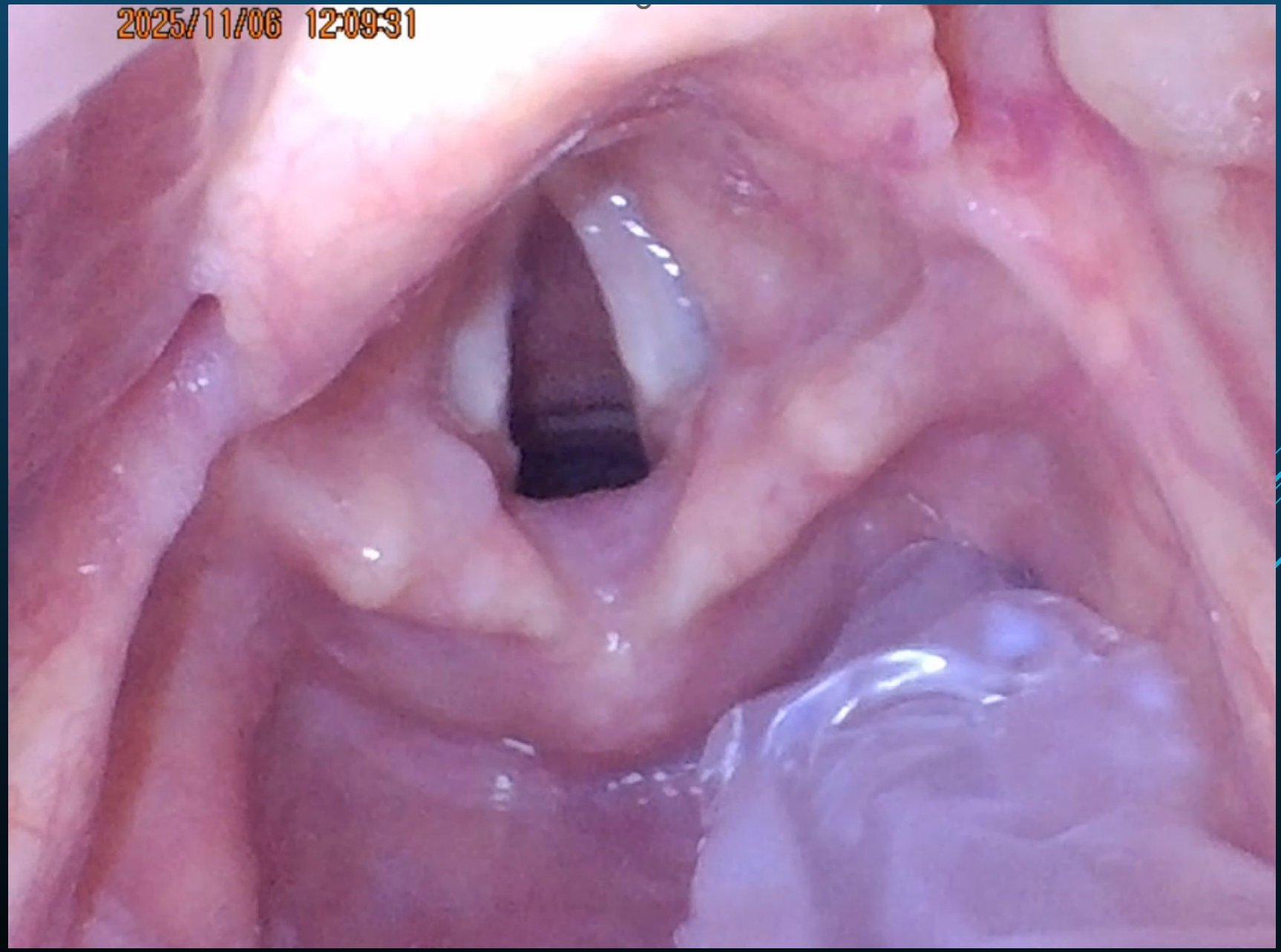
Epiglottis fanget



Epiglottis visualiseret



Tuben på afveje



KERNE BUDSKAB

