Measuring Nursing Workloads and Activity in Critical Care:
A Review of the Evidence

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Alliance of leading critical care nursing organisations

- Royal College of Nursing Critical Care and In-Flight Nursing Forum
- British Association of Critical Care Nurses
- Critical Care National Network Nurse Lead Forum
- Intensive Care Society Nurses and Allied Health Professionals Committee
- National Outreach Forum
- Military Critical Care Nurses

BACCN British Association of Critical Care Nurses

CCNN Critical Care Network-National Nurse Leads

intensive care society
care when it matters

RIGHT TIME • RIGHT PEOPLE • RIGHT PLACE •
NOrF The National Outreach Forum

Royal College of Nursing

Background


THE MID STAFFORDSHIRE NHS FOUNDATION TRUST PUBLIC INQUIRY
Chaired by Robert Francis QC
Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry
Executive summary
HC 947
A promise to learn – a commitment to act
Improving the Safety of Patients in England
National Advisory Group on the Safety of Patients in England
August 2013
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The independent regulator of health and social care in England
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Background

Better ICU nurse staffing is associated with:

- Lower in-hospital and 30-day *mortality* (Cho and Yun, 2009)
- Decreased adverse patient outcome (McGahan et al, 2012)
- Reduced mortality (West et al 2014)

- Reduced incidence of pressure ulcer (Cremasco et al, 2013)
- Reduced health-care associated infections (Daud-Gallotti et al, 2012; Leroyer et al, 2014)
- Reduced Central line and ventilator associated sepsis (Stone et al, 2007)

- Lower incidence of human factors related errors in patient care (Graf et al, 2005)
- Improved patient and relative satisfaction (Gerasimou-Angelidi et al, 2014)
- Less musculo-skeletal injury and reduced staff burnout (Frade Mera et al, 2009)

In a ward setting, an increase in nurse's workload by one patient increased the likeliho od of an inpatient dying within 30 days off admission by 7% (Aiken et al 2014)

Background

J Adv Nurs. 2003 May;42(4):402-12.

Measuring nursing workload in intensive care: an observational study using closed circuit video cameras.

Adomat R[1], Hicks C.

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- Many mechanically ventilated critically ill patients required less nursing care than patients who were self-ventilating and allocated a lower level of dependency
- A high percentage of nursing activities observed consisted of low skill activity
- Nurses spent less time with Level 3 patients than Level 2

Background

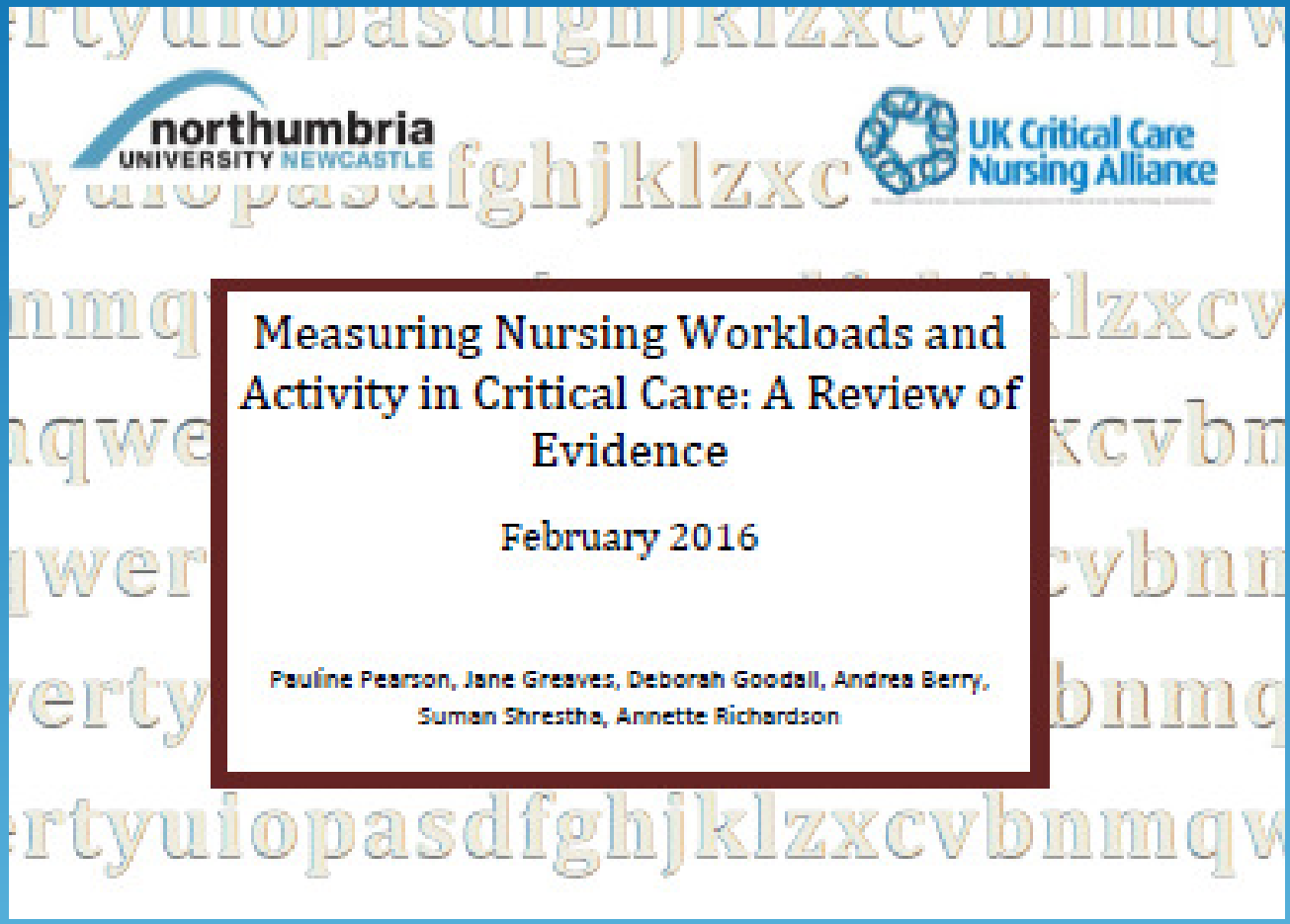
ICU nurse staffing guidelines:

