# Principles of Nurse Staffing in Intensive Care

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# Nurse staffing in intensive care

- Recommended staffing levels in the UK
- Nurse staffing, patient outcomes and quality
- The EU Working Time Directive and shift patterns
- Neurosurgical Critical Care at The National Hospital
  - *Not enough nurses*
  - *Not enough patients*

# Recommended staffing minimums in the UK

## *Adult intensive care*

**‘Gold standard’ ratio set by the British Medical Association in 1967**

**1 registered nurse : 1 patient**

**Revised in 2009**

***British Association of Critical Care Nurses***
***British Association of Critical Care***
***Royal College of Nursing***

- Every patient in ICU should have access to a registered nurse with post-registration qualification in the specialty
- Ventilated patients should have 1 nurse : 1 patient
- Nurse patient ratio should not fall below 1 nurse : 2 patients
- Units of 6 beds or more should have a supernumerary nurse coordinator (senior critical care qualified nurse)

# Recommended staffing minimums in the UK

## *Neonatal and Paediatric intensive care*

**2001 British Association of Perinatal Medicine**

**2003 & 2009 Department of Health**

**Paediatric Intensive Care Society**

### *Neonatal unit*

- High dependency 1 : 2
- Intensive Care 1 : 1
- Supernumerary nurse coordinator on each shift

### *Paediatric unit*

- Level 1 - 0.5 : 1 (1:1 in cubicle)
- Level 2 - 1.5 : 1
- Level 3 - 1.5 : 1
- Level 4 - 2 : 1

# Recommended staffing minimums in the UK


- Strict use of defined nurse : patient ratios be replaced by a more flexible system based on patient dependency
- Dependency harder to predict
  - Patient's condition can change
  - The 'agitated' patient

# Nurse staffing, patient outcomes and quality


Policy+

Policy plus evidence, issues and opinions in healthcare Issue 12 October 2008

KING'S College LONDON

2008

Can you measure nursing?

2010

Learning from reporting

How do staffing issues impact on patient safety?

The recent Health Committee report[1] on patient safety (July 2009) stated that inadequate staffing levels play a major role in undermining patient safety.

Of all the incidents reported to the RLS during this period, 3.4 per cent (33,335) were reported as relating to staffing issues. The majority of these incidents (79 per cent) caused

| | | | |
|---|---|---|---|
| Medical specialties | | | 4.1 |
| Other | 2,279 | 64,183 | 3.6 |
| Other specialties | 594 | 19,614 | 3.0 |
| Not applicable | 144 | 6,032 | 2.4 |
| Diagnostic services | 617 | 32,063 | 1.9 |
| Unknown | 209 | 12,180 | 1.7 |
| Primary care/community | 842 | 51,825 | 1.6 |
| Mental health | 1,368 | 129,316 | 1.1 |
| PTS (Patient Transport Service) | 23 | 2,744 | 0.8 |
| Learning disabilities | 204 | 32,522 | 0.6 |
| Missing/not provided | 15 | 3,456 | 0.4 |
| Total | 33,335 | 973,935 | 3.4 |

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**Impact of staffing on the care of seriously ill patients**

UK review of 61 incidents in which patients died revealed clear evidence of a link between nurse staffing levels and patient outcomes in acute care

