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Session 5: Laws and Chronic Conditions



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**NURSE
BUILDERS**

Laws

- Health and education laws are mostly under state control
- Federal law supersedes state law
- Focus on the FEDERAL laws for privacy and for children with chronic conditions

HIPAA vs FERPA

- Health Insurance Portability and Accountability Act (HIPAA)
 - Insurance cannot be denied for pre-existing conditions
 - Stipulates regulations to preserve confidentiality and protect individual's privacy
 - You CAN fax; you CAN communicate with provider regarding orders
 - For school nurses, this is between you and OUTSIDE of school agencies
- **Family Educational Rights and Privacy Act (FERPA)**
 - Buckley amendment
 - **This law governs all public schools and any agency that receives any federal education funds**
 - Protects all paper and computerized records
 - 'Need to know' (not 'nice to know')
 - Personal nursing documentation must be protected in separate location and is not part of education records
 - Breach of FERPA results in possible loss of federal funding

Individualized Healthcare Plan (IHP)

- Written **by** the nurse and **for** the nurse (or substitute)
 - Written in nursing language
 - Who needs one? If they have or are at risk for.....
- Incorporates feedback from family
- **Not to be shared** – although components of it may be included in other plans
- Part of health record
- Includes all steps of nursing process plus specific ways to intervene
- It changes as the care change

Emergency Action Plan (some call it Emergency Care Plan)

- **Written for the non-nurse** (teachers, staff, bus drivers)
- What are the steps a non-nurse should take IF they see the following signs
- “If you see this (or student complains of this).....Do this.....”
- No diagnosis needed
- Directly relates to IHP **in lay language**
- Only to those staff (including bus drivers) who will interact with the student

Chronic Conditions

- Physical and mental conditions that require long term monitoring and/or management > 1 year
- Usually non-reversible pathological alteration; may have remissions and exacerbations
- NOT chronic illness – as most are not sick
 - Health continuum goes from wellness to illness
- Disability (multiple definitions) depending on the law
- IDEIA, Rehabilitation Act, Americans with Disabilities Act
- 20% - 25% of children/youth have a chronic condition

- #1 Chronic Condition is _____

Individuals with Disabilities Education Improvement Act (IDEIA/IDEA), 2004

- A Civil Rights law
- **Disability is identified as those who qualify for special education and related services**
 - ID, hearing, speech or language, vision, emotional disturbance, orthopedic impairment, autism, TBI, specific learning disorders, OHI
- Ages birth through 21
- Affects about 15% of all students
- Purpose: educate ALL children, regardless of disability
- Tell parents their child has a right to go to school in the LRE

Individuals with Disabilities Education Improvement Act (IDEIA), 2004

- **Free and Appropriate Public Education (FAPE)**
- **In the Least Restrictive Environment (LRE)**
- **With Related Services** (including nursing) provided during school hours (Tatro/ bright line test) [also includes PT, OT, speech]
- Free bias-free evaluation
- **Development of an Individualized Education Program (IEP)**
 - Transition plan by age 16
 - Education must be equal to that provided the non-handicapped student (Rowley)
 - Include the parents
- **PERSON-FIRST LANGUAGE** (The student with....)
- [Make sure to identify their strengths] – Focus on what they CAN do

Supreme Court Decisions

- Tatro – catheterization/procedures nurses can do in school
 - **Schools must provide Related services**
- **Cedar Rapids vs. Garret** – cost cannot be considered regarding accommodations
 - Principal cannot tell you not to include treatments based on cost
- Rowley – education must be equal to that provided typical students

Rehabilitation Act of 1973 – Section 504

Americans with Disabilities Act

- Civil rights law – protect the rights of those with disabilities; prevents discrimination
- Equal opportunities for access and participation
- If otherwise qualified, reasonable accommodations must be made
 - Aides, services, water for child with SSA, bathroom pass for student with IBD, uniforms, chairs, ramps, tube feeding
 - No discrimination in hiring/ acceptance if qualified
- **Accommodation Plan/ 504 plan**
- **For any age**
- Americans with Disabilities Act incorporates these same concepts
 - Assures access to transportation and public buildings
- Service animals: guide dog, signal dog or other animal trained to provide assistance to an individual with a disability to perform a function that they cannot perform themselves
 - Emotional support animals are NOT service animals under ADA – unless local laws allow

