8-1-2022

OI, HIV Cases

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Outpatient HIV Clinic Visits

Clinic Visit 1 (8/16/2021)

HPI: Megan Smith is a 56-year-old African American female referred to Pacific HIV clinic after having tested HIV-positive at an urgent care 2 days ago. She reports having multiple sex partners over the past 5 years and denies consistent use of protection during sexual intercourse. One of her previous sex partner from years ago notified her that she was recently diagnosed with HIV, thus prompting her to get tested. She denies having any history or s/sxs of a STIs. Patient is aware of her needing to start ART and is willing to start. However, she wishes to have a single tablet daily ART regimen and to avoid any injectable medications given she is already taking many medications at home.

Urgent care labs report:
HIV Ag: detected
HIV Ab: detected
HIV-1/HIV-2 antibody differentiation immunoassay: (+) HIV-1, (-) HIV-2
N. gonorrhoeae NAAT: negative
C. trachomatis NAAT: negative
RPR: negative

PMH: T2DM, hypertension, CKD Stage 3, asthma, PAD

S**H**: Bisexual, reports being sexually active with multiple sex partners previously but recently started a relationship with a female partner, denies tobacco or recreational drug use

Home Medications:
Aspirin 81 mg 1 tab PO daily
Atorvastatin 80 mg 1 tab PO daily
Insulin NPH 40 units SC BID
Losartan 100 mg 1 tab PO daily
Hydrochlorothiazide 25 mg 1 tab PO daily
Flovent HFA 44 mcg/actuation 2 puffs INH BID
Proventil 90 mcg/actuation 2 puffs INH q4h PRN SOB

Assessment/Plan: Based on patient's social history and test, patient is newly diagnosed with HIV. Will start patient on Biktarvy. Patient was educated on importance of safe sex and other appropriate measures to decrease transmission of HIV. Patient was also informed to let any sexual partner in the previous 5-10 years know regarding possible HIV transmission and encourage testing. Will f/u with patient in 4 weeks to assess treatment.

Prescription Order (sent to Pacific pharmacy):
Biktarvy 1 tab PO daily; Quantity: 30; Refill: 1

Prescription Follow-up

Pharmacy informed that Biktarvy is not covered by patient's insurance, Pacific Health. Formulary for single tab regimen for HIV was requested from patient's insurance and is attached below. The pharmacy was informed by patient's insurance that the HIV medications that require PA are easily approved most of the time. Follow-up with pharmacy to change prescription to Dovato. Patient was called regarding prescription change.

Pacific Health Insurance Formulary:

Drug	Formulary Status

Atripla (efavirenz/tenofovir DF/emtricitabine)	PA required
Symfi (efavirenz/tenofovir DF/lamivudine)	PA required
Complera (rilpivirine/tenofovir DF/emtricitabine)	PA required
Odsefsey (rilpivirine/tenofovir AF/emtricitabine)	Not covered
Stribild (elvitegravir/cobicistat/tenofovir DF/emtricitabine)	PA required
Genvoya (elvitegravir/cobicistat/tenofovir AF/emtricitabine)	Not covered
Triumeq (dolutegravir/abacavir/lamivudine)	PA required
Biktarvy (bictegravir/tenofovir AF/emtricitabine)	Not covered
Symtuza (darunavir/cobicistat/tenofovir AF/emtricitabine)	PA required
Juluca (dolutegravir/rilpivirine)	Not covered
Dovato (dolutegravir/lamivudine)	PA required

Prescription Order (sent to Pacific pharmacy):
Dovato 1 tab PO daily; Quantity: 30; Refill: 1

Clinic Visit 2 (9/10/2021)

HPI: Megan Smith is a 56 years old African American female who was diagnosed with a HIV-1 infection 1 month ago and was started on Dovato. Patient reports no acute complaint after starting treatment. She admits missing some doses of Dovato in the last month but claims to be 80% compliant overall. She is more aware to practice safe sex and she is grateful that her current partner tested negative.

PMH: HIV, T2DM, CKD Stage 3, HTN, asthma, PAD

Home Medications:
Aspirin 81 mg 1 tab PO daily
Atorvastatin 80 mg 1 tab PO daily
Insulin NPH 40 units SC BID
Losartan 100 mg 1 tab PO daily
Hydrochlorothiazide 25 mg 1 tab PO daily
Flovent HFA 44 mcg/actuation 2 puffs INH BID
Proventil 90 mcg/actuation 2 puffs INH q4h PRN SOB
Dovato 1 tab PO daily

Assessment/Plan: CD4+ has increased and viral load has decreased. Continue Dovato. Patient was educated regarding importance of compliance with HIV medication. Patient wishes to be seen less due to work schedule. Follow up in 3 months.

