Kent, Surrey, Sussex
Critical Care Network

S.P.E.A.K SIM Scenario A
In-Line One-way Valves (OWV)
Placement & Cuff Deflation

Title	Cuff deflation & In-line OWV placement	Version	2
Target Audience	Critical Care nursing staff Critical Care AHPs (PT & SLT) Critical Care Practitioners/ ACCP/ ACP		
Running Time	1 hour (inc. debrief)	Authors	R. Webster & Laura Brockway

Brief Summary

Pt. Hx. Harry Mudd.

- 72 year old male.
- Pre-morbid frailty 2
- Small bowel resection and Type 2 respiratory failure.
- Critical Care patient currently undergoing trache wean. Intubated for 7 days. Trache for 3 days.
- Pt. has a non-fenestrated, cuffed trache in situ.
- He is receiving Ventilation SPONT Peep 6 Pressure Support 8 (*check the range*)
- Small amount of thin secretions suctioned from trache this morning.
- Frustrated and having difficulty writing

Weaning:
MDT considering trache wean and initiating cuff deflation trials. He has not had a cuff deflation trial.

Educational Rationale

This scenario will allow staff to practice providing cuff deflation and in-line one-way valves (OWV) trials.
To allow staff an opportunity to explore signs/ symptoms of laryngeal hypersensitivity versus not being able to physiologically tolerate ventilating with OWV in situ & how they would manage these scenarios.

Learning Objectives

- S – Selection of appropriate patient:
  - identification of trache and status of cuff (+/- rationale for cuff deflation/PMV trials/In-line placement)
  - identifying appropriate ventilation settings for initiating/ continuing one-way valves e.g: PEEP <10 PS <16 FiO_2 <0.50 (note these settings are a guide & need to be adapted to local policy)
  - Patient's FiO_2/ ventilation within targeted parameters prior to starting cuff deflation trials
  - Level of alertness – in most circumstances you would want A or V on AVPU – able to discuss rationale around this
- P – Prepare
  - Prepare necessary equipment: 10ml syringe, yankeur & soft suction catheters in bedspace, OWV (including warning label to go on cuff pilot line), connector for OWV, have relevant SPEAK Bedhead signs for your ventilator
  - Prepare the patient: patient education & explain rationale & procedure to the patient
  - Prepare the ventilator: know how you are either going to:
    1) place ventilator onto NIV/NIV-ST mode & which alarms you need to adjust for your ventilator
    2) use a ventilator with a bespoke SPEAK VALVE function & how to use this
    3) use a NIV machine & change interface according to need
- E- Eradicate air, ensure full cuff deflation
  - Aspirate subglottic port (if one present on tracheostomy)
  - Slow cuff deflation, considering need for simultaneous tracheal suction – can have discussion here re: when this may not be appropriate e.g: for instances where partial/ very slow cuff deflation is required e.g: laryngeal sensitivity & persistent cough
  - Ensure can hear/ feel air from mouth
- A – Assess
  - Assess degree of leak: Vte should be at least 40% less than Vti on ventilator
  - Place OWV correctly in-line with mechanical ventilation
  - Adjust ventilation mode/ alarms in line with local policy – see relevant SPEAK Bedhead sign for your ventilator
  - Assess patient comfort, voice & secretion management
  - Are aware of previous weaning plan/ ongoing plan/ rationale for OWV use
  - Discussion/ learning about potential ventilation setting changes that can be made e.g: reducing PEEP to account for physiological PEEP generated by OWV, titrating PS to patient comfort
  - For staff involved in setting weaning plans can expand this to be able to formulate potential wean plan moving forwards for subsequent OWV trials
- K – Keep an eye
  - Identify appropriate end of trial
  - Discussion around signs of laryngeal sensitivity versus intolerance of cuff deflation +/- OWV
  - Able to detect signs of fatigue & readiness to end OWV trial & rest patient

Practical ability to remove OWV, reinflate cuff, check cuff pressure & ensure nil residual leak. Aware of how to return ventilator back to baseline mode/ settings/ alarm settings (refer back to relevant SPEAK Bedhead sign)

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Technical set-up

Setting	Critical Care		
Simulator	Agree with Local SIM trainer		
Gender	Male	Age	72

Initial monitor parameters

RR	O2 sats	Pulse (HR)	BP	ECG rhythm
18	96%	101	125/85	
Cap Refill Time	Blood glucose	Temp.		
		37.		

Initial patient set-up

Airway	Obstruction	Airway adjunct
	Cuffed tracheostomy. Inflated trache cuff.	Tracheostomy NGT in situ

Breathing	Chest sounds	O2 supply
	Stable	Ventilation via Trache PEEP 6 PS 8

Circulation	Heart sounds	Cannula	BP cuff	Peripheral pulses

Disability	Eyelids	Pupils	AVPU/GCS
	Open	Normal	GCS – 9T AVPU score A

Exposure	Posture	Moulage	Bowel sounds
	Lying down (need to be sat up)		

Specific equipment / prop requirements

- Cuffed Tracheostomy in situ – size 8 – Inner cannula
- Ventilator and tubing
- SPEAK Bedhead sign for relevant ventilator
- Tracheal soft suction catheters
- Yankeur suction
- One-way valve valve (including warning label for cuff pilot line) and In-Line connector
- Manometer & 10ml syringe

**Settings/equipment to be adapted to reflect local equipment and procedures

Scenario flowchart

INITIAL SETTINGS

A. Tracheostomy size 8 cuff up. Ventilation in situ
B. RR 18. SpO2 96%
C. HR 101 BP.
D. Currently in bed has been sitting out with PT.
E. *NGT tube in situ*

EXPECTED ACTIONS

- Able to follow S.P.E.A.K algorthim
- Speak with pt.
- Position pt. upright
- Cuff deflation & simultaneous suction
- Check for reduced tidal volume.
- Monitor Ventilator (as per local policy)
- Check for oral airflow
- Encourage voice
- Place PMV in-line
- Speak with pt.

After 4 mins of cuff deflation

A. Tracheostomy size 8 deflated cuff. Ventilation in situ
B. RR increase to 22 . SpO2 91% on O2.
C. HR mildly increases.

Immediate results of Cuff deflation & OWV placement

- Post cuff deflation: Coughing and hoarse voice
- OWV placed - slightly stronger cough and voice.
- Pt. asking for drinks.
- Pt. answering questions

EXPECTED ACTIONS

- Monitor Obs.
- Remove valve and reinflate cuff

EXPECTED OUTCOME

- Patient returns to initial status
- Advised to trial further cuff deflation 1/7