

CTG Point Prevalence Study Process of Care in the ICU

Tony Burrell, Karena
Hewson, Doug Elliott, Ian
Seppelt, Steve Webb

Acknowledgements

Allan Zhang (ICCMU), Parisa Glass (The George Institute), Colman Taylor (The George Institute)

Background

- **Process quality**
(Donabedian, '66; Rubin, '01; Lilford, '04)
- **ICU process measures**
(Shojania, '01; Berenholtz, '02)
- **FASTHUG**
(Vincent, '05)

Background

Compliance with process measures - USA

Process measures	Median performance	Range among ICUs
Effective assessment of pain	84%	30-98%
Appropriate sedation	64%	2-100%
Prevention of VAP	67%	42-99%
Appropriate PUD prophylaxis	89%	71-98%
Appropriate DVT prophylaxis	87%	48-98%
Appropriate use of blood transfusions	33%	9-66%

Pronovost, Berenholtz et al J Crit Care 2003



Background – Local data

Pilot study on use of checklist:

- Sedation - (31.3%) invasively ventilated patients were not able to respond appropriately – over-sedated
- Prevention of VAP (91.1%) head of bed raised - $\geq 30^\circ$
- Nutrition (87.5%)
- DVT prophylaxis (89.6%)
- Stress ulcer prophylaxis (84.2%)

Hewson, Burrell Anaes & IC 2006

Background – Local data



In another NSW ICU

- Head of bed elevation (53%)
- Documented bowel activity (25%)
- Use of pain score (4%)
- Pressure area risk assessment (4%)

M Edgerton-Winn 2006

Process of care study

Aim

- To measure compliance with a range of 'EB' routine processes of care in ICUs in Australia & New Zealand

Method

- Bi-national (Aus/NZ) Point Prevalence Study (PPS)
- Expressions of interest via CTG
- Conducted in conjunction with other PPS

Method

Data Collection

- Collected by research staff, interacting with ICU nursing & medical staff
- Measure real compliance, not documentation of compliance
- Patient-level Case Report Form (CRF)
- Data dictionary
- Items cover EB/accepted practices
- Pilot: validate the CRF

Method

Case Report Form content

- Clinical and demographic data
- Processes of care covered: nutrition, pain, sedation, DVT prophylaxis, ventilation, head of bed elevation, stress ulcer prophylaxis, bowel management, pressure area.

Content validity

- Comprehensive literature search
- Delphi technique
- Recommended by professional bodies

Method

General procedural directions

- Documentation vs actual practice
- Questions require Y/ N/ NA response

Analysis

- Descriptive statistics for clinical & demographic data, each CRF item
- Compliance with cares = $\text{Total cares delivered} / \text{Total cares applicable}$

RESULTS

Demographics

50 ICUs participated on 3 separate study days in May and June 2009:

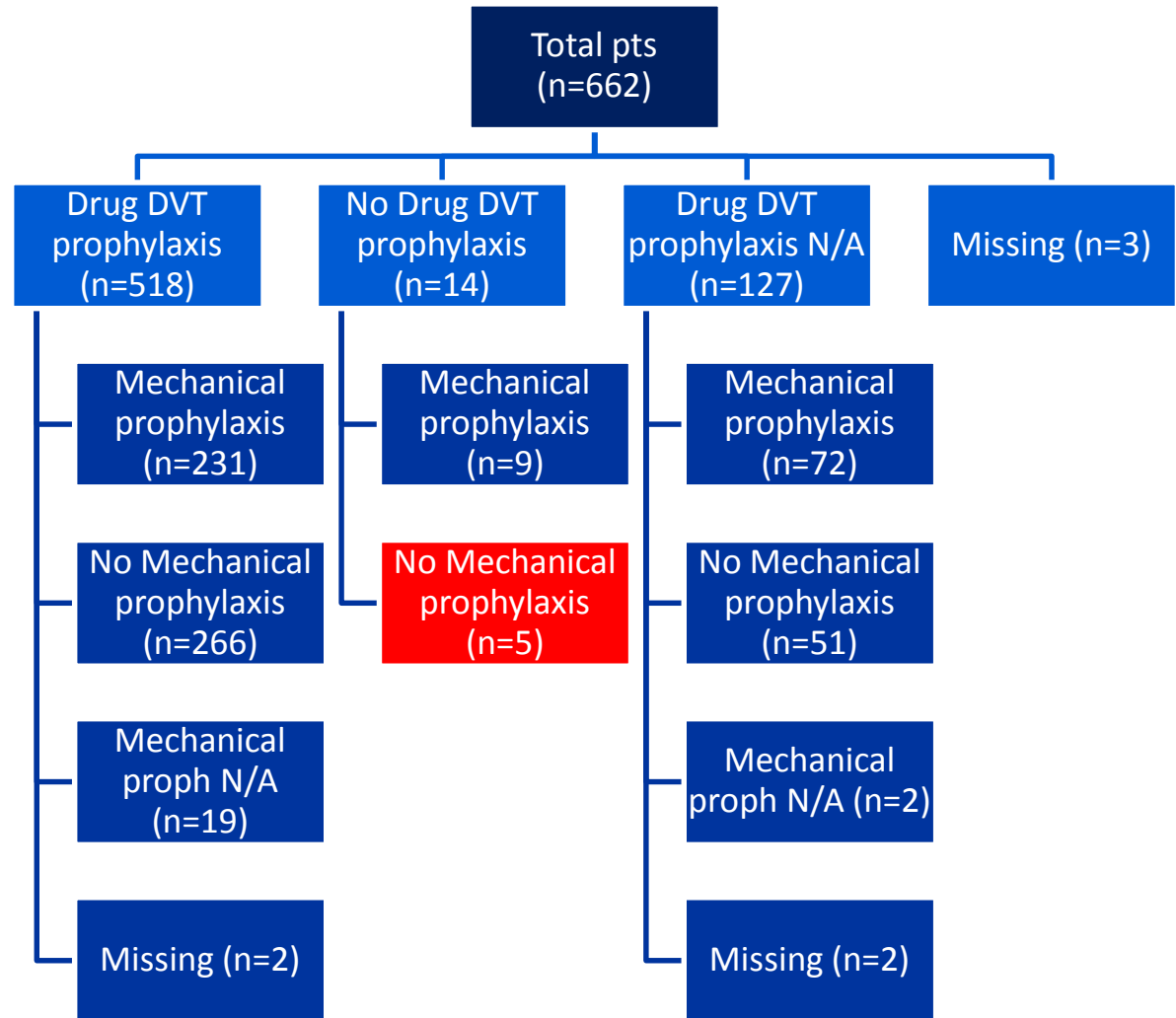
- 44 AUS, 6 NZ
- 30 tertiary, 11 metro, 4 rural/regional, 4 private hospitals
- 9 JFICM level 2, 41 JFICM level 3 units

