

Improving care for ventilated patients: a collaborative approach

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Introduction

- Background to improvement work
- Overview of interventions; Reducing harm in critical care
- Brief review of Ventilator associated pneumonia (VAP)
- Guideline implementation, measurement and outcome
- Limitations; challenges in practice
- Way forward

East Kent Hospitals University NHS Foundation Trust



Queen Elizabeth, The Queen
Mother Hospital, Margate



Kent & Canterbury Hospital
Canterbury



William Harvey Hospital
Ashford

- 3 Critical Care Units
- 25 Critical Care beds
- 1200 inpatient beds in total



Background

- Efforts are continually being made to improve the quality of patient care in the critical care environment.
- In recent years there has been a significant drive to improve patient safety.
- There is increasing pressure from PCT's, Strategic Health Authorities, the public and accreditation bodies to provide best evidence and evaluation of practice
- Most of us are being asked to engage in quality initiatives like never before
- There is, therefore, a need for greater insight into our clinical performance; essential for improving safety and quality.

Reducing harm: improving standards in critical care



- The last decade has seen a spotlight focused on reducing harm from medical error; the ways in which we can improve quality, safety and efficiency of healthcare delivery has be explored
- National Patient Safety 1st Campaign, IHI, NHSLA, productive ward
- One of the areas in need of urgent improvement has been the translation of research evidence into practice (Zilberberg *et al* 2009)



Reducing harm

Attention in critical care has been focused on evidence based management of:

- Sepsis
- Prevention of nosocomial infections
- Ventilator Associated Pneumonia



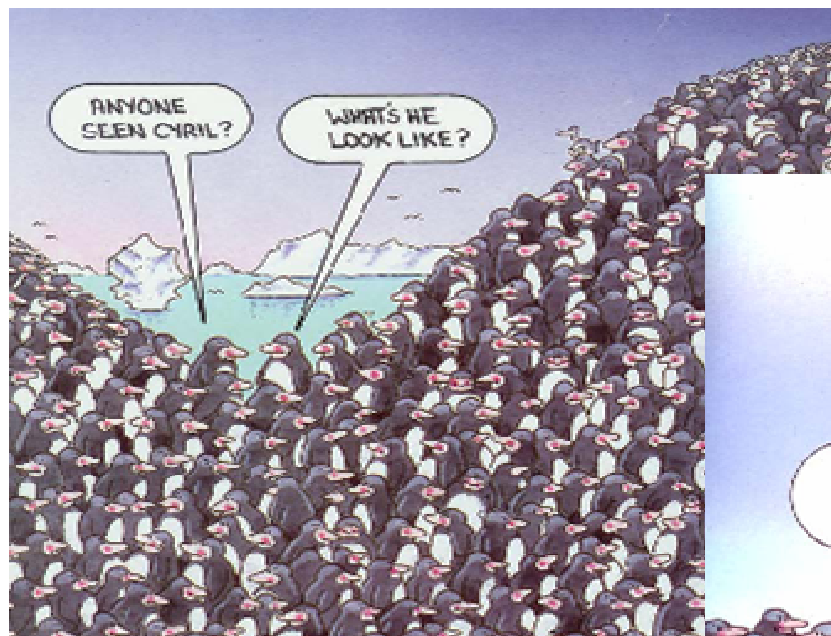
On the band wagon...

East Kent joined in!

- Sepsis programme
- Ventilator Care Bundle
- Robust infection control measures
 - Hand Hygiene
 - Line management
 - Catheter care
- Daily rounds
- Daily treatment goals
- Glycaemic control
- Clinical metrics
- Dashboard reports
- Global measures

and more and more...

... Until we did not really know what we were looking for...





Back to the beginning

- Determined to own data and act upon it
- Decided to concentrate on Ventilator Associated Pneumonia
- Emerged as an important area of concern, not least because of local disagreements to the definition!



