TYPE 1 DM – PAST, PRESENT AND FUTURE

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In December 2006, the United Nations (UN) passed a resolution to designate November 14 as World Diabetes Day. The occasion aimed to raise awareness of diabetes, its prevention and complications and the care that people with the condition need. Here we discuss about the past, present and future of type1 diabetes (T1DM), commonly seen in the pediatric population.

Nearly 90,000 children are being diagnosed with type1 diabetes (T1DM) each year throughout the world. (Maaahs, 2010 #1) T1DM is ubiquitous with the incidence more in Scandinavian and west European countries. Type 1 Diabetes mellitus is due to autoantibodies to β- islet pancreatic cells in 70-90% of cases and genetically predisposed cell destruction in the others. The 4 implicated antibodies are GAD65 (glutamate decarboxylase), Islet cell, IA-2 (insul细胞) and ZNT 8 (zinc transporter 8). Individuals with HLA - DR-DQ MHC antigen genotypes have increased propensity to develop Type 1 DM. The pathogenesis is more of a continuum than in stages and there is a phase of dysglycemia between antibody appearance and symptoms of hyperglycemia (Figure 1). One cannot underestimate the role of environmental factors in modulating the onset of T1DM. The incidence of T1D increases with age in most populations with the highest incidence observed in the 10–14 year olds. 25 percent of people with T1DM are diagnosed as adults. The incidence in T1DM in children is expected to double by 2020 than from 2005. Geographic areas with a high incidence of T1D (populations of European origin) have a male excess, whereas regions with a low incidence (populations of non-European origin) report a female excess. (Karvonem, 1997 #6)

AMERICAN DIABETIC ASSOCIATION DIAGNOSTIC CRITERIA:
- A fasting plasma glucose (FPG) level ≥126 mg/dL (7.0 mmol/L), or
- A 2-hour plasma glucose level ≥200 mg/dL (11.1 mmol/L) during a 75-g oral glucose tolerance test (OGTT), or
- A random plasma glucose ≥200 mg/dL (11.1 mmol/L) in a patient with classic symptoms of hyperglycemia or hyperglycemic crisis.

PRINCIPLES OF MANAGEMENT: Insulin replacement therapy is a must for all children with T1DM. The insulin regime should involve basal insulin (long acting glargine / Detemir) and a pre-prandial insulin (rapid acting –lispro / aspart / glulisine or short acting regular).

Intensive glucose control is the cornerstone of diabetes management. Blood glucose levels should be checked 4-10 times/day and rapid acting insulin is dosed based on blood sugars. Subcutaneous continuous glucose monitoring is highly recommended. HbA1C should be checked every 3 months. For pediatric patients, the target HbA1C is 7.5%

Complications: Approximately 32% of patients with T1DM will have or are at high risk for at least 1 complication. The discovery of insulin in 1922 transformed type 1 diabetes from a terminal to a treatable disease. Despite the advances in care, the disease continues to be associated with substantial medical, psychosocial, and financial burden. Hypoglycemia and ketoacidosis are persistent potentially life-threatening complications. Hypoglycemic events requiring treatment assistance from another person occur at rates of 16–20 per 100 person-years. Severe hypoglycemic events leading to loss of consciousness or seizures occur at a rate of 2–8 per 100 person-years. Recurrent hypoglycemia results in an increased likelihood of hypoglycemia unawareness and subsequent severe hypoglycemic events, since recurrent hypoglycemia reduces the glucose concentration that triggers the counter-regulatory responses to return to euglycemia. Hypoglycemia unawareness can improve with education, support, and glucose targets that are aimed at avoiding biochemical hypoglycemia, while maintaining overall metabolic control.

Hypoglycemic events are associated with adverse effects on cognitive function, and are associated with 4–10% of type 1 diabetes-related deaths. Microvascular complications of the disease manifest primarily as retinopathy, neuropathy, and nephropathy, but also can affect cognitive function and other organs. Hyperglycemia is the primary risk factor for microvascular disease, and reducing HbA1c through intensive diabetes management, particularly early during disease, is associated with striking (about 70%) reductions in incidence and
LATINOS represent the fastest growing immigrant populations in the United States. Most Latino youth with T1D are in suboptimal diabetes control and therefore at high risk for the devastating acute and chronic complications of T1D. Socioeconomic status, access to health care, health literacy, English proficiency, acculturation, family dynamics, mental health, and nutrition are closely inter-related and significantly influence glycemic control and T1DM management. These factors are largely understudied in this population. Better understanding of the factors that influence T1D education, care, and outcomes will shed light on how to best accommodate the needs of this growing group within the existing health system in the United States.

