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SCOTTISH PATIENT SAFETY PROGRAMME

Targeting Patient Safety

Implementing Ventilator and Central line bundles in a Scottish Critical Care Unit

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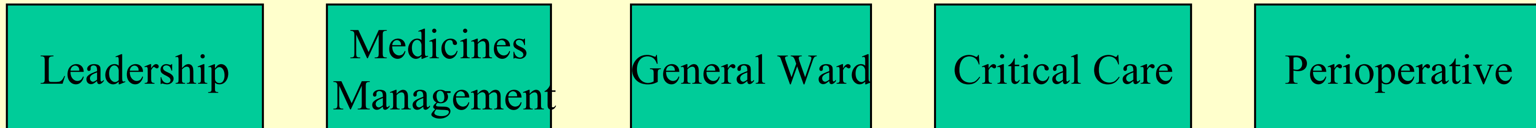
The Unit

- 16 beds (9 level 3, 7 level 2 beds)
- SE Scotland Regional Neuro referral centre
- Colorectal, ID and Oncology/Haematology on site and National Home Ventilation Service

The Concept

- National Directive, IHI QIS

- Work streams



- Aim to significantly reduce Hospital adverse events by 2010

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The Change Process

The
Plan-Do-Study-Act
cycle

Unit Incidence of CRBSI

- 13 episodes of CRBSI from 2007 – 2008
  (6 per 1000 catheter days)

- Aiming for over 300 days

- Unit infection control surveillance team producing data to aid quality improvement initiatives

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CVC BUNDLE

- INSERTION
  - Checklist & Documentation
  - Hand Hygiene
  - Skin Antisepsis
  - Catheter site selection
- MAINTENANCE
  - Consider need for CVC
  - Skin Antisepsis
  - Hand Hygiene
  - Needle free ports on all access points
  - Dressing if clean & intact can be left for up to 7 days

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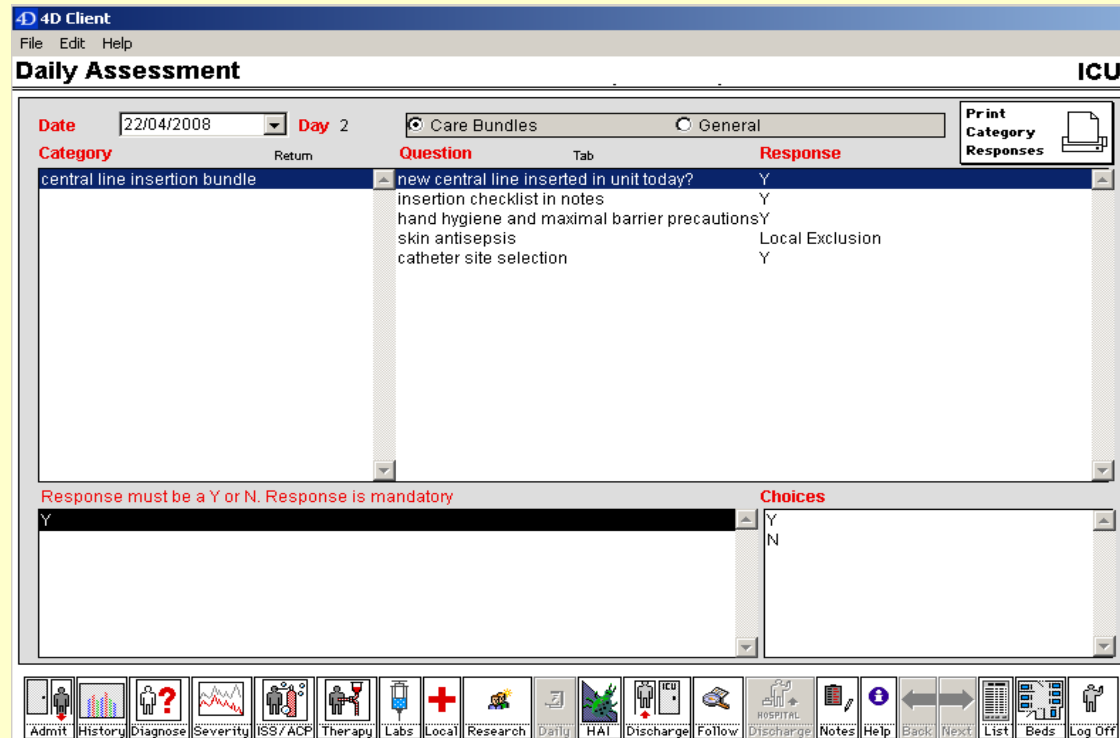
Every Patient Every Time
Scottish Patient Safety Programme

