

AIRWAY MANAGEMENT, RSI AND COVID-19

Dr. Sean Ebert

Rural Rounds | Friday November 26th 2021 | 0800-0900 PST



Please ensure your microphone is muted when not speaking

UBC CPD

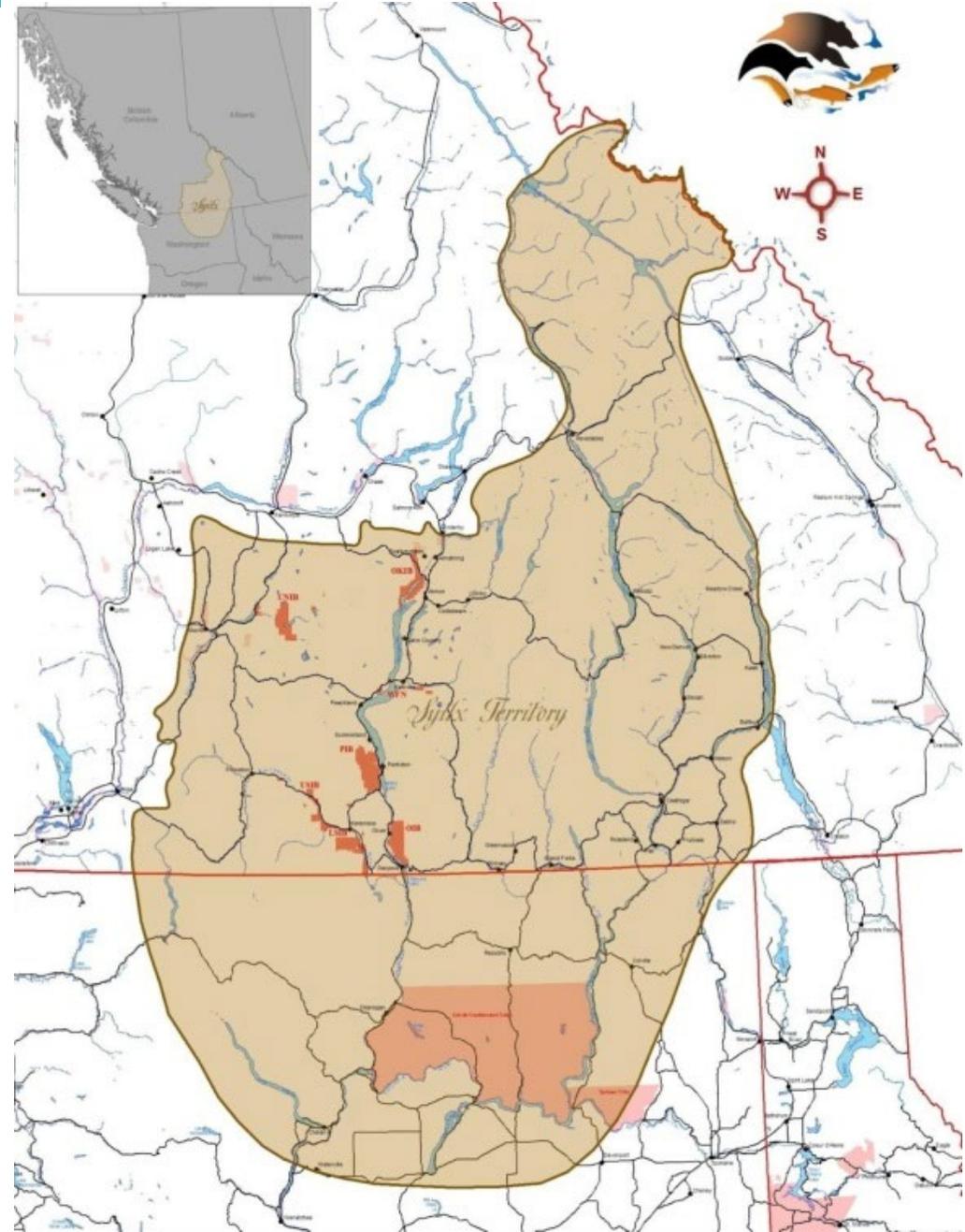


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LAND ACKNOWLEDGMENT

Syilx Okanagan People's Territory



Disclosure

Sessional payments for project work with:

RCCbc

NIRD

BCPSQC

PainBC



Mitigation of Bias

All content was developed as part of this program.
There were no influences from products or relationships.



Learning Objectives

- Review key airway management principles
- Examine standard airway tools
- Rapid Sequence Intubation
- Explore COVID-19 key principles and learnings in airway management.



Case Discussion

53 y.o male presented to the ER with a 6 day history of cough and fever. He developed increasing shortness of breath prompting presentation to the ER.

He reported contact with other symptomatic people in the preceding 2 weeks. He is unvaccinated for COVID-19

Presenting vitals: BP 120/80; Pulse 125; RR 35; O2 Sat 80% RA



AIRWAY PRINCIPLES

The first letter 'ABC'