*(Health Committee Report 2009)*

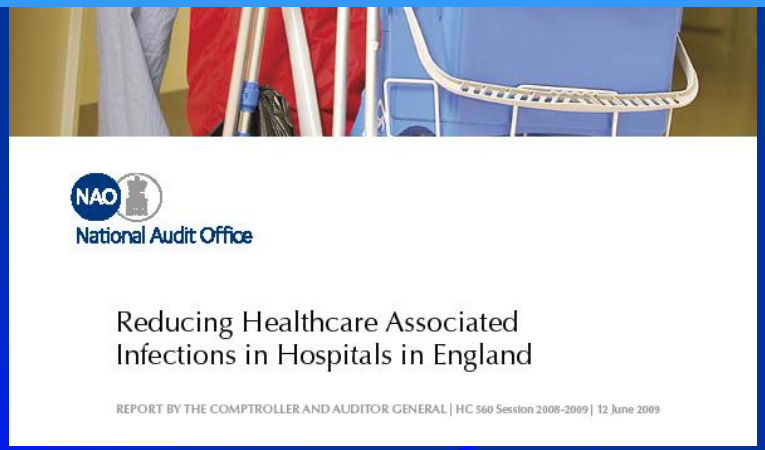
- Routine observations not taken *(14 cases)*
- Observations taken but deterioration in the patient's condition not recognised *(30 cases)*
- Delay in medical attention reaching the patient *(17 cases)*

# Nurse staffing, patient outcomes and quality

- 2007 review in Canada and the U.S. *(Kane et al)* showed reduction in risk of poor outcome greatest with patient : nurse ratios
  - < 3.5 surgical patients per nurse
  - < 2.5 ICU patients per nurse
- Each additional patient assigned to a nurse was associated with an overall increase in risk
  - 17% for medical complications
  - 7% for hospital acquired pneumonia
  - 53% for respiratory failure
- The relationship between higher nurse staffing and improved patient outcomes is not linear but shows diminishing marginal returns (*Lankshear et al.'2005)*

# Nurse staffing, patient outcomes and quality

**Increase in infection rates when staffing levels are low**
***National Audit Office (2009)***



NAO
National Audit Office

Reducing Healthcare Associated Infections in Hospitals in England

REPORT BY THE COMPTROLLER AND AUDITOR GENERAL | HC 560 Session 2008-2009 | 12 June 2009

Investigation

Investigation into Mid Staffordshire NHS Foundation Trust

March 2009

House of Commons
Health Committee

**Patient Safety**

**Sixth Report of Session 2008–09**

***Volume I***

*Report, together with formal minutes*

**High profile cases in UK identified the disastrous effect of too few nurses**

HC 151-I
Published on 3 July 2009
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# Nurse staffing, patient outcomes and quality

## *The importance of skill mix*


**Nurse staffing levels associated with better outcomes in ICU and in surgical patients**

***Agency for Healthcare Research and Quality***
***US Department of Health (2007)***

**Ratio of trained to untrained staff**

***King's College London 2009***

Policy+

Policy plus evidence, issues and opinions in healthcare Issue 20 September 2009

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**RN+RN = better care. What do we know about the association between Registered Nurse staffing levels and patient outcomes?**

There is considerable evidence of an association between nurse staffing levels and patient

could save five lives per 1,000 hospitalised patients in intensive care units, five lives per 1,000 medical patients, and six per 1,000 surgical patients. However the relationship is not linear and the improvements in mortality are greater when moving up from the lowest staffing levels with diminishing benefits at higher levels of staffing.

But are such impressive benefits actually caused by higher nurse staffing levels? If they are not, the potential benefits will not be achieved by simply increasing the number of nurses.

Analysis of the results of the systematic review gives mixed evidence of a causal relationship[3]. For example, evidence for associations with outcomes such as pressure ulcers, falls and urinary tract infections, that are expected to be highly sensitive to nursing[4], is not clear.

**Is the case clear?**

The evidence of an association between nurse staffing and patient outcomes has been used in some countries to set mandatory nurse patient ratios but the expected benefits in terms of patient outcomes have not been realised[5]. A recent study in Belgium, found no association between nurse staffing and outcome at a hospital level[6], although significant variation in staffing levels between wards within hospitals was reported.

Other factors may also be at work. A UK study found that good human resource (HR) practices (sophisticated training policies, team-working and appraisal) reduced mortality[7]. This study controlled for medical but not nurse staffing.