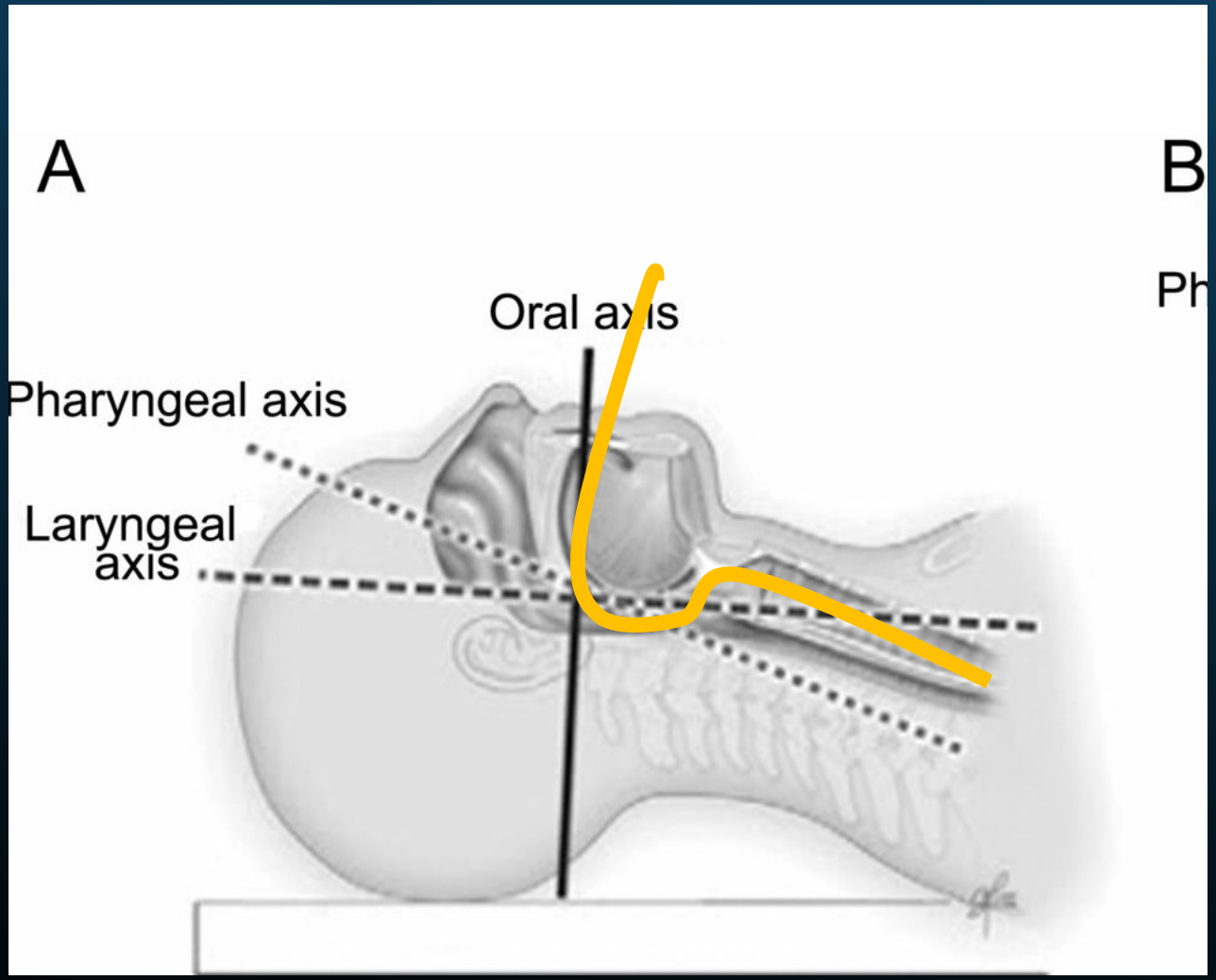
Valg af intubationsudstyr og luftvejsplan bør være et reflekteret valg.