- Royal College of Nursing (2003)
- World Federation of Critical Care Nurses (2006)
- European Federation of Critical Care Nursing Ass ociations (2007)
- BACCN (2009)

Background

- 2015
- 1:1 for level 3 ICU patients
- 1:2 for level 2 High dependency patient

'The evidence to base recommendations is sparse and advise has heavily relied on expert opinion'


northumbria
UNIVERSITY NEWCASTLE
UK Critical Care
Nursing Alliance
Measuring Nursing Workloads and Activity in Critical Care: A Review of Evidence
February 2016
Pauline Pearson, Jane Greaves, Deborah Goodall, Andrea Berry, Suman Shrestha, Annette Richardson

Aim

- To examine current evidence on how best to measure critical care patient activity and workload intensity, to inform nurse workforce decisions

Methods

- A rapid review methodology of the literature
- Team of three experienced critical care nurses, information specialist and two nursing academics
- Scope of search:
  - Research studies
  - Guidelines
  - Surveys

- Within and outside United Kingdom in the **last 20 years**
- The SPICE standardised framework was used
- Partly funded by Royal College of Nursing

The Spice Standardised Framework (Booth, 2004)

Setting for studies:

critical care units, HDU, ICU (general & specialist, including neonatal and paediatric), post-operative recovery unit, renal unit (in-patient dialysis), cardiac care unit

Population was identified as:

Registered Nurses and non-Registered Nurses -including Assistant Practitioners & Healthcare Assistants

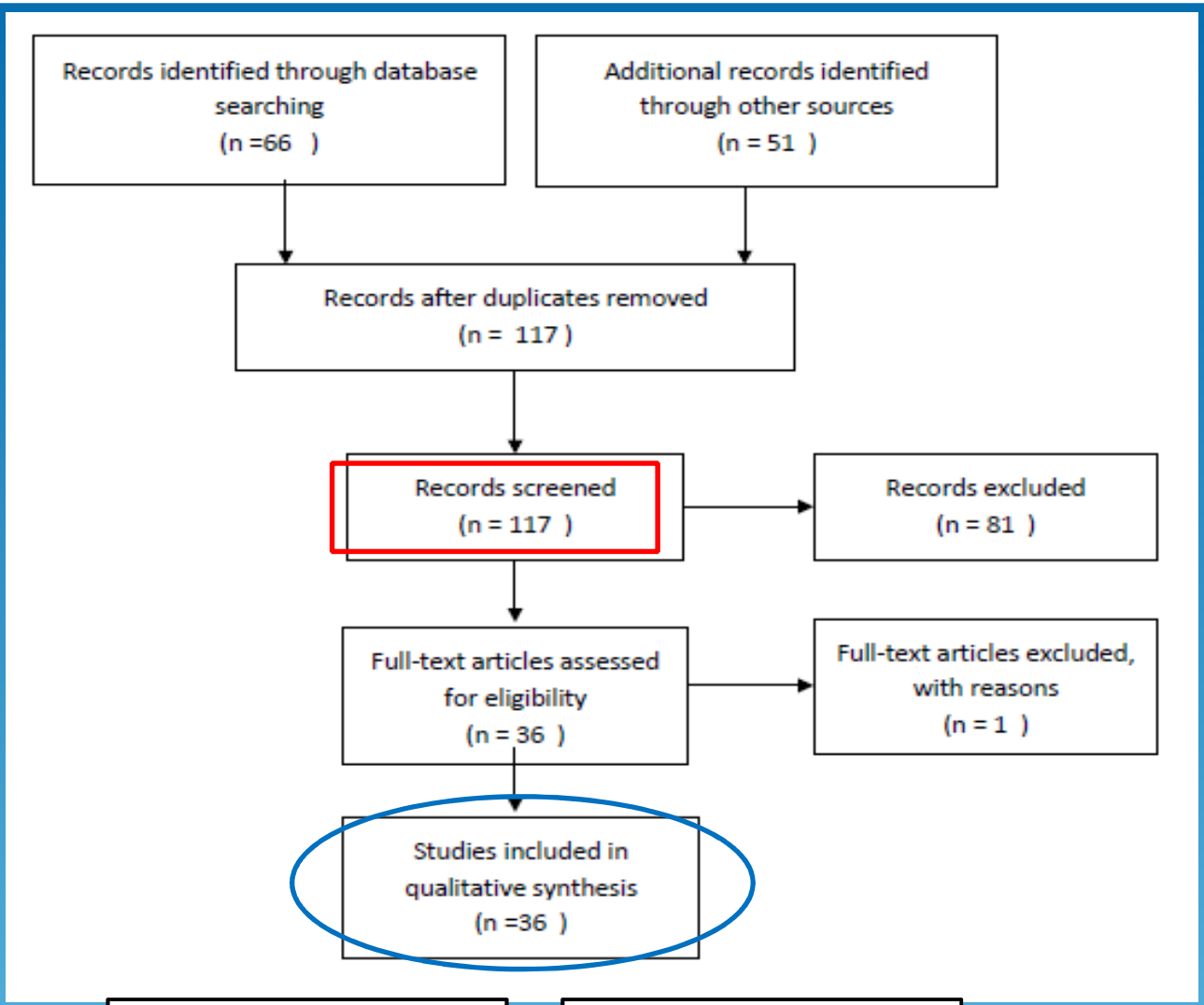
Intervention looking for:

