Team #_____

2021
ASHP Clinical Skills Competition℠
LOCAL COMPETITION CASE

Directions to Clinical Skills Competition Participants

Identify the patient's acute and chronic medical and drug therapy problems. Recommend interventions to address the drug therapy problems using the forms supplied (Pharmacist's Patient Case and Pharmacist's Care Plan).

IMPORTANT NOTE: Only the Pharmacist's Care Plan will be used for evaluation purpose.

Team #_____

Pharmacist's Care Plan

Using the patient's data, you will be able to develop an effective care plan for your patient. Clearly define the health care problems. Health care problems include treatment of all acute and chronic medical problems, resolution of all actual or potential drug-related problems, and identification of any other health care services from which your patient may benefit.

Remember to think about potential medical problems for which your patient may be at risk and disease prevention and disease screening activities that may be appropriate to recommend. Also, don't forget to consider specific patient factors that may influence your goals and recommendations for therapy (e.g., physical, psychological, spiritual, social, economic, cultural, and environmental).

To complete your care plan, specify all of your patient's health care problems that need to be addressed. Then prioritize the problems into one of three categories: (1) Most urgent problem, (2) Other problems that must be addressed immediately (or during this clinical encounter), OR (3) Problems that can be addressed later (e.g. a week or more later/at discharge or next follow up visit). Please note that only **one** problem should be identified as the "most urgent problem."

Then **for each problem** describe the (1) therapeutic goals, (2) recommendations for therapy, and (3) monitoring parameters and endpoints. Your monitoring parameters should include the frequency of follow-up and endpoints should be measurable by clinical, laboratory, quality of life, and/or other defined parameters (e.g., target HDL is greater than 50 mg/dL within 6 months).

2021 ASHP CLINICAL SKILLS COMPETITION
LOCAL CASE

Demographic and Administrative Information

Name: Baby Girl Parks (name pending)	**Patient ID:** 764289103
Sex: Female	**Room & Bed:** Neonatal ICU Bed: 1819
Gestational age: 37 weeks 3 days (estimated) **DOB:** 8/17/21 0912 **Age:** 4.5 hours after birth	**NICU Physician:** Dr. Smalls **Delivering OB:** Dr. Callahan **Pediatrician:** None on file
Length: 48 cm (30th percentile) **Weight:** 3 kg (21st percentile) **Head circumference:** 34 cm (33rd percentile) **Race:** White	**Religion:** Unknown
Prescription Coverage Insurance: Medicaid – pending	**Pharmacy:** None

Reason for Visit/Chief Complaint

"Congenital infection"

History of Present Illness

Baby Girl Parks (name pending) is an estimated 37w3d neonate born to Leslie Parks who presented to the ED in labor. Spontaneous rupture of membranes occurred in the ED and mother was transferred to the labor and delivery unit where she delivered precipitously. The neonate was admitted to the level I nursery for observation and withdrawal monitoring. The neonate voided shortly after delivery and a urine drug screen was sent secondary to absence of prenatal care. At 4 hours after birth the neonate developed grunting with nasal flaring and was placed on noninvasive positive pressure with an FiO_2 requirement of 21%. The patient was also noted to have clear vesicles on the left leg at this time. Given the change in clinical status a chest x-ray, blood gas, complete blood cell count, blood cultures, viral cultures, and other labs were obtained. The patient was also made NPO. While attempting to place a peripheral intravenous line, the neonate had a brief episode of desaturation with a dusky appearance requiring 100% FiO_2 to recover. She was subsequently weaned to 30% oxygen over the next 30 minutes. The neonatal team was called for transport of the patient to the level IV NICU for further management.

Maternal History:

Age: 29 y.o.

Obstetric History: G2P2002

Gravida (pregnancies): 2

Para (births): 2 term live birth
0 preterm births
0 abortions/miscarriages
2 living children

Past medical history:

1. Asthma (childhood)
2. Seasonal allergies
3. Chlamydia infection (2015) – treated
4. Syphilis infection (2018) – treated
5. Polysubstance use disorder – heroin and fentanyl

Maternal Labs and Serologies:

	8/17/21 0811
Blood type	A positive
HIV rapid antibody screen	Negative
Hepatitis C antibody	Negative
Rapid plasma reagin (RPR)	Nonreactive
Group B Strep status	Unknown
Rubella IgG	Immune
Hepatitis B surface antigen	Positive
Neisseria gonorrhea nucleic acid amplification test (NAAT), urine	Detected
Chlamydia trachomatis nucleic acid amplification test (NAAT), urine	Not detected
Trichomonas vaginalis nucleic acid amplification test (NAAT), vaginal	Not detected
SARS-CoV-2 PCR	Not detected
Urine Drug Screen	Positive
Amphetamine	Not detected
Barbiturate	Not detected
Benzodiazepines	Not detected
Cannabinoids	Not detected
Cocaine	Not detected
Fentanyl	Detected
Methadone	Not detected
Opiates	Detected*
Phencyclidine	Not detected
	*sample contains > 300 ng/mL of morphine or other cross-reacting compound

