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**SIMULATION OF PEDIATRIC DIABETIC**  
**PATIENT**

## Simulation of Pediatric Diabetic Patient

(use the Diabetic Ketoacidosis with Pneumonia simulation- the pt. will remain in state 3 throughout the entire simulation)

**Location:** Pediatric Unit

### History/Information

Aaron, a 10 year old male admitted to hometown hospital at 1207 with nausea, vomiting, dehydration and blood sugar of 555. He has lost 10 lbs. over the last month and exhibited increased appetite, increased urination, and increased thirst. He was begun on an insulin drip of 4 units per hour and his blood sugar was decreased to 270. He was transferred to Salina Regional Health Center. The insulin drip and IV of D5NS with 20 meq of KCL running at 100cc/hr were maintained during transport. No previous hospitalizations, immunizations are up-to-date.

Admitted to pediatric unit at 0001 with a blood sugar of 273.

### Healthcare Providers Orders

Stat CBC, BMP, A1C, UA,

Stat accucheck

NPO

IV of D5/NS plus 20meq per liter of KCL at 250 ml/hr

Insulin gtt at 1 unit/hr

Recheck blood sugar 1 hour after decreasing insulin

Accucheck every hour and call physician

Zofran 4 mg IV prn for nausea and vomiting

Cardio respiratory monitor and SaO2 monitor

1:1 care

Repeat BMP at 0800

Supplies needed for this simulation:

Saline lock

IV – running ( Primary of D5NS plus 20 meq of KCL at 250 ml/hr and insulin on syringe pump set at 1ml /hr- insulin connected to port closest to patient)

Zofran

Waveform monitor display set to “ks sat and bp”

Lab results with normals

Pediatric diabetic packet from Marlene

Food for meal (diet pepsi, raisins (1/4 cup), turkey sandwich, low fat strawberry yogurt) (use paper food samples)

Food for snack (juice/ skim milk, peanutbutter, crackers, candy)

Accucheck

Water spray bottle

Physician’s orders for state 2

Pt. history and information and beginning Dr. orders

IV drain bag

Bifurcated clave for connection at saline lock site

Normal saline flush

Mouth swabs and cup

Copy of adult hypoglycemia protocol

**\*Students should have knowledge regarding the following information prior to the simulation:**

1. Basic understanding of function of glucose in body
2. function of insulin
3. disease process of diabetes
4. signs and symptoms of hypoglycemia and hyperglycemia
5. how changes in electrolytes affect the body

A great website: <http://www.emedicine.com/ped/topic581.htm>

**Learning objectives:**

Managing a newly diagnosed diabetic pediatric patient

Managing a pediatric patient on an insulin drip

Management of hypoglycemia

Administering insulin

Providing education for newly diagnosed diabetic

State	Events	Minimal behaviors	Questions/teaching
<p><b>State 1</b> Admitted to pediatric unit ( 0001) (12:01 a.m.)</p> <p>Respiratory control tab to shunt fraction set at 0.00</p> <p>Give lab work</p>	<p>HR-82 Resp-24 BP-114/78 O2 sat-99</p> <p>Patient anxious Patient upset with fingersticks Complains of nausea</p> <p><b>When learner asks:</b> <b>Bgl. 273</b> Temp. 99.1 Denies pain Wt. 39.7 kg (87.7 lbs) Ht. 5'1"</p> <p><b>BMP:</b> glucose 271 (H) Bun 22, Crea 0.8, NA 140, K 4.0, Cl 111, CO2 15 (L), BUNCREA 27.5 (H), OSMO 291.4 (H),</p> <p>CA-9.8, A1c-10.0 (H)</p> <p><b>CBC:</b> WBC 12.2 (H) RBC 5.16, HGB 13.6, HCT 38.5, PLTC 366 (H), UA: color –yellow, gluc neg, bilirubin small, ketone &gt;80 (neg. normal),</p>	<ol style="list-style-type: none"> <li>1. Basic assessment (include check of neurological status and dehydration)</li> <li>2. Administer Zofran correctly</li> <li>3. Analyze lab values</li> <li>4. Discuss tubing set up and priming of insulin tubing</li> </ol> <p>(Does not need to take accucheck at this time, since it was 273 and just done on admission)</p>	<p>S/S of hyperglycemia, dehydration, and cerebral edema</p> <p>Dehydration: skin moisture/ color, CR ,3 sec. tears, mucous membranes, wt, urine output pulse, behavior, lethargy</p> <p>Cerebral edema: loss of alertness, disoriented, sudden severe headache, vomiting, incontinence, decreased temp, HR RR Cardiac arrhythmias</p> <p>Why should blood sugar be dropped slowly? (the intercranial pressure will increase if bgl. drops too fast)</p> <p>Discuss why is patient nauseated? Dehydrated, ketoacidosis) How to give Zofran with IV running (check compatibility and give at closest port)</p> <p>IV tubing priming guidelines: slowly prime tubing with 30-50 mls of insulin solution. If time allows, prime tubing and let it sit for 30 minutes to allow insulin to bind to tubing.</p> <p>Discuss benefits of using microtubing connection, bifurcated clave at connection site, and syringe pump</p>