Anxiety provoking

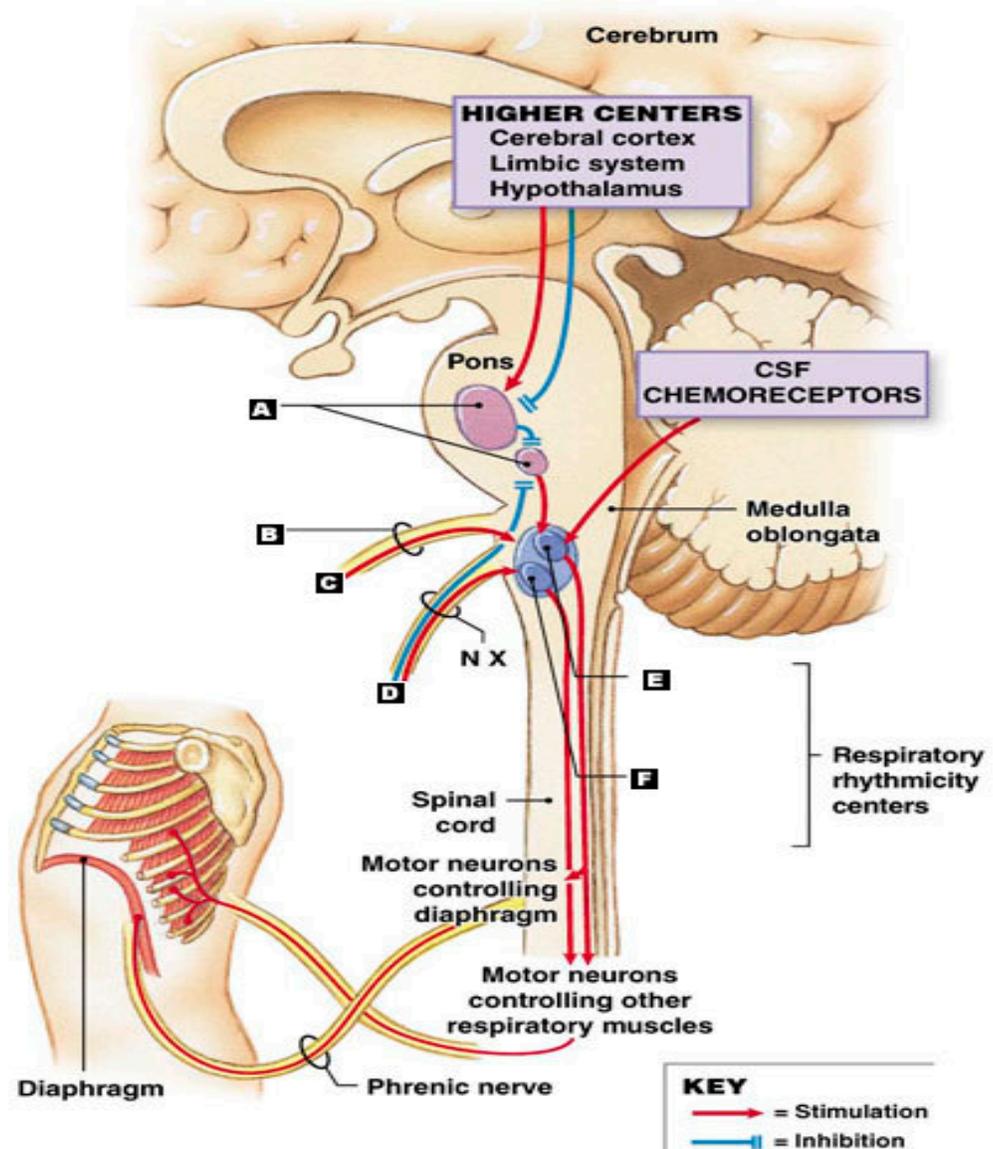
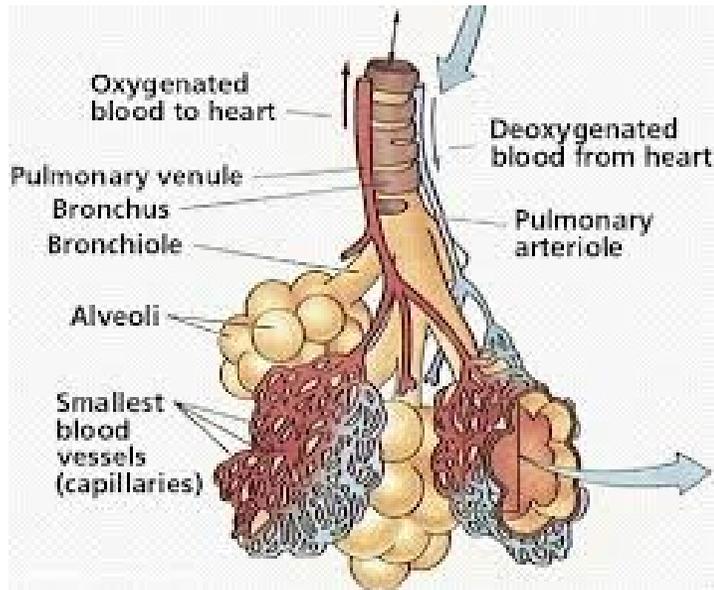
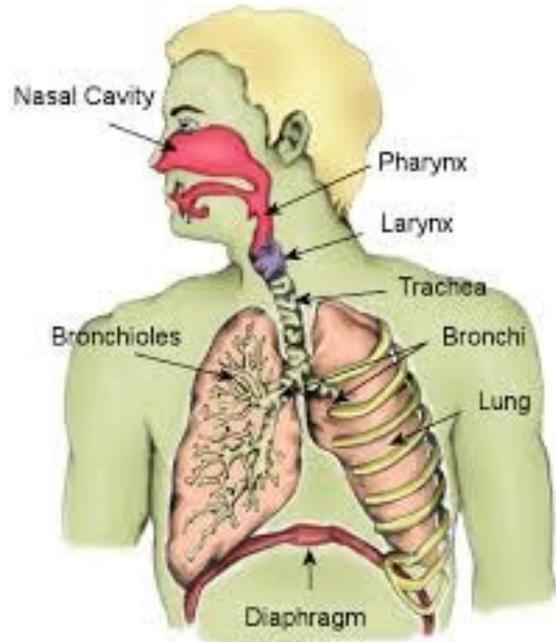
Important but only one piece of the management puzzle

