



Case Study: Patient Update #2

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Case Study Summary

- 65-year-old male, Air Force veteran with a history of untreated hepatitis C. He has a “cough that will not go away,” and he has been “been feeling tired.”
- Abnormal CXR, reveals extensive bilateral cavitary lesions.
- History of positive TST “years ago” when he was in the military.
- TB clinic visit reveals:
 - AFB smear (+), Xpert (+)
 - history of alcohol use
 - unstable housing
 - untreated HCV
 - baseline LFTs = ALT 45 units/L, and AST 60 units/L.
 - started RIPE by DOT
 - visit #10 LFTs were elevated
 - Medications on HOLD



Case Study....continued

Cannot restart anti-TB therapy until LFT's ≤ 2 times upper limit of normal

- Re-challenge medications
 - Introduce one drug at a time
- Liver Friendly Regimen



Watch
closely.



Case Study Continued.....

- Liver Friendly Regimen was started when LFTs were less than 2 x upper limit of normal (Linezolid, EMB, Moxifloxacin)
- How do we monitor this patient for the remainder of TB treatment?
 - Monitored LFTs closely
 - Encourage adherence
 - Re-educate patient to abstain from alcohol while on TB treatment
 - Review adverse effects
 - Instruct patient to self monitor for side effects/adverse reactions while on meds





Most importantly:

Instruct patient to stop taking TB medications immediately and seek medical attention if symptoms of hepatitis occur again.

Case Study....continued

The PHN closely assesses the patient for signs and symptoms of liver toxicity during the remainder of TB treatment and the patient completed TB treatment successfully with 9 months of TB treatment.



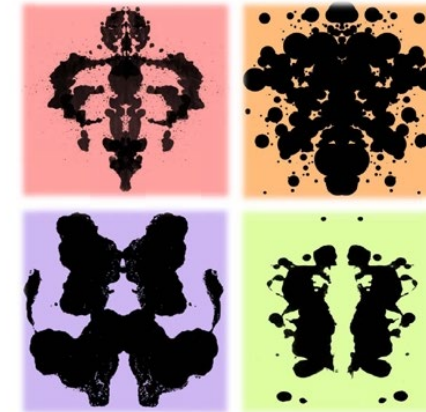
Monitoring Tools

MDR-TB Assessment Checklist

Start Date: _____

Universal Assessment		Baseline	1	2	3	4	5	6	7	8	9	10	11	12
Weight monthly														
CBC and CMP monthly														
Sputum Results														
TB Symptoms (Specify symptom and onset date)														
Resolution of Symptoms (Specify symptom)														
Chest X-ray (q 6 months)														
HIV														
HBsAg, repeat every three months as needed														
Pregnancy, repeat as needed														
Medication Specific Assessment		Baseline	1	2	3	4	5	6	7	8	9	10	11	12
Visual Acuity and Color Vision Assessment	Medication													
	Linezolid													
	Ethambutol													
Neuropathy Screening	Ethionamide													
	Linezolid													
	Isoniazid													
	Ethionamide													
Changes in Mental Status	Fluoroquinolones													
	Cycloserine													
	Cycloserine													
EKG	Fluoroquinolones ¹													
	Clofazimine													
	Delamanid													
	Pretomanid													
Electrolytes (Ca++, K+, Mg++)	Amikacin													
	Streptomycin													
	Delamanid													
	Pretomanid													
Thyroid Stimulating Hormone (q 2-3 months)	Bedaquiline													
	Delamanid													
	Ethionamide													
	PAS													
Renal Function ²	Amikacin													
	Streptomycin													
	Cycloserine													
	Ethambutol													
	Fluoroquinolones													
Audiometry 1000 Hz to 8000 Hz	PAS													
	Amikacin													
Vestibular Toxicity	Streptomycin													
	Streptomycin													

¹Ca: Calcium K: Potassium Mg: Magnesium
²2: specially high dose
³Some patients become depressed due to skin color changes
⁴Recommended for all drugs that require renal dose adjustment



MENTAL HEALTH ASSESSMENT TOOL

- Heartland National TB Center
<https://www.heartlandntbc.org/consultation/>

Monitoring Tools

Texas Department of State Health Services

<https://dshs.texas.gov/disease/tb/forms.shtm>

Kansas Department of Health and Environment

<https://www.kdhe.ks.gov/DocumentCenter/View/3833/Tuberculosis-Medication-Monitoring-Report-PDF>

Texas Department of State Health Services
Clinical Assessment for Tuberculosis Medication Toxicity

NAME: _____ D.O.B.: ____/____/____ SS#: ____/____/____

Adverse Drug Reaction Assessment: Ask all the below questions to monitor for medication toxicity, noting that some symptoms may be more commonly associated with certain medications. Those with * are associated with second-line drugs; those with ** are associated with Isoniazid/Rifampine (HIV) but may also be present in other regimens. Document gas (+), incl. potential pregnancy in women, in progress notes & notify physician. Results: (+)=Present; (-)=Denies; (NA)=Not Applicable