Prescription Order (sent to Pacific pharmacy):
Dovato 1 tab PO daily; Quantity: 30; Refill: 3

Clinic Visit 3 (12/13/2021)

HPI: Megan Smith is a 56 years old African American female who has been on Dovato for HIV treatment. Patient reported improved medication compliance to 95%. She denies any complaint but has been noticing white plaques around her oral cavity. Patient denies any dysphagia or pain.

PMH: HIV, T2DM, CKD Stage 3, HTN, asthma, PAD

Home Medications:
Aspirin 81 mg 1 tab PO daily
Atorvastatin 80 mg 1 tab PO daily
Insulin NPH 40 units SC BID

Losartan 100 mg 1 tab PO daily
Hydrochlorothiazide 25 mg 1 tab PO daily
Flovent HFA 44 mcg/actuation 2 puffs INH BID
Proventil 90 mcg/actuation 2 puffs INH q4h PRN SOB
Dovato 1 tab PO daily

Physical Exam:
ENT: White patches on the surface of the oral mucosa and tongue

Assessment/Plan: CD4+ count and viral load continues to improve. Oral candidiasis detected. Continue Dovato and initiate antifungal therapy. Follow-up in 3 months and patient was informed to contact clinic if candidiasis does not resolved or worsened.

Prescription Order (sent to Pacific pharmacy):
Dovato 1 tab PO daily; Quantity: 30; Refill: 3
Fluconazole 100 mg 1 tab PO daily; Quantity: 7; Refill: 0

Missed Appointment Note

Patient did not come to clinic appointment today. Tried contacting by phone but the number was busy and voicemail inbox was full. No message was left. Will call back next week.

Phone Call Follow-up

Patient was contacted again to follow-up and call wasn't being picked up. No message was left due to full voicemail inbox. No message was left. Will send correspondent note via mail.

Admission Day 1 (5/31/2022)

Admission Note

HPI: Megan Smith is a 56 years old female brought in by her partner with fever and confusion. Her partner mentioned that she started having bad headaches 2 days ago and she tried taking Advil with only slight relief. Her headache got worsened and she felt chill last night. Today she called in sick to work and when her partner checked on her after work, she looked very sick and was confused on what is going on with her. Her partner also reported that the patient had not been taking her HIV medications since there was no refill left 3 months ago and she had been too busy with work to follow-up with the clinic.

PMH: HIV-1, T2DM, CKD Stage 3, hypertension, asthma, PAD

Home Medications:
Aspirin 81 mg 1 tab PO daily
Atorvastatin 80 mg 1 tab PO daily
Dovato 1 tab PO daily
Insulin NPH 40 units SC BID
Losartan 100 mg 1 tab PO daily
Hydrochlorothiazide 25 mg 1 tab PO daily
Flovent HFA 44 mcg/actuation 2 puffs INH BID
Proventil 90 mcg/actuation 2 puffs INH q4h PRN SOB

SH: Bisexual, in a relationship with a female partner; denies tobacco or recreational drug use

PE:
Vitals: BP 135/81, T 38.5°C, HR 91 RR 26, O2 sat 98% on RA, Ht 5'5", Wt 189 lbs
Gen: confused female in acute distress

HEENT: mucosa membranes dry but pink, no tongue trauma
Resp: normal and regular rate, appropriate respiratory excursion
CV: normal rate, regular rhythm, no rubs or gallops, (-) JVD
Abd: normoactive bowel sounds, nontender to light or deep palpation, no organomegaly
Ext: Skin intact with no lesions, peripheral pulses are equal and palpable
Neuro: limited examination due to altered mental status, A&O x1 to person

Assessment/Plan:
1. Encephalopathy 2/2 to possible meningitis, r/o other etiology: STAT lumbar puncture. Initiate empiric antibiotics and antiviral. Obtain cultures and CT head.
2. HIV: low CD4 count and high viral load compared to previous readings. Obtain genotype resistance test. Continue current regimen while waiting.
3. Hyperglycemia: continue home regimen and sliding scale as needed
4. CKD Stage 3: renal function at baseline, continue to monitor

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CT Head

Indication: Headache

Technique: CT imaging of the head was performed without intravenous contrast

Comparison: None

Findings: No intracranial hemorrhage, mass effect, shift of midline structures, or extra-axial. No fractures are identified. Visualized paranasal sinuses, mastoid air spaces, and orbits are unremarkable. Soft tissues of the scalp are within normal limits.

Impression: No intracranial hemorrhage, mass effect, or infarct observed.

Lumbar Puncture

Indication: Encephalopathy

Consent: Consent was obtained from Ms. Shonda (partner) prior to the procedure. Indications, risks, and benefits were explained at length.

