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Title: Respiratory rate from a pulse oximeter: A novel method to detect the acutely ill respiratory patient

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Body: Background: Respiratory rate (RR) is a vital physiological marker and predictor of clinical deterioration. However, visual measurement is inaccurate and often not carried out (Goldhill, D.R. et al. Anaesthesia 1999; 54:529–34). We performed this study to ascertain the feasibility of pulse oximetry in objectively monitoring and recording RR in acutely ill respiratory patients. Methods: We performed an observational clinical evaluation of the CE Marked Covidien Nellcor Respiration Rate System over two weeks. Patients in two acute respiratory wards had continuous monitoring via a system providing oxygen saturation (SpO₂), pulse rate and RR using a single integrated sensor. Results: N=66 (35M:31F). Five were diagnosed with asthma, one with pneumonia and 12 with exacerbation of COPD (three requiring non-invasive ventilation). We monitored and recorded clinical data including continuous RR, heart rate, SpO₂ and duration of hypoxia. The data collated informed decisions on escalation of care. We will present selected data sets, similar to Figure 1.

Conclusions: The Covidien Nellcor RR System represents novel, non-invasive, easy-to-use technology for the measurement of RR within an acute clinical setting that could lead to enhanced patient safety. As RR is obtained unobtrusively from pulse oximetry, it can be added easily to the routine monitoring of patients' observations without observational bias.