Pregnancy complications:

1. No prenatal care
2. Polysubstance use disorder: heroin and fentanyl
3. Tobacco use
4. Genital lesions on bright light exam at delivery; mother has not previously been diagnosed with herpes simplex virus (HSV) and notes appearance of lesions in the past week

Maternal Intrapartum History:

Highest maternal temperature: 37.4° C
Antibiotics received during labor: None
Length of time membranes ruptured: 30 minutes
Delivery method: Vaginal

<u>Neonatal Delivery Room Course:</u>

Delivery Time: 0933
Apgar Scores

One minute: 7
Five minutes: 8

Narrative: The neonate had spontaneous cry upon delivery, was warmed, dried, stimulated, and received suctioning. No additional resuscitation needed. The patient was transferred on room air to the level I nursery for observation.

Medications after delivery:

Erythromycin 0.5% ophthalmic ointment x 1	Given - Right eye Given - Left eye
Phytonadione 1 mg intramuscular injection x 1	Given – Left anterior thigh
Hepatitis B vaccine 10 mcg/0.5 mL intramuscular injection x 1	Given – Right anterior thigh

Level I Nursery Modified Finnegan Scores:

	8/17/21 1200
Central Nervous System Disturbances	
Increase muscle tone	2: present
Excoriation	0
Myoclonic jerks or convulsions	0
Cry	2: high pitched cry
Sleep amount after feeding	0
Moro reflex	3: markedly hyperactive
Tremors: Disturbed	2: moderate to severe
Tremors: Undisturbed	0
CNS Subtotal	**9**
Metabolic/Vasomotor/Respiratory Disturbances	
Sweating	0
Yawning	0
Mottling	1: present
Nasal stuffiness	0
Sneezing	1: more than 3 - 4 times
Nasal flaring	2: present
Fever	0
Respiratory rate	0
Metabolic/Vasomotor/Respiratory Subtotal	**4**
Gastrointestinal Disturbances	
Excessive sucking	0
Poor feeding	0
Regurgitation	0
Projectile vomiting	0
Stools	0
Gastrointestinal Disturbances Subtotal	**0**
Modified Finnegan Neonatal Opioid Withdrawal Score	**13**

Upon arrival to the NICU, the medical team places an umbilical venous catheter (UVC) for access and performs a lumbar puncture.

Past Medical History
See maternal history

Outpatient Drug Therapy
None

Medication History
None

Allergies/Intolerances
No known drug allergies

Surgical History
None

Family History
Unknown

Social History
Maternal polysubstance use disorder. Recently enrolled in an outpatient rehabilitation program on 7/12/21 and was receiving methadone but reports relapse on 8/2/21. Paternal history is unknown.

Immunization History
Hepatitis B vaccine – given at birth

Physical Exam
General: exam consistent with estimated gestational age
Skin: coalescence of clear vesicles on left leg with erythema
Head: bulging fontanelle
Eyes: normally spaced, right eye with excessive watering and exudate
Ears/Nose/Throat/Palate: patent nares, palate intact
Respiratory: equal breath sounds bilaterally
Cardiovascular: tachycardic, no murmur, capillary refill 2+ for extremities
Abdomen: distended, hepatomegaly, three vessel cord
Genitalia: normal female genitalia for gestational age
Anus: patent
Musculoskeletal: moves all extremities, some tremors noted (undisturbed)
Neurologic: irritable on exam

Vital signs
HR: 160 bpm
RR: 45 bpm
BP: 68/45 mmHg
O_2 saturations on 30% FiO_2 via non-invasive CPAP: 93%
Temp: 37.7°C

Labs and Microbiology

Metabolic Panel	8/17/21 1316
Na (mEq/L)	135
K (mEq/L)	4.7
Cl (mEq/L)	102
CO_2 (mEq/L)	22
BUN (mg/dL)	10
SCr (mg/dL)	0.6
Glucose (mg/dL)	80
Calcium (mg/dL)	9.4
Phosphorus (mg/dL)	5