Every Student Succeeds Act

- Helps to ensure success for students and schools.
- Advances equity by upholding critical protections for America's disadvantaged and high-need students.
- Requires—for the first time—that all students in America be taught to high academic standards that will prepare them to succeed in college and careers.
- Ensures that vital information is provided to educators, families, students, and communities through annual statewide assessments that measure students' progress toward those high standards.
- Helps to support and grow local innovations—including evidence-based and place-based interventions developed by local leaders and educators
- Sustains and expands investments in increasing access to high-quality preschool.
- Maintains an expectation that there will be accountability and action to effect positive change in our lowest-performing schools, where groups of students are not making progress, and where graduation rates are low over extended periods of time.

Hematologic: Anemia

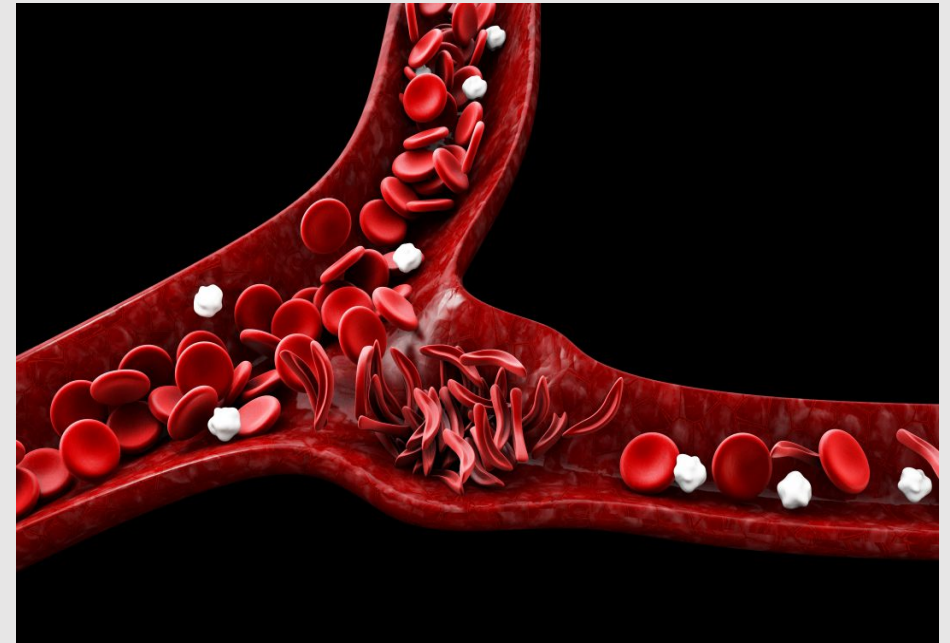
- Due to Red Blood Cells
 - Not enough made (bone marrow suppression, kidney disease [erythropoietin])
 - Altered hemoglobin (sickle cell, lead)
 - Blood loss (bleeding disorders)
 - Poor diet (iron, folic acid, B12, protein)
 - Destruction of RBCs (thalassemia, autoimmune hemolytic anemia, sickle cell)
- RBCs live 90-120 days
- Red cells die ☾ indirect bilirubin ☾ liver enzyme ☾ direct bilirubin ☾ excreted in GI tract
- Anemia is a symptom; it is not a disease

Anemia

- Symptoms
 - Increased heart rate and cardiac output ; increased RR (hypoxia/SOB)
 - Pallor
 - Weakness/fatigue (low exercise tolerance); decreased attention span
 - Jaundice (hepatomegaly/ splenomegaly)
 - Poor wound healing
 - Delayed growth and development
 - Stools may be black if taking iron (take between meals with OJ; brush teeth after)
- Interventions/ accommodations
 - Decrease oxygen demands
 - Rest periods
 - Maintain warmth
 - Hand washing