End goal is tissue oxygenation:

- Airway
- Ventilation
- Oxygenation (circulation)



ANATOMY & PHYSIOLOGY



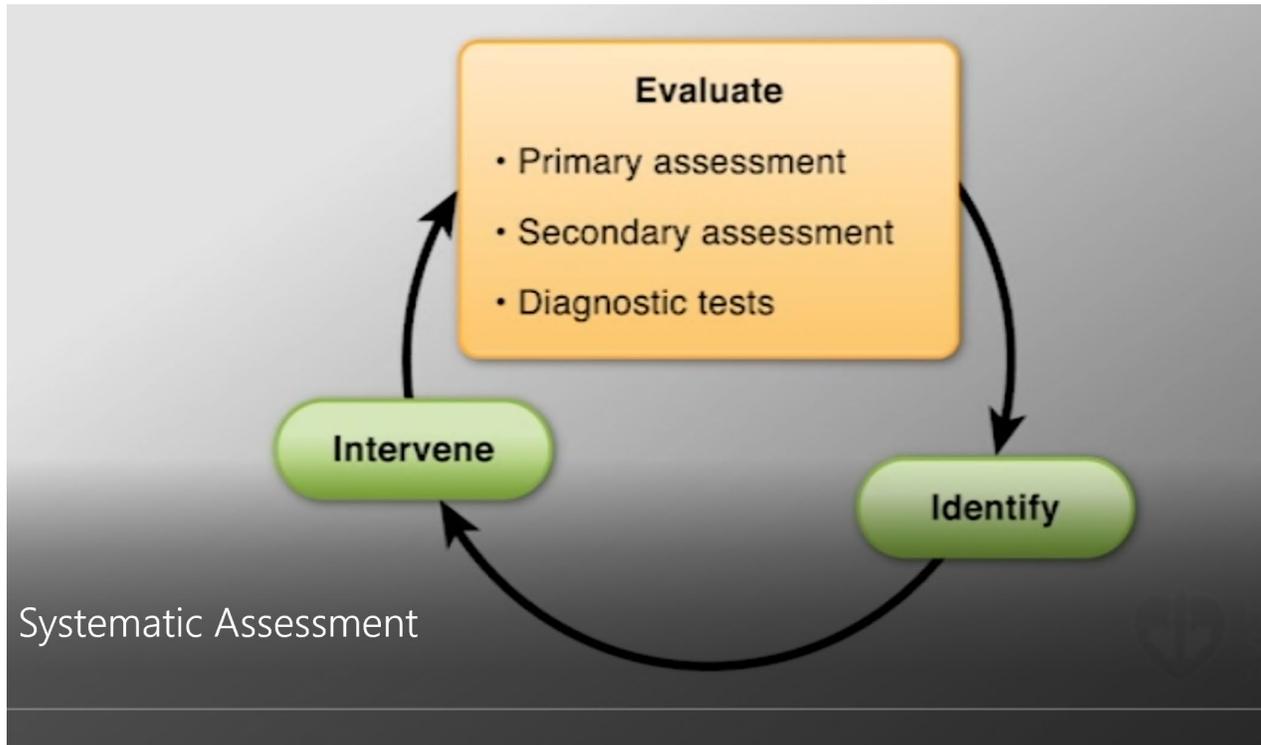
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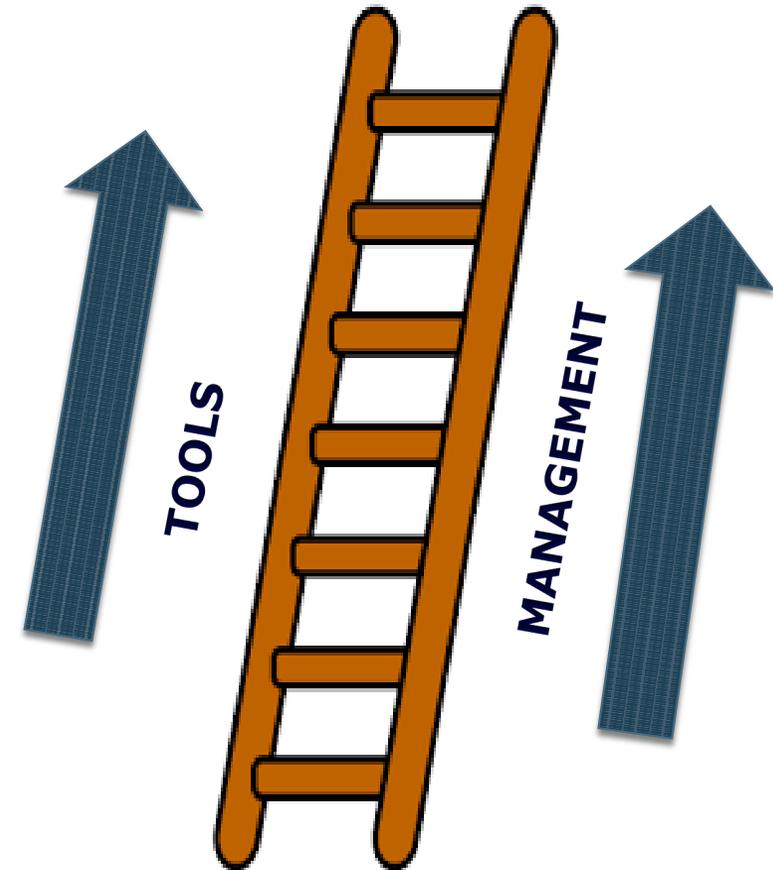
CLINICAL CONTEXT

How we manage the airway will be determined by:

- What is the cause?
- What do we need to do immediately?
- What do we need to do on-going?