Magnesium (mg/dL)	2.1
Albumin (g/dL)	3.3
AST (IU/L)	938
ALT (IU/L)	1257
Neonatal bilirubin (mg/dL)	6.1
CBC	
WBC (million/mm^3)	15.4
Neutrophils (%)	34
Lymphocytes (%)	78
Basophils (%)	1
Eosinophils (%)	2
Monocytes (%)	4
Hgb (g/dL)	12.5
Hct (%)	36.9
Plt (K/mm^3)	72
Capillary Blood Gas	
pH	7.38
pCO_2 (mmHg)	40
pO_2 (mmHg)	45
HCO_{3-} (mEq/L)	25
Base excess (mmol/L)	-1.1
O_2 saturation (%)	88
Microbiology, Virology	
Blood cultures x2	Pending
CSF culture	Pending
Ocular Swabs	Gram-negative diplococci; Preliminary identification for *N. gonorrhea*
HSV DNA PCR, Ocular swabs	Not detected
HSV DNA PCR, Nasopharyngeal swab	Detected
HSV DNA PCR, Oral swab	Not detected
HSV DNA PCR, Rectal swab	Not detected
HSV DNA PCR, Vesicle (left leg)	Detected
HSV DNA PCR, Blood	Detected
HSV DNA PCR, CSF	Detected
HSV Typing	HSV-2
Rapid plasma reagin (RPR)	Nonreactive
CSF Studies	
Color	Pink
Clarity	Clear
Xanthochromia	Absent
Glucose (mg/dL)	72

Protein (mg/dL)	65
WBC (cells/mm^3)	487
RBC count	5 - 10
Urine drug screen	Positive
Detected compounds: Fentanyl Morphine-3-glucuronide	

Other Diagnostic Tests

Chest and Abdomen X-ray Impression:

1. Mild basilar atelectasis
2. No evidence of pneumonia
3. UVC in central position

Current Medication Orders

D10W at 10 mL/hour

Assessment & Plan

Baby Girl Parks is admitted to your NICU. The medical team thinks the respiratory decompensation is from HSV infection that needs to be immediately addressed to prevent further clinical decompensation. The attending asks you to work with the intern to get medications ordered regarding acute care of Baby Girl Parks as well as any other pertinent pharmacologic management needed based on her past medical history and labs.

2021
ASHP Clinical Skills Competition℠
LOCAL CASE ANSWER KEY

ASHP Clinical Skills Competition - Pharmacist's Care Plan – 2021 Answer Key – Local Case

Evaluated for competition

Problem Identification and Prioritization with Pharmacist's Care Plan

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:
   1 = Most urgent problem (Note: There can only be one most urgent problem)
   2 = Other problems that must be addressed immediately or during this clinical encounter; **OR**
   3 = Problems that can be addressed later (e.g. a week or more later)

There should be only a "1", "2", or "3" listed in the priority column, and the number "1" should only be used once.
When identifying individual problems for the case, use more specific terms when possible vs. general disease conditions.

Health Care Problem	Priority	Recommendations for Therapy	Therapeutic Goals & Monitoring Parameters

Disseminated Neonatal HSV Infection	1	• Antiviral treatment
		  ○ Initial:
		  ▪ Initiate acyclovir 60 mg IV q8h (20 mg/kg/dose IV q8h OR 60 mg/kg/day IV divided every 8 hours)
		  ▪ Treatment duration is a minimum of 21 days for parenteral therapy
		  ○ Suppressive treatment:
		  ▪ After completion of parenteral therapy start acyclovir suspension 20 mg PO TID (300 mg/m^2/day divided in three doses) for 6 months
			Therapeutic Goals
			• Resolution of infection
			• Prevention of long-term neurologic deficits
			
			Monitoring Parameters
			• Repeat CSF HSV PCR ~21 days of treatment and every 7 days thereafter if PCR remains positive
			• BUN, serum creatinine at least weekly
			• AST and ALT at least weekly
			• Must have all three of the following:
			  ○ ANC with CBC differential
			  ○ Twice weekly for parenteral therapy
			  ○ At 2 and 4 weeks and then monthly on oral therapy
			• **BONUS**: monitoring for extravasation and need for long-term central access

Early Onset Sepsis (EOS) Evaluation	2	• Initiate empiric antibiotics for EOS ○ Ampicillin 150 – 300 mg IV q8h (50 – 100 mg/kg/dose IV q8h) **AND**	Therapeutic Goals • Appropriate coverage for common EOS organisms

