Impact of vital sign data collection technology on data quality and patient experience.

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Keywords: big data & digital health – innovation & technology

1. INTRODUCTION

AZ Maria Middelares is a Belgian private non-profit 542 bed acute care hospital.

Despite the financial burden for the hospital in the current Belgian fee-for-service healthcare model, we have implemented a hospital-wide assessment and monitoring process for vital parameters – blood pressure, heart frequency, respiration rate, body temperature and consciousness - for all patients resulting in an 80% reduction in the number of resuscitations in our hospital.

As we move forward, we continue to fine-tune and innovate the data collection process e.g. by introducing automated vital sign monitoring equipment and a new wearable sensor to collect the more than 2,5 million data points that are transferred automatically into the electronic medical record.

2. MATERIALS AND METHODS

In a first phase connected spot check monitors and respiration pods were validated and implemented on the wards. In a second phase a “hotspot package” for patients with a second EWS assessment of 3 or higher is introduced. This package for continuous monitoring consists of a wearable biosensor, a peripheral oxygen saturation meter and non-invasive blood pressure monitor.
All data collection equipment is connected and transfers the data points automatically into the electronic medical record.

3. RESULTS AND DISCUSSION

Data analysis of the continuously growing database of clinical parameters showed more precise and reliable data when registered in an automated way compared to the manual measurements and registrations.

Especially the respiration rate is measured more accurately with the odds of initiating an alarm when measured automatically being 2,1 times higher compared to the manual measurements.
For the level of consciousness, heart frequency and oxygen saturation no differences between the two methods were demonstrated.
Nurses make more use of the possibility to signal inquietude in the automated registration because of the user friendly interface.

Additionally these advancements improve patient experience by increasing mobility and free up time of the nursing staff to focus on their core duties. Moreover the introduction of wearables offers opportunities to monitor patients at home and could potentially avoid a number of hospital admissions or reduce the length of stay.

Our current research focusses on the trend analysis of the clinical parameters and relates these to the timing of the diagnostic and therapeutic interventions of the rapid response team.