Kompetence til direkte laryngoskopi, kræver øvelse og vedligeholdelse.

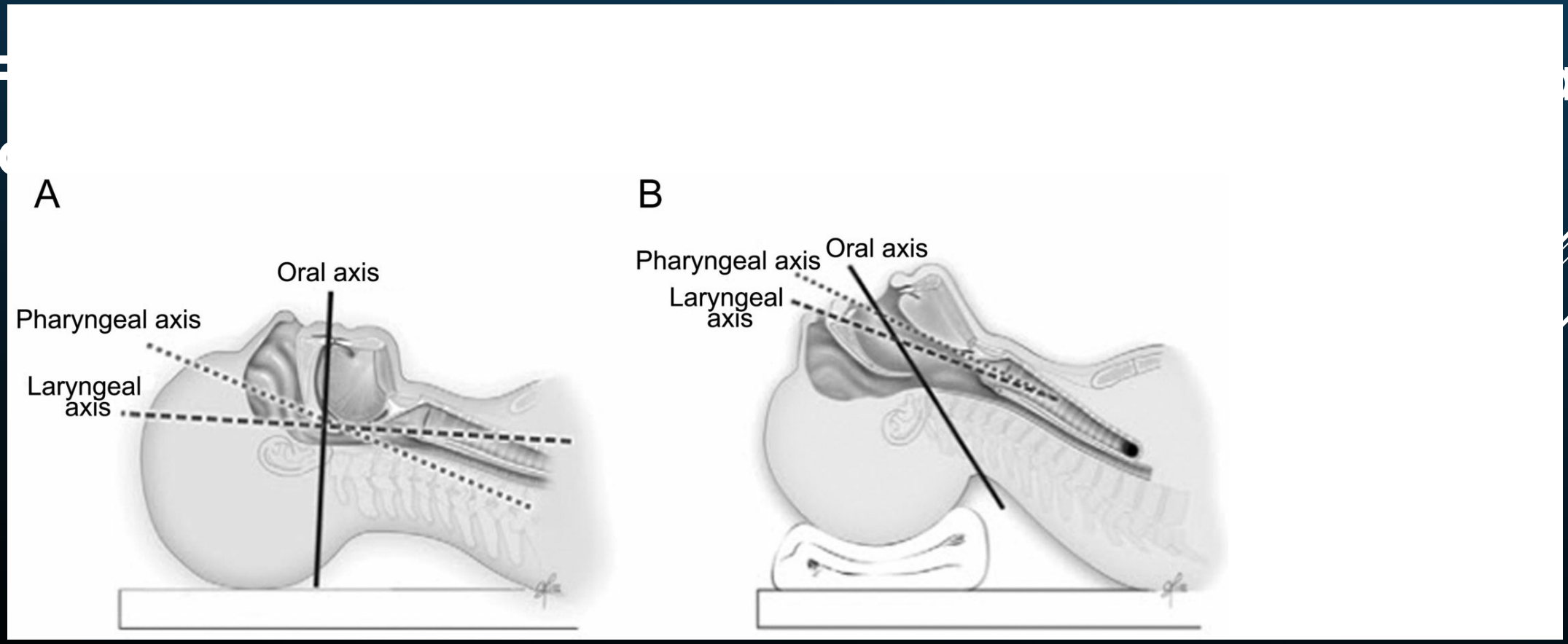
Rutine i direkte laryngoskopi, har positive afledte effekter i form af optimeret lejring og teknik.

?

UTILSTRÆKKELIG LEJRING!

