What's New in Paediatric Emergency Medicine 2018?

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Conflict of Interest:

- **Faculty: Dr. Rodrick Lim**

- No relationships with commercial interest to disclose.
- Generally not an interesting person

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Objectives:

- Discuss three recent areas of research/literature relating to Children who present urgently to a hospital or clinic
- Discuss some quality initiatives at the Children's Hospital that may apply to your local practice or hospital

Fluid Rate in DKA in children?

ORIGINAL ARTICLE FREE PREVIEW

Clinical Trial of Fluid Infusion Rates for Pediatric Diabetic Ketoacidosis

Nathan Kuppermann, M.D., M.P.H., Simona Ghetti, Ph.D., Jeff E. Schunk, M.D., Michael J. Stoner, M.D., Arleta Rewers, M.D., Ph.D., Julie K. McManemy, M.D., M.P.H., Sage R. Myers, M.D., M.S.C.E., Lise E. Nigrovic, M.D., M.P.H., Aris Garro, M.D., M.P.H., Kathleen M. Brown, M.D., Kimberly S. Quayle, M.D., Jennifer L. Trainor, M.D., et al., for the PECARN DKA FLUID Study Group*

June 14, 2018
N Engl J Med 2018; 378:2275-2287
DOI: 10.1056/NEJMoa1716816

CONCLUSIONS Neither the rate of administration nor the sodium chloride content of intravenous fluids significantly influenced neurologic outcomes in children with diabetic ketoacidosis. (Funded by the Eunice Kennedy Shriver National Institute of Child Health and Human Development and the Health Resources and Services Administration; PECARN DKA FLUID ClinicalTrials.gov number, NCT00629707.)

In 2018, What do we do with febrile kids<3 months?

JAMA Pediatrics

Original Investigation

Use of Procalcitonin Assays to Predict Serious Bacterial Infection in Young Febrile Infants

Karen Milcent, MD, MSc; Sabine Faesch, MD; Christèle Gras-Le Guen, MD, PhD; François Dubos, MD, PhD; Claire Poulalhon, MD; Isabelle Badier, MD; Elisabeth Marc, MD; Christine Laguille, MD; Loïc de Pontual, MD, PhD; Alexis Mosca, MD; Cécile Nissack, MD; Sandra Biscardi, MD; Hélène Le Hors, MD, PhD; Feriella Loullet, MD; Andreea Madalina Dumitrescu, MD; Philippe Babe, MD; Christelle Vauloup-Fellous, PharmD, PhD; Jean Bouyer, PhD; Vincent Gajdos, MD, PhD

What do we know?

- The risk of Serious Bacterial Illness is highest than at any point of childhood in children less than 3 months
- All comers, risk is highest with youngest patients (up to 20% down to 8-12% to 90 days)
- As stated, clinical appearance does not differentiate well enough SBI
- Presence of viral infection reduces but does not eliminate risk of SBI
- Hundreds of papers have been published on management of fever in this age

SBI, IBI:

- In well appearing infants:
- Approximately 5-9% will have a UTI
- Approximately 2.0% will have bacteremia, 0.5% meningitis

State of Affairs:

- All children <30 days need full evaluation and treatment
- Children 30-90 days: based on appearance, presentation, judgement
  - A urinalysis to rule out UTI
  - A complete blood count and blood cultures
  - +/- stool culture in cases of diarrhea in high risk areas
  - +/- - - - chest X-ray in cases of signs of pulmonary disease

  - +/- LP
  - +/- Screening tests

- A recent survey of pediatric emergency departments that have PEM fellowship programs found:
- 50% have any policy about the management of febrile infants of which 80% of those policies differ from published guidelines
- In addition, 85% of PEM program directors feel that new guidelines are needed.