Prior to 2013, children from El Paso with Type 1 diabetes traveled to East Texas and New Mexico in search of diabetes care. Texas Tech physicians and medical staff partnering with the diabetes educators at the American Diabetes Association (ADA) recognized Zachary Bowling Pediatric Outpatient Diabetes Education center (ZPODE) at El Paso Children’s Hospital are now providing culturally sensitive, comprehensive diabetes education to the diabetic children of our community. We are dedicated to realizing a vision of our world without diabetes and its complications. (References available on request)
OUT WITH THE ALTE, IN WITH THE BRUE

As a Hospitalist being called for admitting infants with scary events is not uncommon. As pediatric providers we can all recall countless stories of patients having a concerning episode involving choking, gagging, blue discoloration, tone changes, periodic and irregular breathing and calling it an ALTE or Apparent Life-Threatening Event. We have seen that panic, terror and paralyzing fear in parents eyes. Forty-three percent of healthy infants have had a 20-second apnea episode over a 3-month period and 5% of parents recall seeing an apnea event. Conservatively, 1 out of 250-400 children were hospitalized for an ALTE. According to McGovern et al. the most common discharge diagnoses for an ALTE admission was idio-pathic (26-50%), Gastroesophageal Reflux (26-54%), Respira-tory infection (8-11%), Seizure (9-11%). Less commonly is Child Maltreatment (1%), Pertussis (0.05-9%), Cardiac arrhythmias (<1%), Bacterial Infection (0-8%), and lastly Metabolic Disorders (1.5%).

Our priority is finding those diagnoses that can lead to harm if left unrecognized or untreated. The fact that ALTE’s are common, have a broad differential and can be very anxiety provoking often leads to a cascade of unnecessary testing and treatments. In 2016, the American Academy of Pediatrics published guidelines to replace the term ALTE with Brief Resolved Unexplained Event (BRUE). The guidelines provide an approach to patient evaluation that is based on the risk that an infant will have a repeat event or has a serious underlying disorder. Within the new guidelines there are also management recommendations for lower-risk infants. Low-risk infants are those with reassuring history and normal physical exams. The guidelines do not offer recommendations for higher risk infants, as their history and physical exam would suggest higher risk group from the lower risk group that can be managed safely without extensive diagnostic evaluation or hospitalization.

The criteria for low risk include considerations in regard to age, prematurity, CPR performed, duration of event and whether it was the first event. If the patient is identified as a Lower Risk Patient the management recommendations include caregiver education about BRUE, shared decision-making to guide evaluation, disposition and follow up along with offering resource for CPR training. Interventions that may be considered are pertussis testing, EKG and brief monitoring with continuous pulse oxime-try and serial observations. Neither labs nor imaging are recom-mended. No medications should be prescribed. The Lower Risk Patient need not be admitted to the hospital solely for cardio-respiratory monitoring. The algorithm in the guidelines can help triage your patients and can guide your management. Another handy tool is MDcalc application (also available at www.md-calc.com) which has a BRUE Criteria Calculator that can be used in daily practice and as an educational tool.

Lastly at EPCH we have incorporated value-based practice as per national guidelines, to reduce costly and unnecessary interven-tions and provide family centered care. Beyond the guidelines is the art of communication with families to ensure parents are heard, validated and supported during this fear-provoking event. Along with our community providers our Hospitalist group continues to strive to practice evidence based medicine when available while balancing the care of that patient that never reads the book.

HIT THE FLU BEFORE IT HITS YOU!

With flu season fast approaching, it’s time to roll up your sleeves. There’s no denying it, it’s flu season. And RSV season. And cold season. It seems everyone probably knows someone who is sick. It’s that time of year!

But that doesn’t mean it’s time to sit back and wait for respira-tory illnesses to invade your home. Rather, it’s time to play defense.

With 180 pediatric deaths from influenza already reported this season 2017-2018, it is wise to be vigilant. According to a recent AAP News article “Recommendations for Prevention and Control of Influenza in Children, 2018-2019” Sept. 3, 2018, about 80% of the children who died were not vaccinated!

The American Academy of Pediatrics (AAP) recommends intramuscular inactivated influenza vaccine (IIV) for children in the 2018-2019 season as it has been more consistently effec-tive against most strains of flu in recent seasons, but says the nasal vaccine (LAIV) may be an option for kids who otherwise will not be vaccinated.

The most effective way to prevent and fight influenza is through vaccination. Give yourself a fighting chance and hit back and get vaccinated!
PREMATURITY AWARENESS AND DIABETES AWARENESS MONTH

There are over 5750 hospitals in the U.S., but fewer than 250 specialize in pediatrics. In November we celebrated prematurity awareness and diabetes awareness month with our staff and community. Our Level IV NICU delivers the most acute prenatal care and our outpatient diabetes education services is the only certified outpatient pediatric diabetes education between Phoenix and Austin. For our physicians, nurses and staff, El Paso children and their families are 100% our mission.

2019 PEDIATRIC GRAND ROUNDS
The First & Third Wednesday of Every Month

Breakfast: 7:30-8 a.m.  Grand Rounds: 8-9 a.m.
Academic Education Center (AEC), 2nd Floor, 4800 Alberta Avenue

JANUARY 16th, 2019
Diagnosing and Treating Tourette Syndrome
Keith Coffman, MD.

FEBRUARY 6th, 2019
Retinoblastoma
Amy Schefler, MD.

APRIL 3rd, 2019
Auto-Immune Encephalitis
Eyal Muscal, MD.

Tuberculosis
Andrea Cruz, MD.