Technique: multiple transverse and longitudinal sonographic images of the left lower extremity deep venous system with gray-scale, color Doppler, and spectral Doppler flow. Compression and augmentation maneuvers were performed.

Procedure summary: The patient was placed in the left lateral recumbent position with help from the nursing staff. The area was cleansed and draped in usual sterile fashion using betadine scrub. Anesthesia was achieved with 1% lidocaine. A 3.5-inch spinal needle was placed in the L2-L3 lumbar interspace. On the second attempt, clear, transparent cerebral spinal fluid was obtained. CSF fluid collected and a sterile band-aid was placed over the puncture site. The patient had no immediate complications and tolerated the procedure well. Estimated blood loss was <10 ml.

Findings: Cloudy fluid was obtained. No xanthochromia.

Impression: Meningitis cannot be ruled out from the CSF analysis. Specimens are sent for further microbiology tests.

ECG

Rate 87**,** PR 121**,** QRSD 80**,** QT 305**,** QTc 389. No abnormality.

Admission Day 2 (6/1/2022)

Inpatient Progress Note

Impression:
Patient's mental status is still altered when examined at bedside with RN. RN reports continuous fever overnight and a hypoglycemic reading this morning. STAT dextrose was administered and hypoglycemia resolves.

Physical Exam:
General: Awake but not alert, oriented x1 person
HEENT: Normocephalic, atraumatic, no scleral icterus or conjunctival injection
Neck: Supple, no rigidity, no lymphadenopathy
Lungs: Clear to auscultation bilaterally, no crackle or wheezes
CV: RRR, no murmur
GI: soft, nontender, normoactive bowel sounds, no rebound, guarding, or masses
Ext: no ulceration, warm to touch
Neuro: no gross motor deficits, moves all extremities

Plan:
1. Meningitis: CSF fluid analysis positive for *Cryptococcus neoformans*. Consult ID and pharmacy for treatment.
2. HIV: Resistance test comes back with multiple mutations. Consult ID and pharmacy for HIV regimen.
3. Hyperglycemia: hypoglycemic today. Consult pharmacy for insulin dosing.
4. CKD Stage 3: renal function at baseline, continue to monitor

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Summary of Work-up
Actual BW: 85.9 kg (BMI 31.4)
IBW: 57 kg
AdjBW: 68.6 kg

Labs:

	Clinic visit 1 (Aug '21)	**Clinic visit 2 (Sep '21)**	**Clinic visit 3 (Dec '21)**	**Day 1 Admission PM (May 31 '22)**	**Day 2 AM (June 1 '22)**
CBC					
WBC (cell/ml)	7,000	6,700	6,200	11,200	10,900
Hgb (g/dl)	14.2	13.7	13.9	13.2	13.8
Hct (%)	41.8	39.8	38.8	38.9	40.2
Plt	234,000	213,000	225,000	189,000	200,000
BMP					
Na (mEq/l)	141	144	140	138	134
K (mEq/l)	3.8	3.7	3.6	3.5	3.6
Cl (mEq/l)	99	101	102	102	100
CO2 (mEq/l)	25	25	23	22	24
Glu (mg/dl)	201	186	199	189	65
BUN (mg/dl)	40	38	42	35	37
SCr (mg/dl)	2.2	2.1	2	1.9	2
CrCl (use AdjBW)*	30.9	32.4	34	35.8	34
Tbili (mg/dl)	0.9	1.1	0.8	1	
ALT (IU/l)	21	23	28	32	
AST (IU/l)	20	35	30	26	
Alkphos (IU/l)	72	87	85	68	
Ca (mg/dl)				8.9	

Mg (mg/dl)				1.8	1.9
P (mg/dl)				3	
Alb (g/dl)				4	
A1C (%)				8.8	
TC (mg/dL)				197	
HDL (mg/dL)				38	
LDL (mg/dL)				110	
TG (mg/dL)				130	
HIV Labs					
HIV VL (copies/mL)	97,020	61,500	45,200	156,000	
CD4+ count (cells/mm3)	206	305	458	46	
CSF Fluid Analysis & Micro					
Glucose (mg/dl)				22	
Protein (mg/dl)				450	
Gross appearance				Cloudy	
WBC (cells/uL)				13500	
Blood Microbiology					
HSV 1 & 2 Ab				Negative	
RPR (syphilis)				Non-reactive	
Toxoplasma gondii IgG				Detected	
SARS-Cov-2 PCR				Negative	
HBV surface Ab				Non-reactive	
HBV Ag				Negative	
HCV Ab				Non-reactive	
Blood culture 1				Pending	
Blood culture 2				Pending	
CSF culture				Pending	
Genotypic HIV resistance test				Q148K mutation E138K mutation	

