NURSE ATTITUDES TOWARDS the CONDUCT of RESEARCH in the ICU

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RESEARCH in the ICU

- Potential **vulnerability** of ICU patients
- **Recruitment** is challenging
- Interventions may **cause harm** or introduce risk with no benefit
- Enrolment often **time sensitive**
- Most patients have **no capacity to consent**
- Communication of research opportunities to emotionally stressed families may be **disorienting and distressing**
- **Complex and expensive** data collection

Cook et al. 2008 Crit Care Med 36: 2100-2105
Dale et al. 2010 ICCN 26:69-74
• Need to **engage leaders** (medical and nursing)
  – Past experience with research may pose roadblock

• **Need to increase awareness**
  – Study video, flyers, posters, in-service education, unit meetings
  – Periodic study updates (e)-mailed to staff including expression of gratitude
  – Pt and staff exemplars – reassures staff that research not burden/may benefit

• **Awareness of culture and routine** of unit
  – Ensure research protocol **works in local environment**
  – Timing of screening, interventions

• **Nurses may view role as protector and advocate** – barrier to research access
  – Need for **collegial relationship** between research and clinical staff

• **Be mindful of nurses’ workload**
RESEARCH in the ICU

- Ability to support/refute validity of clinical practices can ↓ morbidity, mortality, and costs
- Successful conduct of ICU research is dependent on engagement of inter-professional team
- ICU nurses play integral role in research
  - constant bedside presence
  - first point of contact for families
- ICU nurses may be involved in research activities:
  - study design
  - protocol refinement
  - administration of study medication/interventions
  - collection of study data
  - communication of study information to patients, families, and other clinicians
STUDIES OF INTERVENTIONS REQUIRING SIGNIFICANT INPUT FROM ICU NURSES

Tight glycaemic control

Sedative interruption
• Patients were randomly assigned to a treatment group by the clinicians treating them (drs AND nurses)
• Blood glucose levels were managed (according to a protocol) as part of the normal duties of clinical staff (drs AND nurses)
• Clinical staff (drs AND nurses) received formal training in the algorithm
• Blood samples for glucose measurement (hourly intervals when insulin titrated) (nurses)
Impact of Intravenous Insulin Protocols on Hypoglycemia, Patient Safety, and Nursing Workload

Penny Sauer, MSN, RN, CCRN; Elizabeth R. Van Horn, PhD, RN, CCRN

Figure 2. Frequency of glucose testing per protocol.
Using validated scales, nurses titrated infusions according to a protocol. 

Bedside nurses interrupted infusions daily and assessed hourly for wakefulness. For patients receiving daily interruption, nurses resumed infusions, if indicated, at half of previous doses. 

If the bedside nurse and a physician agreed (interprofessional communication) that infusions were no longer required....
Nurse Visual Analogue Scale

How difficult was the patient’s management during your shift?

- Very Easy
- Fairly Easy
- Somewhat Difficult
- Difficult

N > 8000
Nurse Visual Analogue Scale

How difficult was the patient’s management during your shift?

Mean VAS score

PS+DI 4.22  vs  PS 3.80

Mean diff 0.41, 95% CI 0.17 to 0.66; P=0.001
WHAT DO NURSES THINK ABOUT RESEARCH in the ICU?
Survey of 419 ICU nurses from 10 research-oriented medical centres; 71% >1 pt on research protocol each day

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>1-2 times</th>
<th>&gt;2 times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asked to identify research participants</td>
<td>164 (39)</td>
<td>101 (24)</td>
<td>151 (36)</td>
</tr>
<tr>
<td>Asked to obtain consent</td>
<td>372 (89)</td>
<td>27 (7)</td>
<td>18 (4)</td>
</tr>
<tr>
<td>Provided inservice before study began</td>
<td>130 (31)</td>
<td>156 (38)</td>
<td>136 (30)</td>
</tr>
<tr>
<td>Provided inservice on study findings</td>
<td>266 (64)</td>
<td>93 (22)</td>
<td>53 (13)</td>
</tr>
<tr>
<td>Protocol prohibited nursing interventions</td>
<td>364 (88)</td>
<td>35 (9)</td>
<td>13 (3)</td>
</tr>
<tr>
<td>Protocol required out of the ordinary procedures</td>
<td>325 (79)</td>
<td>49 (12)</td>
<td>36 (9)</td>
</tr>
<tr>
<td>Felt uncomfortable about participating in protocol</td>
<td>352 (85)</td>
<td>45 (11)</td>
<td>13 (3)</td>
</tr>
<tr>
<td>Other responsibilities short-changed</td>
<td>337 (81)</td>
<td>57 (14)</td>
<td>19 (5)</td>
</tr>
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</table>
• Questionnaire to measure attitude, awareness and knowledge before and after implementation of a research communication package
  – 14% rated experience of caring for research participant as poor
  – Median number of studies recalled was 3/10
  – 72% perceived research information was prominently displayed
  – Only 47% had awareness of results of recently completed studies
Multi-centre Survey of Nurse Attitudes to the Conduct of Critical Care Research