Demographics

662 pts:

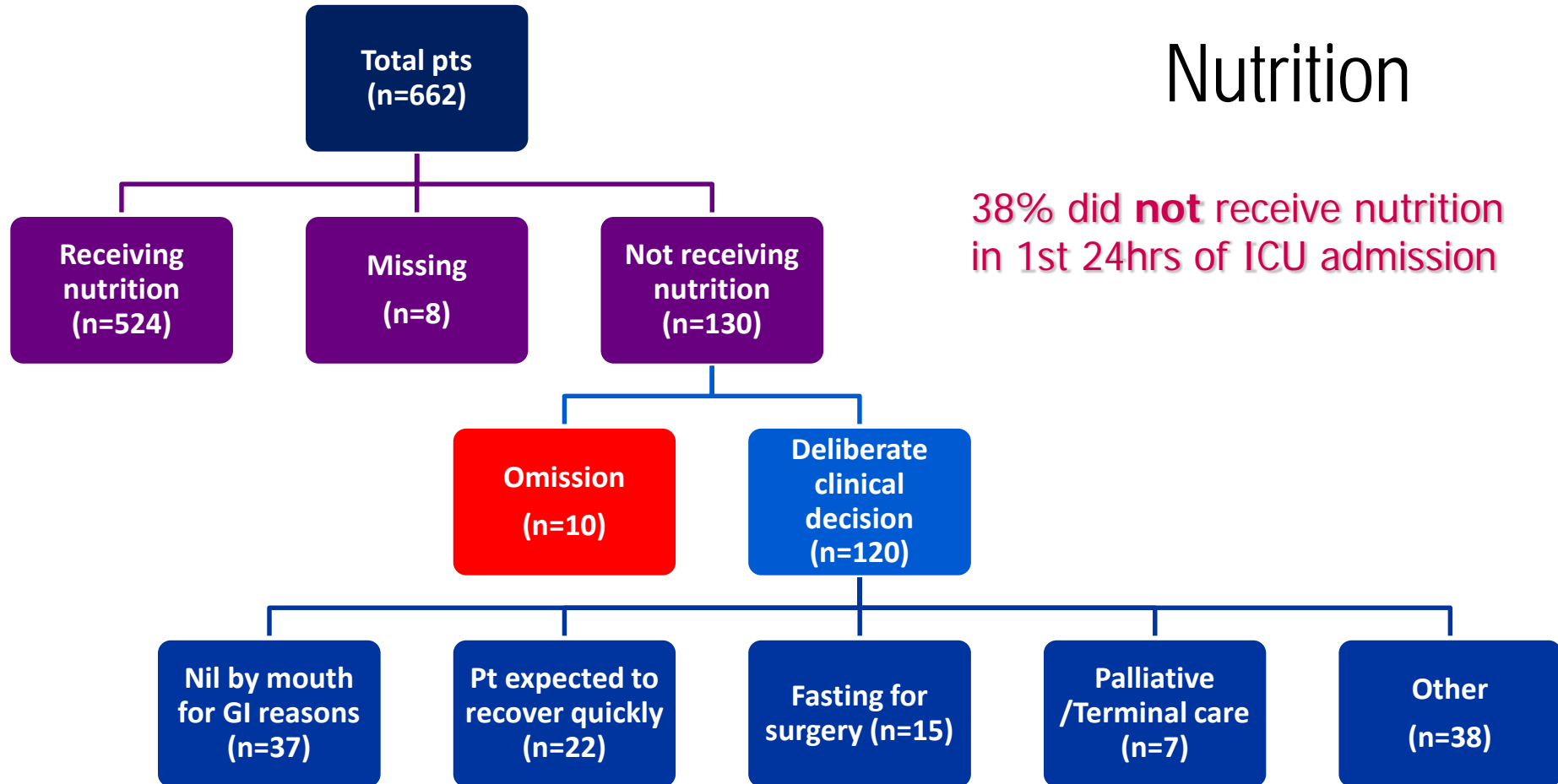
- 61% male
- Median age = 65 (IQR = 50-73)
- 40% post-operative (155 elective, 108 emergency)
- 8% readmission to ICU
- Mean Apache II score = 18.55 (SD = 7.97)
- Median days in ICU up to & including study day = 4 (IQR = 2-9)

