LET THE KIDS SLEEP: ASSESSING THE UTILITY OF ROUTINE OVERNIGHT VITAL SIGN ASSESSMENT IN STABLE PEDIATRIC SURGICAL PATIENTS

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Background

- Routine overnight vital sign checks are a source of sleep deprivation in hospitalized patients [1]
- Sleep deprivation is associated with adverse patient outcomes, heightened pain response, and negative metabolic and cardiovascular effects [2]
- Little is known about the necessity of overnight vital signs checks in stable pediatric patients [3]

Purpose

To determine the frequency with which routine overnight vital sign assessment resulted in new adverse clinical events in stable pediatric surgery patients.

Methods

- Retrospective chart review of pediatric surgical patients admitted to a Children's Hospital during October 2019-2021
- Inclusion criteria = all stable postoperative patients older than 5 years old admitted for trauma or acute care surgery
- The primary outcome was number of flagged vital signs which resulted in clinical intervention or incident leading to death

Results

Demographics	Number of Patients, n=413 (%)
Mean Age (years)	12.6
Gender	
Male	263 (63.7%)
Race	
White	202 (48.9%)
Black	162 (39.2%)
Hispanic	22 (5.3%)
Other	27 (6.5%)
Number of Flagged Vital Signs	
0	197 (47.7%)
1	56 (13.6%)
2	44 (10.7%)
3	22 (5.3%)
4	20 (4.8%)
5	74 (17.9%)
Intervention	
Yes	124 (30%)
No	289 (70%)
Readmission	
Yes	68 (16.5%)
No	345 (83.5%)

Table 1. Demographic and clinical characteristics of 413 study subjects

Abnormal Vital Sign	Intervention Rate, n (%)
Any vital sign (n=216)	124 (57.4%)
Temperature (n=84)	68 (81.9%)
Blood pressure (n=183)	101 (55.5%)
Heart rate (n=49)	37 (77.1%)
Respiratory rate (n=41)	28 (70%)
Oxygen saturation (n=3)	3 (100%)

Table 2. Flagged vital signs resulting in clinical intervention

Results Continued

- 52% of patients had >1 flagged overnight vital sign during their hospitalization
- Abnormal blood pressure was the most commonly flagged vital sign (44.1%) followed by temperature (20%)
- Of the patients with flagged vital signs, an intervention occurred in 57.4%
  - -The most common intervention was administration of medication (54.6%)
  - -Two patients (0.9%) returned to the OR
  - -Three patients (1.4%) were transferred to the ICU

Conclusions

- Abnormal vital signs are not uncommon in pediatric surgery patients but are rarely associated with escalation of care or other serious interventions
- Further research is necessary to identify subsets of patients who would benefit from discontinuation of routine overnight vital signs

References

1. Dolan R, Huh J, Tiwari N, Sproat T, Camilleri-Brennan J. A prospective analysis of sleep deprivation and disturbance in surgical patients. *Ann Med Surg*. 2016;6:1-5. doi:10.1016/j.amsu.2015.12.046
2. Wesselius HM, Van Den Ende ES, Alsma J, et al. Quality and quantity of sleep and factors associated with sleep disturbance in hospitalized patients. *JAMA Intern Med*. 2018;178(9):1165-1171. doi:10.1001/jamainternmed.2018.2669
3. Storm-Versloot MN, Verweij L, Lucas C, et al. Clinical relevance of routinely measured vital signs in hospitalized patients: A systematic review. J Nurs Scholarsh. 2014;46(1):39-49. doi:10.1111/jnu.12048