State	Events	Minimal behaviors	Questions/teaching
One hour later (0100)	<p><b>Blgl. 391</b> (when learner asks</p> <p>Vitals remain the same</p> <p>Patient upset with fingerstick</p>	<ol style="list-style-type: none"> <li>1. Does accucheck while providing distraction for patient</li> <li>2. Calls physician with accucheck results (uses SBAR to organize information)</li> </ol> <p><b>Physician orders:</b> no change in orders, continue to assess blgl every hour and call results</p>	<p>Discuss how to allow choices and provide distraction for pediatric patient during accucheck</p> <p>Follow SBAR to call physician (situation, background, assessment, recommendation/requests)</p>
<p><b>One hour later (0200)</b></p> <p>(switch learners to allow a new learner to call physician)</p>	<p><b>Blgl. 458</b></p> <p>Vitals remain the same</p> <p>Patient upset with fingerstick</p>	<ol style="list-style-type: none"> <li>1. Does accucheck providing distraction</li> <li>2. Calls physician using SBAR</li> <li>3. Questions and clarifies physician's orders</li> </ol> <p><b>Physician's orders:</b> Dr. sleepy and says "Keep the drip setting the same". Learner needs to question the order. When the order is clarified with physician, give the following order: <b>Insulin drip increased to 2 u/hr</b></p>	<p>Discuss how to provide choices and distraction during fingerstick</p> <p>Assist learner in using SBAR to organize information</p> <p>Discuss how to clarify an order if the nurse feels that a wrong order was given.</p>

State	Events	Minimal behaviors	Teaching
<p><b>State 2- (2 days later)</b> 1100 – hypoglycemic episode</p> <p><b>*Give order sheet, Instructor give report and Dr. orders for last 24 hrs.</b></p> <p><b>Beginning physicians orders:</b></p> <p>DC IV</p> <p>DC 1:1 status</p> <p>DC oximeter and CR monitor</p> <p>Accucheck ac and 2 hours pp</p> <p>Immediately after eating give insulin Novolog 1 unit per 10 gms carbs sq</p> <p>Lantus 22 units at hs</p> <p><b>Set up:</b> Lightly spray simulator's hands with water to simulate clamminess</p> <p>DC IV</p> <p><b>When food tray given:</b> paper food samples: Raisins ¼ cup, turkey sandwich, low fat yogurt, diet Pepsi (total carbs 104)</p>	<p>Vitals remain the same as state 1</p> <p>Pt. slightly irritable</p> <p>c/o being shaky and weak</p> <p>cool and clammy</p> <p>“I am really hungry”</p> <p>“I don’t feel right”</p> <p><b>When learner asks:</b> Food tray usually arrives at 1130-1200</p> <p><b>Bgl. 50</b></p> <p><b>After 15 min. Bgl-80</b></p> <p>Patient will assist with accucheck if nurse helps him, and is somewhat interested in helping with the insulin pen injection.</p>	<p>Identifies s/s of mild hypoglycemia and manages patient</p> <ol style="list-style-type: none"> <li>1. Accucheck for bgl.(bgl 50)</li> <li>2. gives 15 gms of simple sugar</li> <li>3. reassesses after 15 minutes (bgl 80)</li> <li>4. Notifies physician of episode</li> </ol> <p><b>Physician order: give complex carbohydrate and protein and continue orders</b></p> <ol style="list-style-type: none"> <li>5. After blood sugar is &gt;70, gives a complex carbohydrate and protein (in this simulation, the patients eats his noon meal)</li> <li>6. Calculates meal carbs (104) and adjusts to 70-80 gms by switching low fat to nonfat yogurt)</li> <li>7. Administers insulin correctly <b>after patient has eaten</b></li> <li>8. Provides diabetic education to patient</li> </ol>	<p>S/s of mild hypoglycemia (shaky, HA, feeling hungry, sweaty)</p> <p>To manage hypoglycemia: Assess bgl and symptoms, give 15 gms of simple sugar, reassess in 15 minutes, contact physician, when bgl is &gt; 70- give snack of complex carbohydrate and protein</p> <p>Checking of carbs in meals (this meal has 104 gms. – normal should be 70-80gms)</p> <p>Insulin dose of 1 unit Novolog per 10 gms of carbs figures to 8 units to be given (Note: hypoglycemia snack doesn't figure into the meal calculation)</p> <p>Correct Novolg insulin administration:</p> <p>Novolog is the “See food” insulin- must have eaten the food before insulin given</p> <p>How to correctly use insulin pen</p> <p>2 nurses must check</p> <p>Inject insulin and hold plunger of pen down for 10 full seconds</p> <p>Education:</p> <p>Start early, use every opportunity as a teaching opportunity</p> <p>teaching packet and videos</p>

## **Learner Information for Diabetic Pediatric Patient**

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