

***An Evaluation of Daily Sedation
Vacation in Mechanically Ventilated
Patients within the Adult Intensive
Care Milieu and its Impact on Patient
Outcomes***

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Aims of Study

- To evaluate the efficacy of daily sedation vacation (DSV) practice with regard to length of ventilator days (LOVD) & length of stay (LOS) in the intensive care unit
- The cost of sedation therapy was also evaluated



(DSV) Daily Sedation Vacation/Interruption/Hold

- **DSV** → ‘ventilator care bundle’, robust research → set framework for study (Kress *et al*, 2000; Fulbrook & Mooney, 2003)
- Current practice → MV weaning protocol, sedation guidelines & pain assessment scale → **Nurse led (MDT approach)**
(Before introduction of DSV - weaning at discretion of attending Dr)
- DSV practice → aligned to literature & educational programme tailored to needs of the staff
- ‘Comfortable & painfree’ in ICU - challenging aspect of care → need for protocols (Weinert *et al*, 2001 & Soliman *et al*, 2001)
- Sedative & analgesic drugs prescribed concurrently in ICU
- Under & over sedation → ‘delicate balance’ → detrimental to haemodynamic status? chemical restraint?

Sedation Score

Intensive Care Society Sedation Guideline Tool (optimal score **0 to 1**)

- **3 = Agitated & restless**
- **2 = Awake & uncomfortable**
- **1 = Awake but calm**
- **0 = Roused by voice**
- **-1 = Roused by touch**
- **-2 = Roused by painful stimuli**
- **-3 = Unroutable**
- **A = Natural sleep**
- **P = Paralysed**

Rationale → ***Sedation is stopped on a daily basis & the patient is assessed with regard to weaning & possible extubation***

Instituting DSV with MV Weaning Protocol

Sedation cessation

- $FiO_2 = < .5$ and signs of recovery from underlying disease
- Normotensive haemodynamic parameters

MV Weaning commenced

- Rapid Shallow Breathing Index $\rightarrow RR \div TV$ (<100 ml, continue weaning)
- PEEP = 5cmH₂O, PS <10 cm H₂O
- Spontaneous TV (>6 ml/kg/bodyweight)
- Acceptable respiratory rate & WOB
- Normalising ABG's according to pre-admission respiratory status
- Vasopressor & inotrope support on low dose/weaned off
- Assessment re: 'awakefulness' & compliance to verbal commands
- Patent airway, intact cough & gag reflex

If need for re-sedation \rightarrow rate of infusion always commenced at a lower dose