Table 4. Sensitivity, Specificity, and Likelihood Ratios (95% CIs) for Definite SBI and IBI at Various Thresholds

Biomarkers	Sensitivity	Specificity	Positive Likelihood Ratio	Negative Likelihood Ratio
Definite SBI				
PCT ≥0.3 ng/mL	74 (62-84)	78 (75-80)	3.3 (2.8-3.9)	0.3 (0.2-0.5)
PCT ≥0.5 ng/mL	60 (48-72)	85 (83-87)	3.9 (3.1-5.0)	0.5 (0.4-0.6)
PCT ≥2.0 ng/mL	36 (25-48)	94 (92-95)	5.7 (3.9-8.4)	0.7 (0.6-0.8)
CRP ≥20 mg/L	77 (66-86)	75 (72-77)	3.1 (2.6-3.6)	0.3 (0.2-0.5)
CRP ≥40 mg/L	59 (46-70)	86 (84-88)	4.2 (3.7-6.3)	0.5 (0.4-0.6)
IBI				
PCT ≥0.3 ng/mL	90 (68-99)	78 (75-80)	4.0 (3.3-4.8)	0.1 (0.03-0.4)
PCT ≥0.5 ng/mL	85 (62-97)	85 (82-87)	5.6 (4.4-7.0)	0.2 (0.06-0.5)
PCT ≥2.0 ng/mL	60 (36-81)	94 (92-95)	9.6 (6.3-14.7)	0.4 (0.2-0.7)
CRP ≥20 mg/L	75 (51-91)	75 (72-77)	3.0 (2.3-3.9)	0.3 (0.2-0.7)
CRP ≥40 mg/L	45 (23-69)	86 (84-88)	3.2 (1.9-5.3)	0.6 (0.4-0.9)

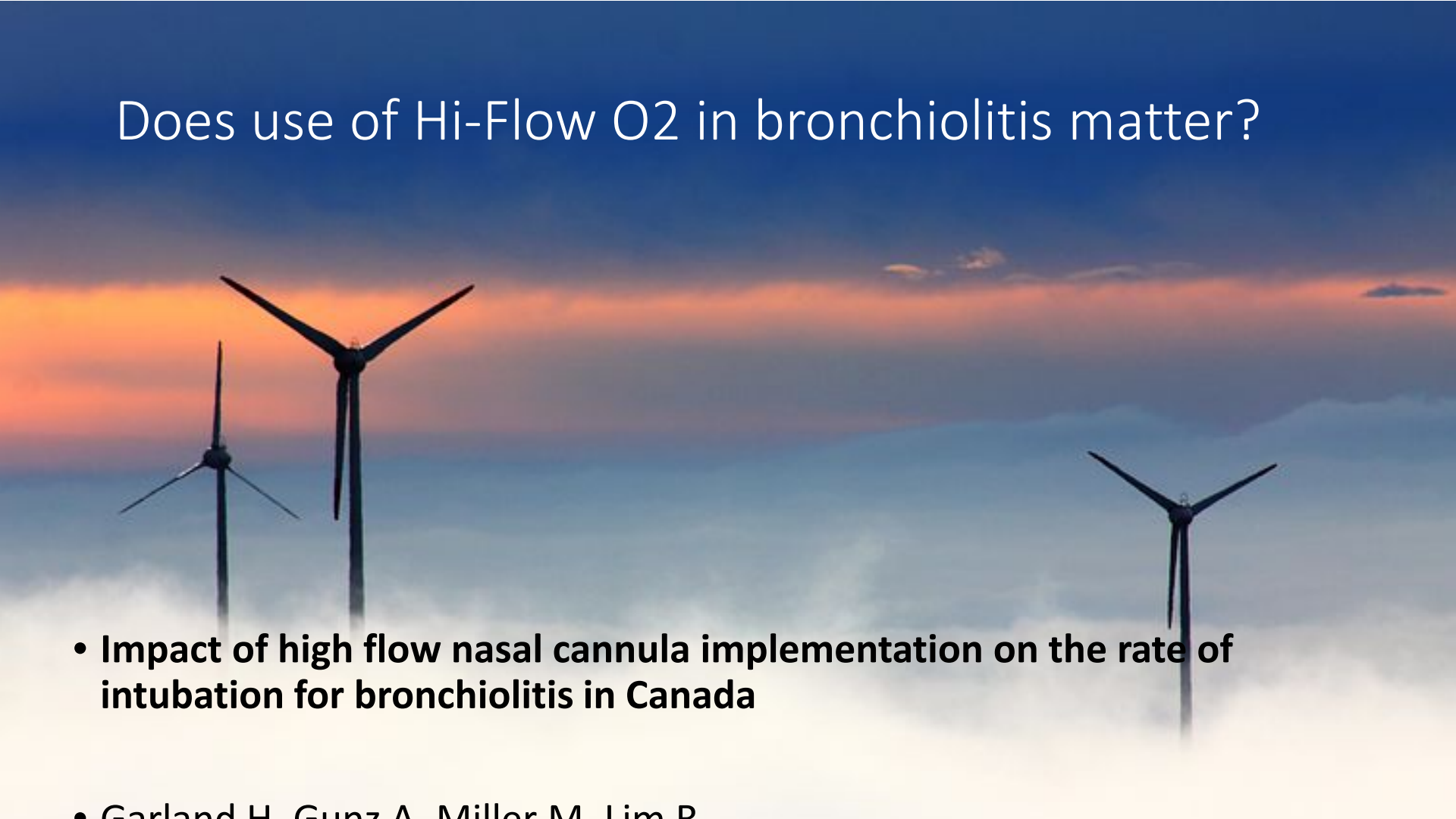
Abbreviations: CRP, C-reactive protein; IBI, invasive bacterial infection; PCT, procalcitonin; SBI, serious bacterial infection.