measurement of nursing activity or workload or skill mix using a tool

Evaluation encompassed:

impact and outcome measures of nursing activity/workload; validity and reliability of tool; ability to inform staffing levels (capacity and capability)

Results



Studies drawn from around the globe:	Studies were:
•UK (9 studies) •Brazil (10 studies)	•retrospective analyses •staff diaries and surveys •observational studies •prospective studies of the use of specific tools and staffing models •instrument development

Results

The tools examined in the review fell into three groups:

Condition and needs of the patient [disease, diagnosis or physiological measures of illness, and patient dependency]

- APACHE II
- SAPS II
- DRGs
- SOFA

'Sicker the patient the more care they need'

Based on actual nursing activities and interventions [actual work by nurses]:

- Nursing Activity Score (NAS)
- Dependence Nursing Scale
- Nursing Intervention Classification
- TISS-76
- TISS-28
- Nine Equivalents of nursing Manpower

Drawing on psychosocial theories

- NASA Task Loading Index (NASA- TLX):
- 'Managing Risk' instrument:

Nursing Activities Score (NAS)

- Most extensively examined tool and generally reliable
- Provides data on activities undertaken by the nursing team by shift
- Major categories of care:
  - basic activities
  - ventilatory
  - cardiovascular
  - renal
  - neurological
  - metabolic support
  - specific intervention
- NAS was able to capture a greater breadth of activities than TISS-28 (Altafin et al 2014)
- Computerised version was effective (Castro et al 2009)
- NAS showed a high potential workload in a burns ICU (Camuci et al 2014)

Nine Equivalents of Nursing Manpower NEMS

Appendix 1: The nine equivalents of nursing manpower use score (NEMS).		
Action	**Points**	**Explications**
Basic monitoring	9	Hourly vital signs, regular record and calculation of fluid balance.
Intravenous medication	6	Bolus or continuously, not including vasoactive/inotropic drugs.
Mechanical ventilatory support	12	Any form of mechanical/assisted ventilation for ≥2 hrs/shift (excludes supplementary ventilatory care).
Supplementary ventilatory care	3	Breathing spontaneously through endotracheal tube; supplementary oxygen any method.
Single vasoactive medication	7	Any vasoactive/inotropic drug, continuously intravenous.
Multiple vasoactive medication	12	More than one vasoactive/inotropic drug, regardless of type and dose, continuously intravenous.
Dialysis techniques	6	All
Specific interventions in the ICU	5	Such as endotracheal intubation, introduction of pacemaker, cardioversion, endoscopy, emergency operation, in the past 24 h, gastric lavage. Routine interventions such as X-rays, echocardiography, electrocardiography, dressings, introduction of venous or arterial lines, are not included.
Specific interventions outside the ICU	6	Such as surgical intervention or diagnostic procedure; the intervention/procedure is related to the severity of the patient's illness and makes an extra demand upon manpower efforts in the ICU.

Discussion

- A perfect tool does not exist
- The papers examined gives little information on
  - practicality in practice
  - How long does it takes to complete the tool
  - staff perception
- Reliability and validity not appraised and tested
- Only NAS been developed in a computer based form

Conclusions

- Understanding nursing workload is complicated
- Professionals and public continue to grapple with understanding what is safe staffing in a context off austerity
- Healthcare is increasingly delivered by multi-professional workforce and the right skill mix is important
- Staffing is also about how much time nurses spend with patient/family
- How about patient outcome?
- Does one size fit all?
- Also important to look at the psychological stresses on nurses
- Scope for further development and research