Pediatric Section Newsletter

Winter 2016

Letter from the Pediatric Section Chair

Hello,

It is with excitement that I begin my term as Chair of the Pediatric Section. The last two years serving as Chair Elect with Elizabeth Bobo, MS, RD, LDN, CNSC as Chair have been a wonderful learning experience. I am thankful for Elizabeth's leadership and feel she has done a wonderful job in taking the section to a higher level, one that I hope I can maintain. I would also like to say "Congratulations" to my friend and colleague. Elizabeth was honored with the A.S.P.E.N. Distinguished Nutrition Support Dietitian Service Award at Clinical Nutrition Week 2016.

Our new Chair Elect for the Pediatric Section is Steve Plogsted, PharmD, BCNSP, CNSC. I look forward to working with him and know that he will be a strong leader for this section. Also, Celina Scala, MS, RD, LDN, CNSC will continue to be the editor for this newsletter. Celina has done a wonderful job organizing this and keeping all the contributors on task.

Elizabeth, Steve, Celina and I had a great time at CNW16. Pediatric practitioners had a great showing at the conference not only in the presentations, but also with posters and awards. The Pediatric Section Community Forum was well attended and Tracy Nagy, a mom of a tube fed child presented a parent's perspective on g-tubes. Elizabeth presented the Pediatric Section New Practitioner Award to Ruba Abdelhadi, MD, CNSC.

Clinical Nutrition Week is always a great time to network with professionals with similar interests as your own. I do realize that not everyone can attend the national conference. Even if you can't attend the conference please consider volunteering with A.S.P.E.N. and get involved with a committee. Many committees need more involved pediatric experts and it is a great way to network. On a similar topic, the Pediatric Section could always use more volunteers. If you have an interest or an idea, please email me at kgcorkins@yahoo.com. We will find a job for you.

Please fill out the survey with this newsletter. We are in the process of sharing ideas for CNW17 and would like your input. If you are interested in a topic or feel we don't need to cover a certain topic again next year, please let us know. There are no guarantees the program will be accepted, but the Pediatric Section does send in a few proposals every year, many which get accepted.

I am looking forward to the next two years.

Sincerely,

Kelly Green Corkins, MS, RD, LDN, CNSC

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Pediatric Section Microsite

Visit the Pediatric Section microsite to access past versions of the newsletter, the Hot Topic of the Quarter survey, current research updates, and much more!
Pediatric Section Microsite

A.S.P.E.N. Pediatric New Practitioner Award Recipient: Dr. Ruba Abdelhadi, MD, CNSC

The Pediatric Section of A.S.P.E.N. is pleased to announce that this year's winner of the Pediatric New Practitioner Award is Ruba Abdelhadi, MD, CNSC. Dr. Abdelhadi serves on the A.S.P.E.N. malnutrition committee and is the lead author of an article coming out this year regarding malnutrition in hospitalized children. At her institution, Children's Mercy, she is the Director of Nutrition Services Programs and is a leader in developing quality improvement tools in the area of enteral nutrition support and clinical nutrition education. Of her many accomplishments, she has developed a "CHEX" model that is used institution wide to assure proper assessment and care of g-tubes. She has also started an outpatient clinic for children with g-tubes. A long term goal of Dr. Abdelhadi is to create an ACGME accredited nutrition fellowship training program at her institution.

Dr. Abdelhadi has recently been busy writing a "Clinical Guide to Nutrition for the Practicing Physician". She is also actively involved in her local A.S.P.E.N. chapter as well as NASPAGHN. She clearly has a passion for pediatric nutrition and we only expect great things from her in the future. Congratulations to Dr. Abdelhadi for this much deserved recognition.

A.S.P.E.N. Distinguish Nutrition Support Dietitian Service Award Recipient: Elizabeth Bobo, MS, RD, LD/N, CNSC

Congratulations to our outgoing Pediatric Section Chair, Elizabeth Bobo on this wonderful honor.

Member Spotlight: Steve Plogsted, BS, PharmD, BCNSP, CNSC

What is your current job title and work location? Clinical Pharmacy Specialist, Nutrition Support Service, Nationwide Children's Hospital, Columbus, Ohio.

