



**Abstract of parallel session: 12**

Title: Explore variations in daily nurse-to-patient ratio over one year for six different units

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Abstract

*Background and Purpose*

*Determination of safe nurse staffing is a key challenge for hospitals. Research has highlighted the negative impact of poor staffing levels on patient outcomes. Most research in this field is based on data aggregated over time (e.g. year). Thus, the results do not reflect daily variations, e.g. understaffing is not recognized due to aggregation. The objective of this analysis is to identify patterns of the nurse-to-patient ratio over time to detect extreme staffing periods.*

*Methods*

*A descriptive exploratory study was conducted exploiting routine data of the year 2016 in a University Hospital in Switzerland from 1) a nurse staffing system and 2) medical controlling data containing demographics, diagnoses and treatments of patients. The two data sources were merged to a dataset with 42,453 patients and 4,033 nurses. A subset was used with six units (cardiology, intensive care, pediatrics, oncology, general internal medicine, and neurology) with a total of 15,260 patients and 229 nurses. Number of patients divided by number of nurses are calculated over a day. Extreme staffing periods were defined as two standard deviations from the mean.*

*Results*

*The nurse-to-patient ratio has a mean from 1.5 (intensive care and pediatrics) to 2.9 (neurology). Results show high variation over time and across service lines. Extreme staffing periods were detected on 70 days (22.9% during weekends) for the year 2016.*

*Conclusion*

*These first results show high variability in nurse-to-patient ratio. Further analysis will model staffing requirements based on patient characteristics, admissions, and discharges and their association with mortality.*