Retrospective, Comparative Pilot Study

ICU Population $n = 40$

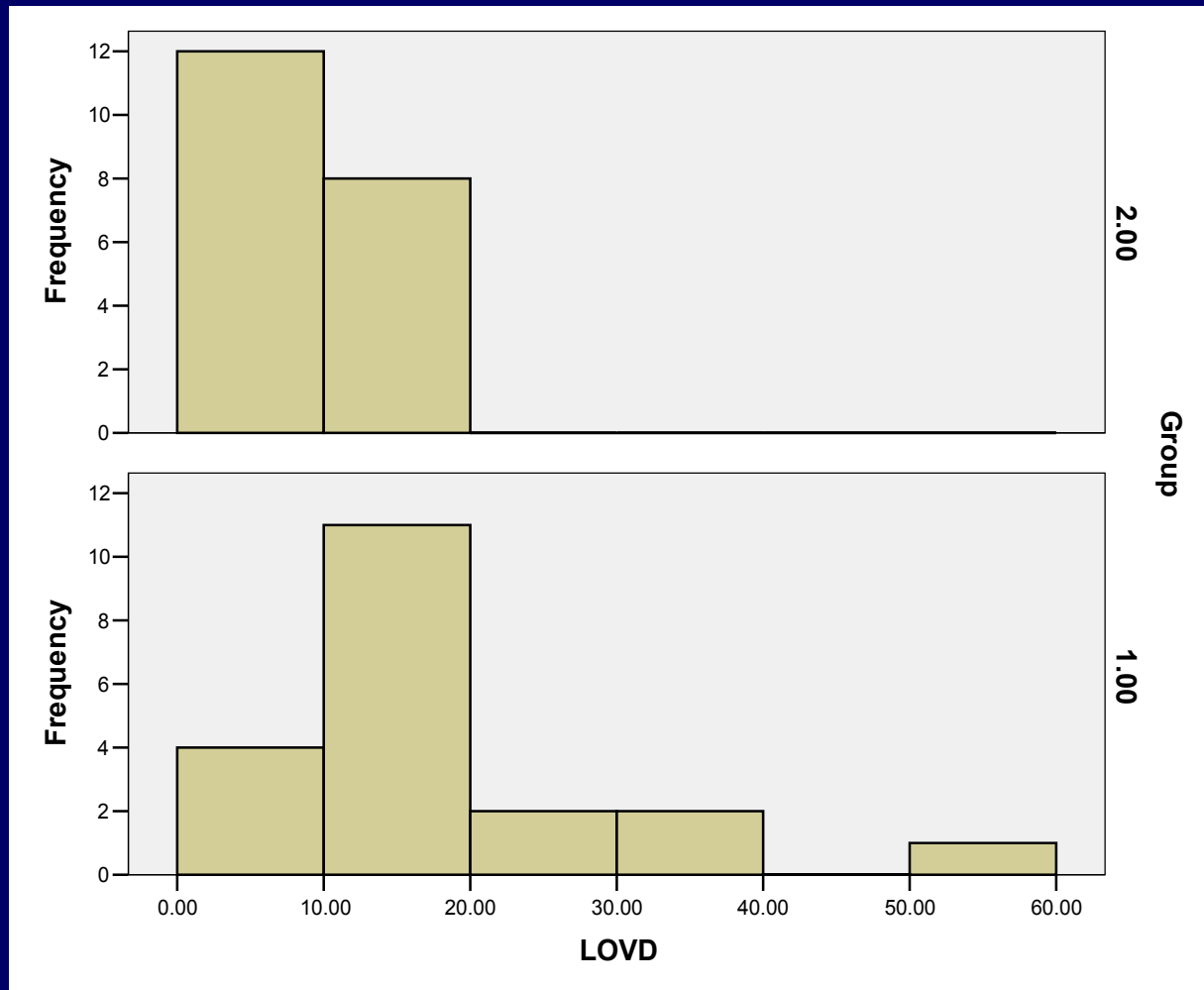
(7 - bed unit)

Group 1 (2003)
 $n = 20$
(Before DSV)

