A European nursing workforce study: international collaboration and results of RN4CAST

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Outline

• Managing a European project
  o Experience with European projects
  o Introducing FP7 - RN4CAST
  o Applying for a grant: what does it mean?
  o Managing a consortium: my experience
  o Factors for failure/success
• RN4CAST results
My experience with European projects

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Time frame</th>
<th>Project name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concerted Actions</td>
<td>1994-1996</td>
<td>Telenursing</td>
<td>Partner</td>
</tr>
<tr>
<td>FP4</td>
<td>1997-1999</td>
<td>Wisecare</td>
<td>Coordinator</td>
</tr>
<tr>
<td>FP4</td>
<td>1997-1999</td>
<td>Telenurse, Nightingale</td>
<td>Partner</td>
</tr>
<tr>
<td>Leonardo da Vinci</td>
<td>2003-2005</td>
<td>EHTAN</td>
<td>Partner</td>
</tr>
<tr>
<td>FP7</td>
<td>2009-2011</td>
<td>RN4CAST</td>
<td>Coordinator</td>
</tr>
<tr>
<td>ESF</td>
<td>2011-2015</td>
<td>Reflection</td>
<td>Partner</td>
</tr>
<tr>
<td>EAHC</td>
<td>2013-2016</td>
<td>JA Health workforce</td>
<td>Partner</td>
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<tr>
<td>EAHC</td>
<td>2014-2015</td>
<td>Recruitment &amp; Retention</td>
<td>Partner</td>
</tr>
<tr>
<td>JPND</td>
<td>2014-2015</td>
<td>ALS-Care</td>
<td>Partner</td>
</tr>
</tbody>
</table>

RN4CAST STUDY

7th Framework Programme for Research and Technological Development

- ‘RN4CAST: nurse forecasting in Europe’: €3 million funding for 2009-2011
  - Health theme 3: Optimising the delivery of health care
  - 16 partners: 12 European countries, USA, China, South-Africa, Botswana
  - Co-ordination: Leuven University (W. Sermeus), U. Pennsylvania (L. Aiken)

Sermeus et al., 2011 BMC Nursing
THE RN4CAST CONSORTIUM

Norway
Knowledge Centre for the Health Services

England
King’s College London

Ireland
Dublin City University

the Netherlands
Radboud UMC

Belgium
Katholieke Universiteit Leuven

Spain
Institute of Health Carlos III

Sweden
Karolinska Institutet

Finland
University of Eastern Finland

Germany
Technische Universität Berlin

Poland
Jagiellonian University

Switzerland
Basel University

Greece
National and Kapodistrian University Athens

Sermeus et al., 2011 BMC Nursing

Applying for a European Grant (FP7)
What we know on success rate

100 proposals

ELIGIBILITY
Commission
-5

S&T Excellence ≥3/5
Implementation ≥ 3/5
Impact ≥ 3/5
External evaluators
-50

Prioritise projects
Panel + Commission
-25

To be funded
20
Timeline preparation of RN4CAST proposal

- Call due-date: Sept. 18, 2007
- First discussions January 2007, EANS Barcelona
- Meeting L. Aiken, Leuven, February 2007
- Meeting with Leuven research coordination office, May, 2007
- Contacts LA (IHOS) and WS (WISECARE, EANS) networks
- EANS summerschool
- Writing first proposal: summer 2007
- September 6-7, Leuven meeting with partners
- Contact EU-officer K. McCarthy
- Contacts with Poland
- Finalising proposal and submitting Sept. 18, 2007

Writing a good proposal criterion 1: S/T Excellence

- 30-seconds-rule (role of jury: kill 80% of excellent proposals)
  - Why bother (what is the problem?)
  - Is it a European problem?
  - Solution already available?
  - Why now (what happens if we do not fund this?)
  - Why you (are you the best consortium?)
  - Stick to the instructions (call)
- Educate the evaluator
  - Likely not a « real expert »
  - Use facts & figures, schemes & illustrations
  - Balance: scientific >> popular
  - Write to the point + convincingly
  - Structure your text (alineas, bold,...)
  - Quantify your arguments

Thanks to Stijn Delauré and Leuven onderzoekscoördinatie, Leuven meeting 6-7 Sept 2007
Criterion 2: implementation