O Smith (Co-PI), C Dale, C Filice, J Filice, D Foster, C Jones, Y Lee, A Matte, E McDonald, K Porretta, M Steinberg, R Ward, K Wheeler, S Mehta, R Pinto, L Rose (Co-PI)

For information contact: smitho@smh.ca or louise.rose@utoronto.ca
BACKGROUND

- Nurses **attitudes** are an important predictor of behaviour
  - Champion and Leach, 1998

- Individual beliefs and attitudes are a **determinant of research utilization**
  - Estabrooks, 2003

- Many nurse research utilization surveys exist...
  - Edmonton Research Orientation Survey
  - Research Utilization in Nursing Survey
BUT

• These surveys do **NOT** address **active participation** in, or facilitation of research

  – Rather the focus is
    • utilization or uptake/evidence based practice/knowledge translation

• **NOR** do they capture unique issues related to the conduct of critical care research
STUDY OBJECTIVES

To understand ICU nurses’ attitudes towards, and beliefs about, conduct of ICU research in research active ICUs (CCCTG affiliated)

– nurse perceptions of organizational characteristics that shape research attitudes including:
  • opportunity
  • recognition
  • communication

– nurses’ perceptions of ICU research including:
  • benefits
  • burdens
  • relevance to nursing
• Survey items generated and reduced iteratively under domains:
  – environmental characteristics (ICU/hospital)
  – personal research beliefs
  – personal research experience

• 15 experts in ICU research rated:
  – face and content validity, discriminability, utility, and clarity

• Cognitive interviews (5 ICU nurses) to confirm comprehension and congruence of domains and items

• Test-retest reliability
  – 10 ICU nurses not involved in survey development and not employed in a CCCTG-affiliated ICU completed the survey twice within 2 weeks to evaluate
SITE CHARACTERISTICS

• **8 ICUs** (all with FT/PT research coordinators [RCs])
  - 7 adult; 1 pediatric
  - average 22 beds (range 10-29)
    - 50% mixed medical/surgical/trauma/neurosurgery
    - 50% mixed medical-surgical only

Research activity (mean [range])

- **12.3 (5 - 20) active studies**
  - 88% in-house investigator-initiated
    - 2.5 (2 - 4) studies
  - 75% industry-led
    - 2.3 (1 - 4) studies
  - 25% nurse-led
    - 2.0 (1 - 3) studies

Research information sharing (completed by RCs)

- 100% post study information for ICU nurses
- 88% provide research in-services to ICU nurses
- 50% invite ICU nurses to research meetings
Sample and Research Involvement

Response rate 56% (482/868)

<table>
<thead>
<tr>
<th>Have you participated in ...</th>
<th>Yes n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course in statistics</td>
<td>216 (57)</td>
</tr>
<tr>
<td>Course in research design</td>
<td>239 (49)</td>
</tr>
<tr>
<td>Posters, presentations, or publications of study findings</td>
<td>58 (12)</td>
</tr>
<tr>
<td>Development of a research protocol</td>
<td>53 (11)</td>
</tr>
<tr>
<td>Analysis of findings</td>
<td>53 (11)</td>
</tr>
<tr>
<td>Research committee</td>
<td>28 (6)</td>
</tr>
</tbody>
</table>

ICU experience (yrs)
- ≤ 5       184 (38%)
- 6-20      218 (45%)
- >20       76 (16%)

- **Majority** exposed to research principles via formal education

**BUT**

- **Minority** had practical research experience
### Research Involvement

<table>
<thead>
<tr>
<th>Research Activity</th>
<th>Sometimes to very often &gt;5 times in 12 months</th>
<th>Never to infrequently ≤ 5 times in 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administered study intervention</td>
<td>302 (63)</td>
<td>180 (37)</td>
</tr>
<tr>
<td>Completed study forms</td>
<td>205 (43)</td>
<td>276 (57)</td>
</tr>
<tr>
<td>Introduced study</td>
<td>77 (16)</td>
<td>402 (83)</td>
</tr>
<tr>
<td>Performed study consent</td>
<td>15 (3)</td>
<td>466 (97)</td>
</tr>
<tr>
<td>Performed randomization</td>
<td>16 (3)</td>
<td>464 (96)</td>
</tr>
</tbody>
</table>