DVT Prophylaxis



Drug prophylaxis N/A =
coagulopathy/bleeding risk,
repeat surgery, unit policy,
surgical/procedural, palliative
care, other

Nutrition



Nutrition

32%

Total pts
(n=662)

Nutrition goals
formally assessed
(n=324)

Nutrition goals
NOT formally
assessed (n=213)

N/A- receiving
ward diet (n=112)

Missing data
(n=13)

Nutrition goals
being achieved
(n=237)

Nutrition goals
NOT being
achieved (n=63)

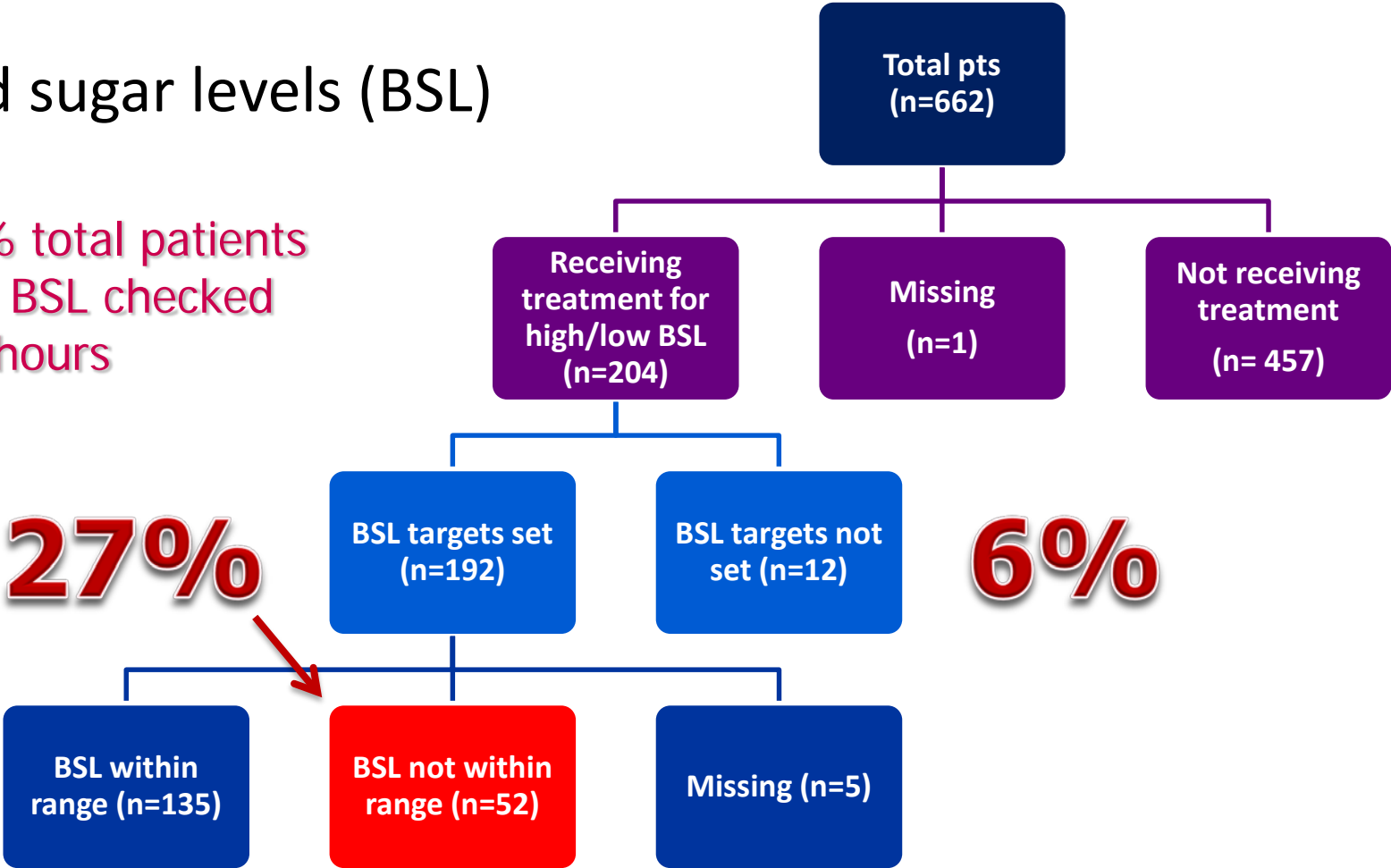
N/A- patient in
ICU < 24 hrs
(n=21)

