Health Care Access for Incarcerated and Underserved Urban Patients

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Background

Lemuel Shattuck Hospital, located in Jamaica Plain, MA, provides acute, subacute and ambulatory care to socially and economically disadvantaged patients referred by public and private agencies. This includes a correctional healthcare unit which provides treatment to over two dozen state and county correctional facilities.[1] As part of the University of Massachusetts Medical School Population Health Clerkship, eight second year medical students spent two weeks rotating through the hospital assigned to various teams. Students compiled case presentations which focused on the intersection of pathology with social factors, pharmacologic interventions, healthcare access and preventative healthcare disparities, and psychological and mental health needs.

Pharmacology[6]

Many patients presented with infectious complications of IVDU such as abscesses, osteomyelitis, and endocarditis. Below, we highlight a few important antibiotic therapies in the treatment of these infections.

Daptomycin

- Lipopeptide molecule that creates transmembrane channels to disrupt the pores of gram positive cocci Important treatment for MRSA
- Cannot be used to treat pneumonia (important in the context of nosocomial infections) due to interaction with surfactant
- Adverse effects include myopathies, rhabdomyolysis

Fluoroquinolones

- Toxic to prokaryotic DNA via inhibition of topoisomerases, which normally maintain DNA integrity by preventing supercoiling during replication. Their inhibition is bacteriacidal.
- Important treatment for gram negative infections, UTIs, and some pneumonias. Also considered an empiric therapy for pyelonephritis, an add-on agent for treatment of *Pseudomonas* infections, and an add-on agent for TB therapy unresponsive to the RIPE regime.
- Cannot be taken with cations, most notably antacids.
- Adverse effects include tendon rupture (more common to certain patient populations, such as young children and the elderly), QT interval prolongation, and GI distress.

Cefepime

- Cephalosporins have 5 total generations with a broad range of activity from mostly gram positives (1st gen) to MRSA and *Listeria* (5th gen). Ceftriaxone (3rd gen) is notable for its ability to cross the blood brain barrier and treat infections like meningitis.
- Cefepime (4th gen) is important in the treatment of *Pseudomonas* infections. In a case of suspected *Pseudomonas* bacteremia, Cefepime was the initial treatment while we waited for susceptibility testing.

Treating A Patient with Endocarditis

36 year old male presents to Shattuck Hospital with infective endocarditis leading to aortic valve replacement and mitral valve repair

- He has a history of substance abuse, which first began when he was involved in a motorcycle accident where he became addicted to pain killer medications and eventually developed an addiction to heroine
- 2.4 million Americans used prescription drugs nonmedically first the first time within the past year with more than half females and a third aged 12 to 17.[2] This is a prevalent problem in the U.S. that borders on the ethical issue of how much opioids should be prescribed for pain especially since pain is a subjective symptom
- Bacterial endocarditis is common in IV drug users and many patients from this population are treated for bacterial infections in the hospital rather than at home because healthcare providers are concerned about patients using while being treated, which can lead to many complications.
- This patient has expressed that he has only taken drugs orally and is otherwise healthy – but he was infected with Serratia Marcescens, a nosocomial bacteria that rarely effects the heart, and has somehow developed severe endocarditis requiring surgery. As a physician, it is necessary to trust patients but there has to be some form of suspicion about whether patients are being entirely truthful to give them the best care possible especially when the clinical picture and patient's stories do not align.
- This patient also is very determined to be clean and is very grateful for his family which includes his parents, his brother, his wife and 3 children for being supportive of him. Although he refuses medical intervention and group counseling to help with his addiction, which is an indication of not accepting that he has a substance abuse problem, hopefully he would overcome his addiction.

Valuing Patients' Quality of Life: an Elderly Man with ED

67 year old man presents to the ambulatory care clinic as a new patient to establish primary care.

-He has a history of HIV, HTN, chronic back pain, osteoporosis, GERD, depression, and erectile dysfunction. He has also been treated in the past for HCV and syphilis.

-All of the patient's chronic conditions are well-controlled from his perspective; however, he is very concerned about his erectile dysfunction. The patient states that his ED is causing him emotional distress and that it is negatively affecting his relationship with his girlfriend, a person who is a critical source of support in his life and who "knows about his HIV and is there [for him] even though a lot of people still have stigma about it".

-He states that when he brought up ED to his previous PCP, the PCP was dismissive of his concerns.

-He used to receive Viagra from a company that assists low- income patients with prescriptions; however, this is no longer possible. He is concerned that his insurance will not cover the Viagra.

-His insurance covers 4 pills of Viagra/month. He receives a prescription and is advised to cut them in half to increase the number of doses.

-This case demonstrates the importance of valuing patient quality of life—especially among marginalized populations where these concerns are more often ignored. Moreover, it speaks to the fact that sexuality and sexual intercourse may be important goals for elderly patients and that clinicians must be knowledgeable with regards to sexual dysfunction and capable of addressing these patient needs.

Inpatient Case Study of Advanced HIV/AIDS Complication

TIMELINE OF PATIENT'S CASE

A 48 y/o Haitian female presented with abdominal pain, weight loss, dizziness, altered mental status. Imaging showed multiple ring enhancing lesions; breast mass; peripancreatic mass

Differentials: brain metastases, CNS lymphoma, pancreatic cancer.

Late Feb 2017: CD4 Count = 32; VL = 74,000; HIV diagnosis

On 3/1: *CSF + for* ***Toxoplasmosis***. Started Bactrim & HAART on 3/6-7; Peripancreatic Bx showed positive AFB - started RIPE. HAART and RIPE discontinued with concern for IRIS. Patient showed symptoms of fever (104.5 F), AKI, thrombocytopenia, and transaminitis

On 3/11: Re-started RIPE- same time: fevers, concern for Bactrim reaction. 3/14: Bactrim / RIPE discontinued. Started Clindamycin, pyrimethamine, leucovorin for Toxoplasmosis.