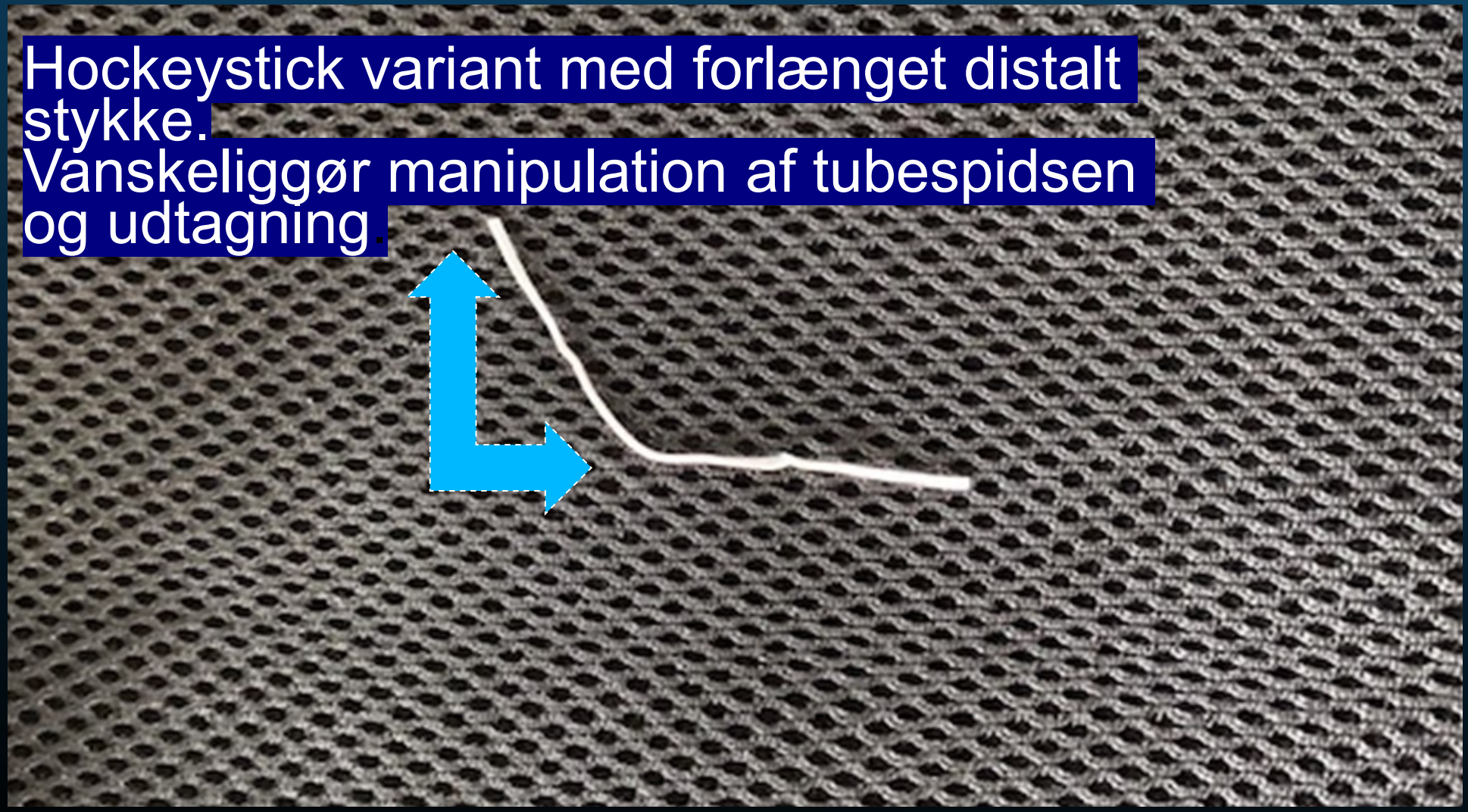


MAC GEOMETRI OG DL

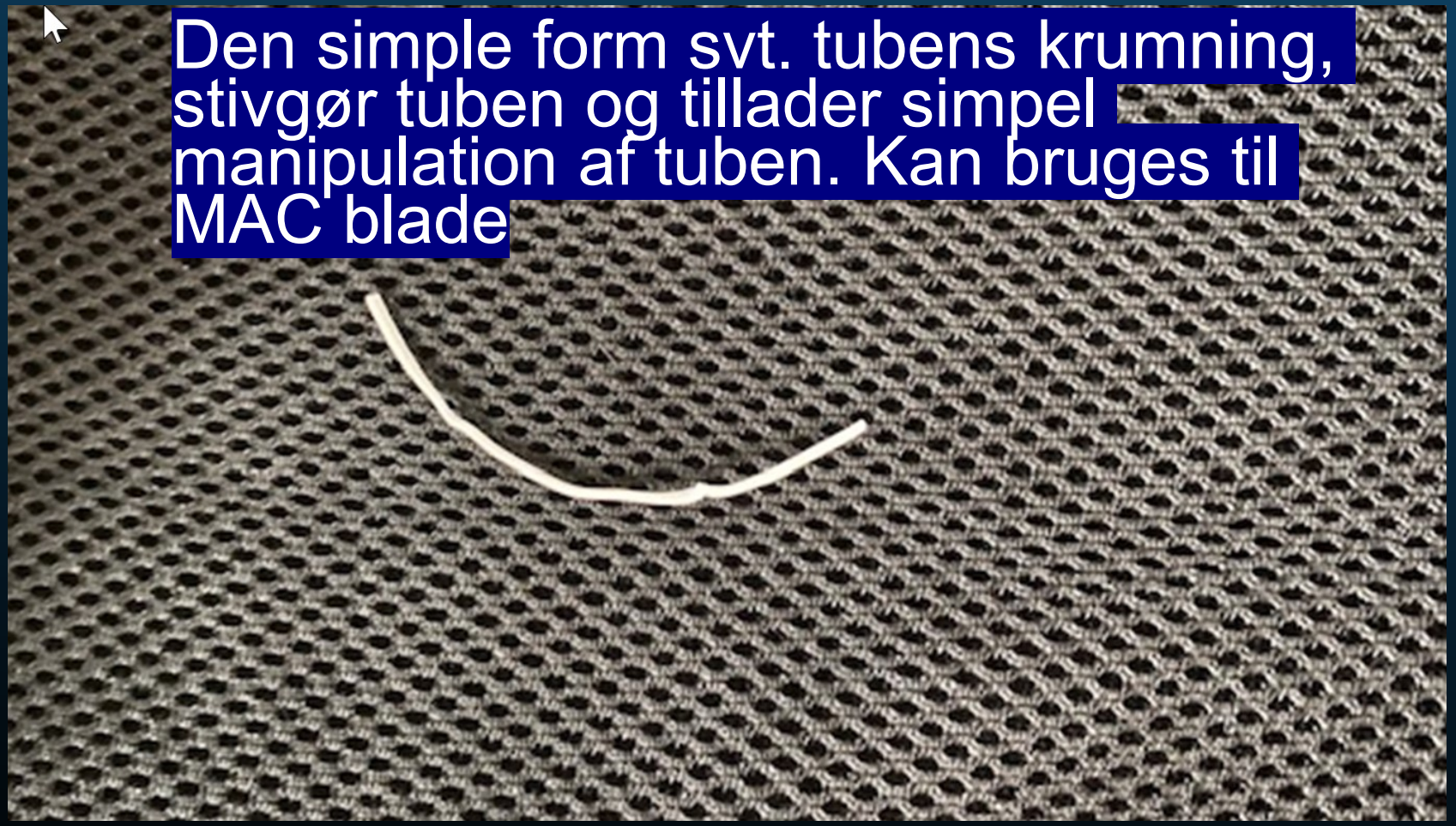


STILETOLOGI, HOCKEY STICK