VAP: recap

- VAP is a healthcare associated infection
- Can cause morbidity & mortality in mechanically ventilated patients
- Associated with an increased duration of mechanical ventilation, crude death rates of 5% to 65% & increased healthcare costs (Muscedere *et al* 2008)
- Body of literature on VAP is extensive & in some cases conflicting; making consensus regarding definition & treatment difficult
- It is preventable & working on the premise that active strategies are superior to passive ones we decided to agree a definition & a treatment guideline; actively measuring our compliance with the guideline



Interventions

- Ventilator Care Bundle (2004)
- New ventilator circuit for each patient (changed if soiled)
- Change of HME every 24 hours and if clinically indicated
- Use of closed endotracheal suctioning system
- Mouth care policy
- Hand hygiene management

In practice

- Clinical definition agreed at Steering Group
- On the agenda and discussed at each of the following:
 - Fever $\geq 38^{\circ}\text{C}$ (held bimonthly)
 - WBC <4000 or >12000
- Process based on IHI (PDSA)
 - Purulent sputum
- ITU teams educated
- Management
 - Led by Matrons
 - Clinical examination of patient, focusing on possible causes for daily rounds, diagnosis (re VAP) discussed at bedside
- Obtain chest radiograph to look for infiltrates and complications of pneumonia (pleural effusion and cavitation)
- Each identified patient with VAP Matron completed data sheet (attached)
 - Obtain sputum and blood culture
- Identified staff on each site collated data
- If chest radiograph shows new or extension of existing pulmonary infiltrates and >2 of the clinical criteria are present, it is likely that the patient has VAP.

