

# Factors affecting observations of vital signs in hospital during the night shift: nurses' perspectives

RCN International Nursing Research conference  
5 - 7 April 2017, Oxford UK

# Acknowledgement and disclaimer

- The research was funded by the National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care (CLAHRC) Wessex at Portsmouth Hospital NHS Trust. The views expressed are those of the authors and not necessarily those of the NHS, the NIHR or the Department of Health.
- We would like to thank the staff who gave their time to the survey and interviews. Their willing participation on the study has provided great insight into understanding aspects of the way that vital signs observations on hospital wards are organised at night time.

# Research team

Name	Organisation	Role in study
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<b>Alejandra Recio-Saucedo</b>	University of Southampton CORG	Co-investigator / Project management
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<b>Gary B Smith**</b>	CORG	Co-investigator

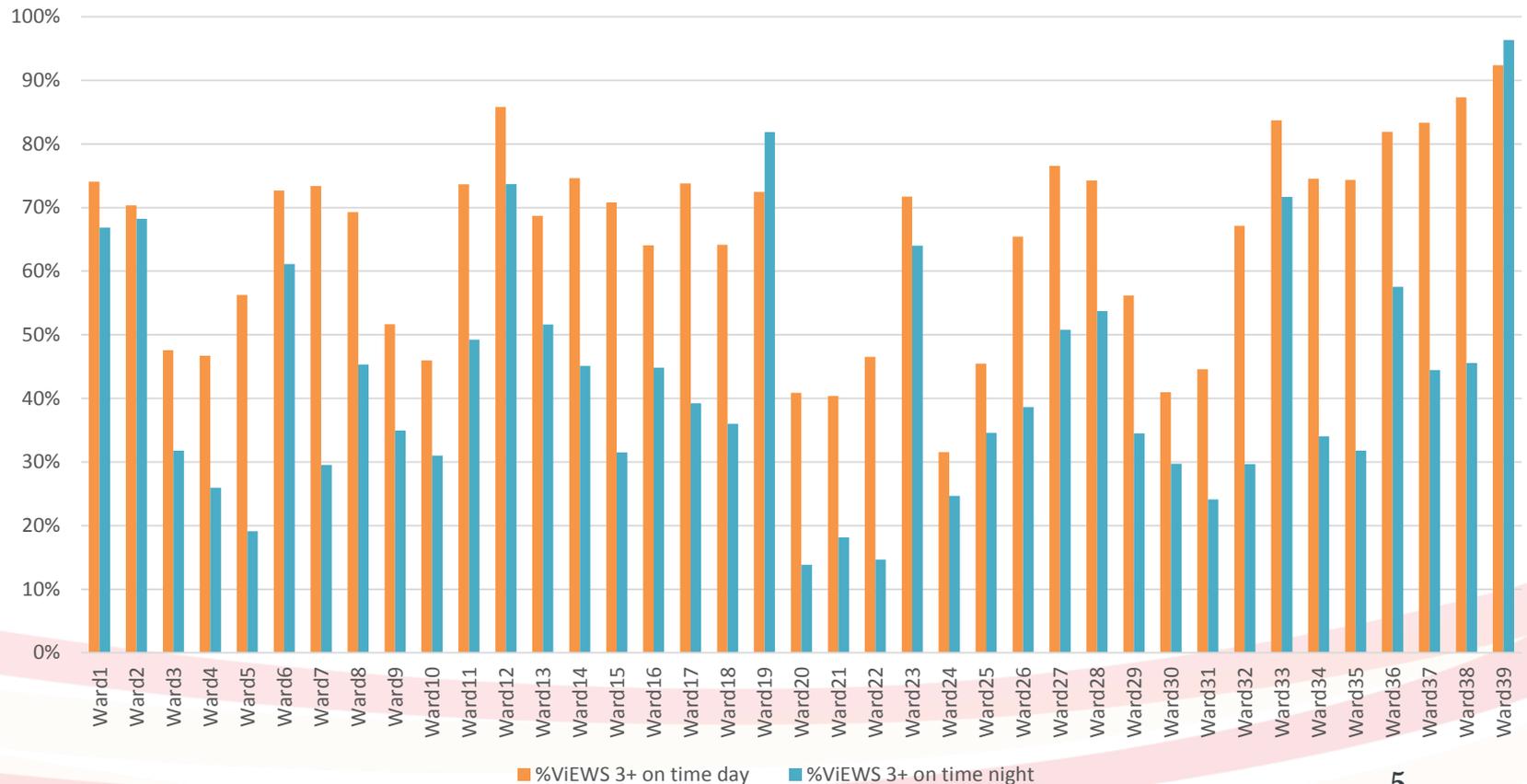
\*CORG: Clinical Outcomes Research Group of PHT Research and Innovation Department: conducts health systems research using digital clinical data collected during routine care provision.

