

Case Study I

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- Jim Jones is a 37-year-old white male who has been hospitalized in your county's local hospital, preparing for discharge.
- He presented with a 2 month history of progressive symptoms that include
 - Productive cough
 - Fever
 - Weight loss of ~ 20 pounds
 - Night sweats
- He has been reported to the health department as a suspected Tuberculosis (TB) case, and you are the public health nurse assigned to his case.

You have conducted a medical record review and found the following information.

- Site of TB disease: pulmonary TB suspected
- TB symptoms: cough, fever, fatigue, weight loss
- Sputum smear results: AFB positive (3+) on 10/18/15
- PCR pending
- Culture results: pending
- Chest x-ray results: cavitation in left upper lobe on 10/18/15



WHAT ARE YOUR NEXT STEPS?

Some First Steps to Take:

- **Interview patient.**
- **Explain need for isolation until final test results come back.**
- **Determine Infectious period.**
- **Enter a report of TB in to TB SWIMSS**
- **Call your regional nurse if you have questions or need assistance.**
- **Contact physician and receive orders for TB treatment as suspect.**

Patient interview

What is the Purpose of the patient interview??????



Patient Interview

- Build Rapport
- Gain information
- Provide TB education
- Explain & arrange for contact investigations
- Discuss precautions/activities to avoid
- Discuss isolation criteria

- On 10/19/15 the patient's physician discharges Jim to home and orders the following drug regimen:

- INH 300 mg PO QD
- RIF 300 mg PO BID
- PZA 1500 mg PO QD
- EMB 1000 mg PO QD

(Pt weight 145 lbs)

Would you request any changes to this regimen?

Discharge date 10/19/15

Does this patient need to be in airborne isolation?

What factors are needed to consider patient as non infectious ?

Case management challenges

On the 9th day of treatment, the nurse arrives at the home to do DOT. An individual who has not yet been identified as a contact opens the door and states he is the younger brother to Jim. He tells you that Jim is down the street at the local bar having a beer. **What are your next steps?**

Next steps for case manager

- Interview and test brother Jim
- Consider drawing labs for LFTs
- Consider health directive/agreement to enforce isolation if patient considers being non compliant
- Patient education

Case management challenges

Several weeks after starting the TB meds the patient starts c/o anorexia, abd pain, nausea/vomiting and weight loss

Labs drawn and returned 4 days later reveal sodium of 125, Alb 3.1, T. Bili 2.6, Alk Phos 381, AST 337, ALT 580

Case management challenges

The patient is asked to come into the clinic immediately and was found to have scleral icterus, 6 pound weight loss and maculopapular rash on arms and legs

What now?.... Do you stop TB meds? Why or why not

When do you consider stopping meds?

If LFT $\geq 3x$ upper limit of normal and patient has symptoms;

or

If LFT $\geq 5x$ ULN with or without symptoms

Normal (ALT 7 – 55 U/L AST 8 – 48 U/L)_{mayo}

- 10% to 20% of persons taking INH will have some mild elevation of liver enzymes. These tend to resolve even if INH is continued.
- Provide close clinical and laboratory monitoring if there are any signs or symptoms of hepatotoxicity or liver function test elevations less than the levels listed.

Case Management challenges

The LHD nurse finds out that the index case has been secretly going to work at the convenience store at night.

What should the nurse do next?

Case management challenges

- Interview patient and find out why they are going to work, if finances are an issue, consider incentives or other sources
- If still in isolation, legal enforcement??

References

CDC Division of TB Elimination

<http://centerfortuberculosis.mayo.edu/>

<http://www.tbcontrollers.org/docs>

<http://globaltb.njms.rutgers.edu/>

Case Study II

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October 2015

April 10, 2015: 53 yr old US born homeless ,
binge drinker, “*no ETOH since Dec 2014*”,
presented to the hospital with c/o of 2 months of
malaise, on and off fevers and chills, headache
and nausea. Headache started approximately 5
months ago while incarcerated at the local jail.
He now has significant hearing loss, increased
SOB, has been coughing for the past 2 weeks,
with blood tinged sputum and intermittent night
sweats, fever last night 101.3

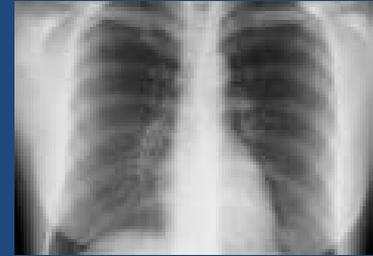
NEXT STEPS

What are the hospital's next steps?????



NEXT STEPS

- Airborne Isolation
- Chest x-ray/CT Scan
- Sputum collection x 3; at least 8 hours apart



Results

CT scan: Profuse miliary-like nodules bilaterally

Sputum collection x 3: (***VERY IMPORTANT***)

4/11 00:45 smear neg

4/11 13:10 smear neg

4/11 15:15 smear neg

4/12 08:45 smear neg

4/12 14:25 smear neg

4/13 17:05 smear neg

BAL 4/16: few acid fast organism with irregular appearance

Q: Any advice for labs?????

NEXT STEPS

A: Order a PCR

MRI, HIV, IGRA,

Other Baseline labs:

ALT: 49 (7 - 55)

AST: 48 (8 - 48)

HbA1C: 6.4



RIPE

NOTIFY HEALTH DEPT OF TB SUSPECT

WHAT IS THE ROLE OF THE HD DURING HOSPITALIZATION?

