More than vital signs: Reframing nurses' recognition and response to clinical deterioration

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Symposium Aims

- To bring together studies from a program of research designed to build knowledge about patient assessment practices

- To facilitate a round table discussion on strategies for improvement

"The most important practical lesson that can be given to nurses is to teach them what ...[and]... how to observe – what symptoms indicate improvement – what the reverse – which are of importance – which are of none – ...."

Florence Nightingale, Notes on Nursing, 1860, p. 105

Royal Brisbane and Women's Hospital

- 929 beds

- most major health specialties

- typical of Australian quaternary hospitals
  - size,

  - average length of stay,

  - cost-per case mix adjusted separations,

  - emergency room waiting times, and

  - hospital separations with an adverse event

(AIWH 2004)

Context

Patient Assessment Research Council

- Patients deteriorate on the ward
- Increase in MERT calls but still issues in detection and response
- Are nurses assessing patients?
- If not, why not?

Assumption about Nurses' Role
Surveillance

- ongoing observation and assessment,

- recognition,

- interpretation of clinical data, and

- decision-making

(Kutney-Lee, A, Lake ET, & Aiken LH 2009).

Problem

- Clinical deterioration frequently goes unnoticed in hospitalized patients (Massey D, Aitken LM, & Chaboyer W, 2009).

- Detectable physiological signs often precede deterioration (Buist, Bernard, Nguyen et al 2004; Jones DA, DeVita MA, & Bellomo R, 2011).

- Insufficient evidence about the effectiveness of hospital safety initiatives (Jones et al 2011; Kyriacos U, Jelsma J, & Jordan S, 2011).
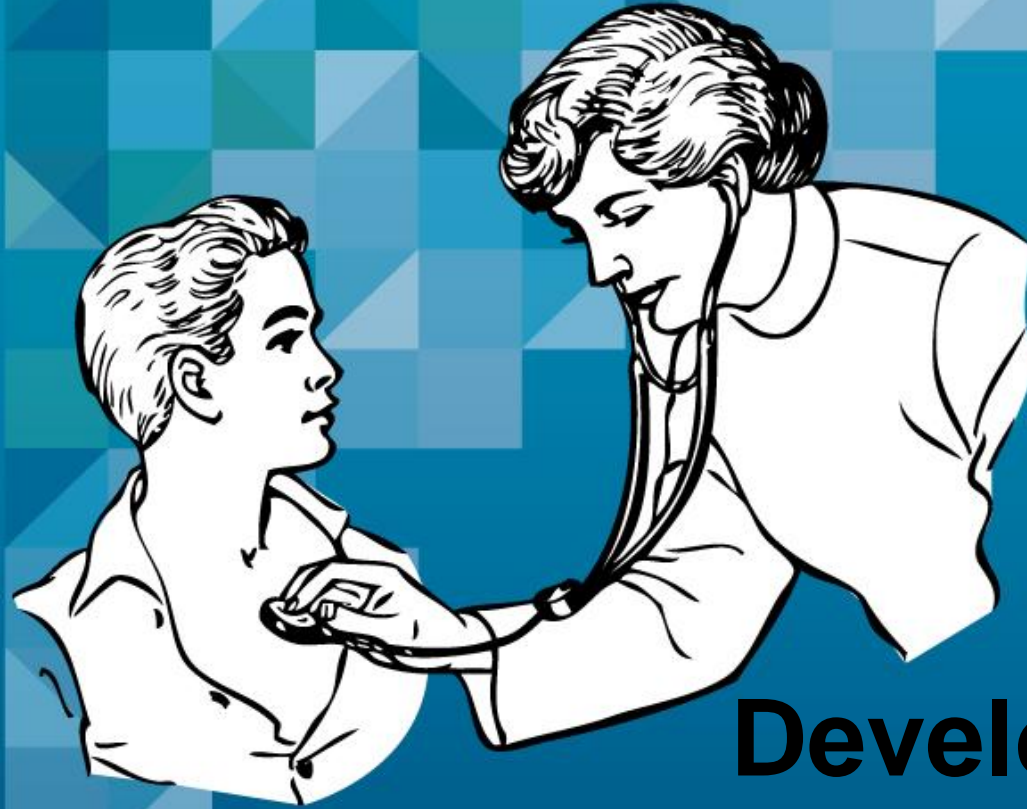
Goals and Objectives
Session 1