- Building an excellent consortium
  - Provide a balanced mix
  - Each partner should add value
  - Experienced manager, good leaders
- Appropriate management structure
  - Handling conflicts, decision making, care for quality, division of work
  - Follow-up of milestones, decisions, …
  - IPR-management

Criterion 3: Impact

- Write deliverables in the words of end-user (cfr. Call)
- Involve end-users in the project (e.g. advisory board)
- Answer questions:
  - How does the project address EU challenges?
  - How can the project affect citizens?
  - How is the uptake in health industry arranged/organized?
Evaluation RN4CAST

- Evaluation by panels of independent experts
- Criteria:
  - Scientific and technological excellence (5/5)
  - Implementation & management (4,5/5)
  - Potential impact (5/5)
  - Total (14,5/15)
- Remarks (for negotiation)
  - Change in environment and location of care
  - The role and participation of ICPC to be better explained; work environment specialist inclusion and selection.
- Grant: 2,999,988 Euro

Negotiation Timeline

- 08.05.2008
  - First deadline for DoW and GPFs based on recommendations
- 10.10.2008
  - End of first round of negotiations,
  - deadline for submission of final version of DoW and signed GPFs
- 17.10.2008
  - The Commission launches its internal procedures for the formal adoption of the proposed financing and finalisation of each Grant Agreement.
- 01.01.2009
  - Official start of the project – first meeting 15&16/1/2009
- End June 2009
  - Final contract signed
Role of coordinator

- Contact person with EU and partners
- Organisational and financial responsibility
- Figurehead of consortium (conferences, policy, …)
- Motivation, stimulation of partners
- Supports collaboration between partners (mutual respect, teamwork, …)

Mandatory readings for coordinators

E. g. Uncertainty avoidance - Power distance Dimensions (Hofstede, 1991)

Results RN4CAST

- Milestones on time
- Final conference dec. 2011 (together with 2 other projects - Prometheus, MohProf)
- More than 40 scientific papers
  - BMJ 2012
  - Special issue IJNS 2013
  - The Lancet 2014
  - Preparing book volume (end 2014)
- Policy impact via international organizations: WHO, OECD, ILO, ICN, EHMA, MEPs, …

Elements of success

- Enough manpower and support for coordination
  - Administrative (0.3 FTE)
  - Scientific (0.5 FTE postdoc + 1 FTE researcher)
  - Financial (Leuven LRD)
- Coordination requires experience (cfr. KU Leuven)
- Coordinator role requires a lot of time
- Grant/consortium agreement is important (more than just administration)
- Publication policy
- Learning EU-language, presence on important EU meetings

SWOT

- Strengths:
  - Preparatory funding KULeuven in preparing consortium, proposal
  - KUL experience with FP7 projects.
  - Strong Leuven research team: administrative, scientific
  - Balanced consortium
  - Specific roles: scientific lead, advisory committee,…
  - Pro-active meetings
  - Structured consortium communication
- Weakness:
  - Extended length of project: 2y before + 3y after project
  - Changing partners
  - Changing EU-officers
  - Post-project management (no funding)
Outline

- Managing a European project
- RN4CAST results
  - RN4CAST framework and design
  - Descriptive results
  - Impact on patient outcomes
  - Impact on nurse outcomes
  - Policy impact

Dubois et al., 2012, BMC HSR

Framework

Dubois et al., 2012, BMC HSR
RN4CAST DESIGN

- Multicountry, multilevel, cross-sectional design to obtain important unmeasured factors in forecasting models, collected at the hospital, nursing unit and individual nurse and patient level:
  - Nurse survey: working environment, quality & safety, staffing
  - Patient survey: patient experiences with nursing staff, hospital, information
  - Hospital survey: type of hospital, inflow & outflow
  - Hospital Discharge data: ICD9/10, length-of-stay, adverse events, mortality

- Setting
  - At least 30 general acute hospitals in each European country.
  - At least 2 general surgical and internal medicine wards in each hospital.