\*\*Visiting member of CORG; Centre of Postgraduate Medical Research & Education (CoPMRE), The Faculty of Health and Social Sciences, Bournemouth University



# The issue: differences between day/night on time observations

Quarterly report of observations in time for patients with EWS 3+: day and night



# Aims

- To describe nurses and midwives knowledge, beliefs and attitudes towards vital signs monitoring during the night shift on hospital wards
- To explore association of nurse characteristics with factors relevant to the completion of vital signs observations at night as outlined in an early warning scores protocol

# Methods

**Design:** Cross-sectional web-based survey of knowledge, beliefs and behaviours of health care staff working in general adult medical and surgical wards. Semi-structured interviews.

**Participants:** All registered nurses, midwives, health care support staff and student nurses who had worked at least one night shift in the previous 12 months at a 1200-bed NHS acute general Hospital Trust in England.

# Analysis

We used **exploratory factor analysis** to:

- identify and evaluate correlation structure between the survey items

**multivariable linear mixed effects model** to:

- relate factor scores with nurse characteristics (e.g. role, experience, number of night shifts worked)

and **thematic analysis** to:

- ascertain the beliefs and attitudes of healthcare staff concerning performing vital signs observations during the night
- ascertain factors that are associated with ward level observation compliance and individual self-reported compliance

# Survey

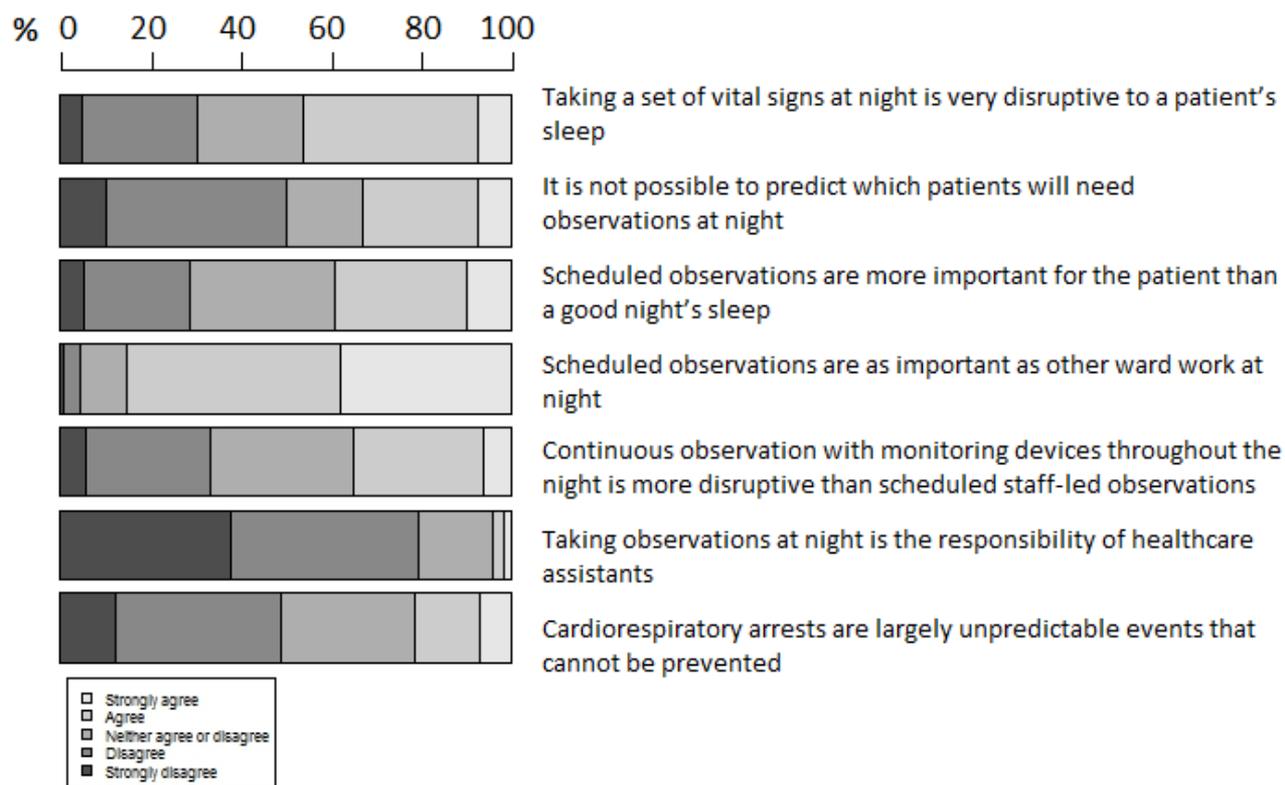
- 2900 email invitations sent; 695 surveys received: 24% overall response rate
- 497 (72%) respondents met inclusion criteria of working at least one night shift in the last 12 months