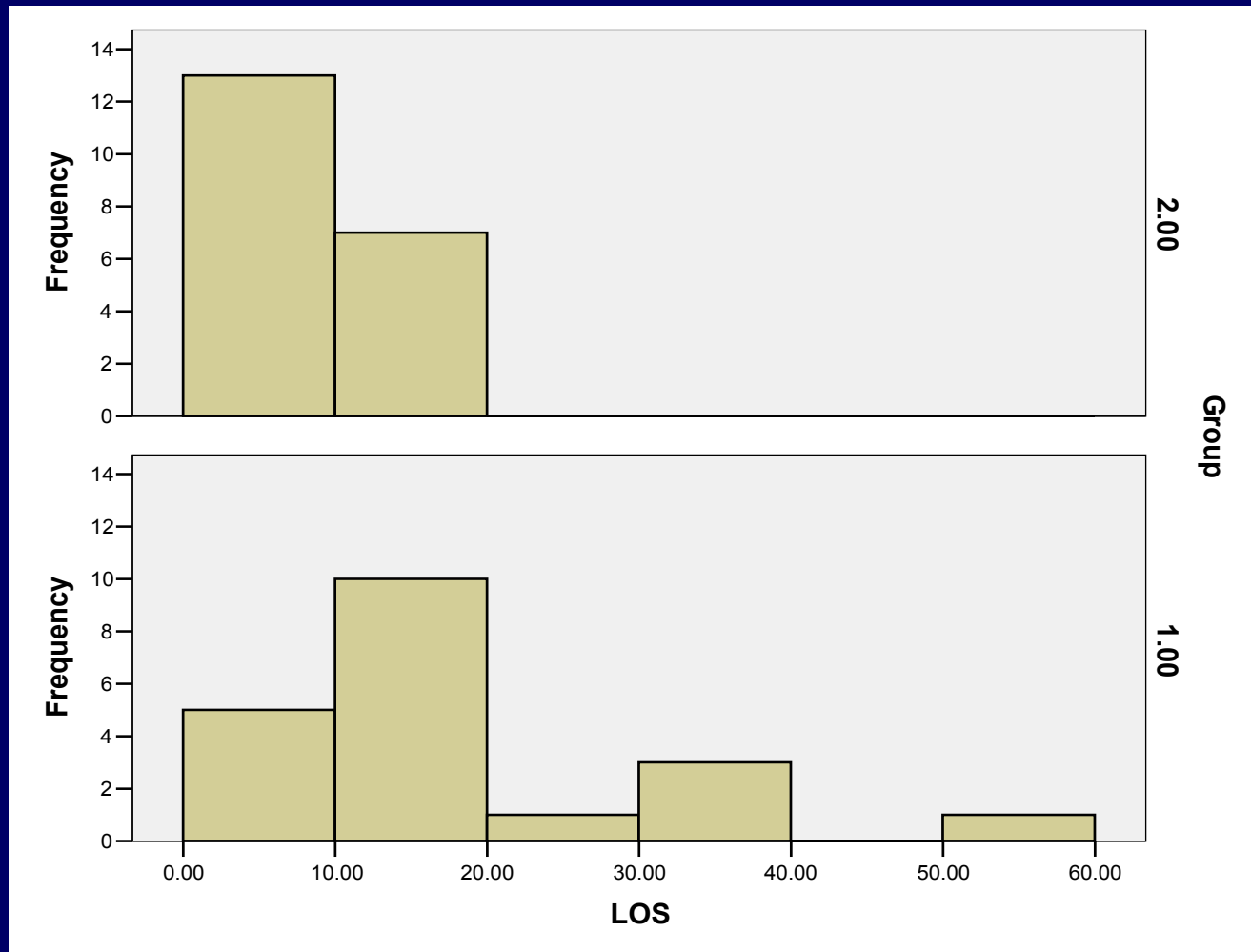
Group 2 (2006)
 $n = 20$
(After DSV)

- Criteria → Inclusion/Exclusion
- Clinical audit design with a service improvement initiative
- Non-parametric, unpaired data, unevenly distributed - Level III patients (ICNARC database & case notes)
- Participants from 2 groups → matched to admission diagnosis & APACHE II Scores (respiratory/respiratory, sepsis/sepsis, abdominal surgery /abdominal surgery) → holistic Rx strategy for all patients
- Age, APACHE II Scores, LOVD and LOS in ICU → analysed by Mann-Whitney U test → SPSS software