Sickle cell disease

- Autosomal recessive (both parents must pass gene)
 - If only one parent passes the gene, child is a carrier
 - Defect of one chromosome ☾ defect in hemoglobin ☾ early destruction of RBC [20 days]
☾ anemia
- Sickling is stimulated by:
 - **Deoxygenation**
 - **Dehydration (illness)**
 - Acidosis (DO NOT GIVE ASPIRIN)
- Sickling results in vaso-occlusive crisis
 - Pain
 - Depends on site of sickling: vision changes, stroke, priapism, splenomegaly
 - Anemia [hemoglobin = 6-9 rather than 12]
- **FEVER REQUIRES IMMEDIATE ATTENTION**
- PROMOTE HYDRATION – water allowed in class and hot weather
- Promote oxygenation (no tight clothes; NO ICE ON INJURY)
- IMMUNIZATIONS AGAINST PNEUMOCOCCUS AND INFLUENZA
- Handwashing



Hemophilia A (clotting factors)

- Classic – Factor VIII deficiency – Sex linked
- NOT a platelet deficiency
- Affects clotting cascade
- Beware of bleeding into neck/mouth/chest (emergency)
- Beware of bleeding into joints (hemarthrosis)
 - Immobilize and lift joint above heart (RICE – rest, immobilize, compression, elevation)
 - No aspirin; no heat
 - Anxiety reducing measures to slow heart rate
- Assess for purpura
- No contact sports, no diving
- Safety measures



Von Willebrand

- Bleeding disorder due to von Willebrand factor deficiency in tissues
- Same symptoms as hemophilia but also affects females
 - Treatment : Desmopressin acetate (DDAVP)
 - Causes increased release of factor from the endothelial lining of blood vessels
 - Avoid use of aspirin and ibuprofen

G.I.: Inflammatory bowel disease

- Crohn's disease and ulcerative colitis
- Crohn's = entire GI track, skip lesions, all layers of bowel
- Ulcerative colitis = colon only, contiguous lesions, mucosal layer only, more bleeding
- Edema and inflammation of bowel, pain, diarrhea
- Assess for weight loss
- Bathroom privileges prn
- Analgesics, antispasmodics, corticosteroids/immunomodulators (methotrexate)
- May have parenteral nutrition for bowel rest (or colostomy), or special diet
- Stress reduction techniques

Celiac disease

- No products with gluten: **wheat, rye, and barley**
 - Absence of enzyme; decreased intestinal absorption ☾ damage
 - Gluten intolerance is different – no immune process and no intestinal damage
 - Corn, rice, soy, and potato products are OK plus all fresh fruits
- Steatorrhea/ abdominal pain
- Vitamin deficiency due to malabsorption

GI – focus questions

- Child with continuous gastric feeding
 - What do you do if there is vomiting during a feed? – STOP FEED
- Pinworms
 - White roundworms that live in colon and exit during sleep to deposit eggs
 - Peri-anal itching
 - Use scotch tape test (across anus) at night
- Peptic ulcer disease
 - Usually treated with antibiotics due to H. pylori
 - (could also be caused by increased use of ibuprofen)
- Black stool – think iron

Constipation

- Consistency – not frequency
- Withholding stool, lack of fiber and roughage, lack of activity, pain, toilet phobia
- What is normal for child
- Check soiling of pants, bleeding, pain, vomiting, abdominal distention
- Avoid bananas and rice
- Promote bran, oatmeal, brown rice, fluid intake
- **Encopresis** (functional fecal incontinence)
 - Rectum stretches and loses its sensation of an urge to defecate
 - Give private time on toilet (decrease being rushed or embarrassed)
 - Have extra clothes at school; reinforce that it is not their fault
 - Bowel training programs take time

Diarrhea

- Increased frequency and decreased consistency
- Assess for associated symptoms: fever, pain/cramping, vomiting, bleeding, steatorrhea, laxative use, abdominal distention, dehydration
 - DEHYDRATION IS BEST MEASURED BY PINCHING SKIN AND LOOKING FOR TENTING
- Promote fluids (avoid fruit drinks, caffeine, and colas – due to high osmotic load resulting in increased dehydration)
- Rest and send home
- Hand washing
- If in diapers – dispose in leak-proof plastic bag
- Leads to metabolic acidosis

Nausea and vomiting

- Contents of vomitus (blood, undigested food, bile)
- Signs of dehydration, pain, fever, coughing
- Females: last menstrual period
- What was last eaten, when and how much
- Prevent aspiration: on side or sitting
- NPO, rinse mouth after vomiting (swish and spit);
- Start on rehydration fluids (ice pops, water, ice chips, Gatorade [electrolyte sports drink], non-carbonated soda) – 1 tsp every 5 minutes unless you think it is appendicitis
- Avoid dairy, carbonated drinks, spicy/greasy food

