Conclusions: This is a major step towards the validation of a pediatric DPN screening tool. Further research will focus on testing our hypotheses about the scale's association with clinical data.

Clinical Implications: A valid pediatric DPN screening tool will enable children at risk for, or in the early stages of DPN, to be identified properly, changing the current standard of care for youth with T1D.

http://dx.doi.org/10.1016/j.pedn.2019.02.012

004–Peer-Based Interventions for Managing Type 1 Diabetes in Adolescents: A Systematic Review

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Background: Adolescents with Type 1 diabetes (T1D) have the poorest control when compared to other age groups. The majority of adolescents do not meet the American Diabetes Association (ADA) goal for hemoglobin A1c (HbA1c). Previous research has determined effective interventions in improving glycemic control and how peer interventions impact T1D. Prior systematic reviews did not address the quality of life. This systematic review includes quality of life as an objective in managing adolescents with T1D.

Aims: The purpose of this systematic review was to investigate the effectiveness of peer support interventions on the quality of life (QoL) and HbA1c in adolescents who have T1D.

Methods: Systematic searches were performed in three databases: Medline, CINAHL, and PyschINFO in January 2018. The criteria for inclusion consisted of: an objective to include a peer intervention, adolescent age group (10-18 years old), HbA1c and/or QoL outcome measure, peer-reviewed English language articles, and experimental and quasi-experimental method design. Articles were screened and evaluated using PRISMA guidelines and the Johns Hopkins Nursing Evidence-Based Practice Research Evidence Appraisal Tool. Date range included 2013-2016 with one article from 1989.

Results: Nine articles were chosen for full review. Three of the articles used the same study, which included ongoing data collection at different intervals and using moderators. Five of the studies were on-line peer support and two were in-person support. Most studies showed an overall improvement in quality of life and peer support. There are mixed results regarding how peer intervention affects HbA1c.

Conclusions: There is evidence that peer support has shown to improve quality of life. However, evidence demonstrates peer support is moving towards internet-based support, which may exclude lower socioeconomic groups, thus widening the gap in healthcare. HbA1c may not be the best indicator of glycemic control in adolescents because other factors, such as puberty, affect glycemic control.

Clinical Implications: Understanding that peer interaction has the potential to positively impact adolescents with T1D allows for many opportunities to create programs dedicated to peer support. Pediatric endocrine nurses can utilize multi-disciplinary frameworks to develop peer support programs.

http://dx.doi.org/10.1016/j.pedn.2019.02.013

006–National Survey of Neonatal Growth Measurement Practices

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Background: Neonatal growth measurements, including frontal-occipital circumference (FOC), weight, and length, are used to assess size for gestational age, determine fluid and nutritional requirements, calculate medication doses, identify surveillance needs, and serve as a baseline for postnatal growth monitoring. Measurements are often inaccurate and unreliable. While evidence-based guidelines for growth measurements exist, little is known about current practices.

Aims: Describe neonatal nurses' growth measurement knowledge, attitudes, practice behaviors, bases of practice knowledge, and facilitators and barriers to changing practice.

Methods: A descriptive, exploratory design with an online survey was used. The neonatal growth measurement survey (NGMS), created and pilot tested for validity and reliability by the research team, was distributed through the Association of Women's Health, Obstetrical and Neonatal Nurses (AWHONN) and the National Association of Neonatal Nurses (NANN).

Results: Of the 301 participants (members of AWHONN 51.8%, NANN 31.9%, both organizations 16.3%), there were 50.5% BSN and 39.5% graduate degree nurses practicing in well newborn (24.9%), special care nursery (23.3%), NICU (36.2%), and regional NICU (15.6%) units, with a mean 18.7 years of neonatal experience. Of 16 knowledge items, five items were answered incorrectly by more than half of participants. Most thought their measurements were accurate or highly accurate (FOC 96.7%, weight 99.3%, length 87.1%). Weights (72.8%) and lengths (60.4%) were routinely measured once before recording, compared to two or more times for FOC (61.9%). Measurements were frequently recorded using large increments of 0.25-1 cm (FOC 71.2%, length 57.6%) compared to smaller weight increments of 1-10 grams (78.8%). A majority reported measuring lengths without assistance from a second person (74.9%) using a tape measure (76.7%) without Frankfort plane positioning (96.7%). The most common bases of practice knowledge were clinical practice guidelines (86.7%) and unit policies and procedures (85.9%). Comparisons between AWHONN and NANN members, levels of care, education, and years of neonatal experience will be presented.