Sermeus et al., 2011 BMC Nursing

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RN4CAST STUDY DESIGN

A UNIQUE DATA SET

Europe (12 countries)
33731 nurses in 486 hospitals
11318 patients in 210 hospitals

USA (PA, CA, NJ, FL)
27809 nurses in 617 hospitals
Millions of patients in 430 hospitals

China (6 provinces)
9698 nurses in 181 hospitals
6494 patients in 181 hospitals

South Africa (6 provinces)
4657 nurses in 62 hospitals

Sermeus et al., 2011 BMC Nursing
RN4CAST FINDINGS

KEY PUBLICATIONS


SPECIAL ISSUE IJNS 2012

14 articles on topics such as:

- Descriptive findings
- Nurse-perceived quality of care, wellbeing
- Nurse migration and tasks below skill level
- RN4CAST follow-up study with qualitative research design
- Rationing of nursing care
- Instrument validation
- Advanced statistical analysis
### Nurse to Patient Ratios (3 shifts)

<table>
<thead>
<tr>
<th>Country</th>
<th>Mean</th>
<th>25th Pctl</th>
<th>50th Pctl</th>
<th>75th Pctl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>10.7</td>
<td>9.1</td>
<td>10.1</td>
<td>12.2</td>
</tr>
<tr>
<td>England</td>
<td>8.6</td>
<td>7.2</td>
<td>8.8</td>
<td>9.6</td>
</tr>
<tr>
<td>Finland</td>
<td>8.3</td>
<td>6.8</td>
<td>7.8</td>
<td>9.5</td>
</tr>
<tr>
<td>Germany</td>
<td>13.0</td>
<td>11.5</td>
<td>13.1</td>
<td>14.3</td>
</tr>
<tr>
<td>Greece</td>
<td>10.2</td>
<td>7.6</td>
<td>9.8</td>
<td>11.8</td>
</tr>
<tr>
<td>Ireland</td>
<td>6.9</td>
<td>6.2</td>
<td>6.8</td>
<td>7.7</td>
</tr>
<tr>
<td>Netherlands</td>
<td>7.0</td>
<td>6.4</td>
<td>7.2</td>
<td>7.7</td>
</tr>
<tr>
<td>Norway</td>
<td>5.4</td>
<td>4.8</td>
<td>5.2</td>
<td>6.0</td>
</tr>
<tr>
<td>Poland</td>
<td>10.5</td>
<td>9.1</td>
<td>10.6</td>
<td>11.5</td>
</tr>
<tr>
<td>Spain</td>
<td>12.5</td>
<td>11.5</td>
<td>12.6</td>
<td>13.5</td>
</tr>
<tr>
<td>Sweden</td>
<td>7.7</td>
<td>6.9</td>
<td>7.5</td>
<td>8.5</td>
</tr>
<tr>
<td>Switzerland</td>
<td>7.9</td>
<td>6.8</td>
<td>7.8</td>
<td>8.7</td>
</tr>
</tbody>
</table>

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### Percent Bachelor prepared Nurses

Aiken et al., 2013 IJNS
Nurses’ work environment

Captures 5 dimensions:
- Staffing adequacy
- Nursing foundations for quality
- Nurse manager ability & leadership
- Nurse-physician relations
- Nurse involvement in hospital affairs

Hospitals classified into quartiles by PES scores

RN4CAST FINDINGS

NURSES’ WORK ENVIRONMENT

Practice Environment Scale score for RN4CAST countries: within-country variation at hospital level