What is your educational background? Received both my B.S. in Pharmacy and Doctor of Pharmacy degrees from the University of Cincinnati College of Pharmacy. In addition I am a Board Certified Nutrition Support Pharmacist (BCNSP) and a Certified Nutrition Support Clinician (CNSC).

How did you get involved in the field of clinical nutrition? My first clinical pharmacy position was in pediatrics and one of the requirements for the position was writing the neonatal PN orders and writing a PN consult in the chart of the non-neonates receiving PN.

What specifically do you do in your current position? I am the pharmacist member of the Nutrition Support Team and Intestinal Support Service. My primary responsibilities revolve around the daily monitoring of non-neonatal patients receiving parenteral nutrition, assisting in the initiation and advancement of PN in selected patients and I serve as the focal point for patients on home PN as they transition between the home and the hospital. My role also requires contributing to the nutrition education of the medical and nursing staff as well as education of pharmacy students. I also provide inpatient clinical pharmacy services to the GI, Renal, Rheumatology and Endocrinology departments.

Why did you become involved in A.S.P.E.N. and what are the benefits of being involved? I became involved in A.S.P.E.N. because it gave me the opportunity to grow professionally and work with the many leaders in the field of clinical nutrition. I have been fortunate to serve as a member of many of the A.S.P.E.N. committees. I currently serve on three committees and the Chair of the Drug Shortage Taskforce. I have also had the privilege to serve in various roles with the State affiliate, The Ohio Society of Parenteral and Enteral Nutrition including a term as President. Working with A.S.P.E.N. has allowed me the opportunity to serve as Section Editor for both editions of the A.S.P.E.N. Pediatric Nutrition Support Core Curriculum as well as Editor for the Parenteral Nutrition Handbook.

What recommendations would you give to someone just starting out in your field? The most important recommendation I can give is to not only join A.S.P.E.N. but get involved sooner than later. The benefits gained by volunteering for various committees or projects are enormous both to the member and to the membership. We all have some area of expertise that we can share to others and becoming involved with A.S.P.E.N. allows for growth to occur. With our personal growth and contributions comes a great sense of pride and professional satisfaction not found in any other professional organization.

Results from the Enteral Feeding Concentrations and Modular Products Topic of the Quarter Survey

Percentages do not always add up to 100% as respondents were not required to answer each question.

1. **What is the maximal calorie/ounce you concentrate formulas to for infants less than a year old?**
    a. 24 1.59%
    b. 27 12.70%
    c. 30 66.67%
    d. 35 3.17%
    e. 40 0.0%
    f. Other 15.87%
        i. Respondents reported ranges from 28-45 calories/ounce
2. **What is the maximal calorie/ounce you concentrate formulas to for children order than a year old?**
    a. 24 4.76%
    b. 27 0.0%
    c. 30 22.22%
    d. 35 6.35%
    e. 40 14.29%
    f. Other 52.38%
        i. Respondents reported ranges from 45-60 calories/ounce, with 45 being a very common answer

3. **How do you concentrate calories?**
    a. Adjust the formula/water ratio 9.52%
    b. Adding modular products 0.0%
    c. A combination of both 84.13%
    d. Other 6.35%
        i. Adjust the formula/water ratio up to 27 calories/ounce and then add modulars for a patient under 1 year of age, for those over a year concentrate to 35-45 calories/ounce
4. **Which modular products do you use, if any?**
    a. Liquid protein 6.35%
    b. Powdered protein 12.7%
    c. MCT oil 11.11%
    d. Vegetable oil 3.17%
    e. Microlipid 4.76%
    f. Rice Cereal 1.59%
    g. Other 60.32%
        i. Liquid concentrated infant formula, Duocal, Solcarb, Liquidgen, Cornstarch, Polycal, baby/pureed foods and mashed potato flakes, glucose polymer, and fiber prodcuts
5. **What factors do you consider when concentrating formulas or adding modular products?**
    a. Summary of responses: GI, liver and renal function, fluid and nutrient goals, food allergies, nutrition status and growth, osmolality, clinical diagnosis, ease of preparation upon discharge, and insurance coverage
6. **Are there patient populations in which you do not use modular products and why?**
    a. Summary of responses: short gut, those at risk for necrotizing enterocolitis (NEC), those with adequate growth, preterm infants, those with excessive diarrhea or emesis, or when parents are unable to properly use modular.
7. **Is there any additional monitoring used for patient's receiving concentrated formulas or modular products?**
    a. No 43.33%
    b. Yes (please specify) 56.67%
    c. Summary of responses: Serum chemistry, urine and stool output, tolerance, growth, BUN and creatinine, fluid status, Vitamin monitoring, and essential fatty acid panel.

