

LOCAL CASE

ASHP CLINICAL SKILLS COMPETITION 2012 PHARMACIST'S PATIENT DATA BASE FORM

Demographic and Administrative Information

Name: Amber Leamon

Patient ID: 04062012

Date of Birth: 3/19/2000

Room & Bed: 4S – 23A

Height: 60 in; Weight: 90 lbs, Race: Caucasian

Physician: Simon

Pharmacy: Walgreens

Religion: Catholic

Prescription Coverage

Insurance: Cigna

Copay: \$5 generic, \$20 brand

Cost per month: n/a

Family's Annual Income: \$70,000

Chief Complaint: vomiting, tachypnea, recent weight loss

History of Present Illness

AL presented to the emergency department (on 8/20/2012) with vomiting, increased work of breathing, and fatigue that started several days ago. Mom reports that over the last month the patient has had increased thirst and urination and seems to have lost weight, because "her clothes are hanging off of her, even though she eats like a horse". Mom reports that at her well-child checkup a few months ago her weight was 100 pounds. AL is being admitted to the pediatrics floor for further workup.

Past Medical History

ADHD-diagnosed at age 5

Seasonal allergic rhinitis-diagnosed at age 11

Nocturnal enuresis-diagnosed one month ago (7/2012)

Allergies/Intolerances: NKDA, milk protein intolerance

Outpatient Drug Therapy

Drug Name/Dose/Strength/Route	Prescribed Schedule	Duration Start–Stop Dates
1. Loratadine 10 mg PO	1 tablet daily	2011 – present
2. Desmopressin 0.2 mg PO	1 tablet QHS	8/1/2012 – present
3. Adderall XR 20 mg PO	1 capsule daily	2005 – present

Medication History

AL takes acetaminophen for mild pain or fever. She has not required any in the last month. She was recently started on desmopressin for nocturnal enuresis. Prior to July 2012, she had not had a problem with bed-wetting. In the last month, she has experienced nocturnal enuresis several nights per week. Since starting desmopressin and limiting beverages for 1 hour prior to bedtime, bed-wetting only happens 1-2 nights per week. She experiences seasonal allergies, worse in the spring and fall; but really is never comfortable (complains of itchy eyes and nasal congestion), even with her current treatment plan. She has a difficult time focusing on her homework in the afternoon and takes her ADHD medication every day. Her difficulty with concentrating started last school year. School started back last week and she is again having problems. Mom reports that "it is a daily struggle to get homework done after school".

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Surgical History: tonsillectomy, age 4

Family History

Father: 36, alive, seasonal allergies

Mother: 30, alive, hypercholesterolemia

Brother: 8, alive, no significant history

Social History

Denies tobacco, EtOH, illicit drug, caffeine use

Attends public school, average student, started 6th grade last week

Vaccination history

Childhood immunizations: up to date through age 5, before attending kindergarten

Influenza: last received October 2011

Physical Exam (8/20/2012)

General: thin, diaphoretic, ill-appearing young female in moderate distress

HEENT: PERRLA, EOMI

Chest: CTA bilaterally; tachypneic, mild subcostal retractions

CV: tachycardia, regular rhythm, no murmurs, rubs, gallops

Abd: soft, tender, bowel sounds present

GU: menarche has not occurred

Ext: no edema, cap refill 3 seconds

Neuro: A&O x 3, CII-XII intact, (-) clonus

Vital signs

(8/20/2012 = Day 1)

HR: 122 bpm

BP: 64/42 mmHg

Temp: 99.8 °F

RR: 40 breaths/minute

(8/21/2012 = Day 2)

HR: 90 bpm

BP: 94/58 mmHg

Temp: 98.8 °F

RR: 22 breaths/minute

	8/20/2012 = Day 1	8/21/2012 = Day 2
Metabolic Panel		
Na (mEq/L)	134	136
K (mEq/L)	3.1	3.8
Cl (mEq/L)	98	102
CO ₂ (mEq/L)	10	28
BUN (mg/dL)	30	12
SCr (mg/dL)	1	0.8
Glucose (mg/dL)	432	120
Calcium (mg/dL)	9.2	9.2
Phosphorus (mg/dL)	3	4.6
Magnesium (mEq/L)	1.4	2

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	8/20/2012 = Day 1	8/21/2012 = Day 2
Albumin (g/dL)	3.8	4
AST (IU/L)	32	30
ALT (IU/L)	34	32
Total bili (mg/dL)	0.6	0.4
CBC		
WBC (million/mm ³)	10.2	
Hgb (g/dL)	13	
Hct (%)	40	
Plt (K/mm ³)	254	
MCV (fL)	90	
MCH (pg)	30	
RBC (mil/uL)	3.4	
Diabetes Screening		
Glutamic acid decarboxylase (GAD)	Pending	
Islet cell antibody	Pending	
C peptide	Pending	
HbA1c (%)	12.8	
Urinalysis		
Color	Dark yellow	Yellow
Clarity	Clear	Clear
Spec Gravity	1.03	1.22
pH	6	5.5
Glucose	4+	Negative
Ketones	3+	Negative
Protein	2+	Negative
Blood	Negative	Negative
Bili	Negative	Negative
Nitrites	Negative	Negative
LE	Negative	Negative
Urine culture (cath specimen)	pending	No growth x1 day
UCG	Negative	