The majority of studies have utilised data which are now more than 10 years old, covering a period in which there has been considerable change in both the patient population and the profile and roles of the workforce in the NHS and beyond. For nursing in particular there has been a recent upsurge in the use of tools for determining appropriate staffing[8] and managing an effective work force through the use of quality/outcome measurement[4].

www.kcl.ac.uk/schools/nursing/nnru/policy

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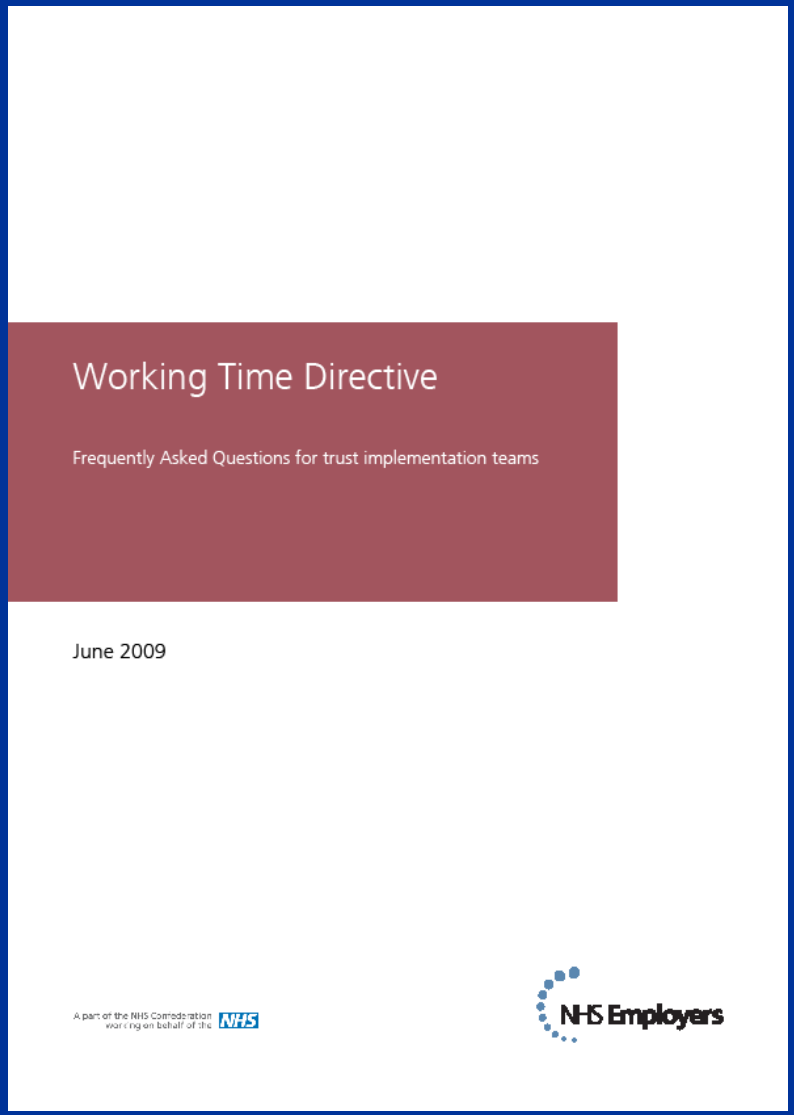
# UK shift patterns