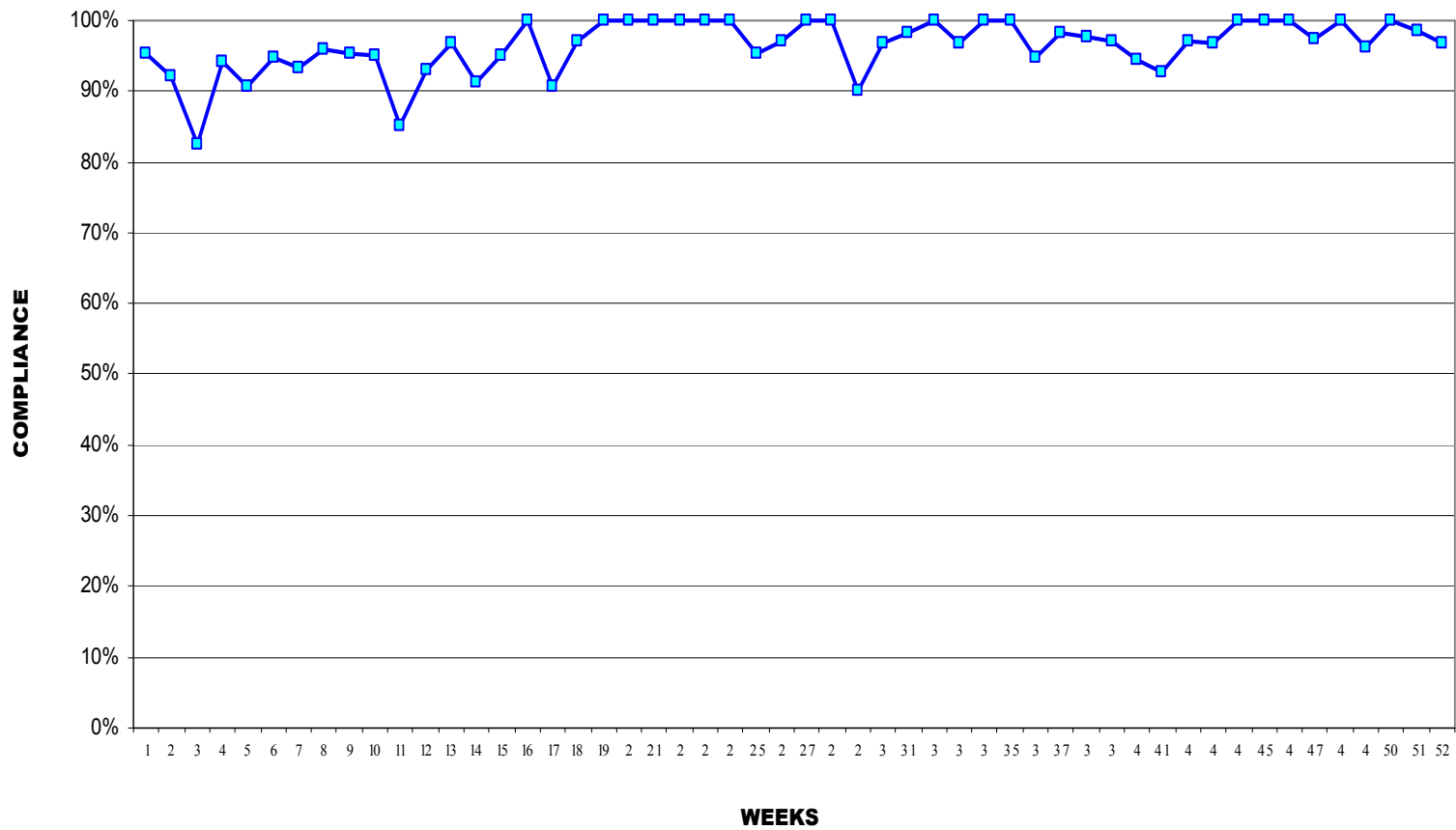
VAP Audit form

UNIT		PATIENT ID NO.		UNIT OUTCOME	ALIVE <input type="checkbox"/> DIED <input type="checkbox"/>
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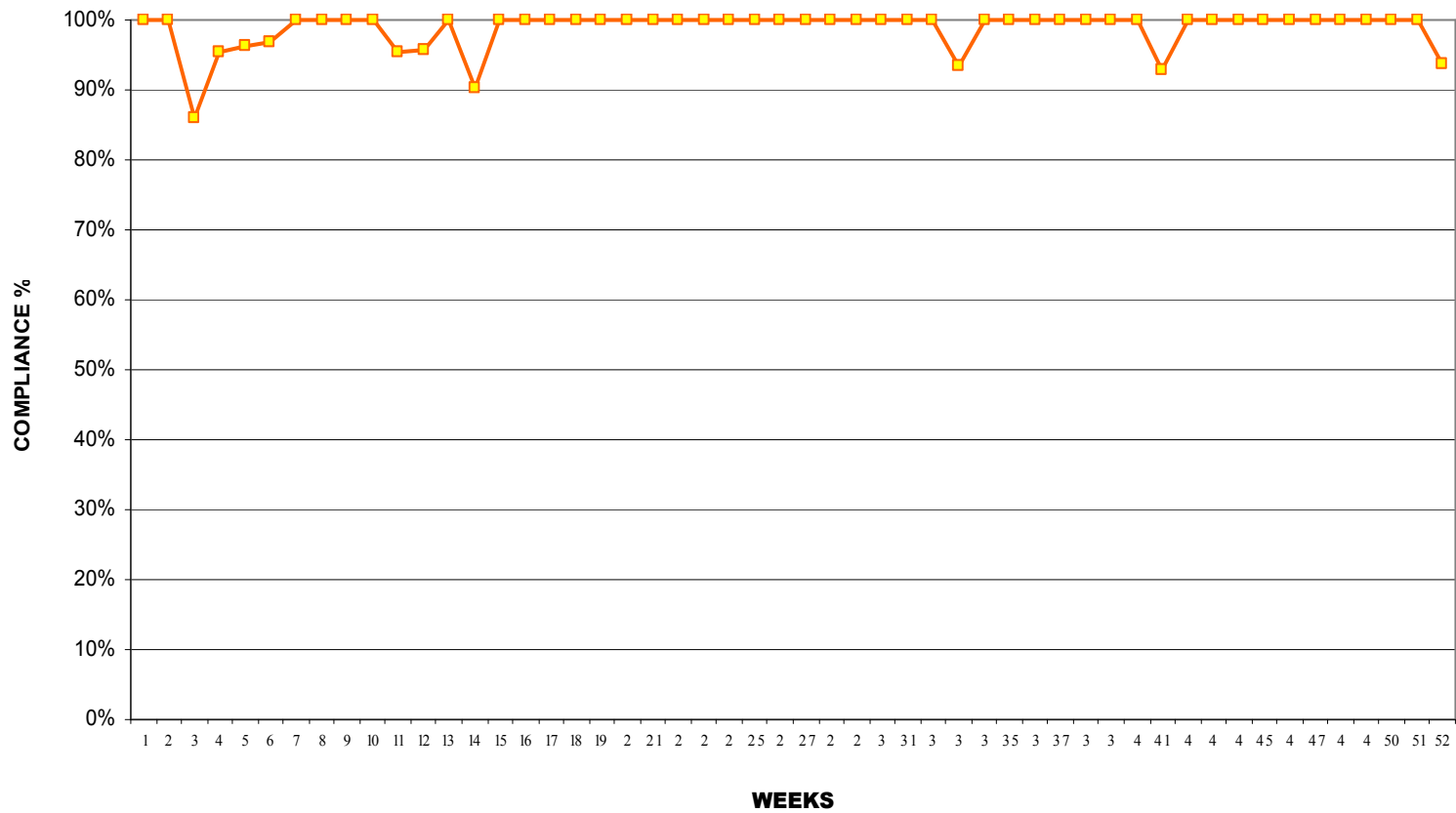
1	Diagnosis	Pneumonia, Renal Impairment
2	Length of time ventilated prior to VAP being diagnosed	10 days (03/06/09)
3	Type of humidification used, wet/dry	Dry
4	Previous antibiotic therapy	Tazocin, Clarithromycin, Fluconazole
5	Antibiotics prescribed following VAP diagnosis	Meropenum, Teicoplanin, Gentamycin, Ceftazidime, Amikacin, Levofloxacin
6	Was the patient re intubated at any time?	Yes but after VAP diagnosis
7	Date of tracheotomy if appropriate	01/06/09 day 8
8	Was the patient being enerally fed?	Yes
9	Type of Organism grown (if any)	Sputum sample: 24/05/09 Candida albicans, 01/06/09 Pseudomonas aeruginosa, 03/06/09 Klebsiella pneumoniae, Tracheostomy site swab: 06/06/09 pseudomonas Sputum: 08/06/09 and all samples until current pseudomonas