INTUBATION VENTILATION



SPONTANEOUS



TOOLS

Oxygen delivery devices:

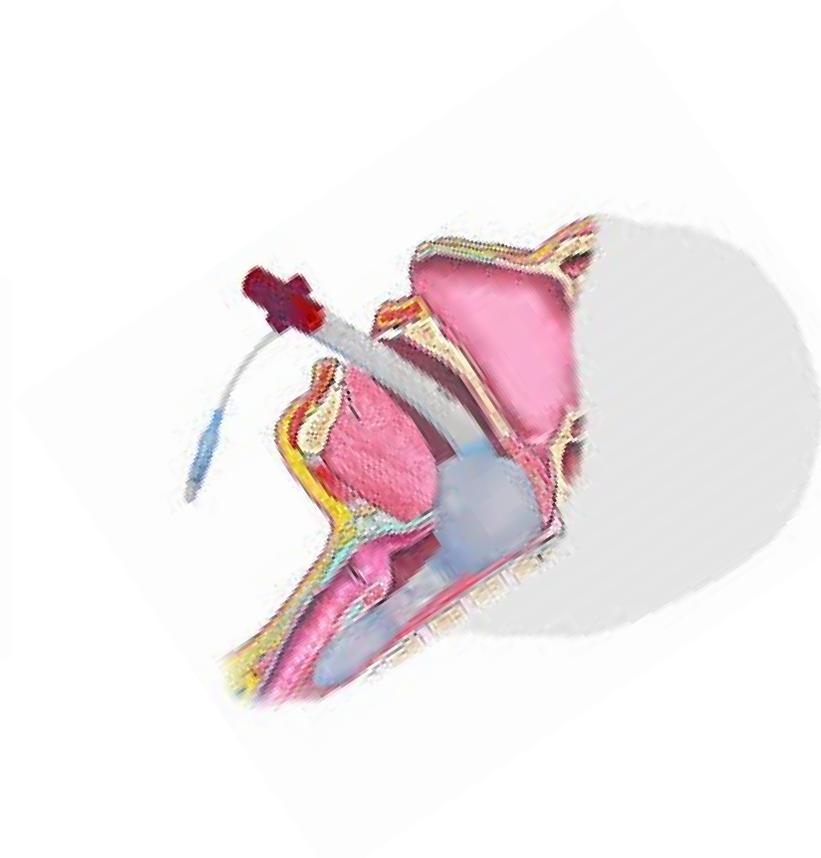
- NP
- O2 mask/non-rebreather
- CPAP/BIPAP
- BVM
- Ventilator

Airway adjuncts:

- Nasal airway
- Oral airway

Advanced airway devices:

- King Airway
- iGel
- LMA
- ETT



TOOLS

Laryngoscopes

- Regular (Macintosh)
- Video (McGrath, Glidescope)

Intubation Assists

- Stylet
- Bougie
- Suction

Surgical Airway Kits (FONA)

Cognitive Aids/Checklists

Drugs

Virtual Support (RUDi/ROSe)



PROCESS MANAGEMENT

Important to evaluate:

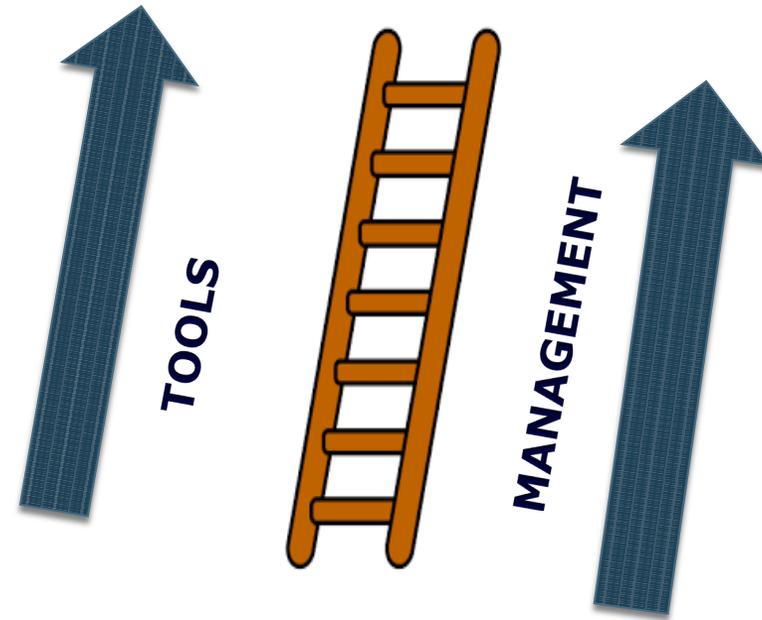
Patient
Provider
Environment

Ask the question:

Now or Later?
Me or Someone Else?
Here or Somewhere Else?

Be prepared!

Think through procedures/situations
Establish systems/protocols/cognitive aids
Ask for help as a routine part of process (power of team)



WHAT ABOUT OUR CASE?

This guy is in trouble!

We will need to secure his airway.

BTW he probably has SARS-CoV 2



Rapid Sequence Intubation (RSI)

Used in securing control of the airway in critically ill patients

- acute respiratory failure due to poor oxygenation or ventilation
- cannot protect their airway due to altered mental status
- a high risk of aspiration

Checklists are awesome!