- Leads to metabolic alkalosis

Hepatitis

- Usually viral – but can be from drugs, chemicals and other organisms
- Focus on viral types A and B
- A is milder than B
 - D can't occur without B
 - Hepatitis C can have no symptoms
- Jaundice (increased bilirubin), especially in sclera, dark urine, clay colored stools, hepatomegaly, abdominal pain, decreased detoxification of drugs, decreased clotting factors
- Promote rest, fluids, good nutrition, handwashing

Hepatitis

- A – FECAL/ORAL
 - Poor hand washing, especially after toileting, transmitted on food
 - Virus lives 3 hours on inanimate objects; inactivated by boiling or disinfecting
 - Incubation: 4 weeks
- B – BLOOD AND BODY SECRETIONS (also C and D)
 - Can be passed by saliva, bites, sharing toothbrushes, piercings, intercourse, contact with wounds
 - Can become chronic and result in cirrhosis and liver cancer
 - Virus can live on surfaces for 1-2 weeks
 - Incubation: 50-80 days

Cancer - Leukemia

- Acute lymphoblastic leukemia
 - Best prognosis for children
 - Affects white blood cells ☾ immune suppressed
- Acute myelogenous leukemia
 - Adolescents
- First signs may be unusual fatigue or pathologic fractures – bone pain
- Observe for blood loss
- **Protect against infection due to immune suppression**
 - **NOTIFY FAMILY OF ANY OUTBREAKS BUT DO NOT MANDATE THEY STAY HOME**
- Anemia and thrombocytopenia interventions (no aspirin or ibuprophen)
- Body image – alopecia and steroids

Common pediatric cancers

- Hodgkin's Lymphoma/ Non-Hodgkin's lymphoma
 - Painless enlargement of lymph nodes
- Brain tumors – often below the tentorial plate
 - Signs of increased ICP and altered balance and neuro status; headache in AM
- Neuroblastoma – neuroendocrine – often adrenal/abdominal
- Wilms Tumor – Kidney
- Bone Cancer
 - Osteogenic Sarcoma
 - Ewing's Tumor
- Prepare classmates for any changes in appearance or equipment (with parent permission)

Respiratory - Asthma

- Bronchoconstriction
- Inflammation of the airway
- Mucus
- Shortness of breath, air trapping ☾ wheezing, prolonged expiratory phase
- IF peak flow is used, do 3 times and use best reading
- Asthma Action Plan
- Metered dose inhalers
 - Exhale completely, press down and inhale at same time, hold 10 seconds; wait 1 minute before repeat
- Spacers/ holding chamber for children

Asthma

- Intermittent – symptoms <2 days/week
- Persistent
 - Mild – symptoms at least 2/week and minor limitations
 - Moderate – symptoms daily and some limitations
 - Severe – symptoms several times daily and extreme limitations
 - Status asthmaticus is now called acute severe asthma and is a medical emergency

Asthma medication

- Short acting beta agonist – rescue medication – ALBUTEROL
 - Side effects: increased heart rate, nervousness, vomiting, headache, tremors, sleeplessness
 - Wait one minute between puffs
- Inhaled corticosteroids to reduce inflammation (beclomethasone, flunisolide) and leukotriene modifiers (montelukast/singulair)
- SMART treatment is one inhaler for long-acting beta agonist plus corticosteroid (Symbicort and Dulera)
- Prevention: get flu vaccine

Cystic Fibrosis

- Autosomal recessive genetic defect on chromosome 7
 - CF transmembrane regulator protein
 - Excess chloride loss (medication Kalydeco helps with this)
 - Exocrine glands affected
- Increase thick mucus production – respiratory distress
 - Multiple infections
 - Percussion and postural drainage – think gravity
 - NO ANTIHISTAMINES
 - NO COUGH SUPPRESSANTS
- No release of pancreatic enzymes from pancreas
 - Take enzymes WITH meals [watch for steatorrhea] and extra fat-soluble vitamins
 - Foul smelling, frequent, fatty stools
- Lost increase salt with exercise and during hot weather [Increase salt in foods]
- Reproductive difficulty
- Avoid interaction among those with CF due to passing cepacia (increased mortality and morbidity)