Thank you very much to all who participated in this survey!

New Hot Topic of the Quarter Survey: Input on Clinical Nutrition Week 2016 and 2017

Input on Clinical Nutrition Week 2016 and 2017
Please complete the survey before it closes on April 1, 2016.

A.S.P.E. N. is looking for Volunteers for Committee Assignments!

If you are interested in volunteering for a A.S.P.E.N. committee fill out the survey link below by March 18, 2016.
A.S.P.E.N. Volunteer Committee Interest

Clinical Nutrition Week 2017, February 18-21 Orlando, Florida, Proposal Deadline

Program proposals for Clinical Nutrition Week 2017 are expected to be due around the end of March. Please check our microsite for more information and the proposal deadline date which will be updated as soon as the details are made available by A.S.P.E.N. If you have a program idea submit a proposal to A.S.P.E.N. and it just may be included in Clinical Nutrition Week 2017 in Orlando, Florida! If you plan to submit a proposal or would like some tips for successful proposal submission contact Pediatric Section Chair Kelly Green-Corkins at kgcorkins@yahoo.com.

New Opportunities for Enteral tube Location (NOVEL) project Update from Beth Lyman, RN, MSN, CNSC

Needed: Pediatric Nutrition Support Nurses

ASPEN has been asked to develop guidelines for schools to use to guide practice for children who attend school. A parent has asked us to work with school nurses so there is consistency across different school districts regarding care of a student who has a gastrostomy tube, central line or nasogastric feeding tube. A working group of ASPEN nurses, school nurses and parents will work via conference calls and emails to develop a document that can be published in a peer reviewed journal read by those in the education world. It is also likely we will develop a web based education module that can be used by school nurses and staff. If you are willing to help with this project, please contact Peggi Guenter at peggig@nutritioncare.org.

Research Updates-Call for Volunteers!

If you are interested in providing research updates for any pediatric specialty area, such as oncology, nephrology, etc., to be included in the quarterly newsletters please contact Celina Scala at Celina_M_Scala@rush.edu.

Pediatric GI Research Updates

Provided by Marisa Dzarnoski Riley, RD, CNSC

Effectiveness of Enteral Versus Oral Nutrition with a Medium-Chain Triglyceride Formula to Prevent Malnutrition and Growth Impairment in Infants with Biliary Atresia

Study Design: Intervention

This study sought to compare the growth outcomes of oral versus enteral nutrition therapy with a high MCT formula in infants with biliary atresia. Fifteen infants ages 3 to 9 months of age were followed for 12 weeks after being randomly selected to receive a 30kcal/oz high MCT formula either orally ad lib or through a NG tube. Enterally fed infants had better length-for-age z-scores, head circumference z-scores, and tricep skinfold values compared to the orally fed infants. There was a higher frequency of respiratory infection and diarrhea in the enteral nutrition group.

Macias-Rosales R, Lorraso-Haro A, Ortiz-Gabriel G, Trujillo-Hernandez. Effectiveness of Enteral Versus Oral Nutrition With a Medium-Chain Triglyceride Formula to Prevent Malnutrition and Growth Impairment in Infants With Biliary Atresia. JPGN. 2016; 62: 101-109.

Zinc Therapy for Wilson Disease in Children in French Pediatric Centers

Study Design: Multicenter Retrospective

This study sought to investigate the effectiveness of zinc acetate as a first line and maintenance therapy for treatment of presymptomatic children with Wilson disease, after receiving initial chelator therapy. A total of 26 children were reviewed. Zinc alone as first line therapy was effective in only four children, based on serum transaminase level. Forty-six percent of children received zinc as maintenance therapy with no relapse of hepatic cytolysis, however two required changes in therapy due to zinc-related adverse effects. Overall, zinc therapy does not appear to be effective in treating presymptomatic children with Wilson disease and can cause adverse effects.