Survey respondents

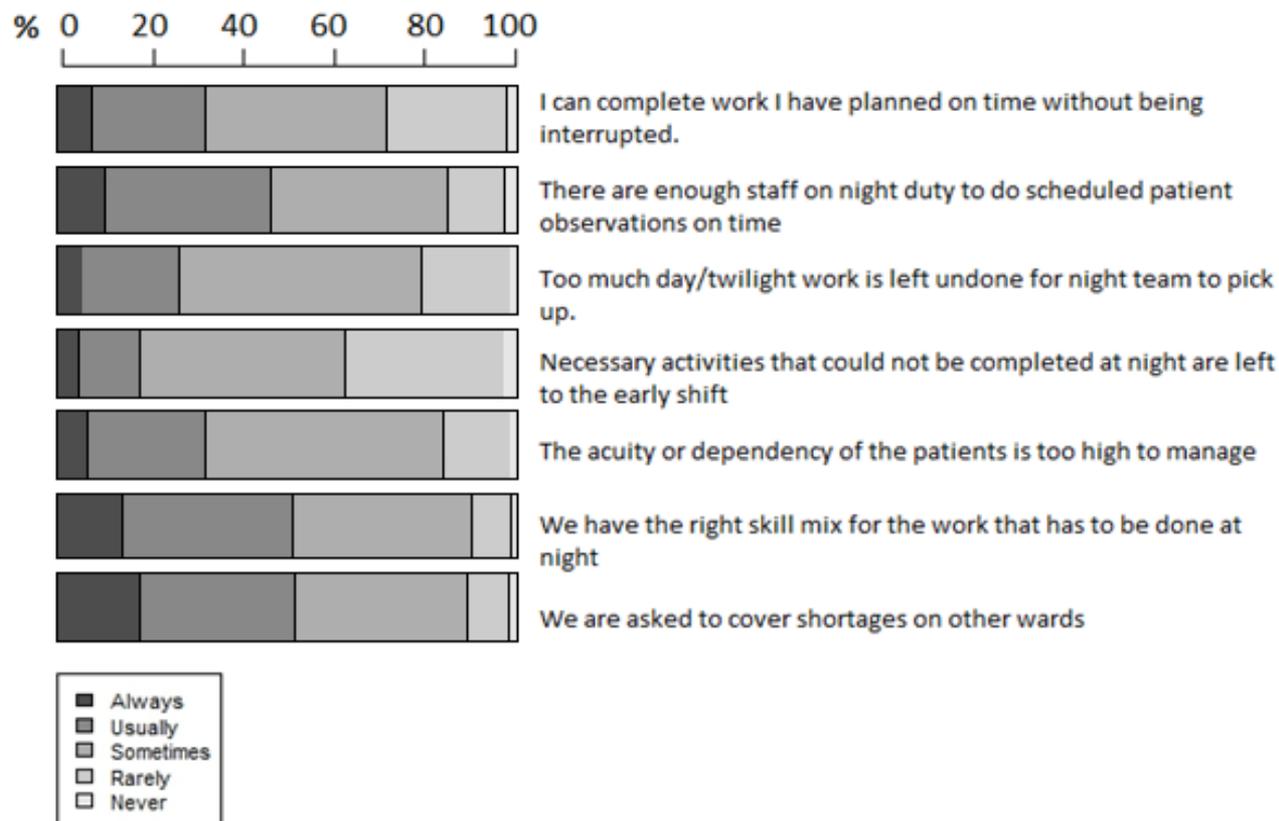
Variable		n (%) N=497
Role	Staff nurse	269 (54.1)
	Health Care Support Worker	120 (24.1)
	Senior nurse/Manager	52 (10.5)
	Student nurse	32 (6.5)
	Midwife	24 (4.8)
Number of night-shifts worked in the previous 12 months	1 to 5	75 (15.1)
	6 to 10	49 (9.9)
	>10	373 (75.1)
Night duty arrangements	Night shifts only	81 (16.3)
	Occasional night shifts	67 (13.5)
	Rotation, including nights	349 (70.2)
Number of wards worked night shifts on previous 12 months	Only 1 ward	241 (48.5)
	More than 1 ward	256 (51.5)
Experience (years)	0-5	152 (30.6)
	6-10	94 (18.9)
	11-15	71 (12.3)
	16-20	62 (12.5)
	>20	118 (23.7)