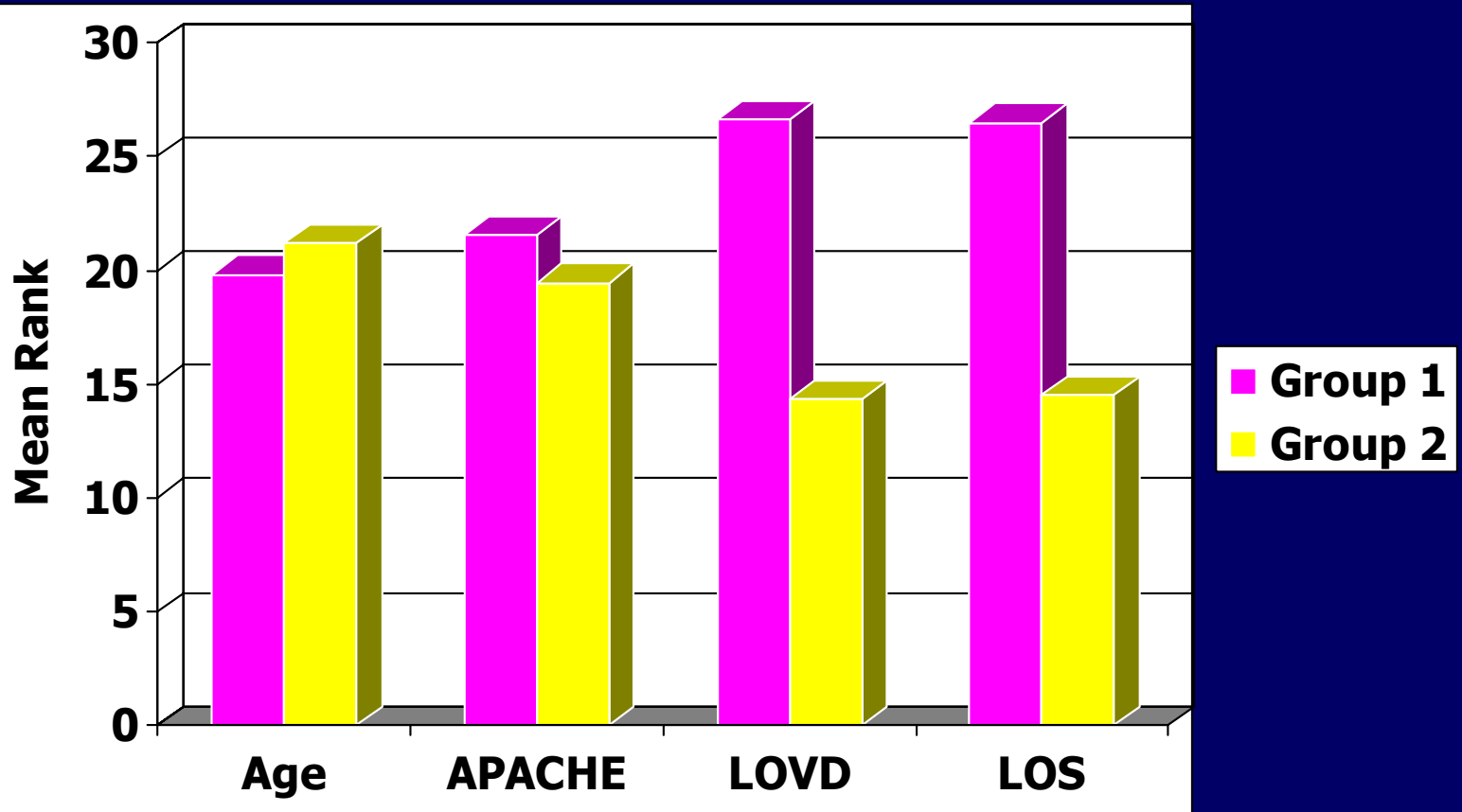
Comparison of LOVD between Group1 (2003) and Group 2 (2006) sample population
LOVD decreased by 12.3 mean days in Group 2
Statistical significance achieved at $p = 0.001$



Comparison of LOS in ICU between Group 1 (2003) and Group 2 (2006) sample population
LOS in ICU decreased by 12 mean days in Group 2
Statistical significance achieved at $p = 0.001$

