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Continuous pulse oximetry monitoring in bronchiolitis patients not on oxygen

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In Reply:

Dr. Keim-Malpass and colleagues raise interesting points about our study of continuous pulse oximetry monitoring in bronchiolitis.¹ First, the authors comment that the evidence underlying the American Academy of Pediatrics recommendation against continuous pulse oximetry is weak and that parents find physiologic monitoring reassuring; therefore calls for deimplementation are unwarranted. This logic suggests that weak evidence of harm (without evidence of benefit) and parent preference justify implementation of a medical intervention. We disagree. Similar logic likely contributed to the overprescribing of antibiotics for mild respiratory illnesses, overuse of home apnea monitoring for well infants, and computerized tomography scans after minor head injuries, all of which are now discouraged by the *Choosing Wisely* campaign.² Clinicians caring for children bear the sometimes difficult responsibility of effectively communicating with and educating parents when interventions are appealing but lack benefit, and may cause harm.

Second, Keim-Malpass and colleagues comment on the lack of outcome measurement and argue that the odds ratios for the clinical variables associated with continuous monitoring suggest clinicians appropriately selected patients for monitoring. However, in our statistical analysis, we adjusted for the clinical variables that Keim-Malpass and colleagues highlight when calculating the risk-standardized monitoring percentages, and even with those adjustments, we observed striking variation between hospitals that cannot be attributed to the clinicians doing a better job selecting high-risk patients for monitoring, at least with respect to the measured variables mentioned. They also appropriately note that deterioration can occur in-between routine vital sign assessments. Continuous pulse oximetry, however, is not the best or only method of surveillance for clinical deterioration in patients identified as high risk. Other forms of clinical nursing surveillance (i.e. the active, purposeful, and ongoing acquisition, interpretation and synthesis of patient data for clinical decision making) exist³ and may be more effective than simply placing a patient on a continuous monitor.^{4,5}

Third, Keim-Malpass and colleagues suggest that valuable “unmined information” might exist in continuous pulse oximetry data, and suggest that by turning monitors off, an opportunity is missed to perform research on early detection of clinical deterioration. We agree that less data will be available if unnecessary monitoring is deimplemented. However, continuing to support indiscriminate monitoring of patients solely to mine their data outside of a research study would be unethical. The opportunity to analyze data does not justify use of an intervention that does not benefit the patient and may cause harm.

In summary, we stand by the conclusion that our study provides evidence suggesting overuse of continuous pulse oximetry in hospitalized children with bronchiolitis not requiring supplemental oxygen. However, this is not the end of the story. A clinical trial led by a team of nurses, physicians, and implementation scientists is an essential next step to determine the most appropriate bronchiolitis patients to include in deimplementation efforts and the most effective strategies for replacing passive continuous pulse oximetry monitoring with a comprehensive, active form of clinical nursing surveillance.

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