Missing data
(n=3)

19%

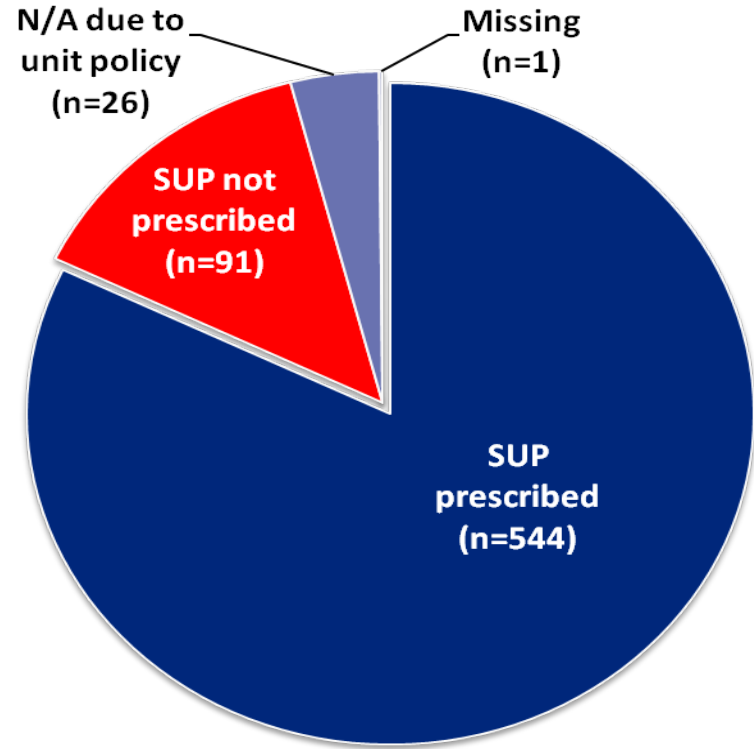
Blood sugar levels (BSL)