KU LEUVEN
### Effect of nurse staffing on patient mortality

<table>
<thead>
<tr>
<th>Nurse staffing (patients to nurse)</th>
<th>Nurse education (% of nurses with bachelor’s degree)</th>
<th>Number of hospitals</th>
<th>Mean discharges per hospital (range)</th>
<th>Deaths/discharges (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td>Range</td>
<td>Mean (SD)</td>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>16.8 (1.0)</td>
<td>7.5-15.9</td>
<td>55% (15)</td>
<td>26-86%</td>
</tr>
<tr>
<td>England</td>
<td>8.8 (1.5)</td>
<td>5.5-11.5</td>
<td>28% (9)</td>
<td>10-49%</td>
</tr>
<tr>
<td>Finland</td>
<td>7.6 (1.4)</td>
<td>5.3-10.6</td>
<td>50% (10)</td>
<td>36-72%</td>
</tr>
<tr>
<td>Ireland</td>
<td>6.9 (1.0)</td>
<td>5.4-8.9</td>
<td>58% (22)</td>
<td>35-81%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>7.0 (0.8)</td>
<td>5.1-8.1</td>
<td>33% (22)</td>
<td>16-68%</td>
</tr>
<tr>
<td>Norway</td>
<td>5.2 (0.8)</td>
<td>3.4-6.7</td>
<td>100% (0)</td>
<td>100-100%</td>
</tr>
<tr>
<td>Spain</td>
<td>12.7 (2.0)</td>
<td>9.5-17.9</td>
<td>100% (0)</td>
<td>100-100%</td>
</tr>
<tr>
<td>Sweden</td>
<td>7.8 (1.4)</td>
<td>5.4-9.8</td>
<td>54% (22)</td>
<td>27-76%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>7.8 (1.3)</td>
<td>4.6-9.8</td>
<td>50% (20)</td>
<td>0-35%</td>
</tr>
<tr>
<td>Total</td>
<td>8.1 (1.4)</td>
<td>3.4-17.9</td>
<td>52% (27)</td>
<td>0-100%</td>
</tr>
</tbody>
</table>

Means, SDs, and ranges are estimated from hospital data—as the 59 hospitals in Belgium have a mean patient-to-nurse ratio of 10:8, and the patient-to-nurse ratio ranges across these 59 hospitals from 7:5 to 15:9. Similarly, the 51 hospitals in Switzerland have, on average, 9% bachelor’s nurses, and the percent of bachelor’s nurses ranges across these 51 hospitals from 0% to 35%.

Table 1: Hospitals sampled in nine European countries with patient discharge data, numbers of surgical patients discharged, and numbers of patient deaths (INRCAST data)

<table>
<thead>
<tr>
<th>Number of hospitals</th>
<th>Mean discharges per hospital (range)</th>
<th>Deaths/discharges (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>59</td>
<td>143 (412-4794)</td>
</tr>
<tr>
<td>England</td>
<td>10</td>
<td>250 (868-6581)</td>
</tr>
<tr>
<td>Finland</td>
<td>75</td>
<td>151 (175-3683)</td>
</tr>
<tr>
<td>Ireland</td>
<td>27</td>
<td>73 (103-1937)</td>
</tr>
<tr>
<td>Netherlands</td>
<td>22</td>
<td>1419 (131-2994)</td>
</tr>
<tr>
<td>Norway</td>
<td>21</td>
<td>1458 (412-4469)</td>
</tr>
<tr>
<td>Spain</td>
<td>16</td>
<td>1382 (138-6794)</td>
</tr>
<tr>
<td>Sweden</td>
<td>62</td>
<td>1354 (394-4564)</td>
</tr>
<tr>
<td>Switzerland</td>
<td>31</td>
<td>1388 (118-3817)</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>1388 (103-6493)</td>
</tr>
</tbody>
</table>

Only hospitals with more than 100 surgical patient discharges were included in the analyses. Data shown are for discharged patients for whom information about 30-day mortality, age, sex, type of surgery, and comorbidities were complete. Data were missing for these characteristics for less than 4% of all patients.

### Significant effect

<table>
<thead>
<tr>
<th>Partly adjusted models</th>
<th>Fully adjusted model</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR (95% CI)</td>
<td>p value</td>
</tr>
<tr>
<td>Staffing</td>
<td>1.005 (0.965-1.046)</td>
</tr>
<tr>
<td>Education</td>
<td>1.000 (0.959-1.044)</td>
</tr>
</tbody>
</table>

The partly adjusted model estimates the effects of nurse staffing and nurse education separately while controlling for unmeasured differences across countries. The fully adjusted model estimates the effects of nurse staffing and nurse education simultaneously, controlling for unmeasured differences across countries and for the hospital characteristics (bed size, teaching status, technology, and work environment), and patient characteristics (age, sex, admission type, type of surgery, and comorbidities present on admission) OR odds ratio.