	Date	Date	Date	Date	Date	Date	Date	Date	Date
Weight									
Temperature									
Blood Pressure									
Pulse									
Do you have any of the following symptoms now or since your last clinic appointment?									
Abdominal pain/diarrhea**									
Abnormal behavior**									
Allergic reaction (specify)**									
Bruises, red/purple spots on skin*									
Change in heart rate**									
Change in urine output									
Convulsions**									
Dark urine (coffee colored) or change in color*									
Ears ringing/fullness/hearing loss** - AK, CAP, KM, SM									
Eye pain/irritation (redness, excessive tears)									
Fever or chills*									
Flu-like symptoms*									
Headaches (chronic)									
Increased gas/stomach cramps**									
Jaundice (yellow skin/eyes)*									
Joint pain/swelling (chronic) - PZA									
Light colored stools*									
Loss of appetite*									
Malaise/fatigue									
Memory Loss**									
Mood changes/depression**									
Musculoskeletal Pain*									
Nausea/vomiting*									
Numbness/tingling/pain, arms, legs*									
Nervousness/Oddness/Restlessness									
Skin discoloration**									
Skin rashes/itching*									
Sleep problems**									
Sores on lips or inside mouth*									
Shortness of breath*									
Taster Fall to Left or Right when standing (eyes closed)									
Unusual bleeding (nose, gums, stool, urine, etc.) or easy bruising - RIF, PPT*									
Vertigo/dizziness/fainting*									
Visual problems/changes in vision*** - EMB, RBT									
Weakness, tiredness*									
Weave/Stagger when walking (normal gait)									
Use of over the counter drugs, ie, Tylenol products?									
Ask women about signs of pregnancy									
Drug Used	Mfg/Lot#	Exp	Route	Frequency	Amount	Amount	Amount	Amount	Amount
Name/Title									
Interpreter									
Next Appt.									

TB206 - Clinical Assessment for TB Medication Toxicity- Revised 8/2017 (Continued on Reverse)

MEDICATION MONITORING REPORT

Client's Name: _____ Date of Birth: ____/____/____

All patients taking preventive therapy, adults and children, should be assessed, face to face, on a monthly basis for adverse reactions by a licensed medical or nursing professional throughout the period of chemotherapy. This face to face assessment should include questions specific to TB symptoms and drug side effects. Routine laboratory monitoring for toxicity does not replace the need for the clinical face to face assessment of symptoms and drug side effects, nor for the prompt assessment of signs or symptoms of adverse reactions occurring between regularly scheduled monthly evaluations.

The person receiving preventive therapy or a responsible adult caring for a child on preventive therapy should be questioned concerning the following symptoms or signs consistent with liver damage or other adverse effects.

Date of interview	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
Feeling of fatigue																				
Loss of appetite																				
Nausea																				
Vomiting																				
Headache																				
Numbness of feet/hands																				
Tching or rash																				
Trouble voiding																				
Dark urine																				
Jaundiced skin																				
Jaundiced sclera																				
Vision screening																				
Hearing screening																				
Interviewer:																				

If any of these or other signs or symptoms occur during preventive therapy, patients should repeatedly be advised to report immediately to the clinic or health care provider.

Of individuals receiving isoniazid, 10% to 20% will develop some mild abnormality of liver function tests, e.g., an elevated aspartate aminotransferase (AST; SGOT). These abnormalities tend to resolve even if isoniazid is continued.


Persons with history of hepatic disease or other persons at risk of hepatitis:
These individuals, especially alcohol abusers, injection drug users and persons taking any other concurrent medications, should have baseline liver function tests, with subsequent biochemical monitoring, according to the patient's risk of hepatitis and at the physician's discretion.

If any of these results exceed 3 to 5 times the upper limit of normal, discontinuation of isoniazid should be strongly

Joint Product Page

Centers of Excellence TB Training and Education Products

- <https://sntc.medicine.ufl.edu/rtmccproducts.aspx>



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Centers of Excellence (COE) TB Training and Education Products

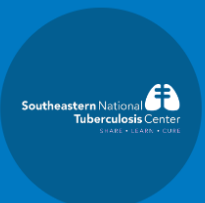
The following educational materials were developed by the CDC-funded TB CoEs. Click on any of the products below to access a download or order the product. For additional information on any of the products, please contact the producing CoE by clicking on their logo located under this section. For more information on the CoEs, please visit www.cdc.gov/tb/education/tb_coe/ or click on the specific CoE logo below. Additional TB training and education materials can be found at CDC Division of Tuberculosis Elimination www.cdc.gov/tb and TB Education and Training Resources www.findtbresources.cdc.gov

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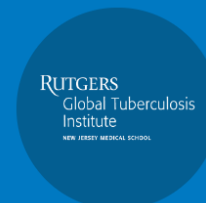
Our Centers