91% total patients had BSL checked <6 hours

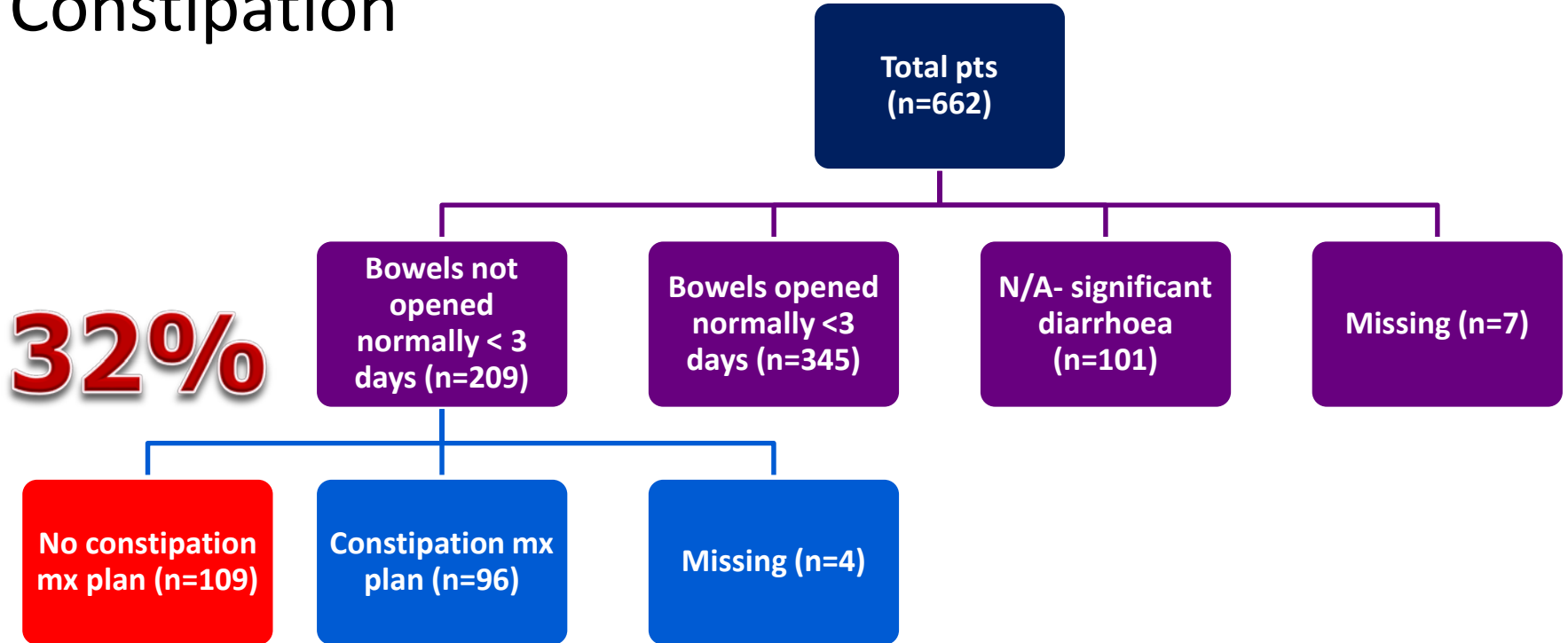


Stress Ulcer Prophylaxis

Stress ulcer prophylaxis prescribed - 86%



Constipation

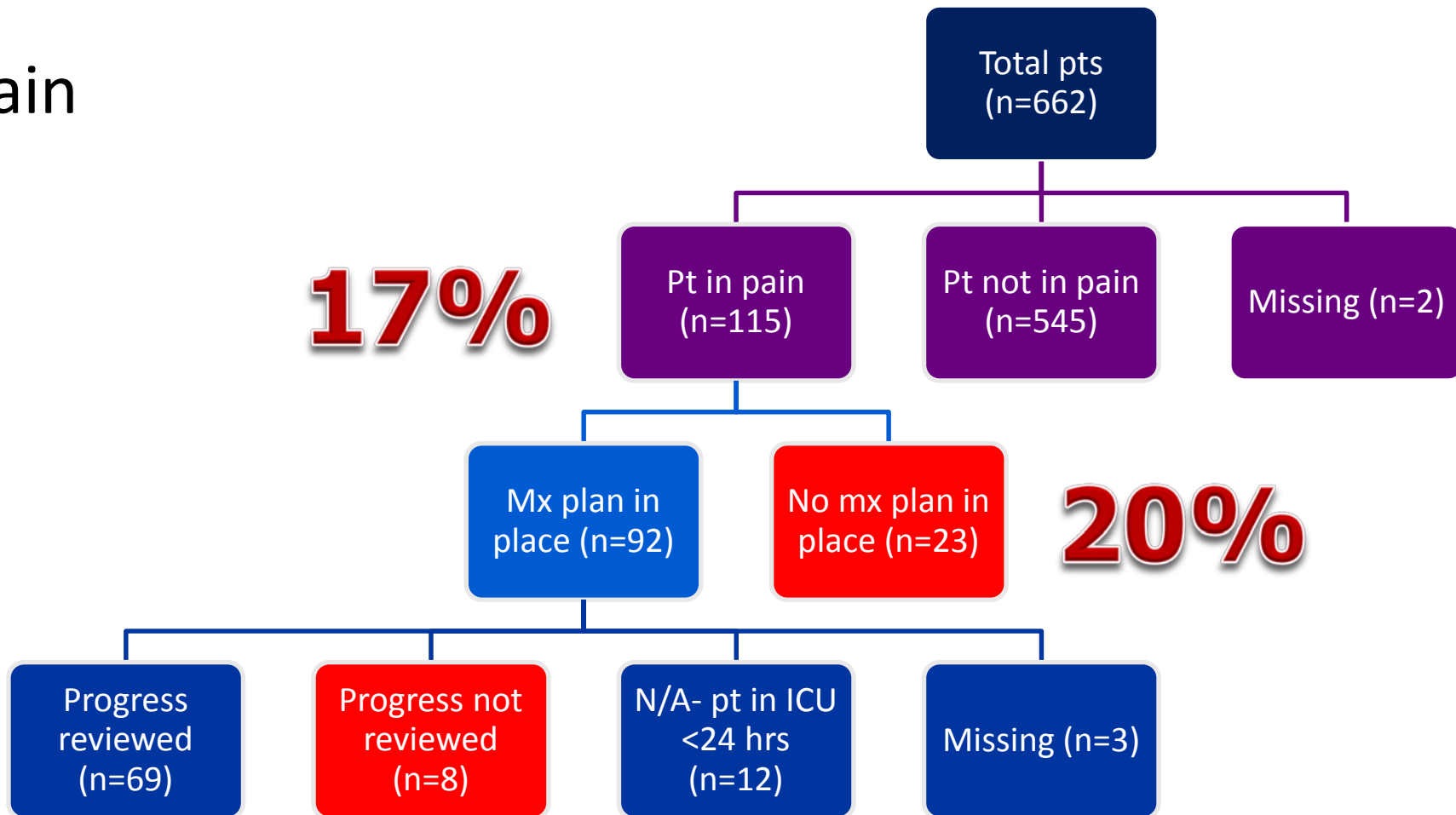


52%

Pressure Areas

- A pressure area risk assessment tool had **not** been used in previous 24 hrs for 31%
- 110 pts (17%) had one or more pressure areas, of these:
 - 35% no risk assessment tool used
 - 23% no targeted interventions implemented