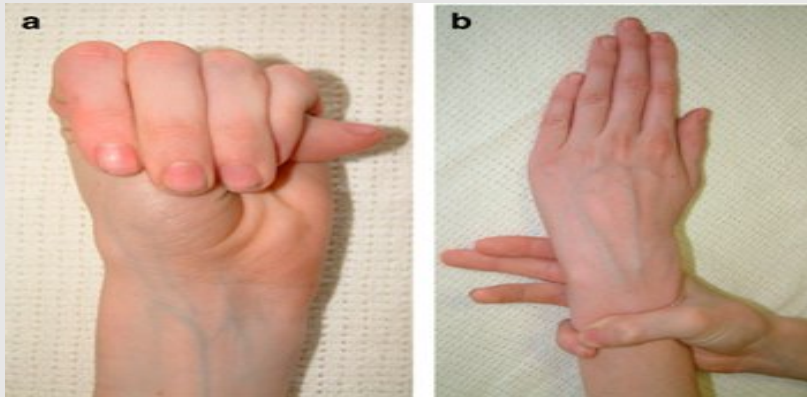
Cystic Fibrosis

- May develop diabetes in adolescence
- No meds to suppress cough or dry up secretions
- Chest PT (think gravity) preceded by bronchodilator or mucolytics (dornase alpha)/ vibrating/oscillating vest (ThAIRapy Vest) or flutter device



Cardiac - Marfan syndrome

- Autosomal dominant condition of connective tissue
- Tall with arm span greater than height; long fingers and toes
- Hypermobile joints – increased risk for scoliosis and kyphosis and nearsightedness
- AT GREAT RISK FOR AORTIC ANEURYSM and mitral valve prolapse due to weakness of vessels
 - Sudden cardiac death
 - MUST have physician clearance before they participate in sports

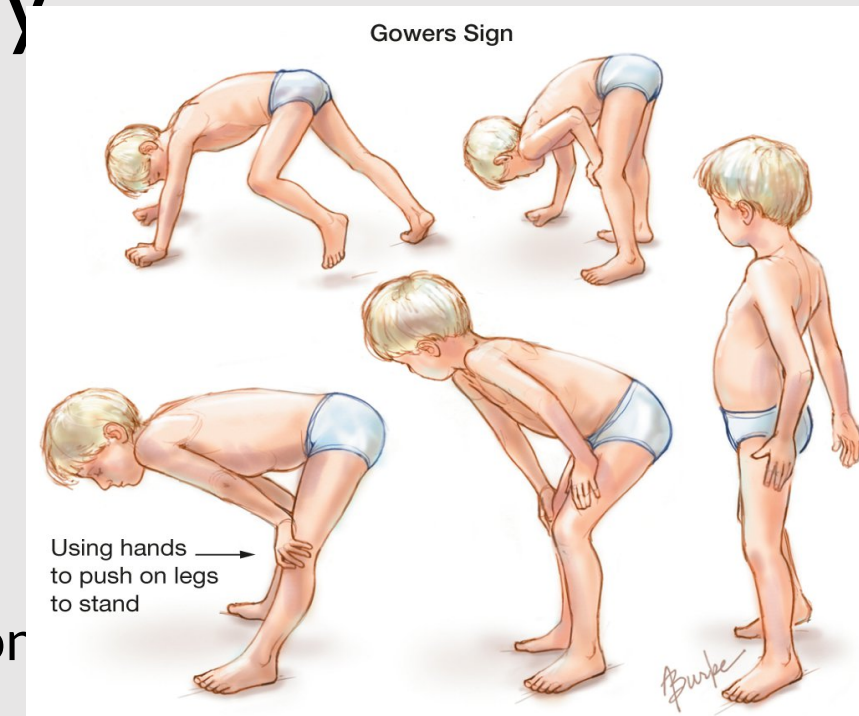


What condition is this?



