



BAMO: Bronchiolitis Admissions Monitoring/Orders

Revisiting Guideline Adherence and Order Accuracy

Sarah MacKay, MD; Rhonda Yngsdal-Krenz, MBA, RRT; Windy Smith, MSN, RN;
Kirsten Koffarnus, CNS; Kristin Shadman, MD
University of Wisconsin – Madison
School of Medicine and Public Health, Department of Pediatrics

BACKGROUND

- Our institution's Bronchiolitis Clinical Practice Guidelines (CPG) recommends:
 - intermittent pulse oximetry (SpO₂) for patients with no respiratory support or on low flow nasal cannula oxygen (LFNC)
 - continuous SpO₂ and cardio-respiratory monitoring (CRM) for patients on high flow nasal cannula oxygen (HFNC)
- Poor adherence to CPG was observed in a sample of children admitted for bronchiolitis during the 2018-2019 respiratory season.

METHODS

- Stakeholders planned improvement **interventions including:** 1) resident/nursing (RN) education, 2) resident/RN newsletter reminders, 3) development of CPG materials for strategic locations, 4) CRM orders and decision support added to the HFNC and bronchiolitis admission order sets.
- General care bronchiolitis patients were observed Nov. 11, 2019 to Mar. 8, 2020.
 - **Included:** age 4 weeks to 23 months, primary diagnosis of bronchiolitis
 - **Excluded:** born <28 weeks gestation, unrepaired cyanotic congenital heart disease, pulmonary hypertension, tracheostomy, home O₂/ventilator, neuromuscular disease, immunodeficiency, cancer and observation within 12 hours.
- Data collection: Presence of continuous SpO₂, CRM and level of respiratory support and were observed day (7am-7pm) and night (7pm-7am). Demographic, clinical status, and active order data were collected from chart review and used to determine adherence to CPG.
- Data were analyzed using statistical process control p-charts.
- This study was exempt by the University of Wisconsin Institutional Review Board.

OBJECTIVE AND MEASURES

- Improve monitoring and monitoring orders of patients admitted to American Family Children's Hospital for bronchiolitis to 85% adherence to CPG by March 2020.
 - **Outcome measure:** observed monitoring CPG adherence.
 - **Process measures:** adherence of orders to CPG and concordance between orders and observed monitoring.



After interventions, there was *no improved adherence* to clinical practice guidelines in monitoring practices or patients' active orders.

ADDITIONAL KEY INFORMATION

- Thank you to all the dedicated respiratory therapists who performed the observations during this busy respiratory season.
- Respiratory care protocols for management of patients with bronchiolitis can be found on UW Health U-Connect.

Sarah MacKay, MD, MHS
University of Wisconsin SMPH
600 Highland Avenue, Madison WI
smackay@uwhealth.org

DISCUSSION

- **Conclusions:**
 - Improving adherence to recommended monitoring for patients with bronchiolitis is challenging.
 - Further interventions are needed to improve both monitoring and order adherence to clinical practice guidelines.
- **Limitations:**
 - 2019 data included only a very small number of patients
 - Some planned interventions were implemented late in the season without time to see change
- **Future directions:**
 - Further analysis of subsets (OFF, LFNC, HFNC) may yield additional insight into over- and under-monitoring
 - Subset analysis may also guide development of further interventions to improve adherence to monitoring CPG
 - Additional years of data collection and review are needed to show true trends and improvements

RESULTS

TOTAL n = 230 patients

Table 1: Patient demographics	
Male	56%
Race	
White	79%
Black	9%
Asian	6%
American Indian or Alaska Native	2%
Declines to answer	5%
Ethnicity	
Non-Hispanic or Latino	85%
Hispanic or Latino	10%
Declines to Answer	5%
Admission Unit	
P4	3%
P5	79%
P7	12%
PICU	3%
NICU	3%