On 3/15: Transfer to Neuro ICU. Found HSV and started Acyclovir; AKI worsened: proteinuria concerning for HIV-associated nephropathy

On 3/23: Rifabutin, ethambutol, INH started for disseminated TB - 2 weeks later: negative sputum

On 3/26: Antiretroviral therapy initiated- continuous fevers; likely IRIS. Began Prednisone 4/15

On 4/25: Started on Trihexyphenidyl for low freq, high amplitude tremor in left arm (likely due to Toxo); other concerns during admission: HTN & recurrent UTIs

On 4/26: Transfer to Shattuck for continued care

SOCIAL HISTORY

-Haitian immigrant following earthquake in 2010; young daughter

-Newly-discovered HIV status

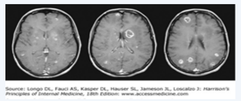
Concerns: Apartment lost during hospital stay; lasting arm tremor complicates return to work (CNA); care for herself and daughter; Immigration status

TREATMENT PLAN

As of October 2017: CD4 = 270; serology viral load undetectable

PLAN: 1) Goal = CD4 Count of 200 for 6 months (continue HAART); 2) 9-12 months of treatment for extrapulmonary TB, 3) Pyrimethamine for 6 months (Toxo maintanence tx)

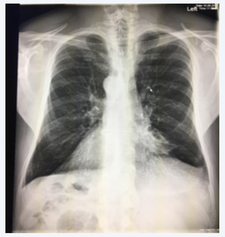
Many psych + social concerns: Discharge to nursing home - insurance? Self-administering medications; Caring for her child & herself

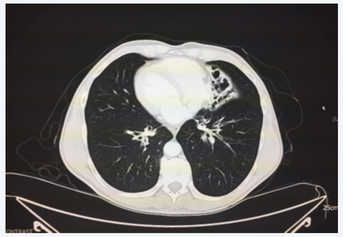


Source: Longo DL, Fauci AS, Kasper DL, Hauser SL, Jameson JL, Loscalzo J: Harrison's Principles of Internal Medicine, 18th Edition: www.accessmedicine.com

Outpatient Case Study of a Rare Disease

52 y/o male inmate presents to the ACC with productive cough without hemoptysis, bilateral rales and rhonchi, and dark foamy urine consistent with a recent pseudomonas infection. Pt c/o of nasal congestion, SOB, and fatigue. He denies CP, fever, or nausea, and has never smoked. Pt has been on Abx intermittently for recurrent respiratory infections and recalls having recurrent pneumonia as a child.





Kartagener's Syndrome / Primary Ciliary Dyskinesia: situs inversus, bronchiectasis, and chronic sinusitis

Treatment Plan: (no cure)

1) Control infection: chronic low-dose Abx (30 d rotation of amoxicillin, azithromycin, piperacillin/tazobactam, TMP/sulfa etc.)

2) Sx control: continue Tudorza (LAMA) and albuterol. Start guaifenesin and stay well hydrated.

A Young Woman with Trauma and Daily IV Heroin Use

26 year old female, h/o alcohol and poly-substance abuse (IVDU), chronic asthma, HCV+, Chron's Disease

- Admitted for prolonged IV antibiotics s/p complications of polymicrobial bacteremia, including:TV endocarditis, septic pulmonary emboli, left empyema and pleural effusion, right iliopsoas abscess
- Social history: sexual, physical, emotional abuse, initiation of illicit substance use at 10 years old, DCF custody at age 12, Began living independently with boyfriend at young age, 2 children at 16 and 18, Homeless at age 20, sniffing heroin at age 21, daily IV user at age 22
- An abnormal echocardiogram showed a patent foramen ovale, doppler showed severe tricuspid insufficiency
- Shunt fraction calculated to be 13.28% indicated shunt reversal through patent foramen ovale. Further evaluation revealed septic emboli in lungs causing pulmonary hypertension, as well as tricuspid regurgitation. Both of these pathologies lead to shunt high right atrial pressure and shunt reversal causing hypoxemia
- Treatment plan: IV antiobiotics, Drainage of pleural effusion, Consultation with pulmonology and cardiology, Substance use treatment including daily methadone

-referral to cardiothoracic surgeon to discuss intervention (closure of PFO, heart/lung transplant?)

-surgery requires remaining infection free, so substance use treatment is central to patients prognosis

Barriers: lack of support network, stunted cognitive and emotional development due to early initiation of drug use, lack of daily and professional skills, severe trauma

Discussion/Conclusion

This clerkship exposed students to the clinical care and barriers faced by some of Massachusetts' most vulnerable populations. Students spent time eliciting the perspectives of patients and discussing patient-centered care plans.

Several experiences, such as personal conversations with patients in recovery and education around medication-assisted treatment, contributed to the destigmatization of substance use disorders. As more physicians are exposed to patients with a history of substance abuse paralleling the record high numbers of opiate overdose in the state, understanding these patients' struggle with addiction will contribute to better patient care and help with tackling the state's problem with drug addiction by providing proper treatments and fostering trusting relationships with patients.

This clerkship provided a valuable educational experience to students but brought to light an ethical concern around the degree of patient autonomy in marginalized populations. There are ethical concerns surrounding how incarcerated patients receive emergency care because it could take as long as one hour to prepare and secure the patient after an emergency to receive help. Patients with a drug addiction usually present to the hospital with very progressive disease due to lack of access and the stigma associated with substance abuse users. The treatment of these patients include a multifaceted social, economic, and pathological problem that, as students, we can start to understand through this clerkship.

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