Session 1 Goal:

- to describe and discuss development and psychometric testing of the *Barriers to Nurses' Use of Physical Assessment Scale* and the implications of findings for nursing assessment practice.

Session 1 Objectives:

- Discuss nurses' use of physical assessment skills
- Discuss development and validation of the Barriers to Nurses' Use of Physical Assessment Scale
- Discuss association between sample characteristics and barriers to use of physical assessment skills

Background

- RNs tend to rely on intuitive judgement rather than physiological signs (Odell et al. 2009) and use a narrow range of physical assessment skills (Secrest, Norwood, DuMont, 2005; Giddens 2007; Birks *et al.* 2013)

- Qualitative and small descriptive studies suggest a range of barriers to nurses' use of physical assessment, but no validated measure existed

- To understand the problem, develop an intervention and test its effectiveness – a new measure was needed!

Study Design and Methods

Item development and content validation

– Comprehensive literature review and RN focus groups

– 52 positively and negatively worded items were developed, representing 13 categories of barriers to nurses' use of physical assessment

– Expert panel reviewed for clarity and relevance, giving a scale content validity index of .92

– Research team reached consensus about the final items to include in the psychometric evaluation of the scale

Study Design and Methods

Psychometric evaluation

- Hospital-wide paper-based/online survey of acute care RNs

- 52-item barriers scale measuring the extent of agreement on a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree)

- Final sample included 434 RNs

  - A sample size of greater than 300 is generally considered adequate for factor analysis (Tabachnick & Fidell 2007, DeVellis 2012)

  - 8.3 participants per item exceeding the minimum 5:1 ratio recommended by Hair *et al.* (2010)

Characteristics	n	%
Gender		
Female	393	90·6
Male	40	9·2
Age		
Mean, SD	38·9	11·5
Highest level of education		
Hospital certificate	59	13·6
Bachelor's degree	271	62·4
Postgraduate	99	22·8
English first language		
Yes	372	85·7
No	59	13·6
Clinical role		
Registered Nurse/midwife	283	65·2
Clinical nurse/midwife	96	22·1
Nurse manager, educator or researcher	47	10·8

Division currently employed		
Surgical and perioperative	141	32·5
Internal medicine	119	27·4
Women's and newborn	57	13·1
Cancer care	42	9·7
Mental health	34	7·8
Other	38	8·7
Employment status		
Full-time	191	44·0
Part-time	233	53·7
Casual	9	2·1
Years of experience as RN		
Mean, SD	13·7	10·8
≤3 years	69	15·9
4–5 years	50	11·5
6–9 years	70	16·1
≥10 years	232	53·5