Pain



Pain

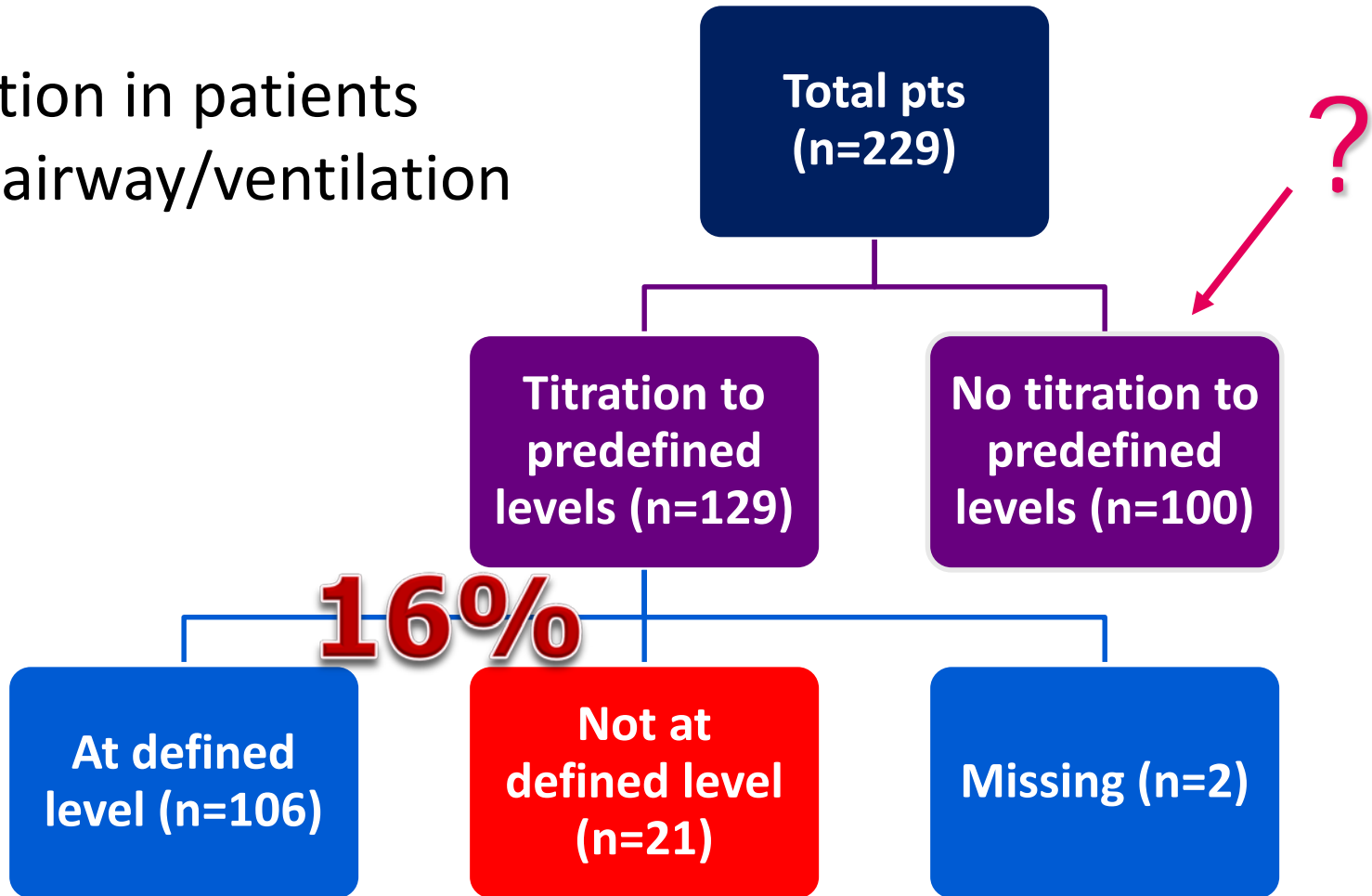
- 71% pts had pain assessed by medical team on the study day
- Of the 115 patients in pain, 42% did not have pain score recorded <4 hrs
- Pts who had surgery in past 4 days were more likely than non-surgical pts to:
 - have pain assessed by medical team ($p=.001$)
 - have a pain score documented in past 4 hours ($p=.0001$)