Blood gas (8/20/2012)

pH: 7.26

PaO₂: 70

PaCO₂: 40

HCO₃⁻: 10

CXR: Unremarkable

EKG: Normal sinus rhythm

Compliance/dosing issue

none

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Current Drug Therapy

Drug name/dose/strength/route	Prescribed schedule	Start date	Indication
D10 ½ NS with 20 mEq/Liter KCl + 20 mEq/Liter KPhos IV	Alternate fluids with ½ NS below to maintain blood glucose in range	8/20	Hydration/ DKA
½ NS with 20 mEq/Liter KCl + 20 mEq/Liter KPhos IV	Alternate fluids with D10½NS above to maintain blood glucose in range	8/20	Hydration/ DKA
Insulin regular 1 unit/mL	Titrated to maintain blood glucose towards 150 mg/dL	8/20	DKA
Loratadine 10 mg PO	1 tablet daily	8/20	Seasonal allergies
Desmopressin 0.2 mg PO	1 tablet QHS	8/20	Nocturnal enuresis
Adderall XR 20 mg PO	1 capsule daily	8/20	ADHD

Patient Narrative

AL was diagnosed with diabetic ketoacidosis and was given a normal saline bolus and potassium for her initial hypovolemia and hypokalemia. Her DKA has resolved. She has now been diagnosed with new onset Type I Diabetes Mellitus. On evening of 8/21, Dr. Simon requests pharmacy's recommendations for medication management. AL required 20 units of insulin in the last 24 hours and has no blood ketones or urine ketones. She is tolerating oral food and medications. Dr. Simon reports that she wants to set AL's target blood glucose at 150 mg/dL and would like to start multiple daily insulin injections. In addition to new therapy recommendations, Dr. Simon requests you look at AL's current medication profile to determine if changes are needed with any medications.

Problem Identification and Prioritization with Pharmacist's Care Plan

Team # _____

- A. List all health care problems that need to be addressed in this patient using the table below.
- B. Prioritize the problems by indicating the appropriate number in the "Priority" column below:
- = Most urgent problem (Note: There can only be one most urgent problem)
 - = Other problems that must be addressed immediately or during this clinical encounter; **OR**
 - = Problems that can be addressed later (e.g. a week or more later/at discharge or next follow up visit)

**Please note, there should be only a "1", "2", or "3" listed in the priority column, and the number "1" should only be used once.*

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
New onset type 1 diabetes	1	- Resolution of ketoacidosis - Prevention of morbidities - Establish multiple daily injection (MDI) insulin regimen to control blood glucose - Prevent hypoglycemia - Prevent neurologic morbidities - Education on type I DM	- Discontinue IV fluids as patient is tolerating PO - Transition IV insulin drip to subQ injections -Begin rapid acting insulin 15-30 minutes prior to stopping insulin drip -Patient required 20 units of insulin over last 24 hours; <i>using 1800 rule and 500 rule <u>or</u> weight based rule, calculate long-acting and rapid acting mealtime insulin regimen</i> - Target blood glucose per physician = 150 mg/dL - Calculations based on total insulin requirement from last 24 hours: -Long-acting insulin = ½ of total daily insulin = 10 units of insulin detemir or insulin glargine -(Bonus)If insulin detemir is chosen, student can divide the dose into twice daily injections (dose is <0.4 units/kg/day) 1800 and 500 rule: -Correction ratio [insulin sensitivity factor (ISF)] = 1800/20 = 1:90 (one unit of fast acting insulin will lower	- Monitor blood glucose multiple times per day -Before each meal to calculate insulin requirement using insulin sensitivity factor (ISF) and insulin:carb ratio (I:C) -Before snacks, at bedtime, possibly an overnight check, and at wake up -Reassess insulin regimen based on BG trends and make adjustments - Maintain fasting BG within range of 90-180 as much as possible to avoid hypoglycemia and hyperglycemia - Monitor trends with low BG and high BG for insulin adjustment - Monitor for skin hypertrophy (appear as lumps under skin from not rotating injection sites); if this is observed, the site should be avoided until healed and sites should be continuously rotated - Monitor growth and weight gain - Monitor HbA1c every 3 months -Patient's goal HbA1c is <8%

