LEADING THE SCIENCE AND PRACTICE OF CLINICAL NUTRITION

American Society for Parenteral and Enteral Nutrition

A.S.P.E.N. Pediatric Section Newsletter **February 2015**

Letter from the Pediatric Section Chair

It is hard to believe that CNW2015 will be here in just a matter of weeks! I hope many of you will be in attendance as there are a variety of pediatric focused symposiums offered this year. Plus, the Pediatric Section will be meeting on Monday night at 6pm at the Hyatt-Regency in Ballroom F for our annual Community Forum. Kathleen Gura, PharmD, BCNSP, FASHP, FPPAG will be speaking about the interpretation of alkaline phosphatase in pediatric patients with intestinal failure associated liver disease. Beth Lyman, RN will also be in attendance to give an update on the NOVEL project. The Community Forum is an ideal opportunity to network and mingle with old friends.

In this edition of the newsletter you will find a summary of our recent clinician survey on malnutrition. This is certainly a "hot topic" at my institution as we shift our ideas about what defines malnutrition and work to be more aggressive with identifying and classifying malnourished patients. At CNW there will be a symposium regarding the latest recommendations for indentifying malnutrition on Monday, February 16th at 2pm. It should be informative and somewhat controversial so do not miss out!

Also, in this edition you will find summaries of numerous recently published pediatric nutrition support articles. The leadership team has made a commitment to assure that you receive the latest information in the field of pediatric nutrition support by disseminating brief reviews of the current literature each quarter. If you have an article that you think the membership would find beneficial, please email it to our editor, Celina Scala, at Celina_M_Scala@rush.edu.

As a reminder, feeding tube awareness week is February 8-14th. The theme this year is "The truth about tube feeding." For ideas of how to get involved, visit www.feedingtubeawarenessweek.org. If your institution does something special to celebrate this week let us know and we will highlight your events in our next edition.

Again, I look forward to seeing you all at CNW15 in beautiful Long Beach, California. Safe travels!

Sincerely,

Elizabeth Bobo, MS, RD, LD/N, CNSC

In this issue:

Results from the Malnutrition Topic of the Quarter Survey

Thank you to all of the members who completed the survey on malnutrition! Below are your survey responses.

1. **Place of work:**

Inpatient pediatrics	33.3%
Inpatient pediatric ICU	31.25%
Inpatient neonatal ICU	10.42%
Outpatient pediatrics	25.0%

2. **What tools do you use to identify malnutrition?**

Z-scores	62.5%
Anthropometrics	85.42%
Subjective Global Nutritional Assessment (SGNA)	22.92%
STAMP	0.0%
PYMS	0.0%
Pediatric Nutritional Risk Score	0.0%
STRONGkids	4.17%

3. **Does your institution have a protocol in place for identifying malnutrition?**

Yes	41.67%
No	58.33%

4. **If yes, what is the protocol?**

Overall, most responses were that the nursing screen upon admission looks at anthropometric percentiles and z-scores, which can deem a patient malnourished. Some hospitals have their dietitians complete this sort of screen in addition to or in place of the nursing screen. Two responses mentioned "MTOOL" and "SCAMP" being used to screen patients. Some respondents also mentioned following WHO, AND, and ASPEN guidelines.

5. **After identifying malnutrition, is there a protocol for follow up?**

Yes	41.67%
No	58.33%

6. **If so what is the protocol?**

Most respondents mentioned that after initial assessment, follow up occurs at least weekly, possibly sooner depending on the clinical severity. One mentioned outpatient clinic follow up being used to follow malnourished patients as well.

Thank you all for your very valuable feedback. When creating or revising your institution's malnutrition screening protocols, if further questions arise or you would like to share additional information with the section group take the opportunity to section group take the opportunity to utilize A.S.P.E.N. Connect and the Pediatric Section page. Some additional A.S.P.E.N. resources that may be available are linked below.