# Results

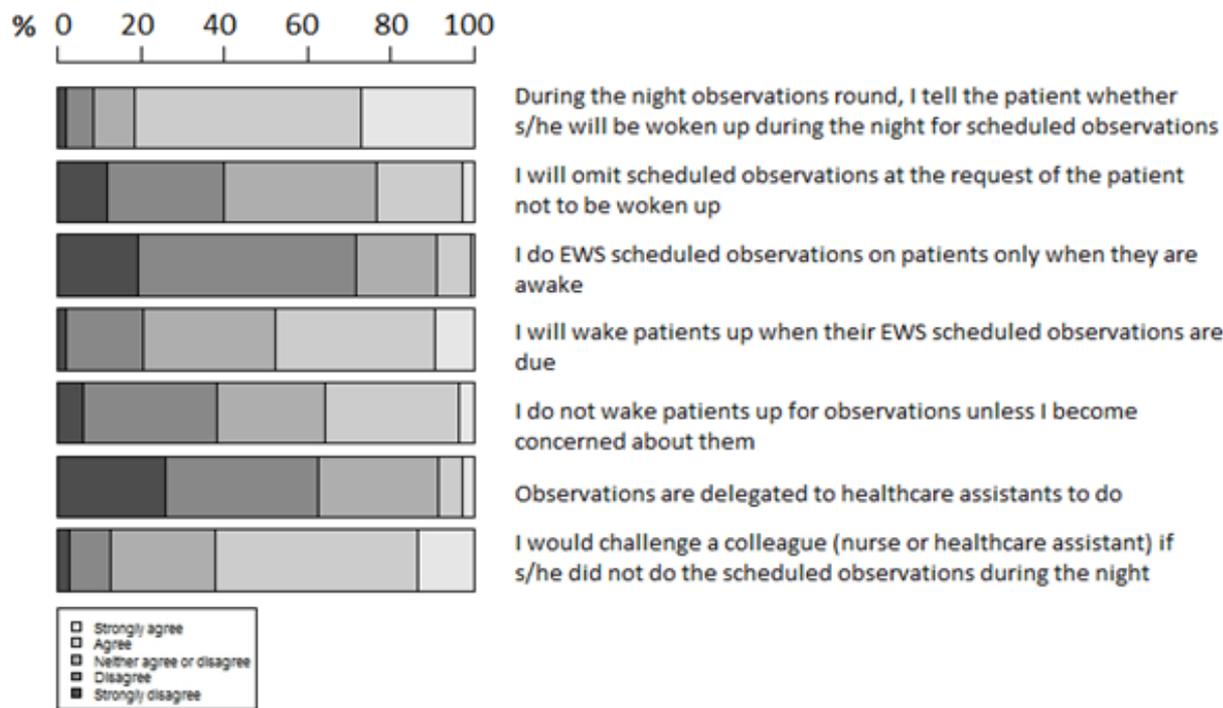
# Attitudes that may influence observations during the night shift



