COMPLEX TB CASES

Making it through → → → → → to the finish

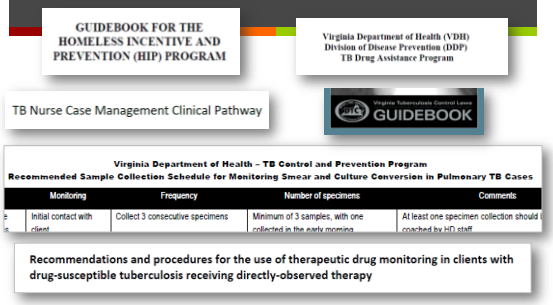
SO, WHAT IS A COMPLEX TB CASE?

The answer is

So Many Things!

Denise Dodge, RN
TB/Newcomer Health Nurses Conference 2013

Some local resources



The Socially Complex Patient

- Socioeconomic
  - Poor
  - Hungry
  - Homeless
- Cultural norms
  - Foreign-born
  - Ethnic minorities
  - Co-culture values
- Geographic location
  - Rural/isolation
  - Transportation
- Developmentally Disabled

The Medically Complex Patient

- Immune suppressed
  - HIV
  - Malnourished
- Diabetic
- Extrapulmonary TB
- Hepatic Disease
- Children
- Renal insufficiency & ESRD
- Drug Resistant Disease
- Pregnancy and Breastfeeding

The Behaviorally Complex Patient

- Substance abuse
  - ETOH
  - IVDU
  - Other recreational drugs
  - Recovering addict
- Antisocial behavior
- Psychosis
- Neurosis
- Stoic and whiner
- Other brain disorders
- Developmentally disabled

Homeless 32 y/o female, PTB, cavitary, sputum smr +, cx +, cough, fever and weight loss

Currently hospitalized, was staying in community shelter in Arlington past month. Has 2 children, 3 and 7, who temporarily remain at the shelter

Recovering heroine addict, denies use for past 2 years

Started on RIPE 4 days ago, tolerating meds well

Ready for discharge

Scenario 1:

Caring for the "recovering" addict

- Initial drug use is voluntary, therefore preventable behavior
- Addiction is the classic bio-behavioral disorder
- Addiction is a chronic recurring illness, compulsive behavior
- True addicts experience relapse, you have no control over this
- What does help
  - Develop a relationship without judgment
  - Recognize their need to control 'something'
  - Communication should be straight forward, honest and clear
  - Don't attempt to reason with a person under the influence

Resources and interventions

- HIP housing, food assistance
- Temporary placement of children
  - clean family, babysitter or friends
  - Shelter?
  - Child Protective Services, Foster care
- If taking methadone, advocate dosage adjustment due to Rifampin interaction
- Ensure HIV testing is done

63 y/o Filipino male, Diabetic, ESRD, confirmed kidney TB, fevers, night sweats, weight loss, denies cough, arrived in U.S. 10 years ago

Creatinine 4.2 mg/dl, CC 53ml/min

Chest x-ray – bilateral lower lobe infiltrates, no sputa collected

Started on RIPE day of discharge, does not believe TB diagnosis

Health Department notified after release from the hospital

Scenario 2: Medical Social

Testing Kidney Function

- Blood Creatinine
  - Directly proportional to renal function
  - Creatinine levels remain relatively constant
  - >4 indicates serious impairment in renal function, likely chronic (4.2)
- Creatinine Clearance CC (24 hr urine/ blood draw)
  - Measure the amount of blood the kidney can make 'creatinine free' per minute, 125 ml/min
  - Varies by age, sex and size
  - <60 ml/min usually indicates chronic renal disease (53)

Dosing recommendations for adult patients with reduced renal function and those receiving hemodialysis

Drug	Frequency change?	Recommended dose and frequency
Isoniazid	No change	300mg daily or 900 3X week
Rifampin	No change	600mg daily or 600 3X week
Pyrazinamide	Yes	NOT DAILY, 25-35mg/kg 3X week
Ethambutol	Yes	NOT DAILY, 15-25mg/kg 3X week
Levofloxacin (fluoroquinolone)	Yes	NOT DAILY, 750-1000mg 3X week
Streptomycin (aminoglycoside)	Yes	NOT DAILY, 12-15mg/kg 2-3X week

Medications should be be given after dialysis on the day of dialysis

Treatment Guidelines: Page 64, Table 13

Cultural Norms

- Passing the immigration TB screening casts doubt on their current TB diagnosis
- Family consensus is expected, individuals do not have the "final say"
- It is common to 'shop' for a diagnosis and treatment from other healthcare providers
- Not conforming to societal norms is considered shameful
- "Weak lungs" is a more socially acceptable term, however is considered a less serious, non contagious form of TB disease
- "Vitamins for lungs", INH/RIF and other combined fixed dose medications are sold to treat URI's and "strengthen" the lungs of children
- Sharing or hording of TB meds to help other family members is not uncommon after the patient feels better

45 y/o male, diabetic, Hep C, recent drug use, living in a homeless shelter for 3 months, cavitary disease, 4 + smears, sputum Mtb +, pansensitive

Currently hospitalized, pending discharge

RIPE started, LFT's slightly elevated

Evidence of antisocial behavior, narcissistic personality disorder, verbally abusive, evasive, uncooperative,

Rarely in contact with family, no known friends

Unstable employment, travels frequently

Scenario 3:

Liver injury

- Symptoms of all types of Hepatic injury are similar
  - Fatigue
  - Loss of appetite
  - Fever
  - Nausea and vomiting
  - Abdominal pain
  - Juandice
  - Gray colored stool