Santiago R, Gottrand F, Debray D, Bridoux, L. Zinc Therapy for Wilson Disease in Children in French Pediatric Centers. JPGN. 2015; 61: 613-618.

Effects of Gluten Intake on Risk of Celiac Disease: A Case-Control Study on a Swedish Birth Cohort
Study Design: Nested case-control

This was a study of 436 case-control pairs of children Swedish genetically susceptible for celiac disease. They were followed from September 2004 to February 2010. Assays for tissue transglutaminase autoantibodies (tTGAs) were followed, and data on breastfeeding duration and gluten intake were collected at regular intervals up to 24 months of age. Prior to tTGA seroconversion, those with biopsy confirmed celiac disease had a higher intake of gluten compared to controls. This association did not differ based on haplotype.
Aronsson C, Lee H, Koletzko S, et al. Effects of Gluten Intake on Risk of Celiac Disease: A Case-Control Study on a Swedish Birth Cohort. Clin Gastroenterol Hepatol. 2015 Nov 25. Epub ahead of print.

Neonatal Research Updates

Provided by Jackie Wessel, Med, RDN, CNSC, CSP, CLE

Manifestations of Cow's Milk Protein Intolerance in Preterm Infants
Retrospective Observational Study

This was a one-year single center retrospective study of infants who were ultimately diagnosed with cow milk protein intolerance (CMPI). This diagnosis was made after resolution of symptoms when placed on an extensively hydrolyzed or amino acid based formula. They describe many scenarios of feeding intolerance that were characterized by repeat courses of parenteral nutrition. In particular they describe feeding intolerance post necrotizing enterocolitis (NEC) diagnosis when infants were placed on a preterm milk based formula. They propose that post NEC due to mucosal injury, infants may be predisposed to sensitization to dietary antigens that may lead to CMPI. It appeared in their retrospective review that this occurred in several patients and that their symptoms went away, as well as their need for TPN, when they were changed to a complete protein hydrolysate or amino acid based formula. In some cases, CMPI may be to blame instead of repeat occurrences of NEC. They discuss the difficulty of making a CMPI diagnosis.

EDITORIAL COMMENT: I find this article very interesting; there has been a greater recognition that CMPI has a role in feeding intolerance in preterm infants, even among those infants who do not develop the "typical" hematochezia. They found the most common symptoms were abdominal distension, increased gastric residuals, and emesis. Their post NEC feeding approach seems very logical and reasonable; I think that this should be considered as a feeding strategy post NEC when human milk is not available. There is often hesitancy among clinicians to use these formulas due to the term instead of preterm nutrient profile of the hydrolysate and amino acid based formulas. However, there is more calcium and phosphorus in these formulas than they typically receive from parenteral nutrition, and time on TPN is associated with morbidities such as line associated blood stream infections. Protein can be enhanced now with hydrolysate or amino acid modulars, so although this is not an ideal strategy for nutrition, it would seem a logical approach until further research is done. What is not known is when it would be appropriate to try to transition back to a preterm milk-based protein product. Clearly more prospective research is needed in this area of nutrition support.

Cordova, J, Sriram S, Patton T, et al. Manifestations of Cow's Milk Intolerance in Preterm Infants. JPGN 2016. 62:140-144.

Growth and Tolerance of Preterm Infants Fed A New Extremely Hydrolyzed Liquid Human Milk Fortifier
Study Design: Unblinded Prospective Randomized Controlled Trial

This study was a comparison of the new liquid hydrolyzed protein human milk fortifier (HMF) and the traditional intact protein powdered human milk fortifier. The infants (147) were 700-1500 gm and on maternal human milk at the time of fortification. Weight gain was similar at 18 gm/kg/day. The protein intake was 3.3 gm/kg in the powdered group versus 3.9 gm/kg in the liquid group, which was significantly higher. Growth was 18.2 ± 0.3 gm/kg/day in the liquid group versus 17.5 ± 0.6 gm/kg/day in the powder group. The group fed the new

liquid HMF reached 1800 gm 7 days sooner than the group fed the powdered HMF. Linear growth was improved in the liquid group during the study and results were statistically significant. Head circumference (HC) growth was similar between the two groups. In terms of blood chemistries, all were within normal ranges but the BUN and prealbumin levels were significantly different and both higher in the liquid group, both within the reference range. Bicarbonate was 23-25 in the powdered group and 25 in the liquid group when measured at study day 1, 15, and 29. In terms of tolerance, fewer infants discontinued fortifier because of intolerance in the liquid group than in the powdered group, 2% versus 10%. Confirmed NEC rate was low, 1,5% in the liquid group versus 3.2% in the powdered group with confirmed sepsis at 4.5% and 3.2%, respectively.