CVC Insertion Bundle

- Operator required to adhere to guidelines on a sticker
- Audit data collected electronically



CENTRAL LINE INSERTION: COMPLETE ALL INFORMATION

Date: **Time:** **Operator Name:**

Line Type:		Right ☐ Left ☐		**Standard Technique Followed:**	
Triple Lumen	☐	Int Jugular	☐	Antiseptic hand scrub	☐
Quad Lumen	☐	Subclavian	☐	Gown, gloves, hat and mask	☐
PA catheter sheath	☐	Femoral	☐	Chlorhexidine skin prep	☐
CVVH line	☐	Other-specify	☐	Aseptic insertion, drapes	☐
Other-specify	☐			Smart Sites Used	☐

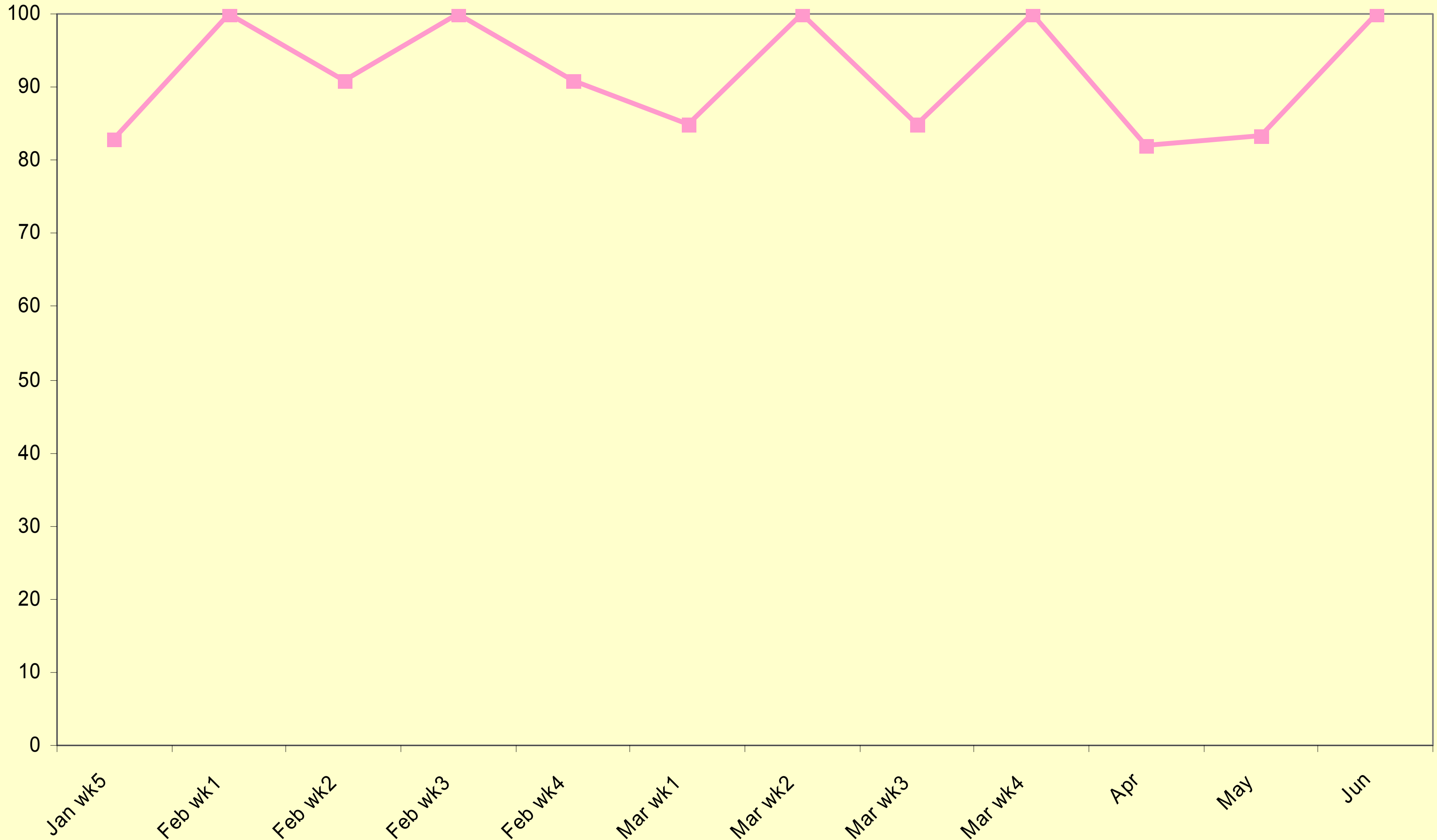
Ultrasound: Anatomy Check ☐ Visualised Insertion ☐ Not Used ☐

