

Das VORTEX Atemwegs Strategie Tool

Bereite Interventionen vor

Intravenöser Zugang

- Adäquat
- Durchgängig / läuft

Medikamente: Wirkstoff / Dosis / Beschriftung

Intubation:

- Hypnotika / Analgetika
- Relaxans
- Sonstig benötigte Medikamente
- Notfallspritzen

Post Intubation:

- Hypnotika
- Analgetika
- Relaxans

Monitoring: Bestätige Optimierte

- ETCO₂
- SpO₂
- RR
- EKG
- Alarme

Vermeide Hypoxie

Sichere Apnoe Zeit

PreOx:

- 100% O₂ Konnetktiert / Fluss
- Optimierte FRC
- PreOx komplett

ApOx:

- O₂ Konnektiert / Fluss

ReOx:

- Maske-Beutel / Beatmungsgerät
- Einstellungen Beatmungsgerät
- Denke an PEEP

Vortex Approach

- Position
- Absaugung

Beatmungsmaske:

- Hilfsmittel
- Maske: Größe / Art

Supraglottischer Atemweg:

- SGA: Größe / Art

Endotracheal Tubus:

- Hilfsmittel
- Laryngoskop: Größe / Art (incl VL), Funktion
- ETT: Größe / Art
- Spritze / Cuff Test
- Klebestreifen / ETT-Holder

CICO Rescue:

- CICO Rettungs-Kit

Fördere Teamarbeit

Zusätzliches Personal:

- Supervision
- Hilfe: Anästhesist / Oberarzt

Rollen: fähig gebrieft

- Team Koordinator
- Vortex Koordinator
- Atemweg Durchführender
- Atemweg Assistent
- Cricoid
- Manual In-Line Stabilisation (HWS)
- Medikamente
- Monitore
- Zeit / Dokumentation
- CICO Rettung

Strategie: besprochen

- Antizipiere Herausforderungen:
 - Maske/ETT/SGA/CICO
- Lifeline Sequenzen
- Lifeline Optimierung
- Optionen Grüne Zone: erhalte/wandle/ersetze
- Fragen / Bedenken?

Instructions for use of the **Vortex** Airway Strategy Tool

This instruction document is intended to provide foundation material on use of the Vortex Airway Strategy Tool for reference/training purposes in order that the checklist itself can remain concise. It is not intended for "real time" clinical use in an airway crisis & does not need to be displayed in clinical areas. The details on this document should already be familiar to the user of the checklist. Familiarity with the Vortex Approach & CICO Status tools are also assumed. This checklist is not intended to be a comprehensive guide to preparation for airway management. The Vortex Airway Strategy Tool should ideally be laminated with the Vortex Cognitive Tool on the opposite side. Checklist items should be read aloud immediately prior to inducing the patient, in a challenge-response format. Responses may be physically checked off on the tool with a whiteboard marker if desired.

Intravenous Access:

Adequate: confirm that IV is of an appropriate gauge and that injection ports are accessible. Where required, confirm that additional IV access is available,

Running: confirm IV access is patent and that where lines are connected they flow freely. A mechanism should be available to prevent reflux of drugs up IV line (valve or kinking). Where required ensure pressure bags, etc are available for rapid infusion of fluid.

Drugs: for all drugs to be administered, confirm appropriate agent, dose (ideally in both mg & ml to be administered) and ensure appropriate labelling. To minimise error, use of a 5ml syringe (preferably red barrelled if available) is encouraged for all muscle relaxants which are to be administered as a bolus (5ml syringes should be avoided for other drugs). Vasopressors and other "emergency" medications should be kept physically separate from routine induction drugs to avoid confusion.

Emergency: emergency drugs may include vasopressors, atropine, rapid onset muscle relaxants, etc as appropriate to clinical situation.

Where required for drug administration post induction, confirm infusion pumps are available with batteries charged & connected to mains power supply where possible.

Monitoring: for all monitoring, ensure that it is attached & confirm baseline values. Consider whether any values require optimisation prior to induction.

ETCO₂: where FM is being used for PreOx, ETCO₂ should be attached to FM during PreO₂ to confirm monitor is functioning & connected, to give some indication of adequacy of FM seal and to assist in assessing adequacy of FMV if implemented as either a planned technique or as a rescue strategy.

SaO₂: confirm pulse oximeter set as tone source to ensure tone variation with SaO₂ level. Confirm SaO₂ tone is audible.

BP: consider whether an IAL is needed for continuous BP monitoring during induction. Where IAL is used ensure transducer is zeroed and at an appropriate height. Where NIBP is used ensure inflation will not obstruct primary IV line or SaO₂ reading and that cycling is active and set to an appropriate interval.