This article gives basic growth and safety data for the new liquid hydrolyzed protein HMF for infants in the age range of 700-1500 gms. This product may have a theoretical advantage being a hydrolyzed protein rather than an intact cow's milk protein fortifier.
Kim JH, Chan G, Schanler R, et al. Growth and Tolerance of Preterm Infants Fed A New Extremely Hydrolyzed Liquid Human Milk Fortifier. J Pediatr Gastroenterol Nutr 2015, 61;665-671.

Postdischarge Iron Requirements of the Preterm Infant

Study Design: Review

This paper discusses the iron requirements of preterm infants. There is immense difference in infants at discharge due to status at birth, intake during the NICU, including blood transfusions. This paper reviews existing studies and gives guidance on how to evaluate iron status prior to discharge so that the appropriate iron dosing can be given post discharge. As the authors have extensive experience in iron research, they are well qualified to write this paper and give guidance to methods to estimate needs.

There are two methods to determine needs for the LBW or VLBW infant: one is a factorial method that assumes that the goal is to match the iron status of the breastfed term infant at some distal time point. (perhaps one year). Then the needs can be calculated on the basis of discharge weight, expected growth rates and hemoglobin and ferritin concentrations at discharge. The second approach is to make recommendations based on the few observational trials on this topic. The trials are discussed.

In general the recommendation is to follow roughly the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition guidelines for 2-3 mg/kg/day for infants <1800 gm during the first six months. They recommend 2-3 mg/kg/day for infants with birth weights <1500 gm. This dose should be individualized based on serum hemoglobin and ferritin levels. For ferritins <60 mcg/L, the iron dose should be increased to 3-6 mg/kg/day during a limited period and rechecked periodically. For those infants with ferritins >300 mcg/L, iron supplements should be delayed. This higher ferritin level would typically be due to multiple blood transfusions.
Domellöf M, and Georgieff M. Postdischarge Iron requirements of the Preterm Infant. J Pediatrics Supp. 2015 167(4) Suppl 1:S31-S35. (This entire supplement is very interesting.)

Early Gut Colonization with Lactobacilli and *Staphyloccus* in Infants: the Hygiene Hypothesis Extended.

Study Design: Double blinded randomized trial

This study adds to the information on the use of prebiotics in formula, attempting to get closer to the flora in human milk by altering the prebiotics in formula. In this case a mixture of PDX and GAS was used.

Salminen S, Endo A, Isolauri E, et al. Early Gut Colonization with Lactobacilli and Staphyloccus in Infants: the Hygiene Hypothesis Extended. JPGN, 2016. 62:80-86.

Antecedent Predictors of Feeding Outcomes in Premature Infants with Protracted Mechanical Ventilation.
Study Design: Retrospective study

This study examines the antecedent risk factors with the need for a gastrostomy tube (G tube)for inadequate oral intake. This study was done to identify co-morbidities for feeding failure and therefore need for G tube in infants with BPD. The significant risk factors identified were: ventricular peritoneal shunt, respiratory morbidity at one month, and duration of mechanical ventilation.

These factors are not surprising, however this appears to be the first time that the neurological link to poor feeding and need for a G tube has been reported in the literature. This study gives us information to guide practitioners in talking to parents as well as to design feeding interventions for these children to assist them in their journey to full oral feeding as possible.

Malkar MB, Gardner W, Welty, SE, Jadcherla SR. Antecedent Predictors of Feeding Outcomes in Premature Infants with Protracted Mechanical Ventilation. JPGN 2016. 61:591-595.