Difficulties/Complications/Deviation from Standard Technique? Explain

Post Insertion CXR checked? ☐ by:

Operator Sign:

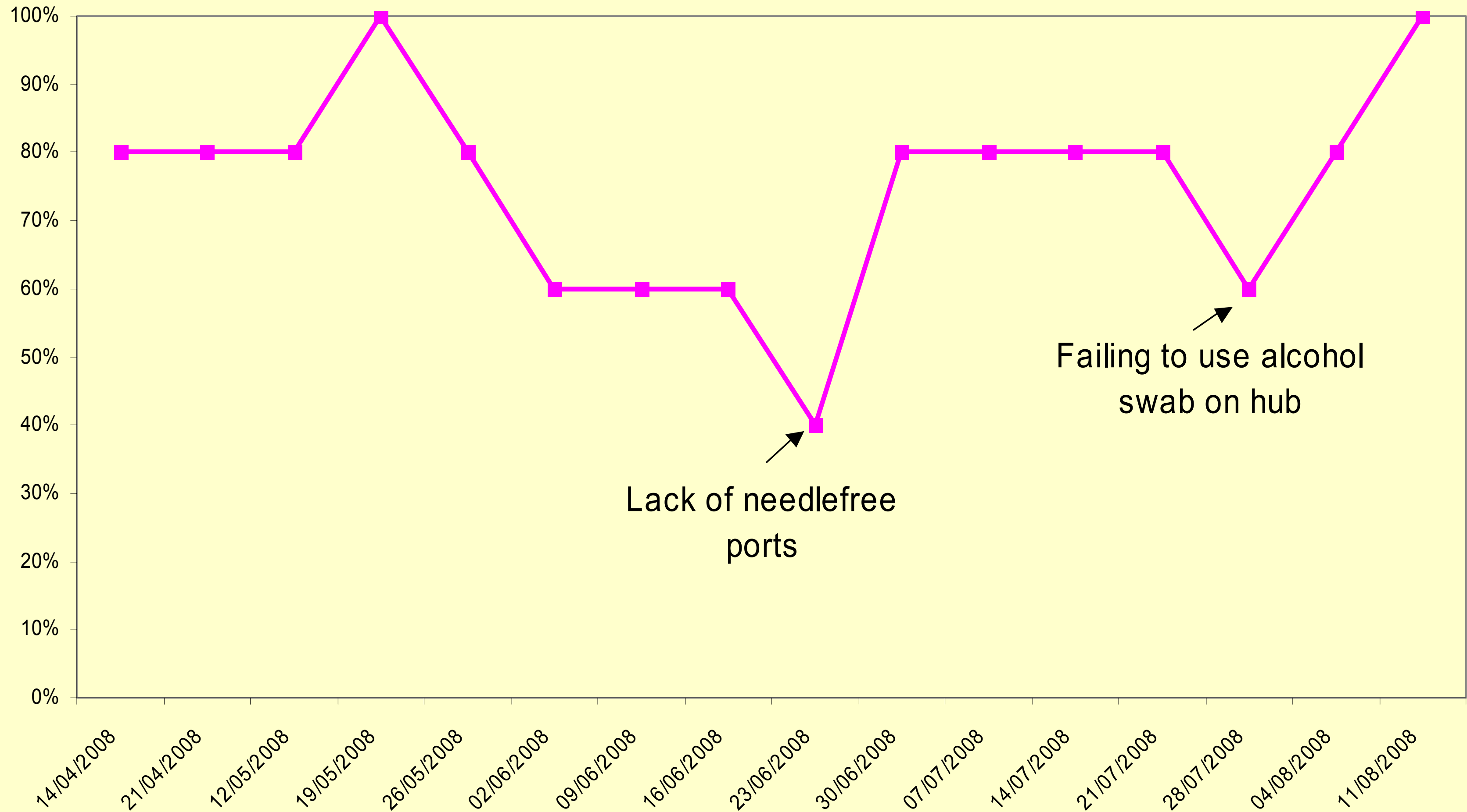
CVC insertion bundle % compliance



CVC Maintenance Bundle

- Posters
- Tick Chart
- Unit Tutorials
- Communication
- Education

CVC maintenance bundle % compliance



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70