## European Working Time Directive (EWTD) 1998

***Ensuring that staff are well rested is critical to patient safety and quality care***



# Changes in shift patterns in UK

***Prior to EWTD***

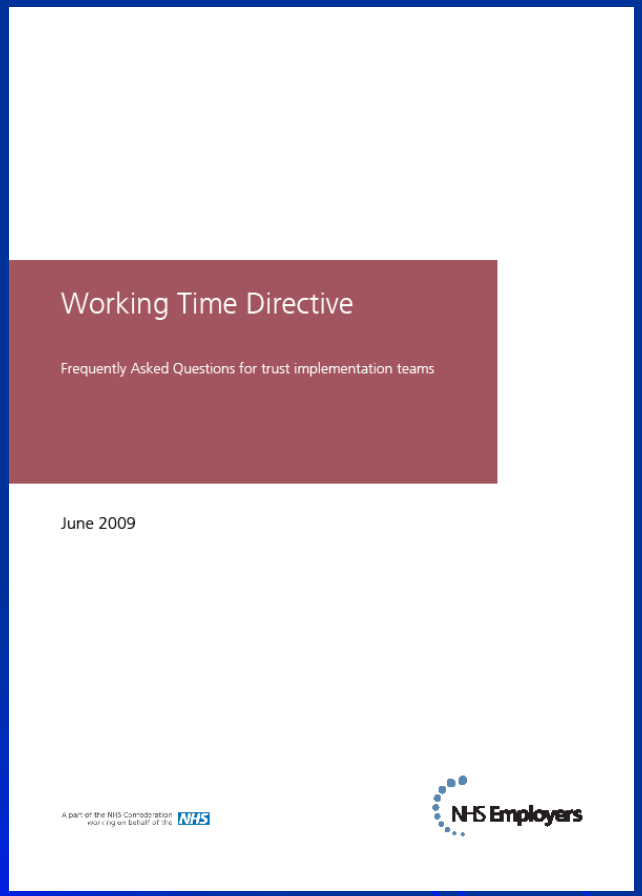
- Medical staff worked 8 and 24 hour shifts
  - Doctors 'on call' and could rest if clinical duties allowed
- Nursing staff worked 8 and 12 hour shifts – *never 24 hours*
  - Nurses 'on duty' at bedside – '*sleeping 'seen as act of 'gross misconduct'*

***Over last 10 years***

- Introduction of 'long day' and 'long night ' for medical and nursing staff
  - Similar to shift patterns in other countries *(US, Australia, Japan)*
- Move from 'on call' to shift system for medical staff – 8 and 12 hour shifts
  - British Medical Association support
  - Criticism from Royal Colleges of Physicians and Surgeons about impact on medical training and therefore patient care
- No change in length of shift for nurses – still 8 and 12 hours
  - Supported by Royal College of Nursing who provided evidence of adverse impact of long working hours on nurses

# European Working Time Directive (EWTD) 1998

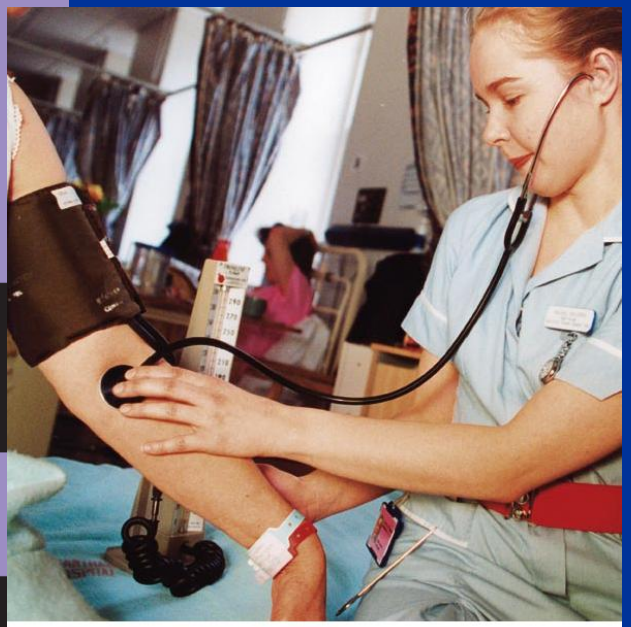
*Legislation setting minimum requirements to Improve work–life balance and reduce sleep deprivation*




- An average of 48 hours working time each week
- 11 hours continuous rest in 24 hours
- 24 hours continuous rest in 7 days (or 48 hrs in 14 days)
- 20 minute break in work periods of > 6 hours
- For night workers an average of no more than 8 hours work in 24 *(this can be extended in areas with a 24 hour service)*