Vitamin D metabolism in the premature neonate: A randomized trial
Study Design: Prospective randomized blinded controlled clinical trial

Thirty two Infants less than 32 weeks were randomized to receive either 400 or 800 IU of vitamin D_3 orally. A vitamin D panel was drawn from cord blood and every four weeks for the duration of the NICU stay. A new very sensitive Liquid Chromatography- Tandem Mass Spectrometry method was used for the assay and vitamin D metabolites could be studied.

The typical assay is for 25(OH)D. However, vitamin D metabolism is complex and it has been noted that a 3-epi isomer of 25(OH)D_3 concentrations are elevated in premature infants as compared to older infants and children. This form is not as bioactive and in earlier assays may be quantified as 25(OH)D, overestimating the biological potential of vitamin D status. This is the first paper to delineate the metabolites of vitamin D_3 in premature infants.

The study showed that either 400 or 800 IU of vitamin D increased the levels of 25(OH)D to normal levels. The very interesting part of the paper is concerning the 3 metabolites studied which is very new information. Previously there was data in a 2014 vitamin D meta-analysis that saw a correlation between high 25(OH)D_3 levels and risk of low head circumference at birth. [Theodoratou E, Tzoulaki I, Zgaga I, et al. BMJ 2014:348:g2035] Interestingly this was seen in this study with high concentrations of the 3-epi-25(OH)D_3.

This is a small single center study but the results are very exciting and I encourage anyone interested in Vitamin D metabolism to read this article.

Hanson C, Jones G, Lyden E, et al. Vitamin D metabolism in the premature neonate: A randomized trial/ Clinical Nutrition 2015. http://dx.doi.org/10.1016/j.clnu.2015.07.023

***Bifidobacterium breve* BBG-001 in Very Preterm Infants: A Randomized Controlled Trial.**

Study Design: Prospective Multicenter Blinded Randomized Controlled Trial

This trial was designed to give answers about the usefulness of a probiotic in the prevention of NEC and sepsis. Previously a meta-analysis had revealed 24 studies using probiotics and many concerns were raised about the rigour of probiotic studies. This trial was designed to give clear answers using good methods spelled out in the GCP International Conference on Harmonisation-Good Clinical Methods for research. This was a phase 3 study using infants between 23 weeks and 31 weeks. The active probiotic B Breve was kept in a freezer and was freeze dried with corn starch. The control was similar packets of corn starch. Interestingly the probiotic was given after the infants were consented and randomized whether or not they were on enteral feedings. They were continued until 36 weeks or hospital discharge. A total of 1315 babies were studied. The products were well tolerated and there were no reports of the organism being cultured from any normally sterile site.

The trial showed no evidence of benefit form the use of *B. Breve BBG-001.* A major limitation of this very large trial was the high colonization rate of the placebo infants. This occurred despite the staff being very well trained on strict infection control measures and separate preparation of dosages for every infant. In the placebo group 49% had positive cultures by 36 weeks. This was reported in all of the trial sites, making it very unlikely that this is unique to their study.

This trial is very important in that was the first to test a probiotic in the prevention of NEC with GCP standards. It is of sufficient size to answer the question. It is especially important as many in the neonatal community have embraced the probiotic concept with disregard to the quality of the literature or to what product has been shown to be efficacious for their specific aim. I encourage everyone to read through this thoughtful study and commentary.

Costeloe K, Hardy P, Juszczak E, et al. Bifidobacterium breve BBG-001 in Very Preterm Infants: A Randomized Controlled Trial. Lancet 2015. Nov 25, 2015.

Biological Impact of Recent Guidelines on Parenteral Nutrition in Preterm Infants.
Study Design: Systematic Review

This study reviewed the literature on parenteral nutrition for premature infants. The review is focused on the impact of early high amino acids, especially when used without phosphorus. They have noted a "repeat feeding-like syndrome" characterized by hypophosphatemia and hypercalcemia, which could be prevented with the provision of early phosphorus. This could be especially pronounced in preterm infants born after fetal growth restriction. Other problems noted were metabolic acidosis increased anion gap, hyperchloremic acidosis, and ammonia acidosis.

This study gives information about how we can adjust our early parenteral nutrition to avoid some of the metabolic problems.

Guellec I, Gascoin G, Beuchee a, et al. Biological Impact of Recent Guidelines on Parenteral Nutrition in Preterm Infants. JPGN 2015 61:605-609.