		○ Gentamicin 12 – 15 mg IV q24h (4 - 5 mg/kg/dose IV q24h) **OR** ○ Ceftazidime 150 mg IV q12h (50 mg/kg IV q12h) – with ampicillin	Monitoring Parameters • Vital signs (blood pressure, respiratory rate, heart rate, oxygen saturation) • Blood cultures (negative at 48 hours) • CSF cultures (negative at 5 days) • Duration of treatment is based on culture results. Antibiotics can be discontinued at 36 – 48 hours if cultures remain negative. If positive, the organism and location (blood or CSF) would dictate treatment duration. • **BONUS:** Gentamicin level monitoring for > 48 hours of therapy, if chosen ○ Peak 8 – 12 ○ Trough < 0.5 – 1
Ophthalmia Neonatorum/ Gonococcal Exposure	2	• Treatment for ophthalmia neonatorum ○ Administer ceftriaxone 75 – 125 mg IV once (25 – 50 mg/kg/dose, max dose: 125 mg, IV once)	Therapeutic Goal • Prevent gonococcal transmission/systemic infection • Prevent corneal ulcers and blindness Monitoring Parameters • Bilirubin daily • Blood cultures (negative at 48 hours) • **BONUS:** Avoidance of calcium containing fluids during ceftriaxone treatment
Hepatitis B Exposure	2	• Administer hepatitis B immune globulin 0.5 mL IM once	Therapeutic Goal • Prevention of perinatal hepatitis B infection Monitoring Parameters • Post-vaccination serologic testing for hepatitis B antibodies and infection after completion of the primary

			vaccination series (minimum 9 months of age) • **BONUS:** Must be administered in the left anterior thigh (opposite of the hepatitis B vaccine)
Neonatal opioid withdrawal syndrome (NOWS)/ Neonatal abstinence syndrome	2	• Initiate morphine or methadone for treatment of NOWS based on a single Finnegan/MOTHER score > 12: ▪ Morphine 0.12 mg PO q3 hours (0.04 mg/kg/dose PO q3 hours) OR 0.12 mg PO q4 hours (0.04 mg/kg/dose PO q4 hours); Interval based on neonatal feeding schedule. **OR** ▪ Methadone 0.15 – 0.3 mg PO q4 hours (0.05 – 0.1 mg/kg/dose q4 hours) OR 0.15 – 0.3 mg PO q6 hours (0.05 – 0.1 mg/kg/dose q6 hours); Interval based on neonatal feeding schedule.	<u>Therapeutic Goal</u> • Prevention of withdrawal • Maintain adequate growth <u>Monitoring Parameters</u> • Signs and symptoms of withdrawal • Modified Finnegan/MOTHER score every 3 hours • Weight gain • Respiratory rate
Fluids and Electrolytes	2	• Add electrolytes to the maintenance IV fluids once post-natal loss of extracellular fluid occurs (~ 24 hours of life), UOP > 1 mL/kg/hour, and/or serum Na > 145 ○ D10W + ¼ NS + 20 mEq/L KCL **OR** ○ D10W + ½ NS + 20 mEq/L KCL	<u>Therapeutic Goal</u> • Prevent dehydration • Prevent electrolyte disorders • Prevent weight loss • Prevent hypoglycemia <u>Monitoring Parameters</u> • Electrolytes daily • Serum glucoses q12 hours while on IV dextrose fluids
Nutrition	3	• Initiate enteral nutrition with neonatal formula: ○ While on positive pressure respiratory support, feeds should be given via nasogastric (NG) or orogastric (OG) tube ○ Infant may take nutrition by mouth once off of positive pressure respiratory support • The neonate should not receive maternal breast milk given recent relapse, but if the mother is planning to re-enter a rehabilitation program she should be encouraged to pump and discard breast milk	<u>Therapeutic Goal</u> • Weight gain <u>Monitoring Parameters</u> • Daily weight (goal to maintain percentile on growth curve for weight and length)

		until 90 days in the program without relapse. Mother should be counseled on smoking cessation (but not contraindicated to breast feeding) • Decrease intravenous IV fluids as enteral nutrition advances	

Health Maintenance	3	• The neonate should start supplementation with cholecalciferol 400 IU (or 10 mcg) daily once enteral nutrition is started.
		  ○ Continue supplementation until the infant takes > 1 L of formula per day
		  ○ The patient has received the initial birth Hepatitis B vaccine and should received routine childhood immunizations at the appropriate age
		• Next set of immunizations due:
		  ○ 9/17/21 (1 month of age): hepatitis B
		OR
		  ○ 10/17/21 (2 months of age): hepatitis B, DTaP (Diphtheria & tetanus toxoids, acellular pertussis), poliovirus, haemophilus b, pneumococcal 13 valent, and rotavirus
		
		The patient appropriately received phytonadione IM, ophthalmic erythromycin, and the hepatitis B vaccine after birth
		
		Completion of hepatitis B vaccination series: 3 dose series (0, 1 – 2, and 6 – 18 months). A 4 dose series (0, 1 – 2, 4, and 6 – 18 months) is acceptable when using a combination vaccine after the birth dose that contains hepatitis B
			<u>Therapeutic Goal</u>
			• Prevent vitamin D deficiency and rickets
			• Protection from vaccine preventable diseases
			
			<u>Monitoring Parameters</u>
			• Temperature and irritability post-vaccination
			• Injection site reactions