	OFF		LFNC		HFNC	
	2019 n=67	2020 n=122	2019 n=6	2020 n=66	2019 n=15	2020 n=42
Observations						
SpO ₂ adheres to CPG	90%	75%	17%	52%	100%	100%
CRM adheres to CPG	65%	81%	100%	67%	67%	76%
Active Orders						
SpO ₂ orders adhere to CPG	99%	87%	83%	83%	27%	45%
CRM orders adhere to CPG	99%	93%	100%	92%	13%	26%
Matching Orders/Observations						
SpO ₂	91%	74%	33%	55%	27%	43%
CRM	99%	76%	100%	62%	47%	50%

Figure 1: Observation of Monitoring Adhering to CPG (%)

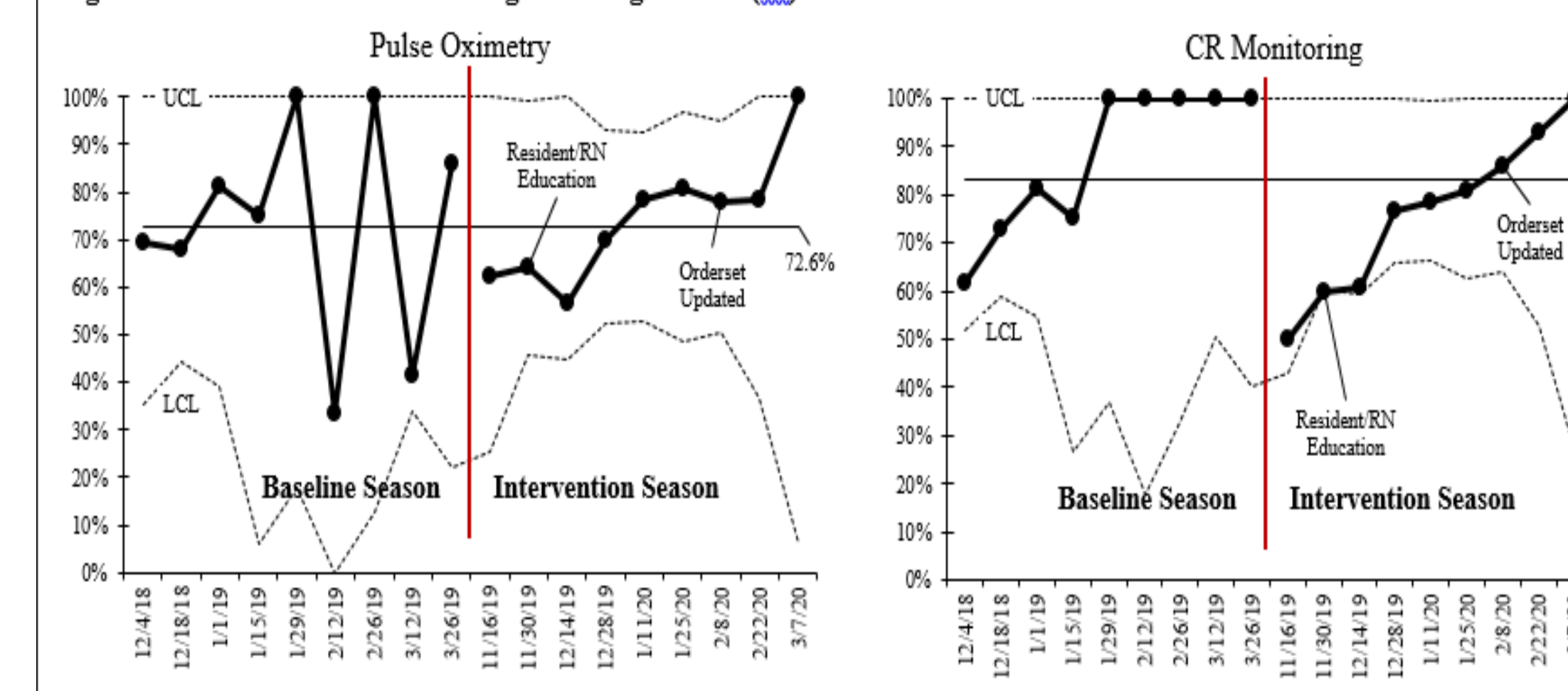


Figure 2: Orders and Observed Monitoring Concordance (%)