Drug induced liver injury: Hepatotoxicity

- Clear Association
  - Alcohol
  - HCV
  - HBeAg+
  - HIV with ART
  - Increasing age
  - Pregnancy and postpartum
  - Other hepatoxic drugs
- General population (60%)
  - Acetominophen
    - >2 grams daily
    - Xtra strength 500 mg/ tablet
  - Sulfonomides
    - Septra or Bactrim
  - Fluroquinolones

TB regimens and the compromised liver

- Regimens may be modified upfront
  - Baseline LFT's 3x normal
  - Cirrhosis or ESRD
  - Chronic HBV or HCV
  - Heavy ETOH use
  - Other underlying liver disease
- Risk without clinical evidence
  - Due to the effectiveness of RIPE, they should be used if at all possible
  - Ensure patient clearly understands what to side effects to report
  - Monitor LFT's every two weeks or monthly, according to orders

Treatment Choices

Preferred	AST >3x	Avoid PZA	Severe liver disease
1	2	3	4
RIPE 6 mo	REP 6 mo	IRE 9 mo	RE+FQN 12 mo
		Drop EMB after pansentive DST	Drop FQN after 2 mo

PEARLS's: Liver injury and TB treatment

- There is no fail save method for predicting or preventing drug induced liver injury (DILI)
- Close monitoring and appropriate patient education for recognition of symptoms for DILI is key for patient safety and prevention of severe injury
- 5 – 15% of active cases experience DILI, but most subsequently tolerate treatment
- Consider PZA and INH sparing regimens for patients with underlying liver disease

- Evidence of antisocial behavior, narcissistic personality disorder, verbally abusive
- Evasive, rarely in contact with family, no known friends
- Unstable employment, travels frequently and impulsively

Our most important priority!

Don't get hurt while protecting the public's health

- You are our most valuable asset
- Protect yourself, never make visits alone, call law enforcement
- Recognize when the line has been crossed
  - Yelling, screaming, obscenities, threatening language
  - Weapons (guns, knives, clubs….. Almost anything)
  - Forceful or unwanted physical contact
- If taking psychotropic meds consider DOT along with TB medications

Newly diagnosed HIV positive 27 y/o bisexual male, confirmed lymphatic TB, miliary pattern on CXR, sputum smear X3 negative, culture pending

RIPE started 3 weeks ago while hospitalized, discharged to Crater district

Unexpected move to Richmond City over past weekend

Contacted the Richmond City health department to fill prescriptions

Antiretroviral treatment not started as yet

Scenario 4:

It's an ART/ Managing treatment

- **Review with TB Medical Consultant**
- Complicated by
  - ART interactions with rifamycins, especially
    - Protease inhibitors (PI)
    - Non-nucleoside reverse transcriptase inhibitors (NNRTI)
  - Overlapping toxicities
  - Review of other medication interactions complex
- Rifabutin usually substituted for rifampin

IRD – Immune Restitution Disease (AKA IRIS)

- After ART is started there may be an exuberant immune system response to TB bacilli
  - Paradoxical reaction - Worsening of clinical symptoms of TB
  - Unmasking – Initial clinical symptoms related to TB
- Predictors of IRIS
  - More common with CD4 <50 and high viral load
  - Improvement of CD4 and viral load once ART is initiated
  - IF ART is initiated less than 30 days after TB treatment began
  - High burden of TB disease
- Explains the importance of ruling out TB before HIV treatment is initiated

Symptoms of IRD

- Within 3 months of starting ART
- Initial TB symptoms worsen
  - Large adenopathies, including abdominal
  - Cold Abscess
  - Return of night sweats, fever, poor appetite
  - Worsening CXR with new or worsening respiratory symptoms, cavity formation
  - New or worsening CNS
  - Miliary TB with large nodules
  - Sputa remain negative if conversion has occurred

3 y/o exposed to father who was diagnosed with MDR TB

CXR hilar lymphadenopathy, TST 7mm, low grade fever

Cranky and fussy but otherwise behaving like a 3 yr old, appetite varies

Hospitalized to collect gastric aspirates X3, all negative smears, cultures pending

Treatment: Cycloserine, Ethambutol, PAS, Capreomycin (through PIC line)

Scenario 5:

Medical

Behavioral

The pediatric triad

- Otherwise healthy infants
  - Known contact with an adult case of TB
  - Positive TST
  - Suggestive signs on a chest x-ray
- 'Typical' TB symptoms are often not present
  - Change in behavior
  - Failure to thrive (growth delay)
  - Unexplained lymphadenopathy (firm, nontender)
  - Shallow, weak, dry cough (children are poor TB transmitters
  - They often do not improve long term with 'common' antibiotics
- Age is the most important risk factor for progression to disease

Risk of progression to TB disease in pediatric patients

Age of infection	Risk of TB disease
Birth – 12 months	43 - 50%
1 – 5 years	20 – 25%
6 – 10 years	2%
11 – 15 years	16%

PA and lateral film to get a better view of the hilar lymph node

- Lung focus may resolve without detection in primary disease
- CXR in primary TB typically shows enlargement of lymph nodes
- Lymphohematogenous spread is typical and can result in disseminated disease

PEARLS's: Pediatric TB

- Fewer side effects with second line drugs than adults
- Fluorquinolones should be used with care in young children
- Children tend to have a smaller bacillary load than adults. They are generally strong and healthy
- Children with drug resistant TB should be treated by the most experienced clinician or clinic available. Consult with Dr. Gadkowski or Dr. Houpt

"Anyone who has never made a mistake has never tried anything new." – Albert Einstein