Conclusions: Knowledge gaps and areas for practice improvement were identified.

Clinical Implications: NGMS results can be used by endocrinology and neonatal nursing experts to develop interventions and targeted implementation strategies to improve growth measurement practices, thereby optimizing growth monitoring and clinical decision-making.

http://dx.doi.org/10.1016/j.pedn.2019.02.014

Case Presentations

007–Suppression of Pituitary Axis from Inhaled Corticoteroids

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Patient Demographics: RS is a 16-year-old Caucasian female.

Clinical Presentation: RS initially presented 2 years ago with growth arrest for 2 years. She had menarche a year before with subsequent scant, irregular menses. No cause was determined for her growth arrest.

RS returned one year later with the complaint of "fatty legs". She had continued scant, irregular menses and no interval growth. Large fatty deposits encased her thighs, but she was otherwise a thin, competitive athlete.

Relevant Past History: At age four RS was diagnosed with asthma requiring frequent oral steroid bursts until age seven when she began daily treatment with Dulera (mometasone-formoterol), an inhaled steroid.

Evaluation: At her initial evaluation, RS had a normal workup including CBC, UA, celiac screen, IGF-1, prolactin, thyroid studies and BMP. Her bone age was within 2 SDs of age related norms.

At reevaluation one year later, RS had a decreased bone density, low estrogen and normal gonadotropins. These data, combined with her persistent irregular scant menses, raised the suspicion of negative effects of her inhaled steroids. Unusual fatty deposits have been reported with Dulera.

Interventions: After we consulted with her Allergist, RS began a Dulera taper. Three weeks after stopping Dulera she experienced exhaustion and fatigue. Cortrosyn stimulation testing revealed suppressed cortisol levels with no rise to stimulation. ACTH was normal. She began replacement hydrocortisone.

Five months later at age 16 she had been weaned to very low dose hydrocortisone replacement, had grown one inch, and had normal menses. The fatty deposits in her legs were completely resolved.

RS was weaned to stress dose steroids only. A follow up Cortrosyn stimulation test revealed an improved, but still low, baseline level with an appropriate rise to stimulation. We advised her to continue the stress dosing with plans for further reevaluation.

Discussion/Recommendations: Chronic use of inhaled steroids is increasingly common. Endocrinology nurses must be aware of the potential consequences of inhaled steroid use in children, including suppression of the pituitary-adrenal axis, impaired linear growth, possible irregular menses and low bone density. Iatrogenic adrenal insufficiency can be life threatening. Watching for it and avoiding it are imperative.

http://dx.doi.org/10.1016/j.pedn.2019.02.015

008–17-year-3-Month-Old Female with CF and Hypoglycemia

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Patient Demographics: Patient is a 17-year-3-month-old Caucasian female

Clinical Presentation: Patient presented to clinic with post prandial hypoglycemia without the use of exogenous insulin.

Relevant Past History: She has a history of hypothyroidism, impaired glucose tolerance, cystic fibrosis (CF) diagnosed at birth due to meconium ileus, and celiac disease. Weight 45.6 kg (42%) and height 1.48m (1%). Family history includes brother with CF, mother with hypothyroidism, and father with hypertension.