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Unit Incidence of VAP

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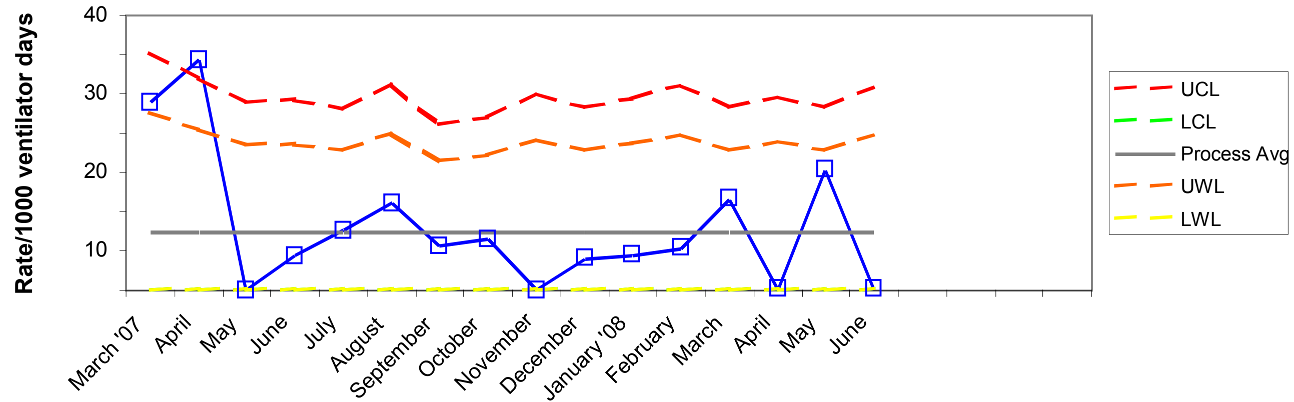

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VAP Prevention Bundle

- 30 Degree Head of Bed elevation
- Chlorhexidine Mouth Gel
- Daily sedation hold
- Assess for weaning
- Subglottic drainage (local exclusion at present)