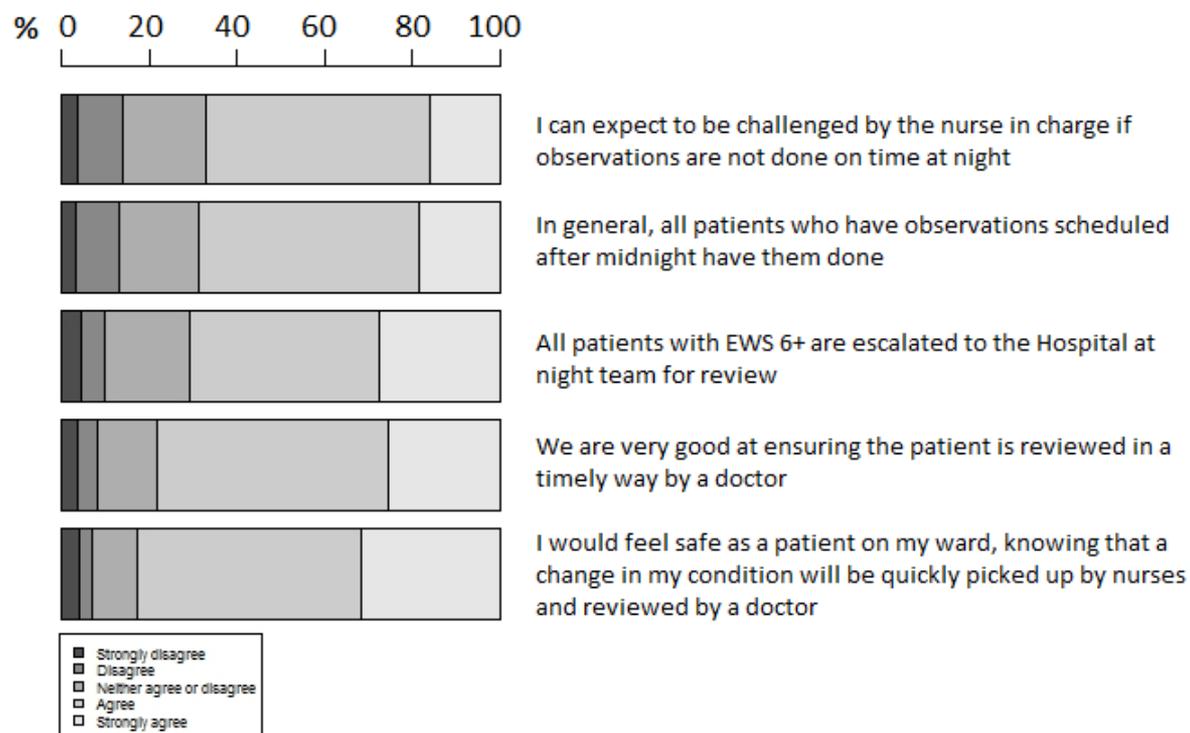
# Beliefs about work environment (staffing and workload) affecting observations



# Professional judgement and/or EWS protocol guiding observation decision-making



# Beliefs of ward efficiency during the night shift



# Associations between nurse characteristics with factors relevant to the completion of vital signs observations at night

## Workload and resources

- There are enough staff on night duty to do scheduled patient observations on time
- We have the right skill mix for the work that has to be done at night
- Agency staff at night know and follow the EWS protocol
- Agency staff at night have access and know how use VitalPAC

## Factor 2: prioritisation

- Scheduled observations are more important for the patient than a good night's sleep
- I will wake patients up when their EWS scheduled observations are due
- Taking a set of vital signs at night is very disruptive to a patient's sleep
- I will omit scheduled observations at the request of the patient not to be woken up

## Factor 3: safety culture

- I can expect to be challenged by the nurse in charge if observations are not done on time at night
- In general, all patients who have observations scheduled after midnight have them done
- All patients with EWS 6+ are escalated to the H@N team for review
- I would feel safe as a patient on my ward