Evaluation: Workup included oral glucose tolerance test (OGTT), HgbA1c, diabetes autoimmune panel, and thyroid studies. OGTT was remarkable for fasting BG=95, 1 hr BG= 309, 2 hr= 248. HgbA1c 6.1%. All other labs were normal. Continuous glucose monitoring (CGM) revealed postprandial hyperglycemia after meals with overcorrection causing lows (60's) without exogenous insulin use.

Interventions: Management of CFRD is best with a team approach including patient, family, pulmonary and endocrine teams. Management includes blood glucose monitoring, nutritional counseling, and insulin. Patient and family completed diabetes education training with a CDE and RD, and were taught to monitor postprandial blood sugar 1-2 hours after meals and to carbohydrate count. Patient was started on 2 units Lantus insulin daily and Novolog insulin prior to all meals/snacks. Patient returned 3 months later and postprandial hypoglycemia was eliminated with initiation of pre-meal insulin.

Discussion/Recommendations: CFRD is the most common co-morbidity in CF. The average age of onset is 18-21 years, affecting 20% of adolescents and 40-50% of adults. With a combination of insulin deficiency and insulin resistance, CFRD worsens the prognosis of CF and is associated with worsening pulmonary function, increased infections, nutritional decline, and increased mortality. Postprandial and OGTT-related hypoglycemia is common in CF. Postprandial hypoglycemia is associated with early glucose dysregulation (higher peak plasma glucose) and arises from late secretion of endogenous insulin. Administration of insulin at meals may prevent hyperglycemia excursions and blunt post-prandial hypoglycemia events. CFRD should always be a differential diagnosis for any patient who presents to endocrine clinic with postprandial hypoglycemia. Endocrine nurses are in an important position to educate patients regarding symptomatology, pathophysiology, and treatment of CFRD.

http://dx.doi.org/10.1016/j.pedn.2019.02.016

009–Family History Plays an Important Role in the Diagnosis of Multiple Endocrine Neoplasia Type 2A

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Patient Demographics: Patient is a 13-year-old African American male.

Clinical Presentation: Patient presented with bilateral thyroid nodules incidentally discovered on head and neck imaging for occipital skull fracture with subarachnoid hemorrhage sustained while playing football. On dedicated thyroid ultrasound, there were sub-centimeter nodules in the left and right lobes.

Relevant Past History: Patient has no significant past medical history. Detailed review of family history revealed that maternal grandmother had Multiple Endocrine Neoplasia Type 2A (MEN2A), medullary thyroid carcinoma (MTC), and pheochromocytoma. Patient's mother and 4 siblings, age 11, 15, and 23, had undergone no testing at time of presentation.

Evaluation: The vital signs and physical exam were normal, without palpable nodules or abnormal lymphadenopathy. On review of thyroid ultrasound images, nodules were low risk based on size. The right sided nodule was hypoechoic with irregular borders. There were no calcifications and no abnormal lymph nodes. Patient was referred for fine needle aspiration which revealed MTC in both nodules. Calcitonin was elevated at 58.8 pg/mL (0.0-7.5 pg/mL). Carcinoembryonic antigen (CEA) was elevated at 6.1 ng/mL (0.0- 3.0 ng/mL). Plasma metanephrine panel, calcium, and phosphorus were normal. Staging was completed with neck CT with contrast re-demonstrating bilateral thyroid nodules and no abnormal lymph nodes, and chest and abdomen CT with contrast normal.

Interventions: Patient was referred to otolaryngology and is scheduled for total thyroidectomy with bilateral central neck dissection. He and his siblings were also referred to the Tumor Predisposition Clinic and genetic counseling.

Discussion/Recommendations: Thyroid cancer is most often asymptomatic and may be found incidentally on head and neck imaging. This case illustrates the importance of a detailed family history in the diagnosis of medullary thyroid carcinoma. The American Thyroid Association has published updated guidelines on the diagnosis and treatment of MEN2A and MTC. Early detection based on family history and available genetic testing is essential for successful treatment including prophylactic thyroidectomy and ongoing surveillance for known comorbidities.

http://dx.doi.org/10.1016/j.pedn.2019.02.017