The Seven Ps of RSI

- Preparation
- Preoxygenation
- Pre treatment
- Paralysis
- Protection and Positioning
- Placement with Proof
- Post intubation management

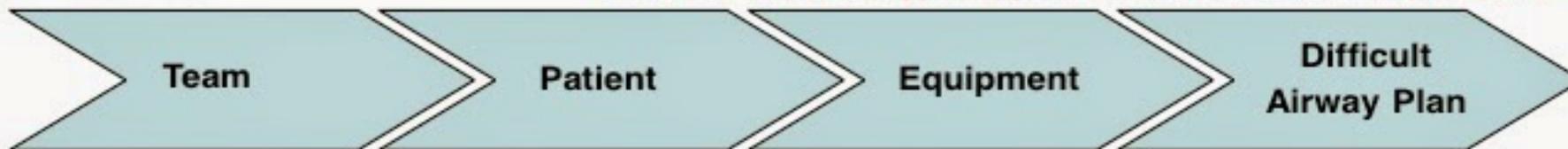
PPE





Emergency Induction Checklist

To be read out loud during pre-oxygenation. All team members must participate.



Do we need to call for any more help?

Second Anaesthetist

1 - Bleep 063

2 - Bleep 550 / 551

ODP – Bleep 017
(Obs ODP – 510)

Can we contact consultant anaesthetist on-call if needed?

Allocate team member roles:

Team Leader

Intubation

Cricoid Pressure

Intubation Assistant

Drugs

C-spine

Is cardiovascular status optimal?

Are we prepared for anticipated complications?

Is position optimal?

Pillow?

Ramping?

Head position?

Is preoxygenation optimal?

Consider adding:

Nasal oxygenation at 10L/min during intubation

Or

ITU : Optiflow or CPAP

Are necessary drugs drawn and labelled?

Induction Agents

Muscle Relaxant

Vasopressor

Maintenance Drugs

Is all monitoring on?

Capnography (CO₂)

Oxygen Saturations

ECG

BP

Is the person intubating happy with equipment?

Tilting Trolley / Bed

Laryngoscopes

2 ET Tubes

Bougie

Guedel, LMA

Suction to hand

Ambubag

Difficult Intubation Trolley

What is the plan for difficult intubation?

A – RSI Laryngoscope +/- Airtraq

B – eg Bag-mask with Guedel

C – eg LMA / LMA Supreme

D - Cricothyroidotomy

Is the relevant equipment for above plan readily available?

Is everyone happy to proceed?

Proceed only if Yes

This checklist is not intended to be a comprehensive guide to preparation for induction

Adapted from the 4th National Audit Project of The Royal College of Anaesthetists

V2, MK 2015



EMERGENCY INDUCTION CHECKLIST

Prepare Patient

- Is preoxygenation optimal?
 - $ETO_2 > 90\%$
 - Consider CPAP
- Is the patient's position optimal?
 - Consider sitting up
- Can the patient's condition be optimised any further before intubation?
- How will anaesthesia be maintained after induction?

Prepare Equipment

- What monitoring is applied?
 - Capnography
 - SPO_2 probe
 - ECG
 - Blood pressure
- What equipment is checked and available?
 - Self-inflating bag
 - Working suction
 - Two tracheal tubes
 - Two laryngoscopes
 - Bougie
 - Supraglottic airway device
- Do you have all the drugs required?
 - Consider ketamine
 - Relaxant
 - Vasopressor

Prepare Team

- Allocate roles;
 - Team leader
 - First Intubator
 - Second Intubator
 - Cricoid Pressure
 - Intubator's Assistant
 - Drugs
 - MILS (if indicated)
 - Rescue airway
- How do we contact further help if required?

Prepare for difficulty

- If the airway is difficult, could we wake the patient up?
- What is the plan for a difficult intubation?
 - Plan A: RSI
 - Plan B: e.g. BMV
 - Plan C: e.g. ProSeal LMA
 - Plan D: e.g. Front of neck
- Where is the relevant equipment, including alternative airway?
 - DO NOT START UNTIL AVAILABLE
- Are any specific complications anticipated?



Adult Intubation checklist

1 Team Preparation & CRM

- Gloves / Glasses / Mask N95 / Face Shield for Entire Team
- Establish Roles
- Establish Goals
- Induction Plan & Confirm Dosing
- Medication Drawn & Labeled
- Vasopressors Ready
- Rescue Plan