Southeastern National Tuberculosis Center



Heartland National Tuberculosis Center



Rutgers Global Tuberculosis Institute



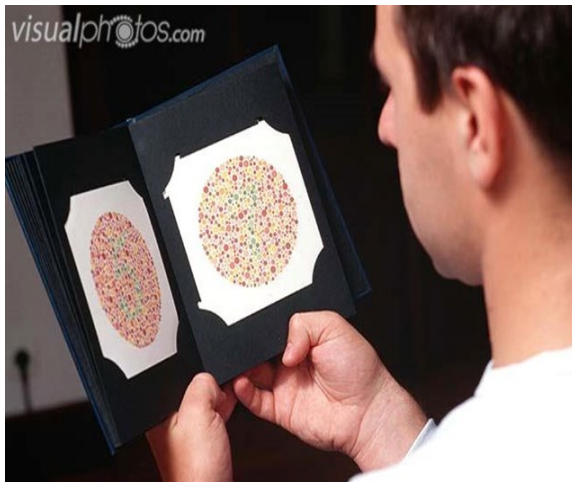
Curry International Tuberculosis Center

Vision Screening

Ishihara Test

Test for red-green color blindness, and was created by Dr. Shinobu Ishihara

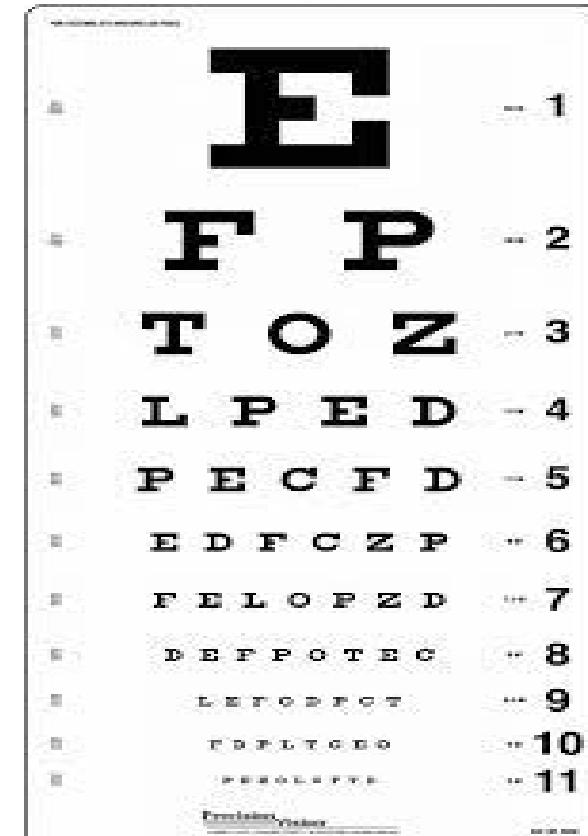
Consists of a set of 38 colored dotted plates (called Ishihara plates) that either contain a number or path-shaped design.



009828 [RM] © www.visualphotos.com

Snellen chart

Eye chart that can be used to measure visual acuity




Peripheral Neuropathy Tool

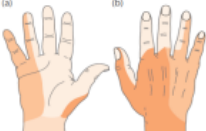
Romberg Test

Peripheral Neuropathy Evaluation

Lower Extremities



Upper Extremities



□ Median nerve □ Ulnar nerve □ Radial nerve

PATIENT'S INTERVIEW (Ask your patient the following questions:

Question 1:

¿Do you have any pain in your feet?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

Question 2: Does your pain have any of these characteristics?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
1 Burning?	<input type="checkbox"/>
2 Freezing pain?	<input type="checkbox"/>
3 Electric shock-type sensation?	<input type="checkbox"/>

Question 3: Do you have any of these symptoms in the area?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
4 Tingling	<input type="checkbox"/>
5 Prickling	<input type="checkbox"/>
6 Numbness	<input type="checkbox"/>
7 Stinging/itching	<input type="checkbox"/>

Question 4: ¿Is the pain made worse with the touch of clothing or bed sheets?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

PATIENT'S ASSESSMENT

Question 5:

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
8 Hypoesthesia to touch	<input type="checkbox"/>
9 Hypoesthesia to prick	<input type="checkbox"/>
10 Extreme sensitivity to touch	<input type="checkbox"/>
11 Extreme sensitivity to prick	<input type="checkbox"/>

PATIENT'S INTERVIEW (Ask your patient the following questions:

Question 1:

¿Do you have any pain in your hands?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

Question 2: Does your pain have any of these characteristics?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
1 Burning	<input type="checkbox"/>
2 Freezing pain?	<input type="checkbox"/>
3 Electric shock-type sensation?	<input type="checkbox"/>

Question 3: ¿Do you have any of these symptoms in the area?

Yes	No
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4 Tingling	<input type="checkbox"/>
5 Prickling	<input type="checkbox"/>
6 Numbness	<input type="checkbox"/>
7 Stinging/itching	<input type="checkbox"/>

Question 5: Is the pain made worse with the touch of clothing or bed sheets?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

PATIENT'S ASSESSMENT

Question 4:

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
8 Hypoesthesia to touch	<input type="checkbox"/>
9 Hypoesthesia to prick	<input type="checkbox"/>
10 Extreme sensitivity to touch	<input type="checkbox"/>
11 Extreme sensitivity to prick	<input type="checkbox"/>

Patient's name:
DOB:
Date of evaluation:



Group Exercise