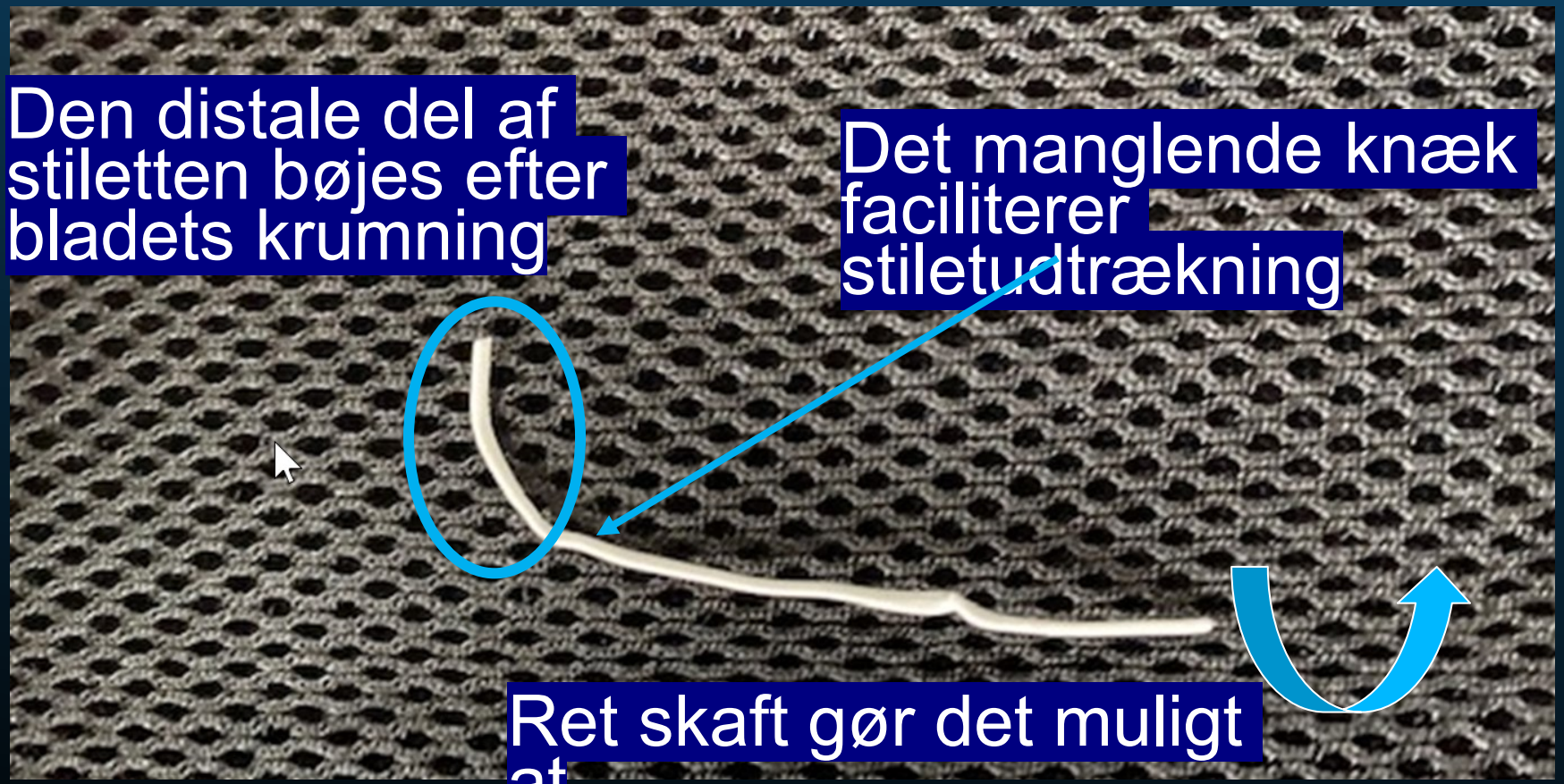
STILETOLOGI, BOOMERANG



STILETOLOGI, LANGBUEN



STILETOLOGI, PRODUCENT ANBEFALET



STILETTOLOGI, FISKEKROGEN

Den ekstreme krumning på den distale del af stiletten tillader indføring om skarpe hjørner, men gør det vanskeligt at trække stiletten.