# Impact of shift patterns





**Errors increase when staff are working under pressure and when tired**

*National Audit Office (2006)*

**Higher absence rates for staff working > 8 hours a day for any number of days in one month than for staff who never work > 8 hours / day**

*NHS Health and Wellbeing Survey (2009)*

# The National Hospital Neurosurgical Critical Care

## *9 ICU and 6 HDU beds*

# Nurse staffing for each shift

**Shift leader allocates according to skill mix and experience**

**All staff rotate between ICU and HDU**

*Nursing establishment = 65*

- 2 shifts in 24 hours
  - Day 07:45 - 20:15
  - Night 19:45 - 08:15
- 10 nurses + shift leader
  - 2 senior staff nurses / sister
  - 4 middle grade staff nurses
  - 5 junior staff nurses
- Supporting staff Mon-Fri (9 - 5)
  - Clinical Nurse Specialist
  - Education Sister
  - Unit Nurse Manager

# Sickness / Absence Rates

- SITU sickness / absence rates
  - As a department and as individuals expected < 4%
- Managing sickness / absence
  - ‘Back to work’ interview on return from sickness
  - If > 4% over 2 monthly rosters ⇒ Informal process / supportive / occupational health referral
  - Formal process via Human Resources Department
  - Currently managing 2 staff members
- Carer’s leave policy

# Not enough nurses!

- Importance of the supernumerary shift leader
- Ability to ‘draft in’ extra staff to cope with sudden shortages
- Impact on medical staff
- Impact on the patient

# Not enough nurses!

**Importance of the supernumerary shift leader**
***'Nurse in charge'***

- Role exists in most units of 6 beds or more
- Coordinating, supervising and supportive role
- Particularly important when short staffed and when skill mix not optimum
- Allocated patient if needed

# Not enough nurses!

**‘Drafting in’ other staff to cope with sudden shortages**

- Likely to be additional personnel available Mon-Fri 9 to 5
  - Clinical nurse specialist
  - Education sister
  - Critical care outreach nurse
  - Unit nurse manager
- Employ hospital ‘bank’ nurses to cover short notice sickness
  - Often own staff doing extra shifts
  - Funded by not filling all established posts (85%)

# Not enough nurses!

**Impact on medical staff**

Nurse shortages do have an impact – *but limited since nursing and medical roles distinct*

- Nurses absorb extra workload
- ICU medical staff workload largely unchanged
  - Possible delay in undertaking procedures requiring an assistant
- Impact on other staff if elective theatre cases cancelled

# Not enough nurses!

**Impact on the patient**

- Unnecessary sedation for the agitated patient
- Delay in implementing patient rehabilitation plans
- Cancelling elective surgery
- Sub-standard care
- Actual harm
  - Critical incidents

# Not enough patients!

***- but this can change rapidly***

**Making best use of valuable resources**

- Redeploy elsewhere
  - Decision taken by senior nurse for hospital and nurse in charge of ICU
  - Never ‘popular’ but in contract
  - Always one-way flow of staff from ICU to ward - never the other way!
  - Show fairness - everyone takes their turn
- Flexibility in rota
  - Give annual leave
  - Move shift
- Time for training and education

# Not enough patients!

***- but this can change rapidly***

**Maintaining motivation**

- Training and education
  - On-line mandatory training updates
  - Competency training
- Management issues
  - Staff appraisals
  - Staff meetings
- Administrative duties

**But hard to sustain for more than a few shifts!**

# Not enough patients!

***- but this can change rapidly***

**Maintaining standards**

Should be easy when unit is quiet *but* …..

- Often things are postponed until ‘later’ and then forgotten
- Important information not passed on to next shift

# In summary

- Managing nurse staffing to meet the peaks and troughs of intensive care activity can be difficult
  - Nurse : patient ratio
  - Ratio of senior nurses : junior nurses
- Flexibility to alter duty roster is essential
  - Move staff from another shift
  - ‘Draft in’ staff – even for a few hours!
- Obstacles to flexibility include
  - Length of the shift
  - Travel time for staff

Good luck!