

What is RN4CAST?

- ▶ RN4CAST, funded by the European Commission, was designed to provide scientific evidence for decision makers in Europe about how to get the best value for nursing workforce investments, and to guide workforce planning to produce a nurse workforce for the future that would meet population health needs.

Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study

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Background

- ▶ Hospitals are target for spending reductions.
- ▶ Nursing is a so-called soft target because savings can be made quickly by reduction of nurse staffing whereas savings through improved efficiency are difficult to achieve.
- ▶ Research that could potentially guide policies and practices on safe nurse staffing in Europe has been scarce.

Aim

- ▶ To assess whether differences in patient-to-nurse workloads and nurses' educational qualifications in nine of the 12 RN4CAST countries with similar patient discharge data are associated with variation in hospital mortality after common surgical procedures.

Methods

- ▶ Discharge data from 422 730 patients aged 50 or older who underwent common surgeries in 300 hospitals in nine European countries.
- ▶ Surveys of 26 516 nurses to measure nurse staffing and nurse education.

Settings

| | Number of hospitals | Mean discharges per hospital (range) | Deaths/discharges (%) |
|-------------|---------------------|--------------------------------------|-----------------------|
| Belgium | 59 | 1493 (413–4794) | 1017/88 078 (1.2%) |
| England | 30 | 2603 (868–6583) | 1084/78 045 (1.4%) |
| Finland | 25 | 1516 (175–3683) | 303/27 867 (1.1%) |
| Ireland | 27 | 738 (103–1997) | 292/19 822 (1.5%) |
| Netherlands | 22 | 1419 (181–2994) | 466/31 216 (1.5%) |
| Norway | 28 | 1468 (432–4430) | 518/35 195 (1.5%) |
| Spain | 16 | 1382 (186–3034) | 283/21 520 (1.3%) |
| Sweden | 62 | 1304 (295–4654) | 828/80 800 (1.0%) |
| Switzerland | 31 | 1308 (158–3812) | 590/40 187 (1.5%) |
| Total | 300 | 1308 (103–6583) | 5381/422 730 (1.3%) |

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 those characteristics for less than 4% of all patients.

Table 1: Hospitals sampled in nine European countries with patient discharge data, numbers of surgical patients discharged, and numbers of patient deaths (RN4CAST data)

Nurse staffing and nurse education

| | Nurse staffing (patients to nurse) | | Nurse education (% of nurses with bachelor's degrees) | |
|-------------|---------------------------------------|----------|---|----------|
| | Mean (SD) | Range | Mean (SD) | Range |
| Belgium | 10.8 (2.0) | 7.5-15.9 | 55% (15) | 26-86% |
| England | 8.8 (1.5) | 5.5-11.5 | 28% (9) | 10-49% |
| Finland | 7.6 (1.4) | 5.3-10.6 | 50% (10) | 36-71% |
| Ireland | 6.9 (1.0) | 5.4-8.9 | 58% (12) | 35-81% |
| Netherlands | 7.0 (0.8) | 5.1-8.1 | 31% (12) | 16-68% |
| Norway | 5.2 (0.8) | 3.4-6.7 | 100% (0) | 100-100% |
| Spain | 12.7 (2.0) | 9.5-17.9 | 100% (0) | 100-100% |
| Sweden | 7.6 (1.1) | 5.4-9.8 | 54% (12) | 27-76% |
| Switzerland | 7.8 (1.3) | 4.6-9.8 | 10% (10) | 0-39% |
| Total | 8.3 (2.4) | 3.4-17.9 | 52% (27) | 0-100% |

Means, SDs, and ranges are estimated from hospital data—eg, the 59 hospitals in Belgium have a mean patient-to-nurse ratio of 10.8, and the patient-to-nurse ratio ranges across those 59 hospitals from 7.5 to 15.9. Similarly, the 31 hospitals in Switzerland have, on average, 10% bachelor's nurses, and the percent of bachelor's nurses ranges across those 31 hospitals from 0% to 39%.

Table 2: Nurse staffing and education in nine European countries

Results

- ▶ An increase in a nurses' workload by one patient increased the likelihood of an inpatient daying within 30 days of admission by 7 %.
- ▶ Every 10% increase in bachelor's degree nurses was associated with a decrease in this likelihood by 7%.

The results imply that

- ▶ Patients in hospitals in which 60% of nurses had bachelor's degrees and nurses cared for an average of six patients would have almost 30% lower mortality than patients in hospitals in which only 30% of nurses had bachelor's degrees and nurses cared for an average of eight patients.

Interpretation

- ▶ Nurse staffing cuts to save money might adversely affect outcomes. An increased emphasis on bachelor's education for nurses could reduce preventable hospital deaths.

Comment from authors

- ▶ Additional research in Europe is needed to establish whether our multicountry findings can be replicated for high mortality surgeries and for medical patients; and whether in Europe, like in USA, nursing is related to a range of adverse outcomes that contributes to high costs.