Duchenne's Muscular Dystrophy

- Genetic/ sex linked
- Absence of protein in muscle ☾
progressive muscle deterioration from feet up
- Delayed motor develop; toe walking
- Begins with pelvic girdle weakness – waddling gait
 - Gower sign to get up from floor
 - Lordosis, muscle hypertrophy due to fibrous degeneration
- Decreased ability to perform self-care activities
- Range of motion, splints, KEEP ACTIVE as much as possible
- DO NOT RESUSCITATE ORDER if desired and allowed by law
- If you observe toe walking, Gower sign, delayed motor development, tell parent to tell MD



Endocrine: Growth

- Short stature: measure bone age via x-rays of carpals of wrist
- Dwarfism – short stature with normal body proportions
- Achondroplasia – disproportionate dwarfism – normal torso but short extremities
- Assess mental age
- Interact based on chronological age
- Psych support if needed
- Dental care due to altered jaw size; spinal issues

Endocrine: Thyroid

- Regulates metabolism
 - Requires iodine
- Hypothyroid: increased weight gain, decreased temperature and pulse, dry scaly skin, fatigue, constipation, cold intolerance
 - Decreased energy to learn and play
 - Give thyroid hormone
- Hyperthyroid (Graves): increase pulse and nervousness/ tremors, heat intolerance with sweating, weight loss, insomnia, exophthalmos
 - Be aware of thyroid storm (acute fever and tachycardia)

Endocrine: Diabetes

- Insulin is only endocrine hormone not controlled by hypothalamus and pituitary
 - Depends on ingestion of glucose
- Cells need glucose; insulin lets glucose into cells
 - If it can't get in ☾ hyperglycemia
 - Body compensates by breaking down triglycerides to fatty acids ☾ ketones ☾ metabolic (keto) acidosis ☾ fruity breath
 - Cells are starving ☾ HUNGER (polyphagia)
 - Increased sugar load = osmotic diuretic ☾ INCREASED URINATION (polyuria)
 - Loss of fluid from urination ☾ dehydration and THIRST (polydipsia)
 - Dry flushed skin/ hypotension
- Blood glucose >126 (fasting) or 200 with symptoms
- Hemoglobin A1c should be below 7.5% (BS=169) [some say 6.5% (140)]

Diabetes

- Type 1
 - Autoimmune
 - Complete absence of insulin
 - Continuous glucose monitor
- For hyperglycemia –
 - Kussmaul breathing to rid acidosis; fruity breath
 - Blurred vision
 - Give insulin and non-caloric fluids to flush out ketones
 - Ketones occur when fat is broken down for energy because cells can't get glucose
 - Measured in both urine and blood if blood glucose is > 250
 - Converts triglycerides to fatty acids ☾ causes acidosis
 - Do not allow them to exercise if they have ketones

Insulin

- Lispro/ Humalog – clear/ **rapid acting** – onset 5-15 minutes – peaks 30-90 minutes
- Regular insulin – clear/ fast acting - 30 minutes – peaks 2-3 hours
- NPH – cloudy/ intermediate -must have afternoon snack – peaks in 6-8 hours
- Lantus – clear/long acting for basal needs only – NO peaks – do not mix with other insulins
- Do not shake insulin vial; gently rotate in hands to prevent air bubbles
- Rotate injection sites to prevent lipodystrophy (alters absorption)
- MUST have food when insulin peaks
- Insulin requirements increase with illness, stress, growth, food intake;
- Decreases with exercise
- Pump = Continuous subcutaneous insulin infusion (CSII) - basal

Calculating the Correction Dose/ Sensitivity Factor

- Difference between actual blood glucose and target blood glucose divided by the correction factor
 - Example: 242 (actual) minus 150 (target) = 92. If the correction factor is 50, divide 92 by the correction factor (50) and get 1.84. Round up to 2 units of rapid acting insulin
- Pre-meal blood sugar (actual = 220 mg/dl) minus pre-meal target (120) \ominus 100 mg/dl
 - if correction factor is 50, divide the 100 by 50 \ominus 2 units of rapid to correct the blood sugar

The insulin to carbohydrate ratio represents how many grams of carbohydrate are covered or disposed of by 1 unit of insulin.