Factor analysis

- EFA was conducted using PCA and varimax rotation

- 11 factors had eigenvalues > 1; however, scree plot and parallel analysis indicated that a 6-factor solution was probably best
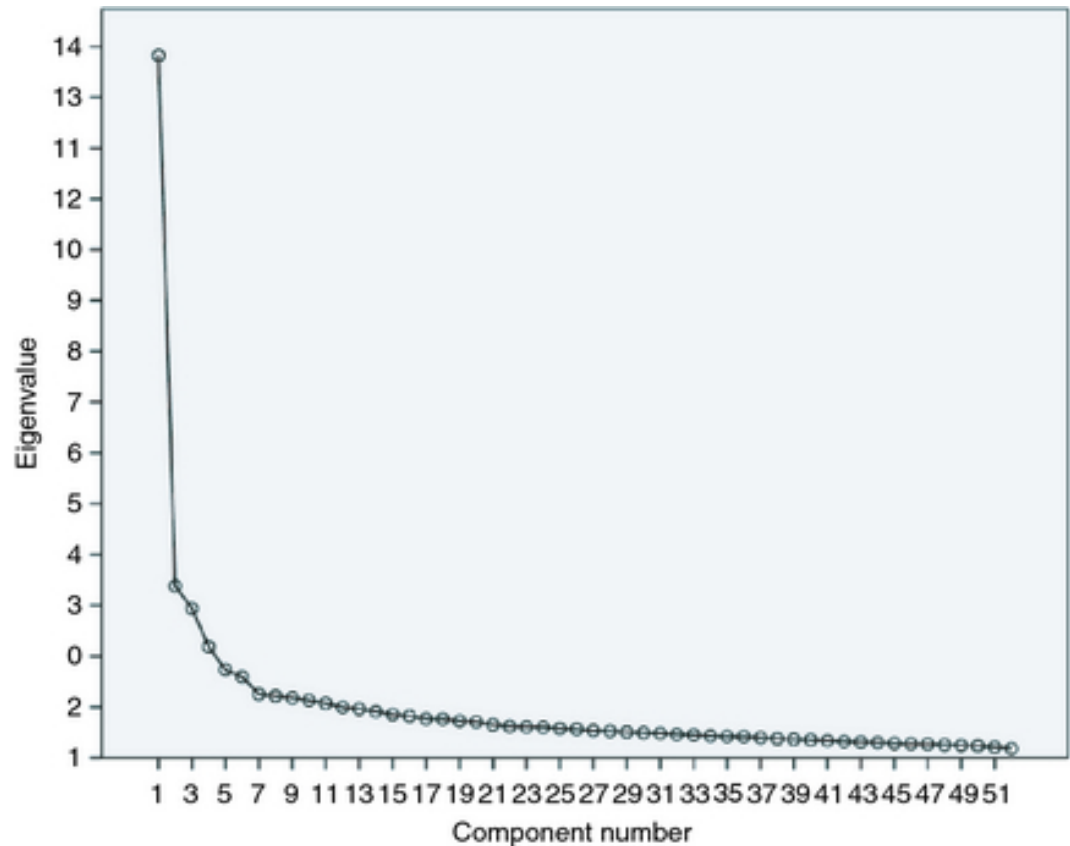
Factor analysis

- Poorest performing items were deleted one at a time and PCA re-run until all factor loadings ≥ .40 and items loaded on one coherent factor

- A 7-factor extraction was the most appropriate based on factor interpretability, together accounting for 57.7% of the variance in the scale

- CFA using maximum likelihood estimation was also used to examine model fit:
  - normed χ^2 = 1.90, RMSEA = .05 (90% CI = .04 to .05) and CFI = .91
  - All items loaded significantly ($p < .001$) on the hypothesized measurement model and no modifications were warranted

Barrier subscales

1. Reliance on others and technology
2. Lack of time and interruptions
3. Ward culture
4. Lack of confidence
5. Lack of nursing role models
6. Lack of influence on patient care
7. Specialty area

Subscale means and alphas

Subscale	M	SD	Range	α
1. Reliance on others and technology	2·21	0·54	1·00–4·44	0·83
2. Lack of time and interruptions	2·69	0·75	1·00–5·00	0·85
3. Ward culture	2·26	0·61	1·00–4·67	0·84
4. Lack of confidence	2·45	0·76	1·00–5·00	0·86
5. Lack of nursing role models	2·63	0·75	1·00–5·00	0·78
6. Lack of influence on patient care	2·06	0·48	1·00–4·00	0·73
7. Specialty area	3·48	0·64	1·60–5·00	0·70

Barriers by RN and Work Characteristics

- No significant associations with age, gender, level of education, or employment status