JPEN-Defining Pediatric Malnutrition: A paradigm Shift Toward Etiology-Related Definitions

Standards for Nutrition Support: Pediatric Hospitalized Patients

New Topic of the Quarter Survey: Blenderized Tube Feedings

The hot topic of this quarter is blenderized tube feedings, as suggested by our members who responded to the last newsletter's hot topic survey. Please complete the survey below regardless of whether you have previous experience with blenderized tube feedings or not. At the end of this survey there will be an opportunity to suggest the nutrition hot topics for future newsletters. Please complete this survey before it closes on February 28, 2015. Thank you for your participation!

Blenderized Tube Feeding Survey

NEW-Pediatric GI Research Updates

The section committee would like to thank Marisa Dzarnoski Riley, RD, CNSC for volunteering as the Pediatric GI research update liaison. Marisa is a pediatric GI dietitian at Children's Hospital Colorado.

Breast-Feeding Improves Gut Maturation Compared With Formula Feeding in Preterm Babies

It is suspected that the development of necrotizing enterocolitis (NEC) in preterm infants may be associated with an intestinal inflammatory response against commensal bacteria following mucosal injury to the immature intestine. It is known that breastfed infants are at lower risk of developing NEC compared to those fed with formula. This study hypothesized that exclusive breastfeeding improves preterm intestine maturation. A group of 40 preterm infants were prospectively monitored for increases in urine levels of intestinal fatty acid-binding protein (I-FABP), a protein known to represent enterocyte maturation, while being exclusively breastfed (n=21) or exclusively formula fed. I-FABP levels were collected at day 5, 12, 19, and 26 of life for each infant. Infants who were breastfed developed higher levels of I-FABP earlier in life compared to formula fed infants, which is suggestive of earlier intestinal mucosal maturity. However, by 19 days of feeding, there was no statistical difference in urine I-FABP between the groups. Study limitations include attrition of sample size and therefore possible lack of power for statistical analysis at day 19 and inability to run statistics for day 26. This study emphasizes the role of breast milk in gut maturation.

Reisinger K, de Vaan L, Kramer B, Wolfs T. Breast-Feeding Improves Gut Maturation Compared With Formula Feeding in Preterm Babies. *JPGN.* 2014; 59; 720-724.

Randomized Feeding Intervention in Infants at High Risk of Celiac Disease.

Observational studies have suggested that introducing gluten between 4 and 6 months of age can reduce the risk of developing celiac disease. The connection between breast feeding and celiac disease is inconclusive. This study was a prospective, randomized, double blind, placebo-controlled trial with the hypothesis that in genetically predisposed infants, preferably being breastfed, incidence of celiac disease at 3 years of age could be reduced with feeding of small amounts of gluten (100mg immunologically active gluten) between the ages of 4 and 6 months. A total of 944 infants less than 4 months of age and at risk of developing celiac disease, due to HLA haplotype and family incidence, were recruited and monitored for a three year period. Infants were provided either a gluten supplement (n=475) or placebo supplement (n=469), while anti-transglutaminase type 2 (TG2A) and antigliadin antibodies were periodically measured. Small intestinal endoscopy with biopsy was used to diagnose celiac disease in 96% of cases when TG2A was elevated. The cumulative incidence of celiac disease in the gluten consuming group and placebo group was 5.9% and 4.5%, respectively. Study results suggest that neither introduction of gluten during 4 to 6 months of age, nor ongoing breastfeeding are preventive in the development of celiac disease. This is the first prospective study conducted in several countries investigating the preventive effect of early gluten introduction and breastfeeding.

Vriezinga SL, Auricchio R, Bravi E, et al. Randomized Feeding Intervention in Infants at High Risk for Celiac Disease. *N Engl J Med.* 2014; 371: 1304-15.

Serum plant sterols, cholestanol, and cholesterol precursors associate with histological liver injury in pediatric onset intestinal failure.