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
			BG 90 mg/dL) -Insulin to carb ratio (I:C) = 500/20 = 25, 1:25 (one unit of insulin will cover 25 carbohydrates) <u>OR</u> • Weight based insulin regimen = 0.3-0.5 units/kg/day -Long-acting insulin =6-10 units -Mealtime rapid acting insulin = 2-3 units at mealtimes • Educate patient and caregiver(s) on managing T1DM -Finger sticks, use of glucometer, injection technique, sites for injections, rotation of injection sites, insulin storage, how different insulins work, how to measure doses, teach carb counting and dose adjustment -How to manage low blood sugars (BG<70 – give 15 grams fast acting sugar; recheck in 15 minutes; if not above 70, give 15 grams fast acting sugar; recheck in 15 minutes; if above 70, give 15 gram snack with protein) -When to measure for urine ketones with high BG (usually >350), push fluids to clear ketones, correct with insulin, rest, seek medical attention if not clearing or patient decompensates • Patient should eat a well balanced diet with complex carbs, healthy fats, and protein for growth and development • Unacceptable therapies: -NPH (neutral protamine Hagedorn) regimen	based on age • Monitor for urine ketones if BG >350 • Additional acceptable monitoring: -Can recommend to monitor estimated average blood glucose

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
Nocturnal enuresis	2	Prevent bed-wetting	- Trial off desmopressin -Hyperglycemia from AL's diabetes could have lead to the new onset nocturnal enuresis -No specified timeframe for trialing off, the antidiuretic hormone effect works for 12 hours in the body; therefore, a trial off of 1-2 weeks with close counting of bedwetting nights would be acceptable - Continue to limit fluid intake one hour before bedtime and practice regular voiding Acceptable therapy: -Can recommend bedwetting alarm	- Monitor for bed-wetting - Monitor if symptoms correlate with high BG - If nocturnal enuresis continues, restart desmopressin as it was working
ADHD	3	- Control ADHD symptoms - Improve quality of life	- Patient isn't able to focus on homework in the afternoons - Behavior therapy should be recommended <u>Can bring patient back in a few weeks or address now.</u> Any of the following are appropriate options: - Add an immediate release dexamphetamine or methylphenidate to AL's regimen when gets home from school or right before school gets out. This should help focus on homework and shouldn't affect sleep OR - Change from oral therapy to transdermal patch OR - Switch to methylphenidate containing extended release product, as some	- Monitor to see if AL's focus improves during homework times - If symptoms improve, continue with therapy - If symptoms don't improve, consider alternate agents - Monitor stimulants' affect on blood glucose control - Monitor heart rate, blood pressure, and growth

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
			patients respond better to one stimulant type over another OR ○ Increase Adderall XR to 30 mg/day • Unacceptable therapies: -Guanfacine and clonidine <u>should not be used</u> as this patient doesn't have tics	
Seasonal allergic rhinitis	3	• Relieve current symptoms of seasonal allergic rhinitis • Prevent the future occurrence of symptoms and comorbidities associated with seasonal allergic rhinitis • Provide optimal pharmacotherapy with minimal or no adverse effects • Improve patient quality of life	• Avoid allergen exposure • Continue loratadine 10 mg PO daily (less sedating) or change to cetirizine 5-10 mg PO daily (may cause sedation at recommended doses) • Add intranasal corticosteroid for daily use and/or breakthrough nasal symptoms if not controlled • Fluticasone 50 mcg/actuation 1 spray in each nostril once daily; • Mometasone 50 mcg/actuation 2 sprays in each nostril once daily; • Budesonide 32 mcg/actuation 2 to 4 sprays in each nostril once daily; • Beclomethasone 42 mcg/actuation 1 to 2 sprays in each nostril once daily; • Or another intranasal steroid • Acceptable <u>additional</u> therapy: -Intranasal antihistamine such as azelastine 1-2 sprays in each nostril twice daily	• Counsel on bitter taste, if intranasal steroid recommended • Return to the clinic in 2 to 4 weeks for reassessment of symptoms (sneezing, rhinorrhea, congestion, watery eyes) • Monitor for adverse effects of pharmacotherapy, in particular epistaxis or ulceration of the nasal mucosa
Disease prevention and health promotion	3	• Catch up on immunization schedule • Maintain healthy behaviors	• Patient should receive Meningococcal Conjugate Vaccine (MCV4) • Inactivated influenza vaccine	• Monitor for injection reactions • Follow up on healthy behaviors

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
			yearly • Counsel and encouragement for Human Papillomavirus (HPV) vaccination series • Provide education on vaccination schedules • Vaccine information sheet (VIS) and appropriate documentation required by federal law should be provided for each vaccine administered • Should counsel on at least 3 health promotion issues: -Exercise -Healthy diet -Avoid smoking -Abstinence -Wear seatbelt • Acceptable answers (Bonus): -Varicella if only received one dose as recommendation have changed to include second dose at age 4-6 years or catch up during 11-12 year old range -Hepatitis A if high-risk area • Unacceptable recommendation: -Live attenuated influenza vaccine	

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