- Having > 10 years' nursing experience was associated with lower perceptions of lack of time and interruptions, $F(3, 406) = 4.45$, $p = .004$, and lack of confidence, $F(3, 409) = 3.68$, $p = .01$

- Compared with RNs and CNs (Grade 5 or 6), APNs (Grade 7) were less likely to perceive a reliance on others and technology, $F(2, 411) = 4.44$, $p = .01$, or lack of influence on patient care, $F(2, 419) = 3.32$, $p = .04$, as barriers to physical assessment

Barriers by RN and Work Characteristics

- Having < 5 years' experience was associated with greater endorsement of a lack of nursing role models, $F(3, 410) = 2.75$, $p = .04$

- RNs from non-English speaking backgrounds scored higher on reliance on others and technology, $t(415) = -2.04$, $p = .04$

- RNs working in maternity or mental health both rated specialty area higher compared with other service divisions as influencing their use of skills, $F(5, 423) = 2.46$, $p < .001$

Discussion

- Results support the new 38-item *Barriers to Nurses' use of Physical Assessment Scale* as a valid and reliable measure in the acute hospital environment

- Greater attention to the barriers RNs encounter in performing physical assessment is needed to understand nurses' work practices and failure to recognise patients at risk of clinical deterioration

Conclusion

- The next step was to explore what physical assessment skills acute care RNs perform and whether perceived barriers are significant predictors ...

Goals and Objectives Session 2

Session 2 Goal:

- to present indings from study exploring RN's use of, and perceived barriers to, physical assessment skills used in routine assessment and recognition and response to patients at risk of deterioration.

Session 2 Objectives:

- Discuss nurses' perceptions of factors influencing patient assessment practices.

- Compare most consistently utilized patient assessment practices with characteristics of nurses and nurses' perceptions of barriers to practice

Background

- Literature Review

- What are nurses doing

- What factors shape that

Study Design and Methods

- Cross-sectional survey design
- Recruitment and data collection
  - (June – July 2013)

Setting and Population

- 929 bed teaching hospital

- acute care wards (sampling frame 102)

- 1591 surveys distributed

- Outcome measures:
  - Frequency of physical assessment skills
  - Barriers to physical assessment skills
  - Perceptions of MERT (not reported here)

Sample Size

- There were approximately 800 nursing staff identified as the study population.

- A sample of at least 260 registered nurse participants was required for analysis of categorical data and 120 registered nurse participants were required for analysis of continuous data

- We aimed to recruit all identified registered nurses to complete the survey.

Measurements

- Physical Assessment Skills (PAS) Inventory
  - 133 items
  - Based on 126 item survey by Giddens 2007, adapted by Birks et al 2012
  - 5 point Likert scale (1=know how but never done, 5=perform regularly (every time I work)
- Perceptions of Barriers to PAS
  - 38 items, 7 subscales, 5 point Likert scale
  - described earlier
- Perceptions of MERT*
  - 26 items
  - not reported here

Medical Emergency Response Team

Data Analysis

- Descriptive statistics to describe study sample
- Physical assessment skills were logarithmically transformed to produce a normally distributed outcome variable. Back transformed (geometric) means and 95% confidence intervals were reported.
- Pearson's correlation (r) to examine the bivariate relationship between physical assessment skills and barriers to nurses' use of physical assessment skills.
- The relationship between physical assessment skills and demographic variables and barriers to physical assessment skills were then explored and significant demographic variables were adjusted for in a backwards stepwise modelling process using general linear models that examined the relationship between physical assessment skills and barriers to nurse/midwives' use of physical assessment skills.
- Means and regression coefficients (b) from the models were reported with 95% confidence intervals as appropriate. Nurses division of work was set as a random effect to account for any clustering effect.

Results

- 434 acute care RNs completed survey
  - average 40 years old
  - female
  - bachelor-prepared
  - registered nurses/midwives (Grade 5)
  - working in surgery and medicine
  - average 14 years clinical experience

Results – Core Skills

- On average, 10 of the 133 skills were regularly performed.