HYPOGLYCEMIA: blood sugar <70

- Sweating, tremors, poor coordination, irritable, confusion
- **Give 1 (15g) fast acting carb (1/2 C. OJ, 6 oz. regular soda, small tube of cake icing); no complex sugars; follow with protein source (peanut butter/ cheese)**
 - Do not send back to take an exam
 - Glucagon to unconscious child; follow seizure precautions; mix with diluent and give immediately into large muscle (Baqsimi nasal powder)
 - Half dose if < 44 pounds
 - Can cause vomiting; place on side

For Type 1

- Honeymoon period – one time remission of symptoms during first year – may be insulin free [Symptoms WILL Reappear and then be permanent]
- Dawn phenomenon – increased sugar in morning (due to growth hormone and cortisol release)
- Somogyi effect – treat hyperglycemia ☾ hypoglycemia and vice versa
- Think: field trips, think ADA

Type 2 diabetes

- Typically seen in obese and overweight children who are physically inactive
- Genetic predisposition
- INSULIN RESISTANCE – decreased liver, muscle and adipose tissue sensitivity to insulin (results in increased blood glucose)
- Assess for acanthosis nigricans – thickening and hyperpigmentation of skin in neck and axillary areas
- Assess for hypertension and hyperlipidemia
- Assess for sleep apnea
- Metformin/Glucophage decreases glucose production by liver
- Increase activity

Complications of diabetes

- Nephropathy - kidney damage
- Retinopathy – blindness
- Premature atherosclerosis with vascular insufficiency
 - Amputations, heart disease, stroke, kidney failure
- Poor wound healing

Neuro - Seizures

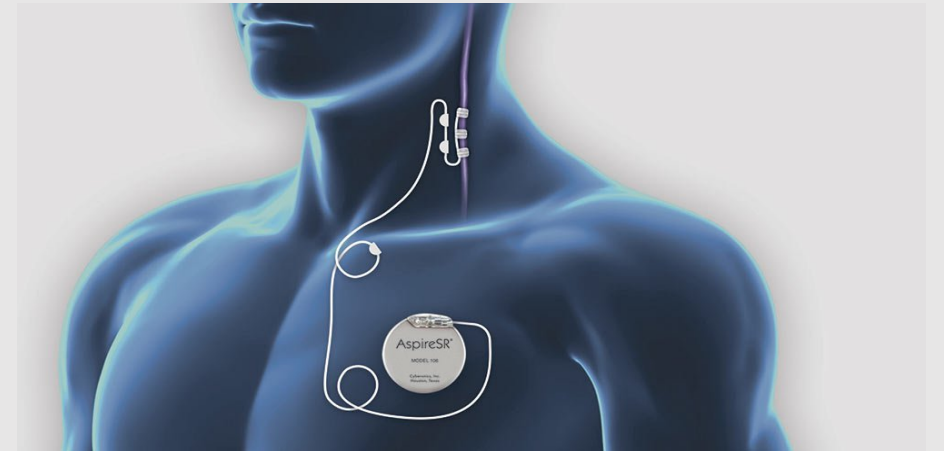
- Transient disturbance of electrical activity in the brain; neurons over-fire
- Focal (simple and complex partial) – note where it starts and what parts are involved
- Generalized (with or without impaired awareness)
 - Absence – DOES NOT LOST CONSCIOUSNESS – does not fall – but can not hear/process directions
 - Tonic-Clonic (Major motor/ Grand Mal) –
 - AURA
 - TONIC – 20-40 seconds
 - Clonic – jerking
 - Post-ictal symptoms
- Safety in physical activity

Seizures

- SAFETY during a seizure
 - Turn on side
 - Do not restrain
 - Nothing in mouth
- Status Epilepticus – seizures without interruption > 5 minutes
 - Can decrease oxygen to brain
 - **Diastat – rectal diazepam**
 - **Versed/Nayzilam – nasal midazolam**
 - **Valtoco – nasal diazepam**
 - **Buccal products**
 - Check vital signs due to CNS depression
- Seizure action plan

Seizure treatments

- Medications
 - Dilantin (phenytoin) ☾ gingival hyperplasia – needs routine dental care
 - Also hirsutism, ataxia, gastric distress, nystagmus
 - Depakote ☾ platelet dysfunction ☾ bleeding
 - Sedation, hair loss; interferes with hormonal contraception methods; may cause decreased bone density
 - Must taper medication; do not go off suddenly
- Ketogenic diet
 - High fat, low-carbohydrate –
 - Causes body to burn fat for energy
 - OK – meat, fish, eggs, cheese, natural fats
 - **NO** – **sugar**, grains, fruit, beans, potatoes
- Vagus Nerve Stimulator
 - Implanted in chest and connected to vagus nerve
 - Swipe magnetic wand across chest to interrupt seizure (worn on belt or with child)