Table 4: Partly and fully adjusted odds ratios showing the effects of nurse staffing and nurse education on 30 day inpatient mortality

Aiken et al. 2014 The Lancet
RN4CAST FINDINGS

MISSED NURSING CARE: DESCRIPTIVE FINDINGS

<table>
<thead>
<tr>
<th></th>
<th>BE</th>
<th>CH</th>
<th>DE</th>
<th>...</th>
<th>12 countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Comforth talk with patients</td>
<td>58.7 (15.9)</td>
<td>51.8 (17.1)</td>
<td>81.0 (11.6)</td>
<td>52.6 (18.5)</td>
<td></td>
</tr>
<tr>
<td>2. Develop or update nursing care plans or pathways</td>
<td>43.4 (11.3)</td>
<td>38.3 (13.6)</td>
<td>55.2 (11.3)</td>
<td>41.7 (13.8)</td>
<td></td>
</tr>
<tr>
<td>3. Educate patients and families</td>
<td>44.0 (12.6)</td>
<td>30.9 (11.6)</td>
<td>51.3 (14.0)</td>
<td>40.6 (17.1)</td>
<td></td>
</tr>
<tr>
<td>4. Oral hygiene</td>
<td>43.3 (12.9)</td>
<td>24.1 (11.8)</td>
<td>30.2 (14.3)</td>
<td>34.4 (14.5)</td>
<td></td>
</tr>
<tr>
<td>5. Adequately document nursing care</td>
<td>36.3 (12.5)</td>
<td>19.4 (8.4)</td>
<td>40.7 (13.7)</td>
<td>27.5 (13.2)</td>
<td></td>
</tr>
<tr>
<td>6. Adequate patient surveillance</td>
<td>28.6 (12.5)</td>
<td>16.3 (10.5)</td>
<td>37.7 (12.6)</td>
<td>27.2 (13.6)</td>
<td></td>
</tr>
<tr>
<td>7. Planning care</td>
<td>26.5 (11.8)</td>
<td>19.2 (9.4)</td>
<td>43.7 (12.3)</td>
<td>25.8 (14.9)</td>
<td></td>
</tr>
<tr>
<td>8. Frequent changing of patient position</td>
<td>31.8 (19.5)</td>
<td>18.0 (11.8)</td>
<td>22.4 (13.1)</td>
<td>24.7 (15.5)</td>
<td></td>
</tr>
<tr>
<td>9. Skin care</td>
<td>26.5 (11.8)</td>
<td>16.4 (7.2)</td>
<td>28.5 (14.2)</td>
<td>24.5 (12.8)</td>
<td></td>
</tr>
<tr>
<td>10. Prepare patients and families for discharge</td>
<td>26.5 (9.5)</td>
<td>16.4 (5.9)</td>
<td>23.5 (9.5)</td>
<td>22.4 (11.0)</td>
<td></td>
</tr>
<tr>
<td>11. Administer medications on time</td>
<td>22.6 (10.4)</td>
<td>15.3 (7.9)</td>
<td>20.2 (10.6)</td>
<td>19.4 (10.5)</td>
<td></td>
</tr>
<tr>
<td>12. Pain management</td>
<td>15.7 (8.6)</td>
<td>8.3 (6.3)</td>
<td>19.7 (10.1)</td>
<td>10.0 (9.2)</td>
<td></td>
</tr>
<tr>
<td>13. Treatments and procedures</td>
<td>12.3 (7.7)</td>
<td>2.8 (3.6)</td>
<td>14.2 (9.4)</td>
<td>9.2 (9.0)</td>
<td></td>
</tr>
<tr>
<td>14. Composite score</td>
<td>4.1 (1.1)</td>
<td>2.8 (0.8)</td>
<td>4.7 (0.9)</td>
<td>3.6 (1.2)</td>
<td></td>
</tr>
</tbody>
</table>