Serum concentrations of plant sterols have previously been associated with development of biochemical signs of intestinal failure-associated liver disease (IFALD) in adults and children with intestinal failure. Intestinal surgery and resection is also suspected to increase bile acid malabsorption and subsequently increase cholesterol synthesis. This prospective, cross-sectional study monitored and assessed serum levels of plant sterols (stigmasterol, avenasterol, sitosterol and campesterol), development of portal inflammation and cholestasis, and level of cholesterol synthesis in relation to development of liver steatosis and fibrosis in children with intestinal failure requiring parenteral nutrition(PN) or after being weaned off. Blood samples of 50 patients (median age 7.3 years) with pediatric onset intestinal failure and 86 healthy controls were obtained and evaluated for several labs including conjugated bilirubin, serum cholesterol precursors, the aforementioned plant sterols, and cholestanol (a sensitive indicator of cholestasis). Liver biopsies were also completed on 40 patients with intestinal failure. A positive association was found in levels of plant sterols to cholesterol in relation to the number of weekly TPN infusions and amount of daily parenteral energy delivery. Those with cholestasis had higher ratios of cholestanol to cholesterol, and patients with portal inflammation while on TPN had higher stigmasterol or avenasterol serum concentrations. Some degree of abnormal liver histology was identified in 80% of biopsied patients who received TPN. Short bowel syndrome patients with hepatic steatosis had higher levels of cholesterol after weaning from TPN, than those without steatosis. Despite the limitation of small sample size and cross-sectional study design, these findings support the hypothesis that plant sterol accumulation may play a role in development or preservation of intestinal failure-associated liver disease.

Mutanen A, Nissinen M, Lohi J, Heikkila P. Serum Plant Sterols, Cholestanol, and Cholesterol Precursors Associate With Histological Liver Injury in Pediatric Onset Intestinal Failure. *Am J Clin Nutr.* 2014; 100: 1085-1094.

General Pediatric Research Updates

Fat-Modified Breast Milk Resolves Chylous Pleural Effusion in Infants with Postsurgical Chylothorax but is Associated with Slow Growth

This prospective, nonrandomized open-label study of enterally fed infants receiving either fat-modified breast milk (MBM) (n=9) or a predominantly MCT based formula (n=9) following diagnosis of a postsurgical chylothorax. The MBM had breast milk fat removed using a centrifuge which separated fat to the top of the milk so it could be spooned off. Then human milk fortifier, MCT oil, and soybean oil were added to the MBM to bring average calories to 0.74 kcal/ml. The MCT formula was 0.67 kcal/ml. The intervention continued for 6 weeks after chest tube removal per hospital protocol. Results showed that chest tube output volume and duration were not different between two groups. Those infants in the MBM group showed a decrease in mean weight (p=.04) and length (p=0.1) z scores over the study duration, though there was no significant difference in rates of weight gain between the groups. Study limitations include a small samples size and lack of randomization. Researchers concluded that MBM did resolve chylous pleural effusion similarly to MCT formula but that close consideration needs to be given to growth when feeding MBM.

Fat-Modified Breast Milk Resolves Chylous Pleural Effusion in Infants with Postsurgical Chylothorax but is Associated with Slow Growth

Kocel Sl, Russell J, O'Connor DL. Fat-Modified Breast Milk Resolves Chylous Pleural Effusion in Infants with Postsurgical Chylothorax but is Associated with Slow Growth. *Journal of Parenteral and Enteral Nutrition.* published online January 5, 2015. DOI: 10.1177/0148607114566464

Decreased Bone Turnover Markers in Children on Long-Term Parenteral Nutrition (PN) for Intestinal Failure (IF)

Patients with intestinal failure (IF) are at risk for developing metabolic bone disease (MBD) due to their often long-term need for parenteral nutrition. This prospective pilot study monitored bone turnover markers in children with IF (n=13) and age and gender matched controls without IF (n=20). The goal of 2 control matches for each IF patient was not achieved due to time limitations hence the control n=20 and not 26. Bone turnover markers measured were serum concentrations of osteocalcin (OC), bone-specific alkaline phosphatase (BSAP), and c-telopeptide (CTx). Bone mineral density (BMD) was available for only some of the IF participants, 9 of the 13. Researchers found that, compared to controls, OC and CTx were lower in IF patients. For those patients with BMD available, there was a negative correlation between their BMD and BMD z-scores and OC and CTx values. Based on study results, researchers concluded that bone turnover markers may be useful to identify risk of MBD in IF patients on long-term parenteral nutrition but that further research is needed.