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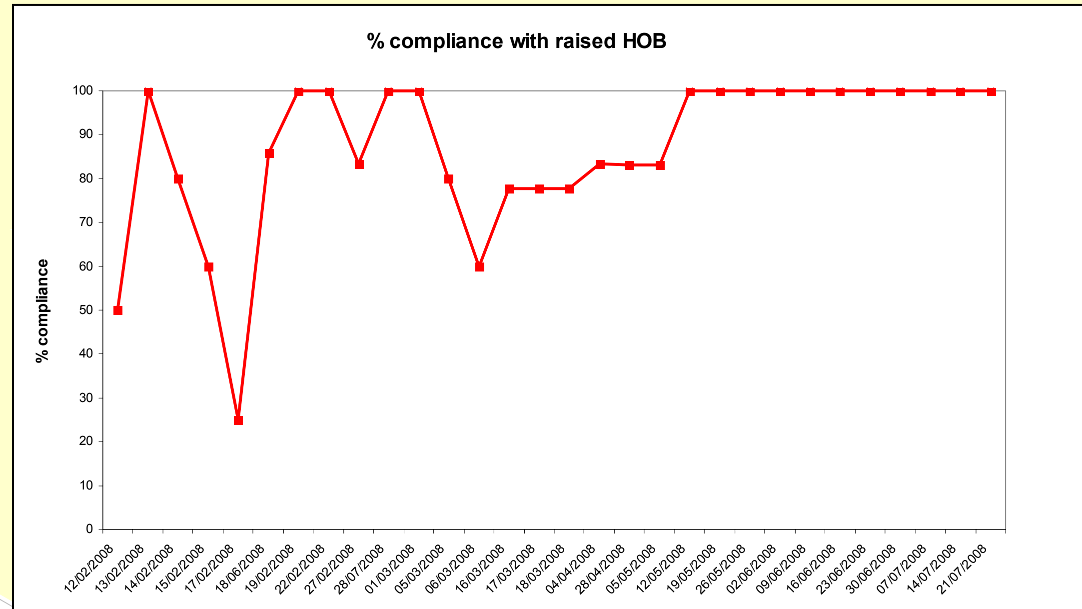
Head of Bed Elevation



Sit up!

Avoid the supine position aiming to have your patient at least 30° head up

Sitting ventilated patients up reduces the risk of VAP by one for every six patients that are sat up.
Drakulovic MB Lancet 1999; 354:1851-1858

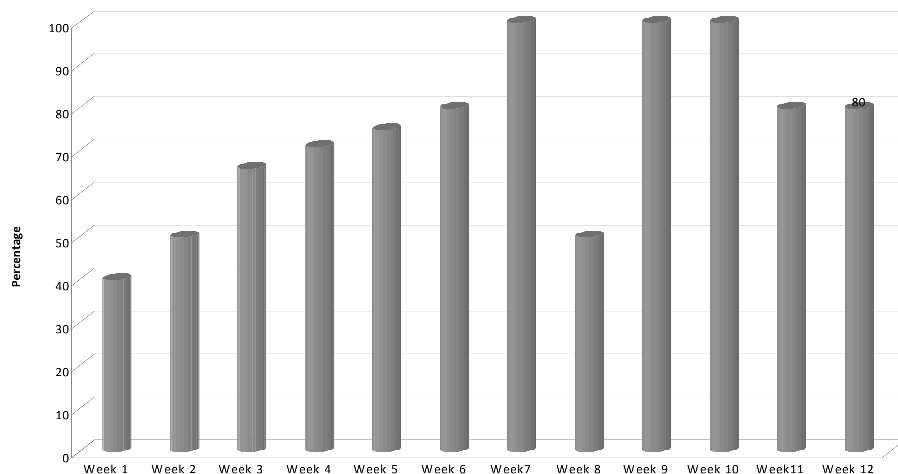
Exclusions
- Prone position
- Patient refusal
- Cardio-vascular instability
- Unstable spinal/ pelvic injury (tilt whole bed)

Record place a tick on 24 hour chart each hour that your patient's head of bed is raised to at least 30°