Ausserhofer et al. 2014 BMJ Q&S

Scope of practice: Nursing Care Left Undone because of Lack of Time

Organisational context of nursing

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Standard error</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse staffing</td>
<td>0.09109</td>
<td>0.01413</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Nurse work environment</td>
<td>-2.1901</td>
<td>0.1758</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Non-nursing tasks during last shift</td>
<td>2.1780</td>
<td>0.1922</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Gender</td>
<td>0.2483</td>
<td>0.06567</td>
<td>0.0002</td>
</tr>
<tr>
<td>Education</td>
<td>0.1951</td>
<td>0.04244</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Employment</td>
<td>0.1708</td>
<td>0.03905</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Professional experience in the hospital</td>
<td>-0.01727</td>
<td>0.001995</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Hospital characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of beds</td>
<td>-0.00008</td>
<td>0.000124</td>
<td>0.5198</td>
</tr>
<tr>
<td>Technology level</td>
<td>-0.07750</td>
<td>0.09712</td>
<td>0.4249</td>
</tr>
<tr>
<td>Teaching status</td>
<td>0.1148</td>
<td>0.1078</td>
<td>0.2869</td>
</tr>
</tbody>
</table>

Multiple multilevel linear regression model with hospital-level as random and country-level as fixed effects, accounting for the hierarchical structure of the data (nurses nested within hospitals within countries).

Ausserhofer et al. 2014 BMJ Q&S
## Patient satisfaction rates (1-10)

<table>
<thead>
<tr>
<th>Country</th>
<th>Rated hospital 9 or 10*</th>
<th>Would definitely recommend hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>1179/2510</td>
<td>47</td>
</tr>
<tr>
<td>Finland</td>
<td>1128/1862</td>
<td>61</td>
</tr>
<tr>
<td>Germany</td>
<td>116/240</td>
<td>48</td>
</tr>
<tr>
<td>Greece</td>
<td>253/597</td>
<td>42</td>
</tr>
<tr>
<td>Ireland</td>
<td>171/282</td>
<td>61</td>
</tr>
<tr>
<td>Poland</td>
<td>2182/979</td>
<td>55</td>
</tr>
<tr>
<td>Spain</td>
<td>66/469</td>
<td>35</td>
</tr>
<tr>
<td>Switzerland</td>
<td>587/976</td>
<td>60</td>
</tr>
<tr>
<td>US†</td>
<td>—</td>
<td>59</td>
</tr>
</tbody>
</table>

Source: Aiken et al. 2012 BMJ

## RN4CAST FINDINGS

### PATIENTS’ EXPERIENCES WITH CARE: RELATION TO NURSING

<table>
<thead>
<tr>
<th></th>
<th>Patient rating hospital 9 or 10*</th>
<th>Patient definitely recommending hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unadjusted odds ratio (95% CI)</td>
<td>Adjusted odds ratio (95% CI)</td>
</tr>
<tr>
<td>Europe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient to nurse ratio</td>
<td>0.91 (0.89 to 0.94)</td>
<td>0.94 (0.91 to 0.97)</td>
</tr>
<tr>
<td>Nurse work environment</td>
<td>1.24 (1.11 to 1.38)</td>
<td>1.16 (1.02 to 1.32)</td>
</tr>
<tr>
<td>Nurse outcome</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor or fair quality of care in ward</td>
<td>0.83 (0.8 to 0.87)</td>
<td>0.86 (0.84 to 0.89)</td>
</tr>
<tr>
<td>Poor or failing safety grade in ward</td>
<td>0.9 (0.83 to 0.98)</td>
<td>0.95 (0.77 to 0.94)</td>
</tr>
<tr>
<td>Burden</td>
<td>0.92 (0.89 to 0.96)</td>
<td>0.93 (0.88 to 0.97)</td>
</tr>
<tr>
<td>Job dissatisfaction</td>
<td>0.89 (0.85 to 0.93)</td>
<td>0.92 (0.87 to 0.95)</td>
</tr>
<tr>
<td>Intention to leave in the next year</td>
<td>0.85 (0.83 to 0.9)</td>
<td>0.88 (0.85 to 0.9)</td>
</tr>
<tr>
<td>Not confident that patients can manage care after hospital discharge</td>
<td>0.93 (0.89 to 0.97)</td>
<td>0.91 (0.85 to 0.97)</td>
</tr>
<tr>
<td>Not confident that hospital management would resolve patients' problems</td>
<td>0.97 (0.92 to 1.02)</td>
<td>0.96 (0.9 to 1.02)</td>
</tr>
</tbody>
</table>

Source: Aiken et al. 2012 BMJ
Relationship of nurse satisfaction and patient satisfaction