*Students need to calculate CrCl and they should know to use adjusted BW if actual BW is >30% of IBW

Day 2 lab note

CSF Microbiology	**Results**
E. coli PCR	Negative
H. influenza PCR	Negative
L. monocytogenes PCR	Negative
N. meningitidis PCR	Negative
S. agalactiae PCR	Negative
VZV PCR	Negative
CMV PCR	Negative
Enterovirus PCR	Negative
Cryptococcus neoformans PCR	Detected
Cryptococcus Ab	Detected

Vitals

DATE	TEMPERATURE	PULSE	RESPIRATION	BLOOD PRESSURE	PULSE OXIMETRY
06/01/2022 12:15	38.7 C	95	16	142/81	100 %
06/01/2022 08:41	39.1 C	99	17	148/78	100 %
06/01/2022 05:55	38.7	82	13	125/74	99 %
06/01/2022 00:20	38.9 C	98	18	128/78	98 %
05/31/2022 18:20	38.5 C	91	26	135/81	98 %

BG POCT

DATE	CAPILLARY BLOOD GLUCOSE READING
06/01/2022 12:15	149 mg/dL
06/01/2022 08:41	79 mg/dL
06/01/2022 06:30	92 mg/dL
06/01/2022 05:55	65 mg/dL
06/01/2022 01:40	169 mg/dL
05/31/2022 21:30	219 mg/dL

DATE	MEAL CONSUMED
06/01/2022 12:15	70 %
06/01/2022 08:41	60 %

Medications/Orders:
Vancomycin 1000 mg IV q24h
Ceftriaxone 2 g IV q24h
Acyclovir 850 mg IV q8h
Insulin glargine 80 units QHS
Insulin sliding scale TID AC
Vaccine completed: COVID 3 doses, flu, Tdap/Td
Dextrose 10 g x1 (after hypoglycemia reading)

Student Instructions
1. Please provide complete SOAP for the main problems with specific instructions as follows.

- Cryptococcal meningitis: provide full treatment plans for cryptococcal meningitis, including acute treatment to resolve infection with any necessary supportive care and follow-up secondary prophylaxis to prevent recurrence
- HIV: provide assessment of current HIV management and provide **comprehensive** plan to optimize management and reduce future complications/adverse events risk

2. Please provide assessment and plan on secondary problems
3. Please review patient's course of hospitalization and previous visits (including appropriateness of medications initiated, monitoring during hospitalization, or any necessary follow-ups) to assist in responding to the discussion questions

Disclaimer:

- Dovato is ordered as 2 different medications in the chart because EHRGo does not have Dovato in their medication list. But pretend that patient takes the combination medication.
- In this case, genotypic HIV resistance tests resulted in within a day. But in practice, please note that the test typically takes 2-3 weeks.

Discussion Questions

1. (a) Do you agree with the empiric therapy (vancomycin & ceftriaxone) initiated for the suspected bacterial meningitis? Why or why not? If not, what would you have recommend? Please assess dosing as well on top of choice of therapy.

(b) Do you agree with the dosing for vancomycin and ceftriaxone? If not, what would be your recommendation? Please use AUC-based monitoring for vancomycin.

(c) How do you determine duration of therapy for bacterial meningitis?

2. (a) Acyclovir may sometimes be initiated in patients with meningitis if there is a concern for viral involvement. Do you agree with the acyclovir dose ordered for Megan? Why or why not? If not, what would be your recommended dose?

   (b) Is Megan at risk for acyclovir-induced nephrotoxicity? What risk factors she has?

   (c) What are ways to reduce risk for nephrotoxicity if Megan needs to continue treatment with acyclovir?

3. (a) What primary prophylaxis for other opportunistic infections are indicated for Megan?

   (b) Do you agree with the initial antiretroviral therapy (Dovato) started for Megan? Why or why not? What other alternative did Megan has for initial HIV antiretroviral therapy (discuss why the alternative will or will not be appropriate for Megan based on patient preference, insurance coverage, and other necessary patient factors)?

4. (a) The provider initiated insulin glargine on admission due to insulin NPH being non-formulary. Do you agree with the dosing? If not, what would you do differently?

   (b) Please provide assessment of T2DM and provide potential plan for discharge/outpatient management.

   (c) What is your assessment and therapeutic plan to manage hypertension while inpatient?

5. (a) Is Megan up-to-date on her vaccinations? If not, what would you recommend for her and when to administer?

   (b) Which vaccines (list at least 3) are contraindicated for her and why? Are there any exception to any of the contraindicated vaccines?