ECG: confirm rhythm and ST segment morphology prior to induction so that any change can be more easily recognised.

Alarms: confirm relevant alarms are set to ON, alarm limits are appropriate and alarm volume is at an audible level.

Safe Apnoea Time:

PreOx:

- 100% O₂ Connected/Flowing: requires a 100% capable device with good mask seal where FM is used. Where an anaesthetic machine is being used confirm that no other gases/volatile agents are running.
- Optimise FRC: the volume of the FRC can be increased by 20° head up position & application of 5-7.5 cm H₂O of PEEP
- PreOx Complete: denitrogenation of FRC requires 3 mins normal tidal ventilation, 8 vital capacity breaths or an ETO₂ > 80%

ApOx: an alternate O₂ source should be connected to nasal or buccal O₂ delivery device at 15L/min.

ReOx: BVM &/or ventilator & circuit should be available and checked for function/leaks.

Vortex Approach:

Beware of placing patients in sniffing position where immobilisation of the cervical spine is required.

Patient/Equipment/Drugs should be prepared for all optimisation manoeuvres under the Vortex Approach categories of Manipulations, Adjuncts, Size/Type, O₂ Flow/Suction & Muscle Tone. Refer to the Vortex Approach cognitive tool as required. As many optimisations as possible should be implemented prior to the first attempt at airway management. ETT connector should be firmly pushed into ETT.

The location & availability of the emergency airway trolley should be confirmed. Where considered appropriate the emergency airway trolley should be immediately available at the bedside.

CICO Rescue equipment should be rapidly accessible in a pre-packaged kit containing all the equipment necessary to perform both cannula & scalpel techniques. If CICO status escalates to READY the CICO kit should be present and visible at the bedside. Where clinically appropriate CICO status may be escalated to READY or SET prior to initiating airway management.

Abbreviations:

ApOx: Apnoeic Oxygenation
BVM: Bag-Valve-Mask Device
ECG: Electrocardiogram
ESA: Emergency Surgical Airway
ET: End Tidal
ETT: Endotracheal Tube
FM: Face Mask
FMV: Face Mask Ventilation
FRC: Functional Residual Capacity
GZ: Green Zone
IAL: Intra-Arterial Line

IV: Intravenous
NIBP: Non-Invasive Blood Pressure
NSA: Non-Surgical Airway
PEEP: Positive End Expiratory Pressure
PreOx: Pre-Oxygenation
ReOx: Re-Oxygenation
SaO₂: Oxygen Saturation
SGA: Supraglottic Airway
VL: videolaryngoscope

Additional Staff:

Supervision: where appropriate, intubation should be discussed in advance with supervisor to provide the opportunity to assess strategy, give advice and offer direct supervision/assistance.

Help: if it is considered that the assistance of more senior airway clinicians, an anaesthetist or ENT surgeon may be necessary, they should be immediately available as the need for their involvement may be time critical. It is not sufficient that help is merely "aware" or "contactable".

Roles: not all roles may be required for every episode of airway management. Ideally the required roles should be assigned to separate individuals but depending upon the number of staff available it may be necessary for some staff to fulfil multiple roles. Ensure that all required roles are assigned, that the respective staff feel capable of performing the role and that they have been briefed on how to perform the role.

Vortex Coordinator: the clinician assigned to Vortex tool should initially keep track of what optimisations have been performed by the airway operator for each lifeline. Once airway operator exhausts/repeats optimisations, abandons an attempt at a lifeline or declares "sucked into Vortex" the clinician assigned to the Vortex and other team members should prompt with remaining optimisation strategies.

Staff performing cricoid & in-line stabilisation roles should be briefed as to significance, technique and timing of application & removal of these interventions. In particular confirm the distinction between the instructions for "cricoid off" and "in-line stabilisation off" to avoid confusion.

Drugs: staff administering drugs should be briefed on plan for both intubation & post-intubation drug administration.

Monitors: someone should be assigned to observe monitors and provided with clear triggers to alert team.

Time/Scribe: someone should note, verbalise and document timing and other relevant details of key events.

Plan: the intended sequence in which lifelines will be attempted & associated optimisation strategies should be outlined in advance.

Green Zone Options Discussed: if GZ is attained via a technique other than the primary intended lifeline, once SaO₂ has been optimised and resources mobilised, the potential options should be considered in advance:

- Maintain current lifeline (remaining in GZ): proceed or withdraw
- Convert current lifeline (remaining in GZ): alternate upper airway lifeline or non-emergent neck airway
- Replace current lifeline (leaving GZ): return to funnel to attempt alternate lifeline with additional optimisations