Sedation

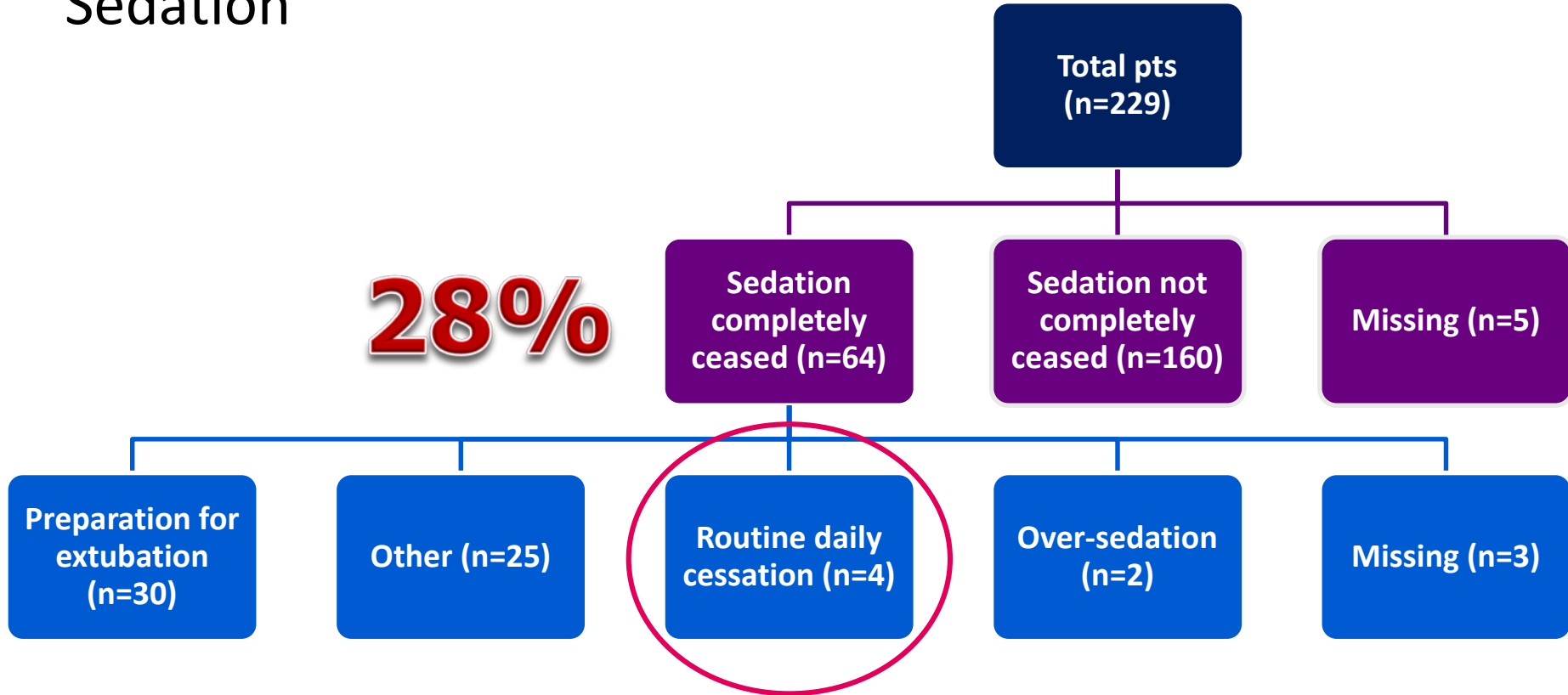
Of 229 eligible (artificial airway for ventilation) pts:

- 79% were receiving sedation medication
- a sedation score was used in 74%
- most frequently used scores = Riker, Richmond