Reporting to ISDH

Communicable reporting rule

Coordinating with hospital for discharge

Interview patient for discharge and CI

Q: Is there anything else in the initial summary that would be a cause for concern?

HOSPITAL DISCHARGE PLANNING

Summary of chart

CT scan: Profuse miliary-like nodules bilaterally

AFB

4/11 00:45 smear neg ; 4/11 13:10, smear neg; 4/11 15:00 smear neg;
4/11 15:15 smear neg; 4/12 08:45 smear neg; 4/12 14:25 smear neg;
4/13 17:05 smear neg; BAL 4/16 : few acid fast organism with irregular
appearance. PCR neg; for MTB, culture pending, CSF Negative, QFT
indeterminate. HIV(-) Symptoms have improved since hospitalization,
T 97.9, BIOX 93%, reports no night sweats, no chills, min cough

Medications:

4/12/15: INH 300 mg PO QD 4/12/15: RIF 600 mg PO QD
4/12/15: PZA 1200 mg PO QD 4/12/15:EMB 1500 mg PO QD

O2 nasal cannula

HOSPITAL DISCHARGE PLANNING

4/19/15 4.00pm IP nurse calls to let you know patient will be discharged tomorrow

Q: Does this patient need home isolation?

Infection Control

Patients can be considered non-infectious when they meet all of the following three criteria:

- They have three consecutive negative AFB sputum smears collected in 8- to 24-hour intervals (at least one being an early morning specimen);
- Their symptoms have improved clinically
- They are compliant with an adequate treatment regimen for 2 weeks or longer.

HOSPITAL DISCHARGE PLANNING

Housing: Patient wants to return home to his sister, however the family say he has TB and they do not want him, what do you do?

- Consider motel
- Talk to your regional nurse about options available

CASE MANAGEMENT CHALLENGES

4/20/15 Patient discharged from hospital

- Plan: 5 days DOT from motel near LHD

Given food cards for incentives, *cannot* buy alcohol with food card

- 4/24/15 (Friday) Patient not present at motel for DOT, Manager said he saw him walking down the street with his O2.
What do you do?

CASE MANAGEMENT CHALLENGES

4/27/15 Monday morning, LHD nurse gets call from Patient's sister saying patient just showed up at her appt, no oxygen? Not looking well. What now?

Patient was sent back to hospital, RIPE restarted, missed only 3 doses.

- If lapse \geq 14 days, start from beginning
- If lapse $<$ 14 days, continue treatment to complete total doses warranted (if can be completed within 3 months)

HOSPITALIZATION

Labs drawn 4/28/15:

AST: 338 (normal range 8 -48)mayo

ALT: 268 (normal range 7 - 55)mayo

Most likely alcohol associated (MIA weekend)

What should the hospital do?

What other labs should the hospital do?

REINTRODUCTION OF MEDS

- Labs stabilized: Meds were reintroduced; one at a time. On all 4 drugs 5/18/15. Patient had been off medications for approx 18 days
- *Reminder : started RIPE in hospital 4/12/15*

MIA: 4/24/15 to 4/27/15 no meds

4/28/15 hospital stopped meds

5/18/2015 hospital restarted RIPE

What date is used for start of dose counting for initial phase of treatment?

Counting doses

- Today is October 22, 2015. You have just administered DOT. How many more doses are left on his treatment plan?
- How many doses has the patient completed so far?
- Approximately when did the patient complete the initial phase of treatment?
- When do you expect the patient to complete therapy?

SUMMARY OF TREATMENT

Dates	Treatment	No. of Doses	Weeks of treatment
4/12 – 4/20	Ripe 7 days/wk	9	1
4/21 - 4/23	RIPE 5 days/wk	3	
4/28	RIPE	1	
5/18 – 5/29	RIPE 5 days/wk	10	2
6/1 – 7/9	RIPE 2 days/wk	12	6
7/13 – 10/21	INH/RIF 2days/wk	?	?

FAST FORWARD

- None of the cultures grew MTB (sputum, CSF and bronch)
- Improved on treatment: x-ray, respiratory auditory.
- Considered culture negative, with questionable CNS involvement
- Due to possible CNS involvement, treatment was extended to 9 months

When do we consider 9 months treatment for TB ?

- Cavitory pulmonary disease and positive sputum cultures at completion of initial phase
- If initial phase does not include PZA
- HIV infected with positive 2 month sputum culture
- CNS involvement

SOME FACTORS TO CONSIDER

Some factors to consider for delayed sputum conversion:

- cavitary disease

- heavy burden of disease

Some factors to consider when they are delays in response to treatment:

- If heavy burden of disease, recommend daily (DOT) not intermittent therapy

- Is treatment regimen adequate / consider wt of patient

- Other medical co-morbidities

QUESTIONS & DISCUSSIONS



References

- [HTTP://centerfortuberculosis.mayo.edu](http://centerfortuberculosis.mayo.edu)
- ISDH TB Program
- CDC.gov
- Heartlandntbc.org
- CDC's Morbidity and Mortality Weekly Report:
<http://www.cdc.gov/mmwr>
- American Thoracic Society:
<http://www.thoracic.org/adobe/statements/treattb.pdf>
- All lab values referenced from Mayo