30°

WGH ICU VAP prevention bundle

Chlorhexidine Mouth Gel



WGH ICU VAP prevention bundle

Chlorhexidine mouth care

Chlorhexidine will reduce oropharyngeal bacterial colonisation which is implicated in the development of VAP. Metanalysis has shown a relative risk reduction of 0.74 [0.56-0.96]

Maciej PC. Crit Care Med 2007;35:595-602

4 times daily

- Apply gel to the inside of each cheek after oral hygiene (2cm measures approx from the tip of the finger to the first IP Joint)
- If not on drug chart ask for it to be prescribed 4 times a day, for all patients with either ET tube or tracheotomy.
- Use a clean (non-sterile) glove for the application. Alternatively a pink mouth sponge may be used.
- Please explain to patients that it may have a slightly unpleasant taste
- Discontinue use after extubation or de-cannulation.

Each tube of chlorhexidine gel must be for single patient use

Exclusions

Oropharyngeal trauma or surgery

Hypersensitivity to chlorhexidine (rare)

Palliative care

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Daily Sedation Hold & Assess for Breathing

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Wake Up & Breathe Sedation Hold

Your patient is excluded if…….

- Raised or (potentially raised) ICP
- Seizure Activity
- Neuromuscular Blockade (Atracurium)
- Spinal Injuries
- PF Ratio < 25 kPa (see over)
- Noradrenaline 6mg % >20mls/hr
- Arrhythmia other than controlled AF
- Planned Intervention eg Tracheostomy

If none of the above apply, your patient is suitable for a sedation break….

- Ensure analgesic requirements are adequate (monitor pain score if able)
- Stop propofol / midazolam
- Assess patient - continue to hold sedation until patient obeying commands or RASS score of - 1
- If patient becomes unmanageable and is at risk then restart sedation at half the previous rate and titrate until RASS score of –2

NB: If after 1 hour patient remains RASS < -2 then discuss with medical staff/ nurse in charge re stopping opiate.

Tick the appropriate section of the sticker on the 24hr chart

Ready to Breathe?

- Is PF ratio > 25 kPa? (see over)
- Has underlying condition improved?
- Are secretions manageable?

Weaning Guide

Check Baseline ABG
Review alarm parameters and apnoea setting
Ensure patient is in an optimal position for weaning

Reduce mandatory rate down to 8 bpm (maintain I:E ratio) and allow 3 min for adjustment before assessing

DOES YOUR PATIENT BREATHE?

YES

Change Mode to PSV (ASB) and set PS to achieve previous tidal volume

Wean PS by 2cmH_2O every hour whilst keeping RSBI < 80 and PF ratio > 25kPa (see charts below)

Aim for PS 5. Once achieved, consider PEEP – if > 5cmH2O then could this be reduced? Discuss with medic or nurse in charge

NO

Return patient to original ventilator settings

Monitor patient and ABG's

Tick appropriate section of sticker on 24 hr chart

Inform Medical Staff at ward round

PF ratio (PaO_2/F_iO_2)

F_iO_2 \ PaO_2	8	10	12	15	18	20
0.4	20	25	30	38	45	50
0.5	16	20	24	30	36	40
0.6	13	17	20	25	30	33
0.7	11	14	17	21	26	29

RSBI (RR/Vt)

Tidal volume \ RR	10	15	20	25	30	35	40
800	13	19	25	31	38	44	50
700	14	21	29	36	43	50	57
600	17	25	33	42	50	58	67
500	20	30	40	50	60	70	80
400	25	38	50	63	75	88	100
300	33	50	67	83	100	117	133
200	50	75	100	125	150	175	200

Barriers to Sustained Reliability

- Changing attitudes
- Requires all consultants to ‘sign up’
- Changing workforce - need brainwashed early !

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Keeping it Reliable

- Continuous Audits
- Less person dependant
- Develop ownership to improve compliance
- Engage interest / enthusiasm

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Communication

- We would be delighted if you would drop in and see us at the
  - **Intensive Care Unit PATIENT SAFETY ROADSHOW**

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Conclusion

- Made it a reliable programme
- PDSA cycle is a powerful tool for change
- Importance of a team approach