All data are n (%), %s do not round to 100 due to missing data

### Research Understanding

<table>
<thead>
<tr>
<th>Research Topic</th>
<th>None to minimal</th>
<th>Average to excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consent procedures</td>
<td>99 (21)</td>
<td>381 (79)</td>
</tr>
<tr>
<td>Study design</td>
<td>148 (31)</td>
<td>333 (69)</td>
</tr>
<tr>
<td>Screening &amp; randomization</td>
<td>187 (39)</td>
<td>293 (61)</td>
</tr>
<tr>
<td>Blinding</td>
<td>215 (45)</td>
<td>266 (55)</td>
</tr>
<tr>
<td>Analysis</td>
<td><strong>246 (51)</strong></td>
<td>234 (49)</td>
</tr>
<tr>
<td>Ethics review and approval</td>
<td><strong>243 (50)</strong></td>
<td>238 (49)</td>
</tr>
<tr>
<td>-beliefs about research</td>
<td>Disagree n (%)</td>
<td>Unsure n (%)</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Research facilitates improved care</td>
<td>16 (3)</td>
<td>91 (19)</td>
</tr>
<tr>
<td>All eligible ICU patients should be approached for research</td>
<td>101 (21)</td>
<td>86 (18)</td>
</tr>
<tr>
<td>ICU patients are too sick to participate in research</td>
<td>379 (79)</td>
<td>70 (15)</td>
</tr>
<tr>
<td>Researchers consider practicalities of nursing care when designing studies</td>
<td>209 (43)</td>
<td>173 (36)</td>
</tr>
<tr>
<td>Research protocols inhibit ability to deliver nursing care</td>
<td>284 (59)</td>
<td>116 (24)</td>
</tr>
<tr>
<td>Caring for research patients increases my workload substantially</td>
<td>176 (37)</td>
<td>105 (22)</td>
</tr>
<tr>
<td>Study protocols have conflicted with my view of appropriate care</td>
<td>128 (27)</td>
<td>94 (20)</td>
</tr>
<tr>
<td>I enjoy caring for patients enrolled in a research study</td>
<td>82 (17)</td>
<td>240 (50)</td>
</tr>
</tbody>
</table>
Positive view of impact of research on nursing practice was associated with:

- Perception of enhanced opportunities/expectations and communication about research (P =0.05)
- Perception of favourable relationship between researchers and clinicians (P <0.0001)
- Prior experience with developing a research protocol (P =0.001)
- NOT associated with years of experience, highest qualification, frequency of caring for research patients, or perceived support for research by members of interdisciplinary team
View that research benefits the critically ill was associated with:

- Perception of enhanced opportunities/expectations and communication about research (P = 0.001)
- Perception of favourable relationship between researchers and clinicians (P < 0.0001)
- Prior experience with developing a research protocol (P = 0.04)
- Highest qualification (P < 0.0003)
- NOT associated with years of experience, frequency of caring for research patients, or research promotion by members of interdisciplinary team
STRENGHS and LIMITATIONS

• Strengths
  – Rigorous survey development - cognitive interviewing, validity and reliability testing
  – Large sample size

• Limitations
  – Lack of generalizability to nurses employed in non-research active ICUs
  – Social desirability bias
  – Non-response bias
CONCLUSIONS

• Though few nurses had practical research experience, most agreed on conduct of, or involvement in, ICU research:
  – benefits patients
  – has some impact on ability to deliver nursing care

• Good communication/relationships between researchers and clinicians, provision of research opportunities within organizations favourably influenced nurse perceptions

• **Recommendations**
  • Identify opportunities for nurse engagement in research activities
  • Communication and relationship building key
  • Consultation of nurses during study planning
  • Consider strategies to improve dissemination/translation of research findings
Acknowledgements

• **O Smith** (Co-PI)

  Co-Is: C Dale, C Filice, J Filice, D Foster, C Jones, Y Lee, A Matte, E McDonald, K Porretta, M Steinberg, R Ward, K Wheeler, S Mehta, R Pinto

• Canadian Critical Care Trials Group (CCCTG)
  – *Canadian Critical Care Research Coordinators Grant competition*

• CCCTG Research Coordinators

• ICU RN interviewees and reliability testers

• Participants