2 Patient Preparation

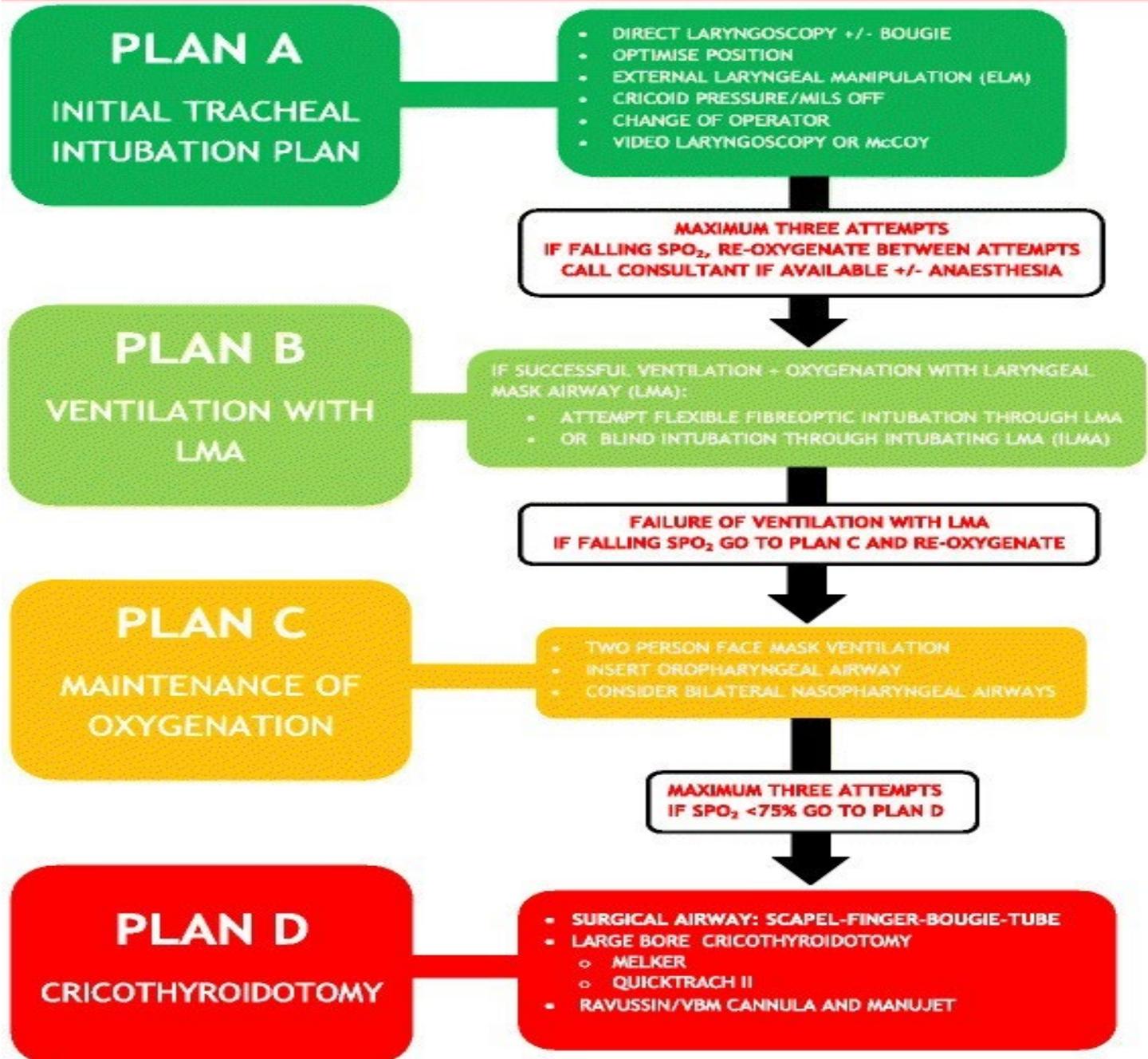
- Optimize Hemodynamics (Consider Vasopressors & Fluid)
- Position Patient
- Pre-Oxygenate / NODESAT (Minimum SPO₂ 90%)
- ECG, NiBP, SPO₂, ET₂CO₂
- Vascular Access x 2 IV / IO with Pressure Infuser

3 Equipment

- BVM with PEEP Valve & Attached to O₂
- Laryngoscope & Blades Tested
- Consider VL & Test Device
- Suction - Tested & Under Patient's Right Shoulder
- OPA / NPA
- ET Tube(s) - Syringe, Verify Cuff & Lubrication
- Bougie - Out & Ready
- ETT Securing Device
- Rescue Airways - Readily Available
- Front of Neck Access (FONA) / Surgical CRIC Ready



CRITICALLY ILL AIRWAY ALGORITHM



EQUIPMENT – DUMP SHEET

PRE-RSI CHALLENGE-RESPONSE

Monitoring - BP, ECG, SpO2, ETCO2	CHECK
Nasal Cannulae at 15l/min PLUS Mask O2	CHECK
Pre-oxygenation for FOUR minutes	CHECK
Suction checked working & available	CHECK

IV & DRUGS

IV Cannula connected to fluid & running	CHECK
NIBP on contralateral arm and BP seen	CHECK
Spare cannula in situ	CHECK
INDUCTION AGENT drawn up, dose checked	CHECK
SUX or ROC drawn up, dose checked	CHECK
VASOPRESSORS drawn up, labelled	CHECK
POST INTUBATION drugs drawn up & labelled	CHECK

INTUBATION EQUIPMENT

BVM connected to oxygen	CHECK
Guedel & two NPO airways available	CHECK
Laryngoscope blade chosen, light working	CHECK
ET tube size chosen, cuff tested	CHECK
Alternate tube size chosen & cuff tested	CHECK
Syringe for cuff inflation	CHECK
Stylet & Bougie available	CHECK
Gooseneck, filter, inline ETCO2 (or EasyCap)	CHECK
Tube Tie available	CHECK
Ventilator settings determined	CHECK
Anticipated difficult airway plan's B, C, D	CHECK

TEAM BRIEF

In-line immobilisation person briefed	CHECK
Cricoid pressure person briefed	CHECK
Drug giver briefed	CHECK
Anticipated problems & post RSI care brief	CHECK

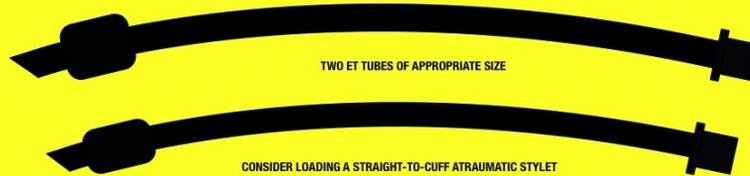
BOUGIE with COUDE TIP (or can use FROVA OXYGENATING BOUGIE)