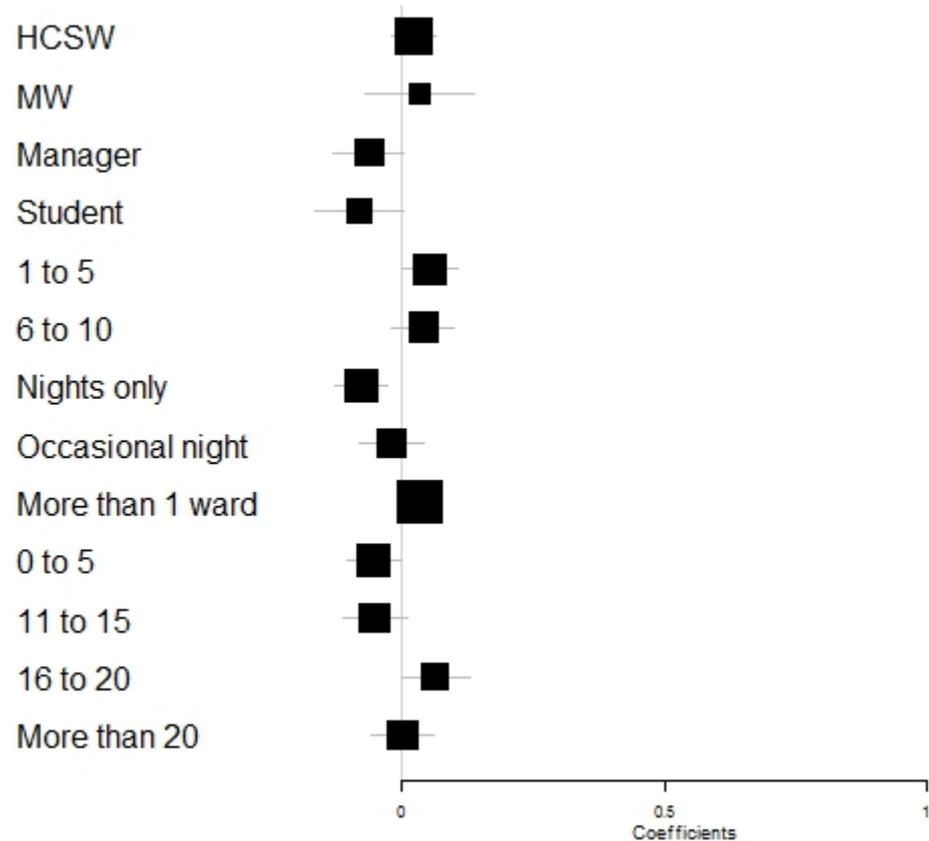
## Factor 4: responsibility & control

- Observations are delegated to healthcare assistants to do
- It is not possible to predict which patients will need observations at night
- Continuous observation with monitoring devices throughout the night is more disruptive than scheduled staff-led observations
- Taking observations at night is the responsibility of healthcare assistants

# Factor 1: workload and resources

Associations between nurse characteristics and questions about workload and resources were not significant for most of the variables.

Midwives, staff working between 1 and 6 night shifts, nurses with 16 and 20 years experience believed workload and capacity to impact the night work, which could identify experience as an important factor, however results in the more than 20 years experience were not significant.



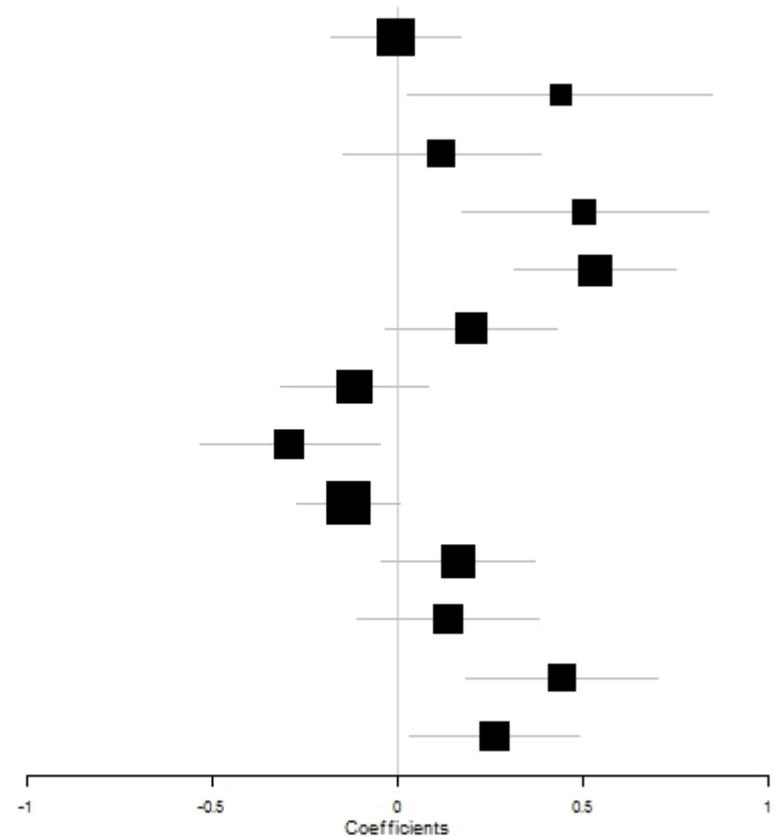
## Factor 2: prioritisation

Student nurses and midwives reported greater inclination to prioritise observations at night

Shift patterns were not significant in questions about prioritisation of sleep or patient preference over early warning scores to conduct observations during the night shift