SI conversion factors: To convert CRP to nanomoles per liter, multiply by 9.524.

- PCT >0.3 is 0.90 Sensitivity, 0.78 Specific
- CRP >20 is 0.75 Sensitivity, 0.75 Specific

- SNOUT, SPIN

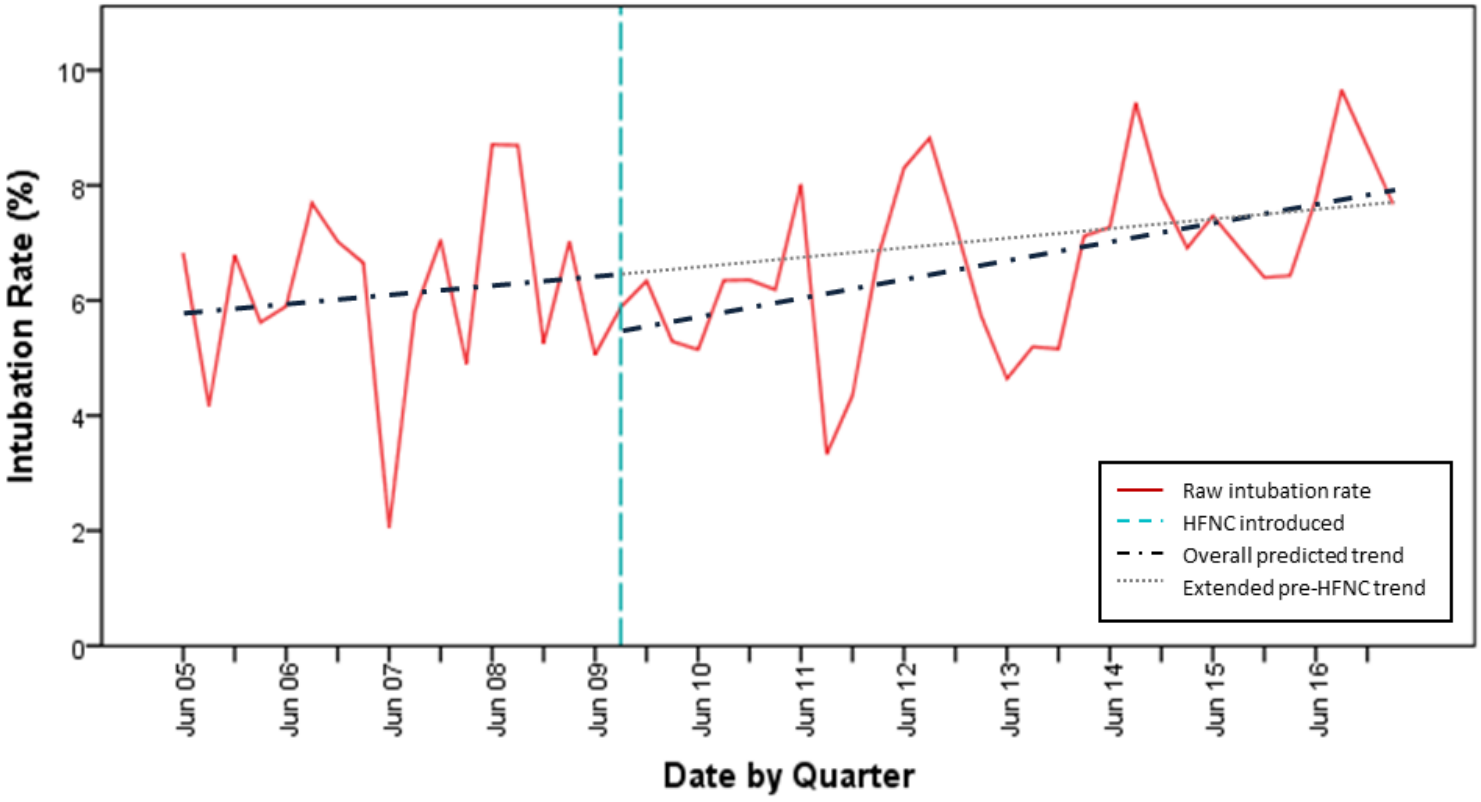
Does use of Hi-Flow O2 in bronchiolitis matter?



- **Impact of high flow nasal cannula implementation on the rate of intubation for bronchiolitis in Canada**

- Garland H, Gunz A, Miller M, Lim R

- Methods: We conducted a multicentre, interrupted time series analysis to examine intubation rates pre- to post-implementation of HFNC for children less than 2 years with bronchiolitis. Data were obtained from the CIHI database using the Canadian Coding Standards. Paediatric tertiary centres that introduced HFNC between 2009-2014 were included, and data were collected from January 2005-December 2016.