NASO-PHARYNGEAL & ORO-PHARYNGEAL AIRWAYS



ET ADAPTOR, IN-LINE FILTER and ETCO2 LINE or EASYCAP



TWO ET TUBES OF APPROPRIATE SIZE



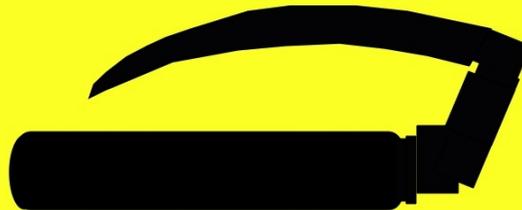
10 or 20 ml syringe

LUBE

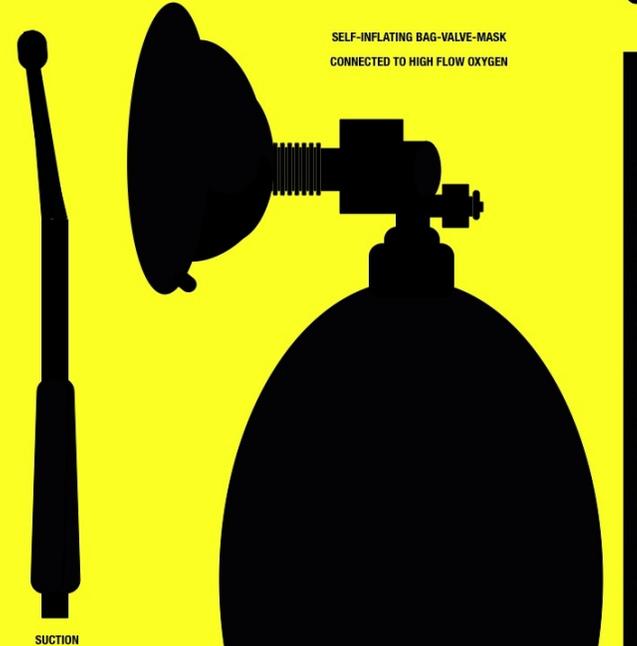
TAPE



LARYNGEAL MASK AIRWAY



LARYNGOSCOPE with WORKING BULB & APPROPRIATE BLADE



SELF-INFLATING BAG-VALVE-MASK CONNECTED TO HIGH FLOW OXYGEN

SUCTION

(CONFIRM WORKING then PLACE UNDER PILLOW)

DRUGS

INDUCTION AGENT
SUX or ROC
VASOPRESSOR
FLUIDS RUNNING

PLAN IN CASE OF A FAILED RSI ?

Difficult Airway
Kit Available

15 l/min
O2

wondershare™

SURGICAL AIRWAY KIT & PREPARED TO USE IT ?



DRUGS

INDUCTION:

- ketamine 1.5 mg/kg
- etomidate

PARALYSIS:

- rocuronium 1.5 mg/kg
- succinylcholine

MAINTENANCE

- Morphine (50 mg) Midazolam (50 mg) in 50 mls NS
start @ 5 ml/hour and titrate



WHAT ABOUT SARS-CoV-2?

SARS Cov – 2 (COVID 19) – coronovirus (like the common cold)

- Delta variant very infectious – everyone is going to get it!
- 80 % people will get mild/moderate infection
- 20% people will require hospital care
 - 10% ward patients
 - 10% ICU
 - 5% death
 - 5% survivor
 - 2.5% Long COVID (Resp, Fatigue, Cognitive Impairment, Multisystem, Mood)



Intubation Checklist for COVID19 Patient

Safety of the health care team is paramount and during a pandemic, health care worker safety is prioritised over the patient. Effective communication is key.

Drs. K Romano, N Chima, E Watson, J Atherstone, J Lohser on behalf of Departments Anesthesiology and Critical Care Vancouver Acute

Intubation Goals

1. Minimise Aerosol Exposure:

- RSI (avoid BMV)
- Inflate Cuff Prior to Ventilation
- Clamp ETT Before Circuit Disconnection

2. Minimise Waste:

- Rationalise Kit

Equipment

Intubation Bag:

- ETT 7.5 w/ Stylet
- Syringe & Gel
- Mcgrath + 4 Blade
- Anchorfast or Tie
- ETT Clamp
- Flex-Tube
- In-Line Suction

Drugs:

- Ketamine 200MG
- Rocuronium 200MG
- Phenylephrine X 2
- Propofol 1% 100ML
- Norepinephrine Infusion
- *Additional drugs available on request*

Crash Bag:

- Bougie
- ETT 6.5, 7.0, 8.0
- X Mcgrath Blade
- LMA 3 & 4 & 5
- DL MAC 3 & 4
- Cricothyroidotomy Set
- ACLS Drug Box & Zoll Defibrillator

Anteroom Bag:

- Plan B Kit (Assembled during brief from **Crash Bag**)

Team Brief (Lead by Anesthesia)

1. Team Introduction & Assign Roles
2. Patient Allergies/Consent/Code Status
3. Empty Pocket Check
4. Review Intubation Plan & Prepare Kit
 - Plan A/B/C
 - RSI Sequence & Drug Dosing — Recommend 1.5MG/KG Rocuronium
 - Prepare **Intubation Bag & Drugs**
 - Prepare **Anteroom Bag** from **Crash Bag**
 - Trauma Surgeon notified if Necessary
 - Review Communication Prompts
5. Room Check
 - Ambu-Bag /OPA/HEPA Filter
 - Capnography
 - Suction + Yanker
 - > 2 IV Pumps
 - IV Access
 - Ventilator + Closed Suction
 - Plastic Drape
6. Cardiac Arrest: **AIRWAY THEN COMPRESSION!**

