



## Pediatric International Nutrition Survey

### PINS 2018 – a prospective, multicenter cohort study of nutritional practices and outcomes in pediatric intensive care units around the world

Benchmarking practice, illuminating gaps and examining outcomes

Dear Colleagues,

February 24, 2017

We are enthusiastically writing to invite your participation in our upcoming international study of nutritional practices in Pediatric Intensive Care Units (PICUs). This is our third multicenter quality improvement effort and will be the most enlightening yet, with the aim of optimizing nutrition therapy for critically ill children throughout the world.

In our past 2 international studies, we enrolled over 1700 mechanically ventilated children from 90 PICUs across the world. We are grateful for your participation and for the efforts of site PIs and dietitians. Together we have significantly advanced our understanding of the challenges to nutrient delivery and identified opportunities for improving outcomes in the vulnerable PICU population. A list of selected publications from the first 2 studies is at the end of this letter. Participating PICUs received a benchmarking, individualized site report that allowed comparison of practice at each site with the rest of the cohort, which prompted several local quality improvement initiatives. These studies have helped develop a strong and international core group dedicated to improving nutritional practices and outcomes in PICUs.

In our first survey in 2009, over 525 patients from 31 centers in 8 countries were enrolled and detailed nutritional data describing assessment of nutritional requirements, mode of intake, barriers to enteral nutrition, and supportive nutrition care strategies in the international PICU community were recorded and analyzed. When adjusted for severity of illness and other relevant covariates in a multivariable model, we observed important associations between clinical outcomes and adequacy of energy intake. We also described discrepancies in feeding protocols in the PICU and their impact on nutrient delivery and acquired infections.(1, 2)

In our second effort in 2011, we enrolled 1245 subjects from 59 PICU sites in 15 countries around the world, including most of the sites from 2009 and several more from a broad spectrum of regions worldwide.(3) In an analysis of nutritional status in the combined cohort from 2009 and 2011 (n=1622), underweight subjects had a significantly higher risk of mortality, and both underweight and obese subjects had significantly higher odds of acquiring an infection.(4) These notable disparities among outcomes related to premorbid nutritional status and the failure to consistently achieve nutritional adequacy, require further examination of nutrient prescriptions and delivery to improve outcomes in PICUs.(4) We have also described acid suppression in mechanically ventilated children and its impact on acquired infections, particularly ventilator-associated pneumonia.(5) The 2<sup>nd</sup> international study also highlighted the critical impact of enteral protein adequacy, independent of energy intake, on reducing the odds of mortality. This association, after adjustment for site, enteral nutrition days, and severity of illness, has fostered a large body of work describing protein catabolism and potential role of protein intake in critical illness.(3)

The current **3<sup>rd</sup> international study** will aim to verify these important findings with updated methods and explore additional relationships between bedside nutrient delivery, markers of nutritional status, and relevant clinical outcomes. We have developed a more focused approach to this study, and have identified 4 important components and an embedded trial of protein supplementation. The 2018 study will provide the following opportunities for participating PICUs:

1. Benchmarking nutrition practice: A detailed benchmarking site report that will allow sites to compare their nutrition practices to other PICUs within their country/region and across the world. Such comparisons will identify differences, strengths and weaknesses and highlight questions for future research.
2. Focused research questions: What are the barriers to enteral feeding, including an examination of intolerance, interruptions and adjunctive therapies used during the first 10 days of PICU admission.
3. Participate in specific subgroup studies: We will explore subgroup populations for further exposure of important relationships between nutrition and medical care (e.g. cardiac intensive care, traumatic brain injury, bone marrow transplantation) and strategize with participating sites to develop tailored interventions to improve nutritional and clinical outcomes.
4. Nutritional risk score: We will specifically examine predictors of nutritional decline as well as hospital and PICU length of stay in our multilevel, multivariable analyses.
5. Selected sites will have the opportunity to participate in a novel 'embedded' pragmatic trial of protein supplementation.

The start date for this third international study is **January 10, 2018**.

Participation requirements:

1. A dedicated PICU dietitian (or other nutrition focused clinician) and a site PI with experience in research studies.
2. PICU (including any pediatric subtypes, e.g. cardiac, surgical, medical, etc.) with greater than 8 beds
3. Commitment to collect and enter de-identified (no patient identifiers required) data on a minimum of 15 PICU patients using a secure web-based data collection tool. A detailed instruction manual on the data collection procedures and ongoing support will be provided. Daily data will be recorded for a maximum of 10 days (from date of PICU admission). The average time spent for data collection and entry is approximately 1 hour per patient.

Ethics approval (or a waiver) for PINS 2018 will be required. Sites should consult their local research ethics board as to the procedures required for approval. We will provide you with a template of the ethics board application submitted for this study at Boston Children's Hospital. Since this is a quality improvement initiative using data collected as part of routine care, we will be asking for consent waiver. No patient identifiers will be stored in the web-based data collection system and all data will be presented in aggregate form only, therefore patient confidentiality will not be breached. We will guide you with this process. In our experience with over 90 PICUs in the past 2 studies, consent waiver and ethics approval was obtained in almost all sites. We will need a valid ethics approval letter from your site by September 15, 2017.

Thank you for taking the time to consider our request; we look forward to working with you on this exciting initiative. Please kindly consider disseminating this announcement to the pediatric critical care team and the dietitian group at your facility, and contact us with any questions.

Yours Sincerely,



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