All categories of years experience were significant

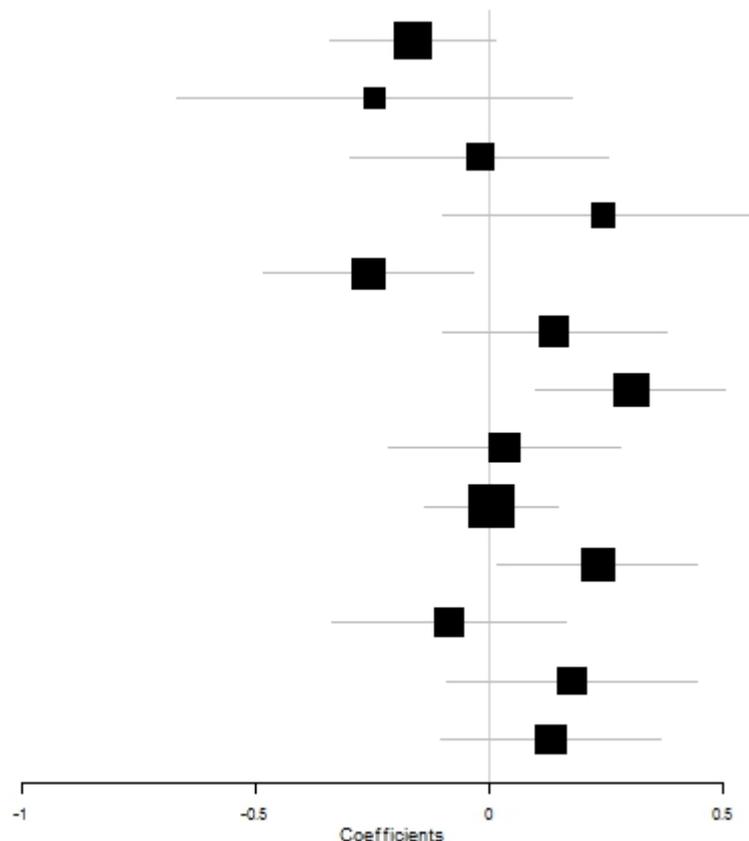
HCSW
MW
Manager
Student
1 to 5
6 to 10
Nights only
Occasional night
More than 1 ward
0 to 5
11 to 15
16 to 20
More than 20



## Factor 3: safety culture

Questions about completing observations for high acuity patients, escalation to hospital@night or feeling safe on the ward because of prompt monitoring and action, were significant for student nurses, staff working mostly night shifts and staff with either low or high years experience.

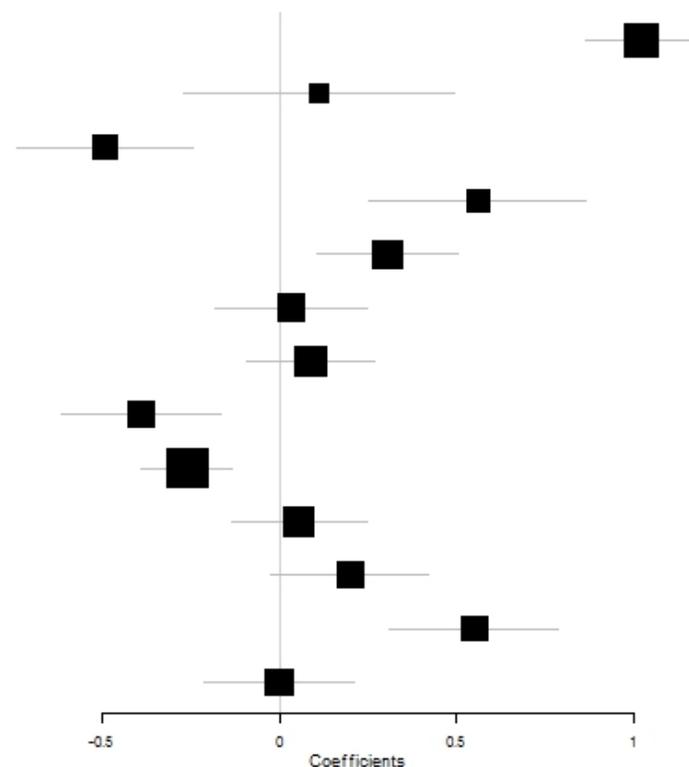
HCSW  
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More than 20



## Factor 4: responsibility & control

Role (except for the ward manager), number of night shifts worked, and years experience were associated with perceptions of the care delivered at night. Again, the category of more than 20 years experience is not significant.