OTHER COMMENTS

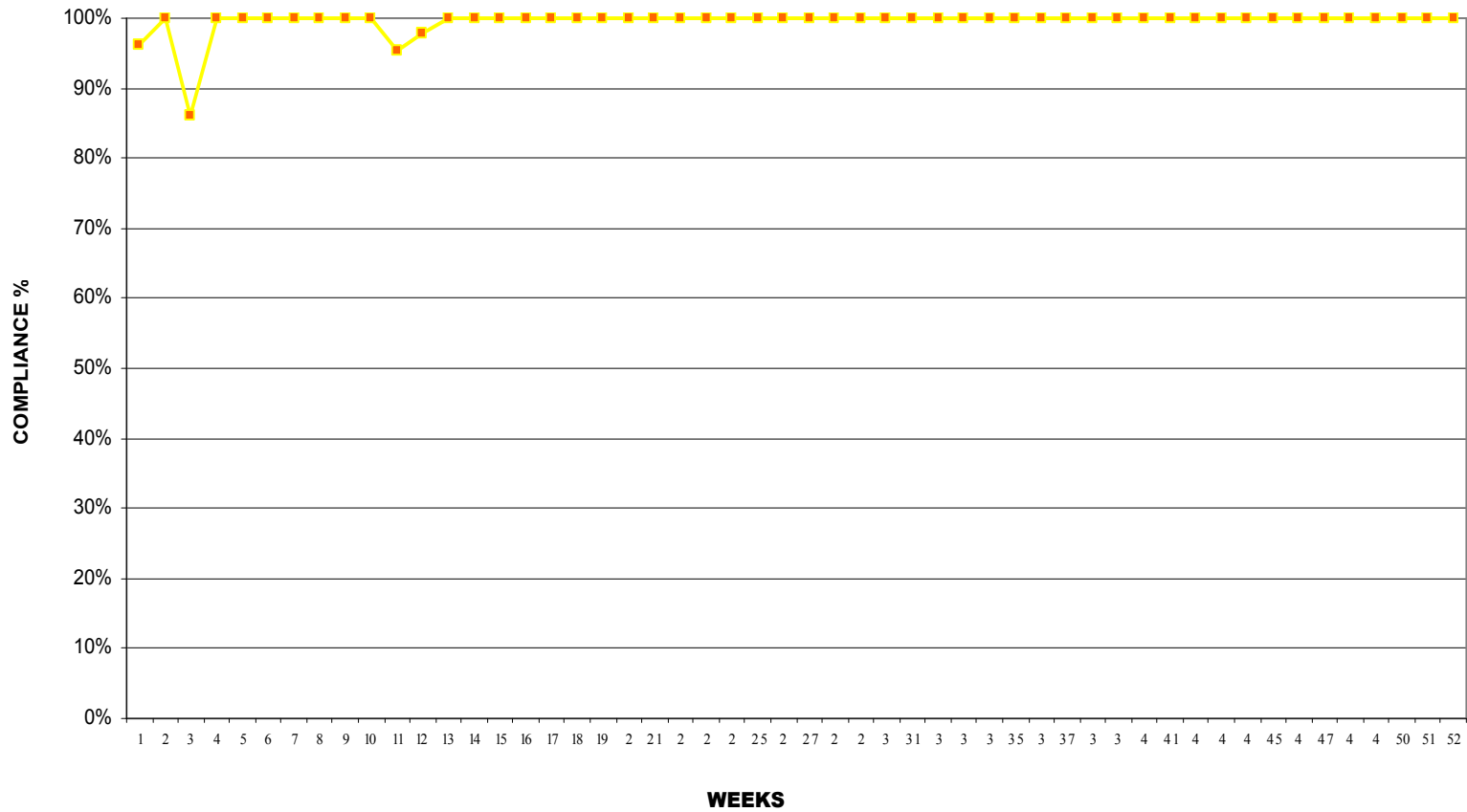
Compliance - Overall



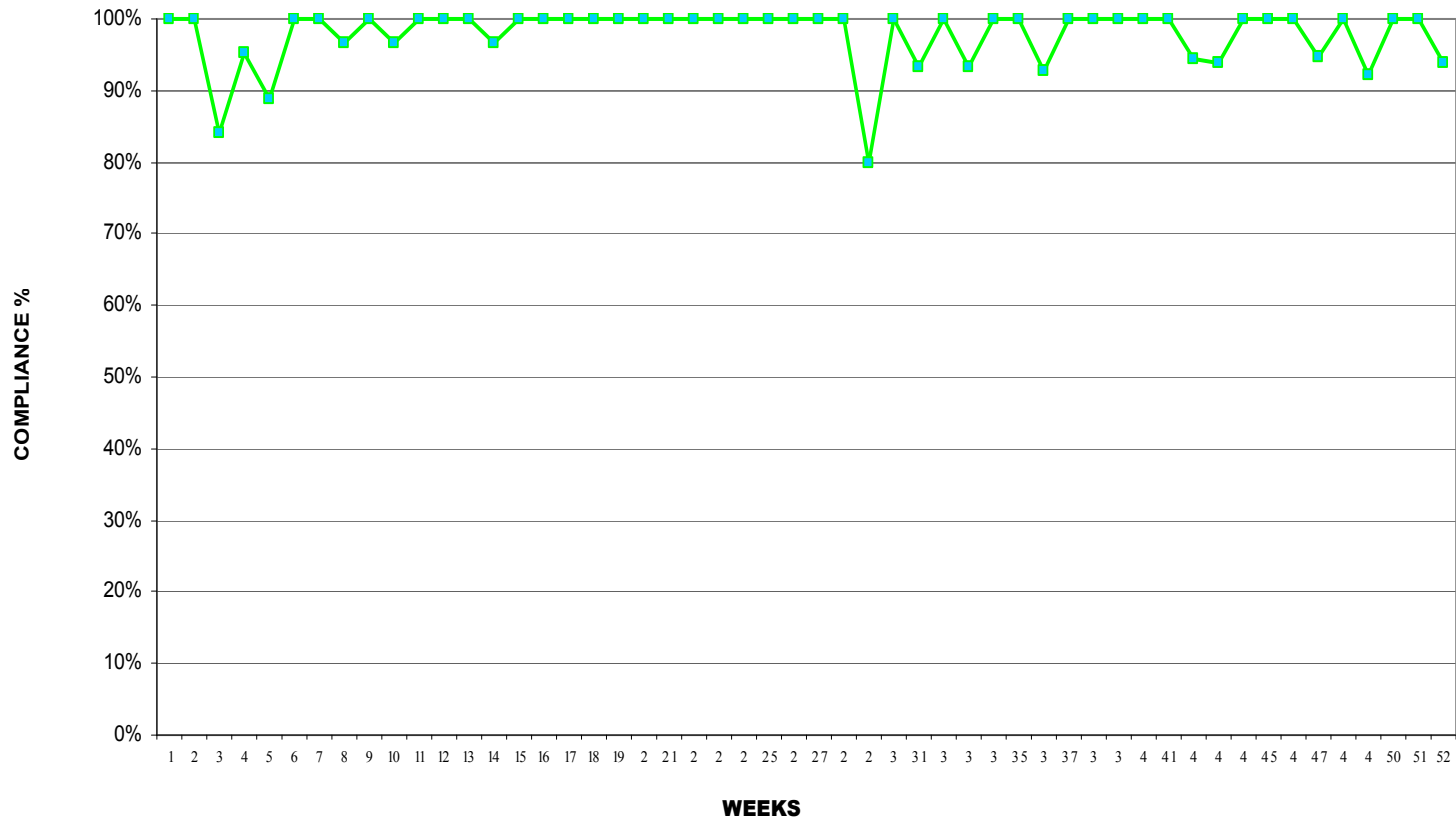
Compliance - DVT Prophylaxis



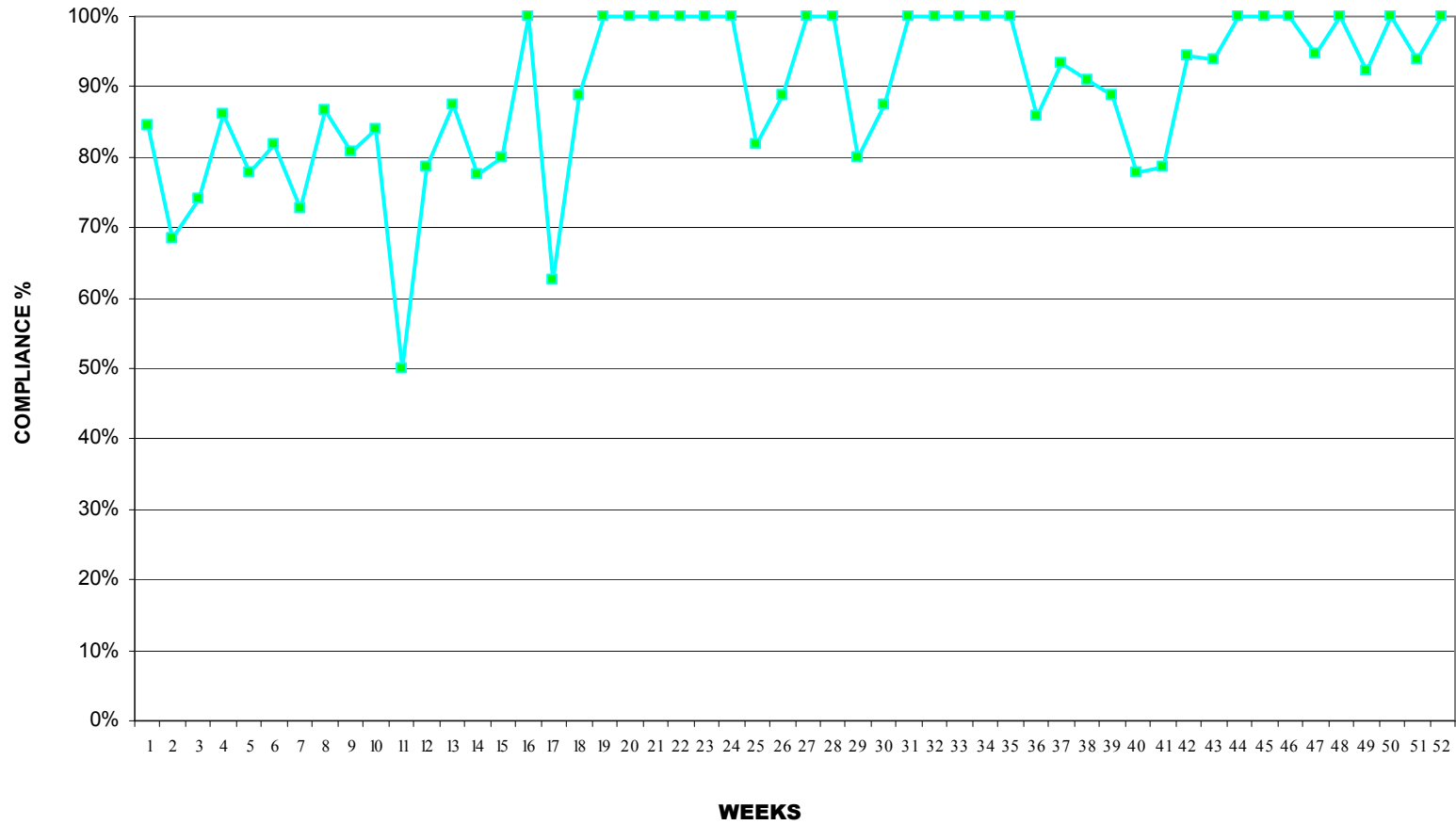
Compliance - GI Prophylaxis



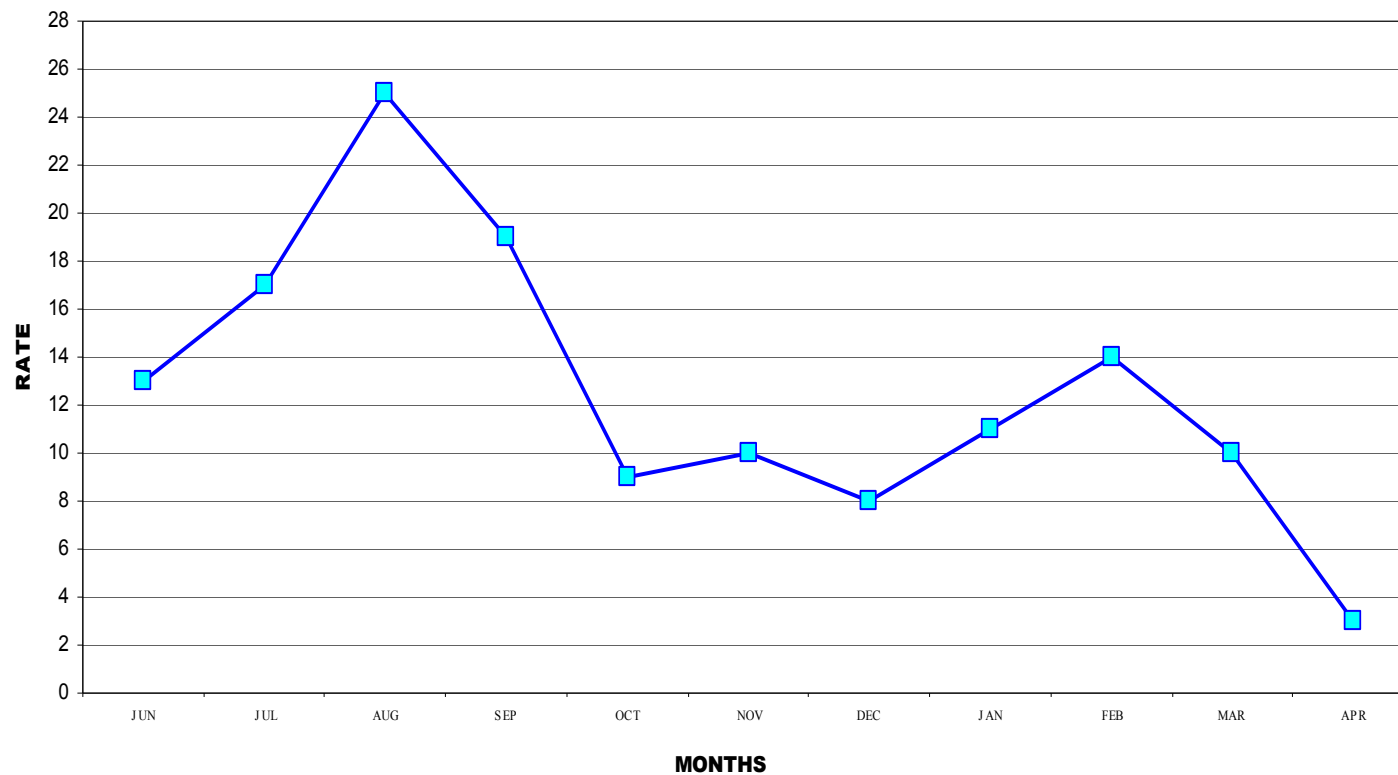
Compliance – Bed Elevation



Compliance – Sedation Hold



Ventilator Associated Pneumonia Rate per 1000 ventilator days





Reality check

- Challenges