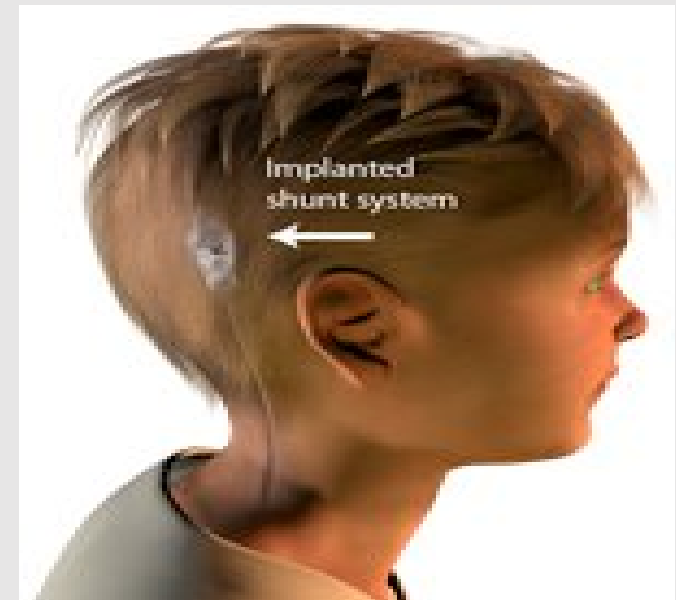
Myelomeningocele/ Spina Bifida



- Neural tube defect
- Surgically repaired within 48 hours
- Depends on location and amount of spinal nerves in sac
- Neurogenic bowel and bladder
 - Requires catheterization (clean procedure); promote self care
 - May develop latex allergy (be latex free)
 - **Be aware of cross-reactivity of latex with kiwi, bananas and avocado**
 - Be aware of products that have latex (rubber bands, pencil erasers, elastic in clothing, gym mats, balloons)
- Decreased mobility
 - Wheelchair – check skin integrity

Myelomeningocele/ hydrocephalus

- May have shunt due to hydrocephalus – do not pump – watch for signs of increased intracranial pressure (ICP) if shunt malfunctions (vomiting, headache, personality/ behavior change).
- For increased ICP, keep in sitting position and keep child calm; call EMS
- Student with shunt wants to play sports
 - Physician clearance and head protection



Cerebral Palsy

- NON-progressive, MOTOR disorder (muscle tone)
- Due to hemorrhage or anoxia or infection – prior to, during, or after birth
- Spastic (hypertonic, exaggerated responses) ☾ contractures
- Dyskinetic/athetoid (writhing) – disappear during sleep
- May affect speech, vision, mobility, ability to care for self
- My have seizures, dental anomalies, intellectual disability
- Assure 1) safety; 2) nutritional needs; 3) communication; 4) PT/OT

Intellectual disability

- Normal IQ is 80-120
- Intellectual functioning below normal (IQ<70) AND limitations in adaptive behavior
 - Difficulty reasoning, problem solving, planning, abstract thinking, judgment, learning from experience
 - Failure to meet developmental and sociocultural standards for personal independence and social responsibility, e.g., communication and social participation
 - Mild, moderate, severe, profound
- **Adaptive function** includes activities needed for developing personal independence and social responsibility (communication and social participation)
- Chronological age vs. mental age
 - Use multiple modalities to test
- Set realistic, reachable, short term goals; break tasks into small steps to encourage successful accomplishment; teach to mental age
- Causes: Genetics, inborn errors of metabolism, congenital anomaly, trauma, alcohol, infection
- Find strengths
- May be more advanced socially – be aware
- Safety

Down Syndrome – Trisomy 21

- Moderate ID
- Associated with atlantoaxial instability of C1-C2, cardiac abnormalities, myelogenous leukemia
 - At risk for compression of cervical nerves
- Smaller head, flat face, upward slanting palpebral fissures, brushfield spots (marbling of iris), low set ears, small oral cavity, single transverse line (simian line)