Aiken et al. 2012 BMJ

Jobsatisfaction of nurses in Europe

Aiken et al. 2012 BMJ
Hospitals with Better Work Environments: Lower Nurse Burnout, in every country

Aiken et al. 2012 BMJ

Effect of nurse staffing on nurse outcomes

<table>
<thead>
<tr>
<th>Nurse outcome</th>
<th>Europe</th>
<th>Unadjusted odds ratio (95% CI)</th>
<th>Adjusted odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burnout</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practice environment</td>
<td>0.69 (0.63 to 0.76)</td>
<td>0.67 (0.61 to 0.73)</td>
<td></td>
</tr>
<tr>
<td>Staffing</td>
<td>1.06 (1.04 to 1.08)</td>
<td>1.05 (1.02 to 1.09)</td>
<td></td>
</tr>
<tr>
<td>Job dissatisfaction</td>
<td>0.63 (0.57 to 0.69)</td>
<td>0.52 (0.47 to 0.57)</td>
<td></td>
</tr>
<tr>
<td>Practice environment</td>
<td>1.1 (1.08 to 1.12)</td>
<td>1.07 (1.04 to 1.11)</td>
<td></td>
</tr>
<tr>
<td>Staffing</td>
<td>0.72 (0.66 to 0.79)</td>
<td>0.61 (0.56 to 0.67)</td>
<td></td>
</tr>
<tr>
<td>Intention to leave in the next year</td>
<td>1.04 (1.01 to 1.06)</td>
<td>1.05 (1.02 to 1.09)</td>
<td></td>
</tr>
</tbody>
</table>

Aiken et al. 2012 BMJ
PROGRESS OF RN4CAST

EU PROPOSAL | PROTOCOL FINALISATION | DATA COLLECTION | DATA ANALYSIS AND POLICY IMPLICATIONS | DISSEMINATION AND POLICY IMPLEMENTATION

RN4CAST STUDY |

2007-2008 RN4CAST STUDY

2010

WP1: Management & Coordination
WP Leader: K.U.Leuven (a)

WP2: Workforce Planning Forecasting
WP Leader: UCL

WP3: Workforce Planning Forecasting
WP Leader: UCL

WP4: Protocol Finalization Harmonization
WP Leader: UPenn

WP5: Nurse Survey Data Collection
WP Leader: ISCIII

WP6: Patient Outcomes Data Collection
WP Leader: KCL

WP7: Data Integration & analysis
WP Leader: K.U.Leuven (b)

WP8: Human Resources Policy Synthesis
WP Leader: DCU

WP9: Dissemination & Stakeholders engagement
WP Leader: KCL

2011

2012-2014

2010

PUBLICATIONS

CONFERENCES

POLICY IMPACT

BRIDGING SCIENCE – POLICY GAP

WE NEED MORE QUALIFIED NURSES
IMPACT?

- Mainly Lancet paper got a lot of attention
  - Altmetric score of 1208
  - Debates in many countries on nurse staffing and qualification levels

Lancet letters

There seems to be great disparity in the level of formal education among nurses in Europe. As evidenced by the present study, this heterogeneity might contribute to increased patient mortality. A bachelor’s degree in medicine and surgery is internationally recognised as a compulsory requirement for all doctors. Given that nurses spend arguably more time in the acute monitoring and management of patients than other health professionals, it is somewhat surprising that similar basic formal qualifications are yet to be universally implemented in nursing.

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RN4CAST POLICY IMPLEMENTATION

• COUNTRY IMPLEMENTATIONS
• STRATEGIC INITIATIVES
  o OECD: Skill mix
  o EU-DG SANCO: Joint Action on health workforce planning and forecasting
  o EU-DG SANCO/EHMA: Health Professional recruitment and retention
  o WHO- European Observatory: Prometheus and migration of health professionals
  o WHO-Europe: Ethical recruitment
  o ILO Nursing Personnel Convention 149

• INTEREST OTHER COUNTRIES
  o Portugal, Cyprus, Italy, …

Conclusion and my advice

Never see a project as just a project, but see it as a long term commitment to society
On behalf of RN4CAST consortium

Thank you for your attention