Team Roles:

Intubator/Room Lead
ANESTHESIOLOGIST

Drug Administration
RN

Airway Assistant
RT

Anteroom Runner (PPE ON)
RT or RN

Second RN
(External, Observer/Chart)

Second Anesthesiologist

Intensivist

OUTSIDE ROOM



Default Monash Adult COVID RSI Strategy

Ramped Position: head up + flexion

Optimal Preoxygenation
Consider ketamine 0.1mg/kg to tolerate mask
2 Hands, Vice Grip
Endpoint: $ETO_2 > 80\%$ or 5 mins (timed)
Consider applying 10cmH₂O CPAP if good seal

Standard Induction Medications
Ketamine 1.5mg/kg
Rocuronium 1.5mg/kg



Keep face mask applied & maximise patency
Consider 10cmH₂O CPAP if good seal
PPV only if threshold SpO₂ inevitable
Time 60 seconds before instrumenting airway



Oropharyngeal Airway
2 hands (Vice Grip)

2nd Generation SGA



1st Attempt
Mac VL
Bougie

Maximum 3 attempts at each upper airway lifeline
Scalpel technique if neck rescue required

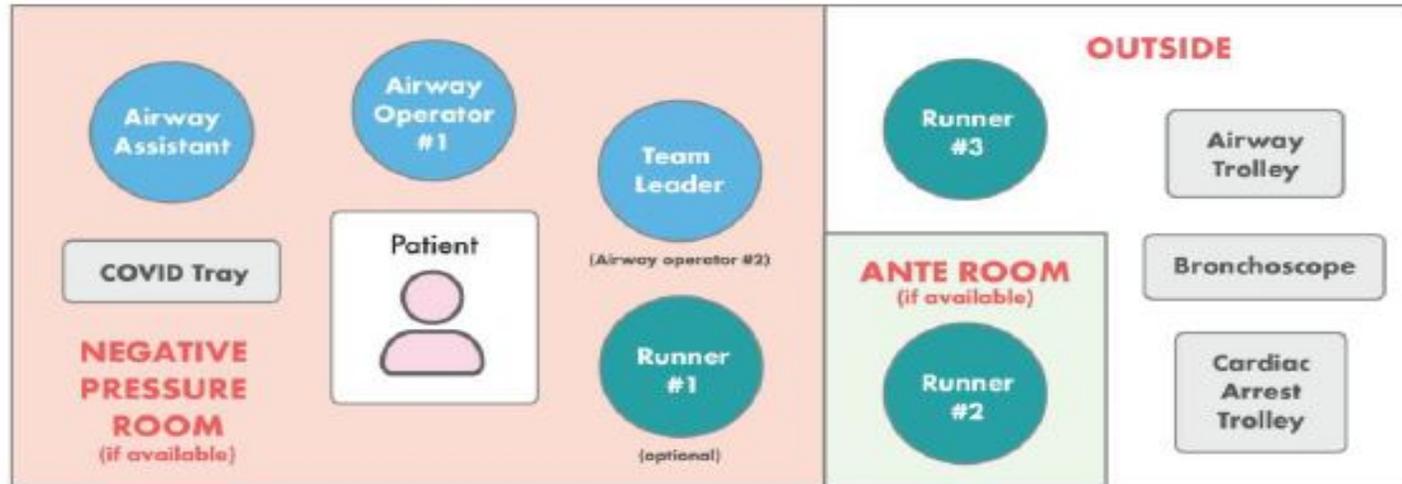




SAFE AIRWAY SOCIETY

COVID-19 AIRWAY MANAGEMENT

Team Members



COVID Intubation Tray

- | | | |
|---|---|--|
| <input type="checkbox"/> Macintosh VL blade | <input type="checkbox"/> Bougie / Stylet | <input type="checkbox"/> ETCO2 |
| <input type="checkbox"/> Hyperangulated VL blade (if available) | <input type="checkbox"/> 10 mL syringe | <input type="checkbox"/> NG tube (large bore) |
| <input type="checkbox"/> Macintosh direct laryngoscope | <input type="checkbox"/> Tube tie | <input type="checkbox"/> OPA + NPA |
| <input type="checkbox"/> SGA (2nd generation) | <input type="checkbox"/> lubricant sachet | <input type="checkbox"/> Scalpel + bougie CICO kit |
| <input type="checkbox"/> ETT (appropriate size range) | <input type="checkbox"/> Viral filter | <input type="checkbox"/> In-line suction |



AIRWAY MANAGEMENT IN COVID-19?

PPE WORKS!

BEST PERSON ON AIRWAY

OPTIMIZE ENVIRONMENT

- room ventilation
- set up, roles

LIMIT EXPOSURE

PRACTICE MATTERS

- simulation



TRAINING/CPD

Hands on

Simulation – onsite/virtual

Resources:

- CME funds (individual/community/REEF)
- RCPD
- REAP
- GPSC – Divisions
- SSC – FE/PQI

Need to collaborate with local team (nurse educator) and create a regular schedule of interdisciplinary activities/SIMS



SUMMARY

Airway principles

Clinical context determines approach

Tools

Process – RSI (COVID)

Support/Training/CPD



DISCUSSION