Gestational and Postnatal Modulation of Esophageal Sphincter Reflexes in Human Premature Infants.
Study Design: Clinical Investigation

Thirty-six Infants were studied using provocative manometry, studying the infants in response to a stimulus, either air or liquid. Of the subject, 24 infants were < 32 weeks, 12 were > 32 weeks. In general the upper and lower esophageal sphincters mature with increasing gestational age. There is a great deal of interesting data in this paper regarding maturation of the premature infants and relationship to feeding. This study provides physiological evidence as to the delays in achieving feeding milestones due to prematurity.

Jadcherla S, Shubert TR, Malkar M, et al. Gestational and Postnatal Modulation of Esophageal Sphincter Reflexes in Human Premature Infants. Pediatric Res 2015. 78:540-544.

NEW! Neurology Research Updates

Neurology research updates provided by Lauren Kronisch, RDN. She is a full-time pediatrics dietitian at JFK Medical Center in Edison, NJ. She also works for JFK Neuroscience Institute to implement ketogenic, modified Atkins, and low glycemic index treatment diets in the pediatric inpatient and outpatient setting. Lauren is currently studying to earn her MS in Clinical Nutrition from Rutgers University.

Ketogenic Diet Patient's Lipid Profiles Improved with KetoCal 4:1 Liquid: A Case Series
Study Design: Case Series

This case series is a retrospective chart review of lipid profiles of three pediatric tube-feeding patients on the ketogenic diet. All three patients first received 100% of their nutrition from Ketocal 4:1 Powder and developed hypercholesterolemia, hypertriglyceridemia, and elevated LDL cholesterol levels. Within three months after switching the tube feeding to Ketocal 4:1 Liquid, all three patient's lipid profiles significantly improved. Ketocal 4:1 Powder contains trans-fatty acids (TFA) and higher levels of saturated fatty acids (SFA) as compared to Ketocal 4:1 Liquid, which contains no TFAs and lower levels of SFAs. Also, Ketocal 4:1 Liquid contains DHA, proven to lower triglycerides; and fiber, although the type of fiber is unspecified. Therefore, it's unclear if added fiber may have contributed to the patients' improved lipid profiles. As more patients are on the ketogenic diet for longer periods of time, modified lipid content and added fiber may be a better choice for minimizing cardiovascular disease risk and for improved elevated blood lipid profils in pediatric ketogenic patients.
Groveman, SA, Fenton C, Randall R, Chee CM, Bergqvist C. Ketogenic Diet Patients' Lipid Profiles Improved with Ketocal 4:1 Liquid. ICAN: Infant, Child, and Adolescent Nutrition. 2015; 7 (3): 157-161.

Ten-Year Single-Center Experience of the Ketogenic Diet: Factors Influencing Efficacy, Tolerability, and Compliance
Study Design: Retrospective Review

Forty-eight patients with intractable epilepsy aged 8 months to 17 years who were either on the ketogenic, modified Atkins, or medium chain triglycerides (MCT) diets were studied. All three therapies increased seizure control in patients, including 35 patients showing a <50-90% reduction in seizures within a year of diet compliance, while three patients achieved seizure-free status. In this study, the type of diet did not have a significant difference in percentage of seizure reduction. One noted side effects was delayed growth with 27% of participants exhibiting weight loss by at least 1 standard deviation (SD) on growth charts, though 21% of patients showed an increase of 1 SD. Other side effects included 65% of participants with constipation, 29% developed hypercholesterolemia, and 40% developed hypertriglyceridemia. Diarrhea, lethargy, and iron deficiency anemia were issues for >15% of study participants. Interestingly, a standard potassium citrate supplementation effectively prevented nephrolithiasis, which shows increased risk in ketogenic, MCT and modified Atkins diets' implementation. Overall, the three studied diet therapies may significantly decrease seizure incidence and reduce the number of antiepileptic medications required in intractable epilepsy pediatric patients.
Wibisono C, Rowe N, and Beavis E. Ten-Year Single-Center Experience of the Ketogenic Diet: Factors Influencing Efficacy, Tolerability, and Compliance. The Journal of Pediatrics. 2015; 166: 1030-6.

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.