- Predominantly vital signs
  - body temperature,
  - blood pressure (manual and automatic), breathing effort (rate and pattern),
  - oxygen saturation, and
  - mental status/level of consciousness.
- Additional core skills included
  - skin inspection for colour/tone,
  - skin integrity and lesions,
  - wound inspection

Results – Relationships (Regression Analysis)

- Significant predictors-
  - reliance on others and technology
  - lack of confidence
  - specialty area
  - clinical role

PAS Inventory- Discussion

- RNs are using a small set of core skills; consistent with previous studies

- Despite patients getting older and sicker, RNs are progressively using less and less physical assessment regularly.

- Key organisational factors influence nurses physical assessment practice

Limitations

- Self-report questionnaire
- Single hospital site

Conclusion

Context of practice is a more telling explanation of nursing approaches to patient assessment, rather than simply the presence of the skill itself.

The critical question emerging then is what is it about the contemporary nursing context which constrains patient assessment practice?

Session 3

Dr Sonya Osborne

Exploring patient assessment practices in the acute hospital environment

Goals and Objectives
Session 3

Session Goal:

- to improve understanding of the unexamined factors that influence patient assessment practices

Session Objectives:

- Explore patterns of behavior related to nursing assessment in the acute care setting
- Consider the influence of contextual, interpersonal, environmental and cultural factors on recognition and response to clinical deterioration in the acute care hospital environment.

Background

- The hospital is a complex organisation -"a battlefield between life and death..." *(Long, Hunter & Gueest, 2008).*

- The literature focus is on improving detection and documentation with scant attention to the nature, contextual, interpersonal, environmental and cultural factors factors influencing assessment practices

Study Design and Methods

- **Design:** hospital (institutional) ethnography
- **Methods:** participant observation and formal interviews
- **Data Collection:** field notes and interview transcripts
- **Analysis:**
  - (1) team ethnography approach (Scales 2011);
  - (2) comprehending, synthesing, theorising, reconceptualising (Thorne 2000)

Results

- Nurses' assessment and surveillance of patients is practiced in the context of the medical emergency response framework.

Results

- As such this creates a culture that dominates and dictates a focus on monitoring and recording of patient's vital signs for medical team review and response.

Results

- This focus influences multidisciplinary relationships and roles and the organisation factors that govern nurses' work.

Discussion

- The study findings illustrate the complex interplay of factors that influence nurses' assessment practice in the acute care setting.

Conclusion

- Development of holistic picture of patient assessment practices will inform development of effective health service improvements in managing patients at risk for clinical deterioration.

Conclusion

Based on our findings thus far we argue that the current hospital safety agenda and body of research on patient deterioration has **redirected** nursing practice towards collection and reporting of minimal data to detect end stages of clinical deterioration.

What now?
Much more complex problem

- Research raises some interesting questions
- We argue there is need to question these systems
- Is it best use of resources?
- Are registered nurses practicing to the full extent of their scope?
- Is it about developing nurses to work to their capacity?

Over to group

- We are Interested in your expertise
- As clinical leaders, educators, senior clinicians, new graduates, researcher, managers, policy makers…
- What would an intervention look like?
  - Small group 'round tables'
  - Report back to larger group

Recap – Key Findings

- Nurses use a small set of core skills
- Reliance on others and technology is a significant barrier to physical assessment
- Practice dictated by medically driven MERT processes and institutional imperatives

Provocative Points to Consider

- Health assessment is core in nursing –basis for planning care.

- Is health assessment becoming a 'non core' activity for nurses?

- If not RNs then who?

- How do we empower nurses to practice to their scope?

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"In dwelling upon the vital importance of sound observation, it must never be lost sight of what observation is for. It is not for the sake of piling up miscellaneous information or curious facts, but for the sake of saving life and increasing health and comfort."

Florence Nightingale, Notes on Nursing,1860, p.125