HCSW  
MW  
Manager  
Student  
1 to 5  
6 to 10  
Nights only  
Occasional night  
More than 1 ward  
0 to 5  
11 to 15  
16 to 20  
More than 20



# Interviews

## CLAHRC Wessex

**Managing night-time vital signs observations: the conflicting care work of supporting sleep and preventing deterioration.**

Dr Jo Hope (on behalf of the Night Surveillance Study team)  
University of Southampton, United Kingdom



**National Institute for  
Health Research**

### Abstract

Patients' vital signs are monitored less at night, even when an early warning system (EWS) is used to measure patient acuity. Semi-structured interviews with 17 nursing staff revealed a range of hidden decision making processes used to balance the competing care work of supporting sleep, preventing deterioration, and meeting hospital and ward demands. It is recommended that teams discuss and audit decision-making around exceptions to EWS protocols at night.

### Introduction

This qualitative study forms part of a mixed methods project, the *Night Surveillance Study*. The project aimed to ascertain the knowledge, beliefs, choices and practices of healthcare staff concerning performing vital signs observations during the night on general medical and surgical wards, and to ascertain factors that are associated with ward level observation compliance and individual self reported compliance.

### Observations at night

Research suggests that vital signs observations are taken less often at night, even when an EWS is used [1,2]. A systematic review of why vital signs observations were missed at any time of day concluded that nurses use vital signs observations alongside intuition and 'pattern recognition' of deterioration based on experience as well as concerns raised by the patient's family members [3]. Relationships with other health



professionals, ward equipment and clinical environment were also identified as factors. No research has focused on why observations are taken less at night [2,3] and qualitative research is needed to explore this topic [4].

### Background

This study was carried out in a UK hospital where vital sign observation frequency dropped at night in 37/39 wards where an electronic physiological surveillance system sets the vital sign monitoring schedule.

### Methods

Nursing staff were approached through the survey in stage one of the project. 10 staff were purposively recruited from wards with the lowest and highest quartiles of expected observations and the largest relative drop in observations at night. This was supplemented with a convenience sample of seven from wards in the middle quartiles (total n=17). The wider project took a pragmatic approach and interview data was analysed using a constant comparative method informed by grounded theory.

### Results

Supporting an uninterrupted 'chunk' of sleep was described as a key care task. Decisions about whether to measure vital signs at night involved:

- **Whether a full observation set seemed 'necessary'**. 'Unnecessary' observations could be those for patients with chronic conditions who always scored highly, people who had difficulty sleeping and outliers labelled 'fit for discharge'.
- **If it chimed with clinical judgement (formal and 'gut')**.
- **Expectations of 'fresh observations' at 6am by doctors** which impacted observations that would have broken up 'chunks' of sleep
- **Whether it might disturb others**, such as those sharing a bay or 'confused' patients
- **Ward protocols setting observation frequency** – in particularly post-op intervals, which overrode EWS intervals but gave the impression of high compliance with EWS
- **Hospital surveillance audits** increased compliance but could damage nurses' sense of professional autonomy

### Conclusion

Nursing staff's attempts to balance competing care tasks with ward expectations involved hidden decision making that could put some patients at risk of lowered monitoring at night.

### Implications

- Further research should explore night monitoring variations
- Night staff's views on exceptions to monitoring at night should be openly discussed with the whole clinical team.

### References

1. [List Level 3][Smith et al 2008]. Title of article. Title of Journal, Volume (Issue/Part number), Page(s).
2. Hands et al 2013
3. Odell et al 2009.
4. Buist & Stevens 2013

### Acknowledgements

- [Name whole team here]

### Contact information

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*“The more we look at our patients, the more we monitor them, the more likely we are to catch them when they're spiking a temperature, or to catch them when they're starting to become unwell. But I think it's still, it's difficult, particularly with haematology patients, because they tend to deteriorate so quickly, that actually, even if we had them constantly monitored, we would struggle to pick up quickly when they were ill, and by doing someone's observations every six hours you won't necessarily pick up at that time that they're actually becoming unwell.”*

*“Some of that decision-making as a practitioner has been removed from the equation because we're being told to do some obs at 2:45 on Mr Smith.”*

# Thoughts to take away

- Some staff characteristics (e.g. role, experience, and number of night shifts worked) associated with beliefs regarding completion of observations. These correlated to prioritisation strategies of care tasks (attitudes and behaviours) to conduct observations (allowing patient to sleep, informing them that they will be woken up when observations are due) and having a sense of control over the care at night (beliefs) (deterioration is sometimes unpredictable).
- Workload may influence nurses' surveillance attitudes and behaviours (too much work to complete is left for the night shift staff)
- Missed observations may be due not only to workload and resources, but also to nurses' role and responsibilities on the ward (observations are responsibility of the HCSW).

Thank you

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