- Disagreements
- Lack of audit support to collate effectively all the information
- The data so far has highlighted more problems than we started with or we can deal with!



Head of bed

- Inconsistent compliance
- Undertook mini audit to assess staff knowledge
- 54 staff members mix doctors, nurses and AHP's
- Asked to estimate bed elevation
- Nurses estimated more accurately but only by a small margin
- 43% of staff correctly guessed 45° but only 30% guessed 30°



Sedation

- 'Hit & miss' scoring
- Tendency to over sedate
- Audit confirmed this
- Nurse Educator led trials and evaluations of alternative scoring systems
- More focus on sedation practices as a result
- Same scoring system across 3 units now in use



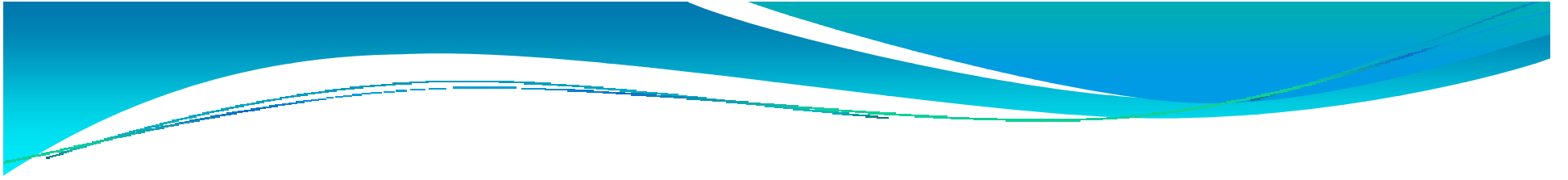
Team Work

- Nursing teams keen to agree definition and clinical guidelines...
- Consultants not!
- Challenging period
- Limited agreement making benchmarking difficult



Conclusion

- Improvement work continues
- Involves all members of the team
- Whilst challenging; 'owning' the information we are getting is exciting as we can see the benefits of interpretation and acting on the findings, further improving our practice



**Thank you
for listening**

Any Questions ...