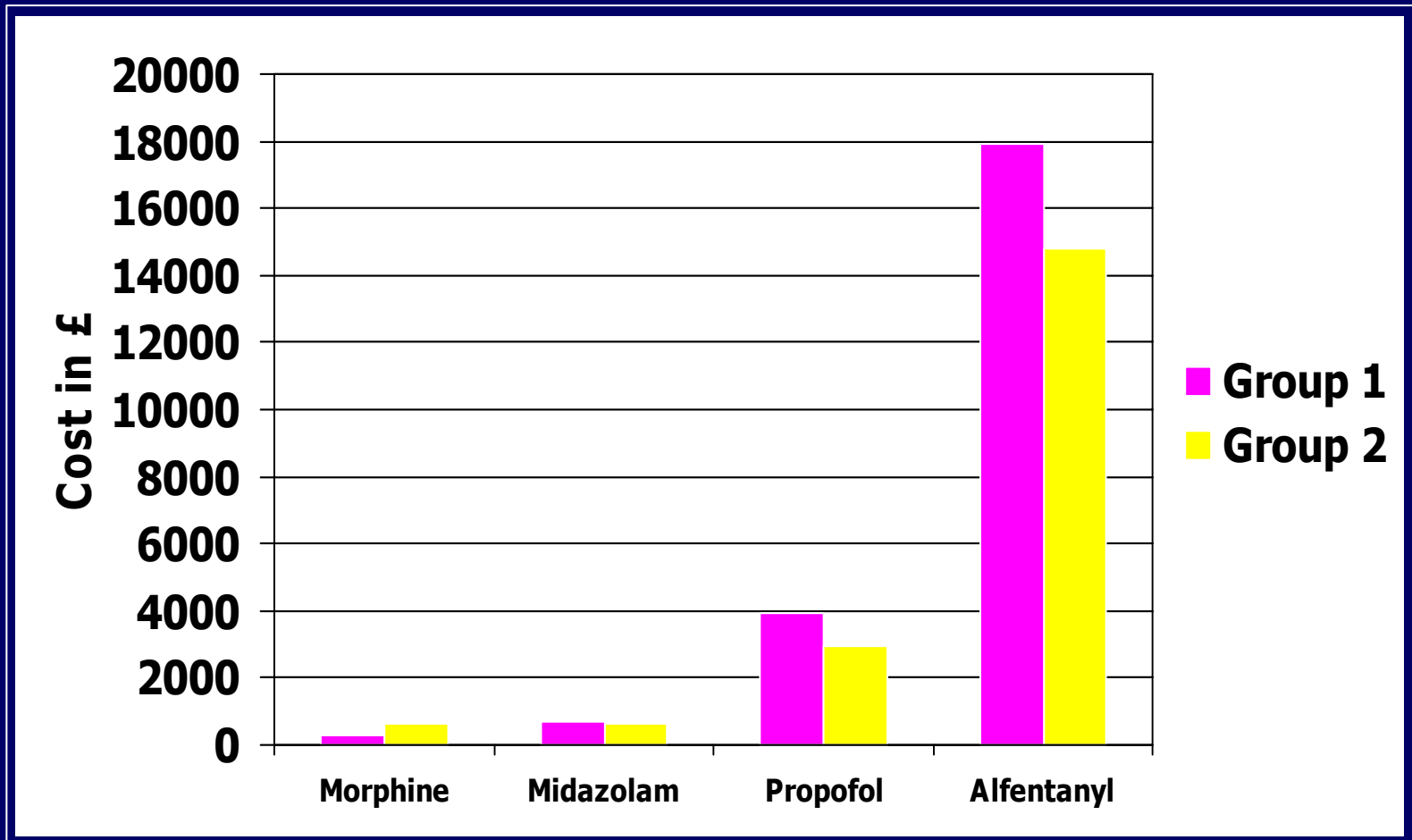


Mean rank differences between Group 1 (2003) and Group 2 (2006) sample population (Level III patients) with regard to age, APACHE II scores, LOVD and LOS in ICU



Comparison of sedative drugs & cost between Group 1 (2003) and Group 2 (2006) retrieved from pharmacy audit

Total cost of sedative therapy for Group 1 was £ 22,844.00 and £18,082.00 for Group 2
This equates to a decreased cost saving of **£3,862.00** for Group 2



Results

- ↓ LOVD = **12.3** days for 20 patients in 2006 (Group 2) → **$p = 0.001$**
(↓ LOVD may ↓ incidence of VAP complications)
- ↓ LOS in ICU = **12** days for 20 patients in 2006 (Group 2) → **$p = 0.001$**
cost containment of **£18,000.00 to £20,400.00**
- ↓ Sedative therapy costs = **£3,862.00** cost saving for 2006 (Group 2)
- ↓ mortality figures - **15%** in **2006** (Group 2) as compared to **45%** in **2003** (Group 1)
- Changes in practice - standardised times
(**08h30 to 10h00** during the morning ICU round)

Limitations of Study

- **Single-centre study**
- **ICU population relatively small ($n = 40$) → Pilot study**
- **Limited generalisability:**
 - **applicable to General ICU's only & not transferable to other ICU disciplines (e.g. cardio-thoracic)**
 - **difficult to discern measurable impact of concurrent interventions**

Conclusion

In adult mechanically ventilated patients within a general intensive care unit, DSV practice improves patient outcomes by decreasing length of ventilator days, length of stay, sedative therapy and ultimately intensive care costs

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