Decreased Bone Turnover Markers in Children on Long-Term Parenteral Nutrition (PN) for Intestinal Failure (IF)

Derepas C, Kosar C, Avitzur Y, Wales P, Courtney-Martin G. Decreased Bone Turnover Markers in Children on Long-Term Parenteral Nutrition (PN) for Intestinal Failure (IF). *Journal of Parenteral and Enteral Nutrition.* 2015;39:85-94.

Pediatric Research Updates- Call for Research Update Volunteers!

To those members who have already volunteered to provide research updates, thank you for your help. The section group is still looking for a volunteer to provide neonatal intensive care unit updates as well as any other subspecialty that would be of interest. If you are interested in volunteering to provide research updates specific to a specialty field for upcoming newsletters, which are published quarterly, please contact Celina Scala at Celina_M_Scala@rush.edu. Thank you again for your help!

A.S.P.E.N. Connect: How to get started

A.S.P.E.N. Connect is a valuable tool to connect with other clinicians around the world to network, share ideas, or ask questions. However, in order to take advantage of all A.S.P.E.N. Connect has to offer the first step is logging in and getting started! Below are some instructions on how to access A.S.P.E.N. Connect and set up your profile.

First, follow this link to the A.S.P.E.N. Connect webpage, http://community.nutritioncare.org/home. On the upper right area of the screen will be a link titled, "Login to see members only content". Click on this link and log in with your A.S.P.E.N. webpage login, the same login you use to see members only content on the main A.S.P.E.N. site. Once logged in, you can click on "Profile" under the Welcome heading and add your information and upload a picture for your profile. You can also link your LinkedIn® directly to your A.S.P.E.N. Connect profile. The A.S.P.E.N. created series of videos about using A.S.P.E.N. Connect give information on how to add contacts, manage your community subscriptions and post questions or information.

A.S.P.E.N. Connect-YouTube

NOVEL Project Update from Beth Lyman, RN, MSN, CNSC

There are many exciting initiatives to report on from the NOVEL Project. If you are interested in more information or getting involved please see the NOVEL project fact sheet below as well as these highlighted updates:

-A meeting will be held at Clinical Nutrition Week on Monday February 16th at 9:45 am in room 203-C to discuss the NOVEL Project. All are welcome and invited to attend this meeting.
-Home care surveys are starting in February, one survey for home health agencies for pediatric patients and one survey for parents/caregivers. If you have a suggested home health agency please contact Beth Lyman at blyman@cmh.edu.
- A NICU study work group plans to do a pilot study starting later in 2015.

NOVEL Project Fact Sheet

A.S.P.E.N. Mentoring Program

Are you interested in sharing your experience and expertise with another A.S.P.E.N. member? Would you like to learn from a fellow A.S.P.E.N. clinician? If so A.S.P.E.N.'s new mentoring program is right for you! Set up a profile as either a mentor or mentee at the link below to be paired with another A.S.P.E.N. clinician. Don't miss this great opportunity to network and grow both personally and professionally.
A.S.P.E.N. Mentoring Program

Member Updates and Spotlight

We want to hear from you! The A.S.P.E.N. Pediatric Section group is proud of the many accomplishments of our members and we'd like to highlight what you're doing. If you have any feedback or ideas, noteworthy awards, presentations, published research, or projects that you'd like to share with our members please let us know by contacting the section group newsletter editor Celina Scala at Celina_M_Scala@rush.edu.