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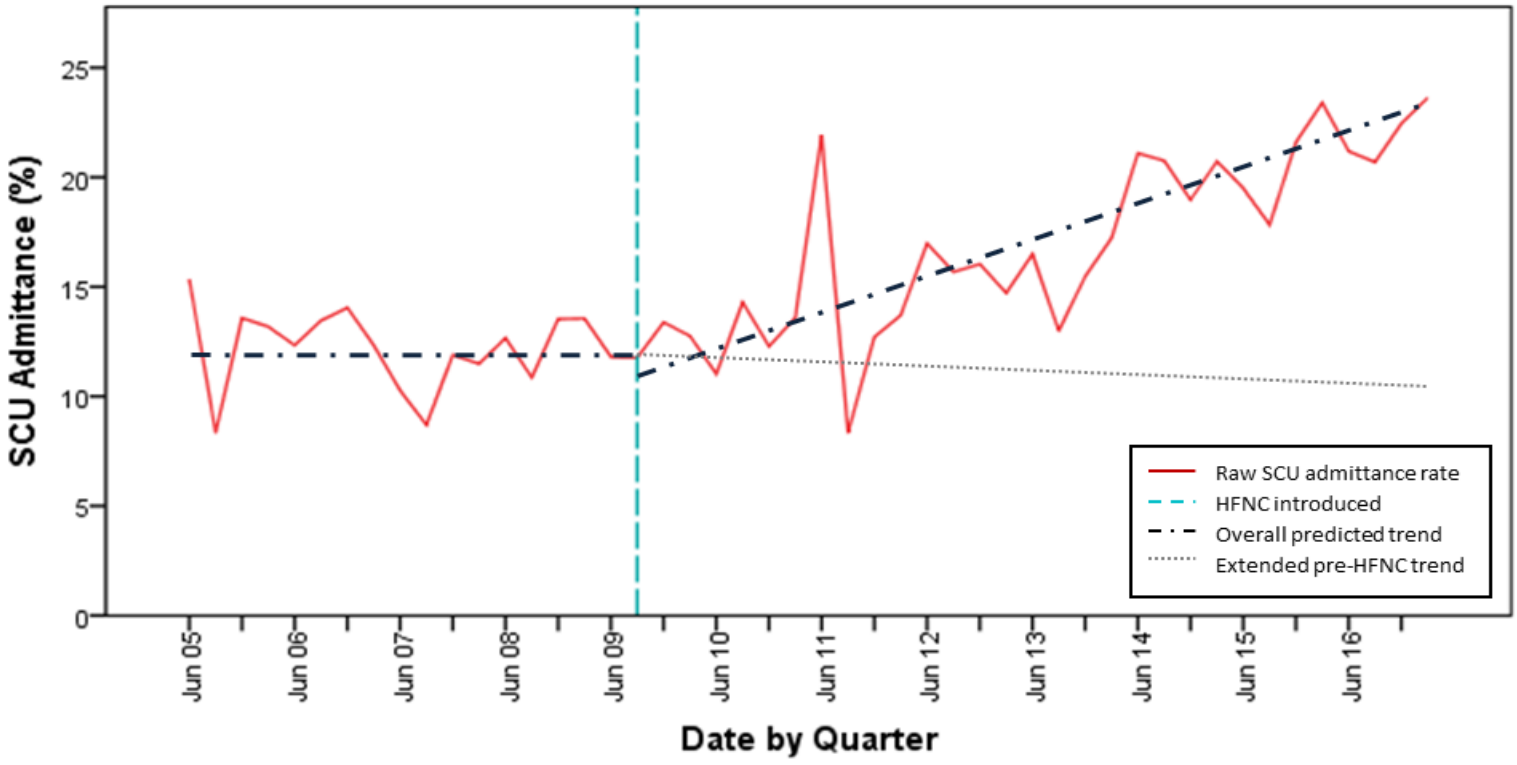

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- Results: A total of 17,643 patients met inclusion criteria; 5,862 were before and 11,791 after implementation of HFNC. Comparing the two groups, there was no significant change in the rate of intubation after HFNC was introduced. There was also no significant change in the trend of average LOS in hospital between the two groups. There was a significant increase in PCCU admission rates after the introduction of HFNC. Prior to HFNC implementation, there was an increase in average PCCU LOS, with a decrease in the overall trend following the introduction of HFNC.


OM3

PRINCIPLES BEHIND OM3

- Not all cases are suitable for M&M discussion – some adverse outcomes are unpreventable. M&M time should focus on case where lessons can be learned.
- Presenters need to have a structured approach to case analysis when prepping for M&M rounds, as well as a framework with which to present and guide discussions around quality improvement and patient safety. Most physicians and residents have limited training in these areas, yet are often thrust into the role of running M&M rounds without coaching.
- M&M rounds are much more effective when they are multidisciplinary and inter-professional. Medicine today is practiced in a team-based approach, and all relevant team players need to be in the room for proper case discussion and potential solution design.
- There must be a formal mechanism in place to actually effect changes, and to act on the items arising out of M&M rounds.

Dual Identifiers


In Situ
Multidisciplinary