Sedation in patients with airway/ventilation



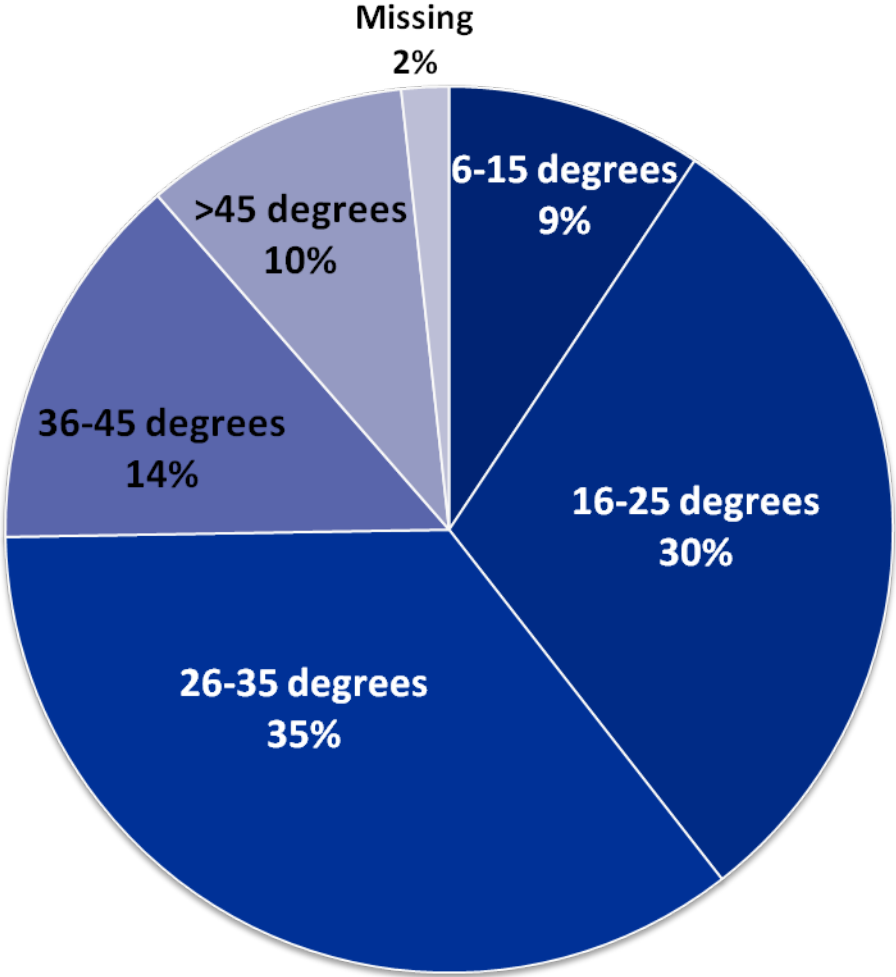
Sedation



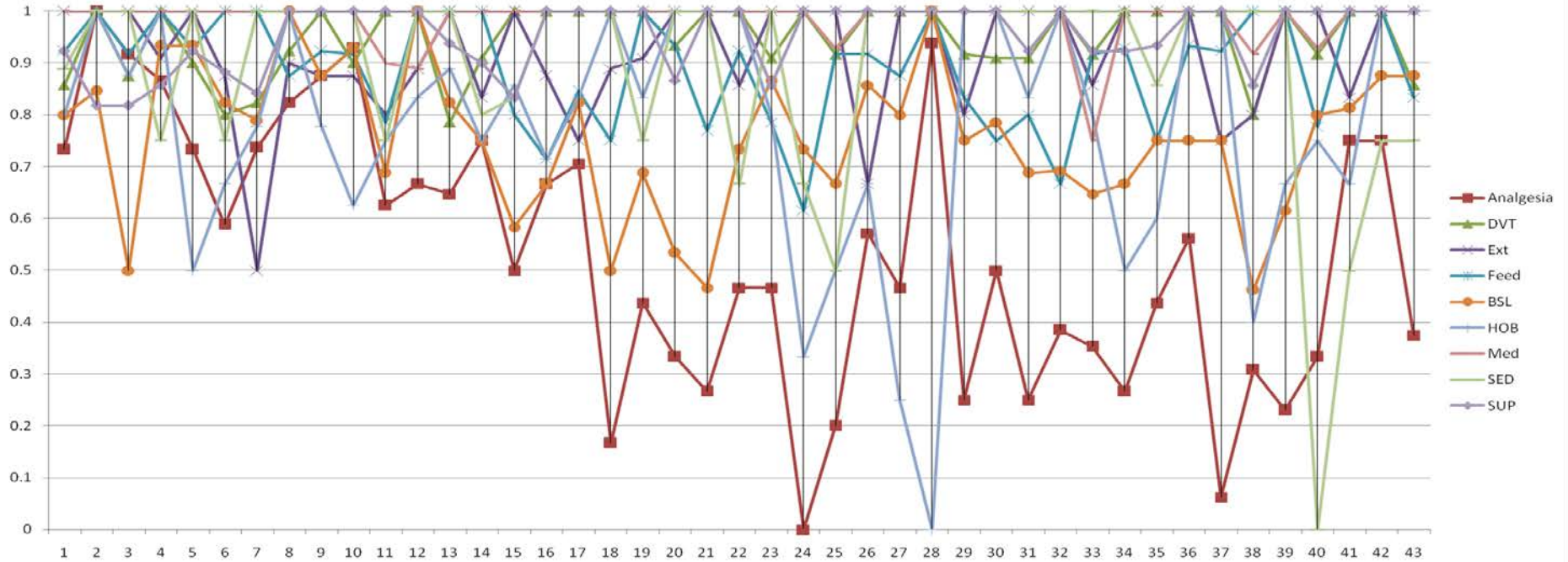
Invasive Ventilation

- 92% had orders reviewed <24 hrs
- Readiness to wean was formally assessed in 60%
 - In retrospect could be interpreted several ways – ready to move forward?, ready to extubate?
 - In very sick weaning is not considered
- Weaning plan was set for 52%
- Head of bed was elevated >30 degrees for 40%, >25 degrees for 60%

Head of Bed Elevation



Pilot Study – electronic checklist



K Hewson

Bundles, 'swags'

- 'All or nothing'
- IHI bundle: head-of-bed elevation, daily "sedation vacation" along with a readiness-to-wean assessment, peptic ulcer disease prophylaxis, and DVT prophylaxis.
- Number of observational studies in peer reviewed journals showing improvement in VAP rates
 - Resar R et al Jt Comm J Qual Patient Saf 2005
 - Youngquist et al Jt Comm J Qual Patient Saf 2007
 - Unahalekhaka et al Jt Comm J Qual Patient Saf 2007
 - Berriel-Cass et al Jt Comm J Qual Patient Saf 2006

IHI Ventilator bundle

87 pts received all of the following:

- DVT prophylaxis
- Stress ulcer prophylaxis
- Daily cessation of sedation
- Readiness to wean from mechanical ventilation
- Raised HOB > 25 degrees

Compliance (Y/Total-NA) = 31%

But 'daily cessation' was mainly patients being prepared for extubation

IHI Ventilator bundle

45 pts received all of the following:

- DVT prophylaxis
- Stress ulcer prophylaxis
- Appropriate sedation management i.e. titrated to, and at, predefined level at time of assessment
- Raised HOB > 25 degrees

Compliance (Y/Total-NA) = 23%

Other 'bundles'

VAP 'swag' - 3 pts received all of the following:

- Raised HOB > 25 degrees
- Assess readiness to wean from mech vent
- Appropriate sedation management
- Analgesia management

TB Bundle - 36 patients received all of the following:

- Raised HOB > 25 degrees
- Assess readiness to wean from mech vent
- Appropriate sedation management

Discussion

- General scepticism amongst Aus/NZ clinicians about bundles
 - Current literature is not good evidence
 - Agreement about some measures and not about others
 - Wip, Napolitano Curr Opin Infect Dis 2009
 - Lot of work but is it a waste of time?
- Demonstrates that 'compliance' could be better in Aus/NZ ICUs
 - However limitations around interpretation of definitions
- But variation in practice provides ideal opportunity for research
- Can we achieve high compliance with a bundle for which there is consensus? Will outcomes be improved?