Case Presentation

Debbie Davila, MSN, RN

June 6, 2024

Comprehensive TB Nurse Case Management
June 5 – June 6, 2024
San Antonio, Texas

Debbie Davila, MSN, RN has the following disclosures to make:

- No conflict of interests
- No relevant financial relationships with any commercial companies pertaining to this educational activity

Case Presentation

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Test Your Knowledge

Which anti-TB medication has the potential of causing hepatotoxicity?

A. INH
B. Rifampin
C. PZA
D. All of the above

Test Your Knowledge

- Which anti-TB medication has the potential of causing hepatotoxicity?
  - A. INH
  - B. Rifampin
  - C. PZA
  - **D. All of the above**

First Line Drugs

INH • G.I. upset • Rash • **Hepatotoxicity** • Peripheral neuropathy • Mild CNS Toxicity	**Rifampin** • G.I. upset • Rash • **Hepatotoxicity** • Thrombocytopenia, hemolytic anemia • Renal toxicity • Flu-like syndrome • Orange staining of body fluids	**Rifabutin** • Rash/Skin discoloration • **Hepatotoxicity** • Leukopenia • Thrombocytopenia • Uveitis • Arthralgias
PZA • G.I. upset • **Rash** • **Hepatotoxicity** • Arthralgias • Gout (rare	**Ethambutol** • Optic Neuritis • Rash	

Second Line Drugs

Amikacin • Rash • Renal toxicity • Ototoxicity • Vestibular toxicity • Electrolyte abnormalities (hypokalemia, hypomagnesemia) • Local Pain at the injection site	**Levofloxacin, Gatifloxacin, Moxifloxacin** • Rash • GI upset • Hepatotoxicity (rare) • Mild CNS toxicity • Arthralgias, rare tendon rupture • Photosensitivity • EKG abnormalities
Capreomycin • Rash • Renal Toxicity • Ototoxicity • Vestibular Toxicity • Electrolyte abnormalities (hypokalemia, hypocalcemia, hypomagnesemia) • Local pain at the injection site	**Ethionamide** • Rash • GI upset, may be significant • Hepatotoxicity • Endocrine effects (gynecomastia, hair loss, acne, impotence, menstrual irregularity, reversible hypothyroidism) • Peripheral neuropathy

Second in Line Drugs

Cycloserine • Rash • CNS toxicity, may include seizure, depression, suicidal ideation,psychosis • Peripheral neuropathy • Skin changes (lichenoid eruptions, Stevens-Johnson Syndrome)	**Para-Aminosalicylate (PAS)** • Rash • G.I. upset, may be significant • Hepatoxicity • Reversible hypothyroidism
Clofazamine • Rash • G.I. upset • Discoloration and dryness of skin • Photosensitivity • Retinopathy	**Linezolid** • Rash • Myelosuppression • Nausea and Diarrhea • Optic neuropathy • Peripheral neuropathy

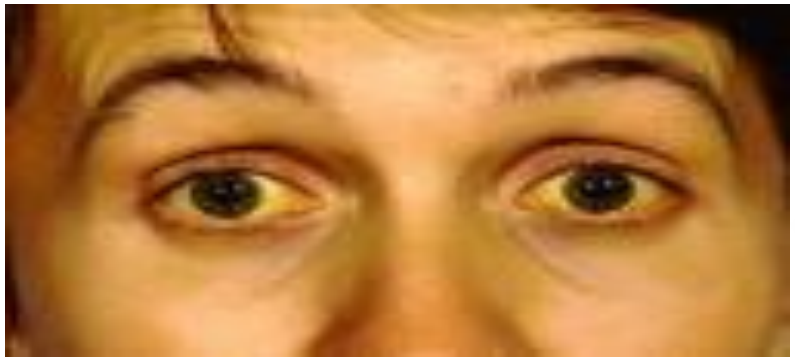
Test Your Knowledge: What are Some S/SX of Hepatotoxicity?

Early Signs

- Fatigue
- Poor appetite
- Taste alteration
- Nausea
- Abdominal discomfort
- Bloating
- Minimal rash

Later Signs

- Vomiting
- Abdominal pain
- Jaundice
- Change in color of urine and stool
- Changes in behavior, memory loss



Case Presentation: Hepatotoxicity

Case Study

- 38 year old male diagnosed with pulmonary TB in **March 2019.**
- Baseline labs indicate ALT 38, AST 25, Alk. Phosphatase 37, T. bili 0.5.
- **March 13** he started standard RIPE regimen.
- He received medication by daily DOT that was provided by the local health department
- **May 15** (approx. 2 mos. later) susceptibility results indicate the isolate was pan susceptible and Ethambutol (EMB) was discontinued. Pyrazinamide (PZA) was also discontinued because he had already taken 2 months of this medication
- He was continued on INH & Rifampin
- **June 4** (**approx. 3 months** after starting anti – TB therapy) follow-up lab results were **ALT 97, AST 304, Alk phosphatase 72, T. bili 0.8**.
- An assessment was done and the patient denied any complaints.


WHAT
WE DO?

Let's Look at the Lab Results

Baseline LFT's: ALT 38, AST 25, Alk Phos 37, T. bili 0.5.

Follow up LFT's: **ALT 97, AST 304, Alk phos 72, T. bili 0.8**

Normal Values:

AST: **10 - 42 u/L**

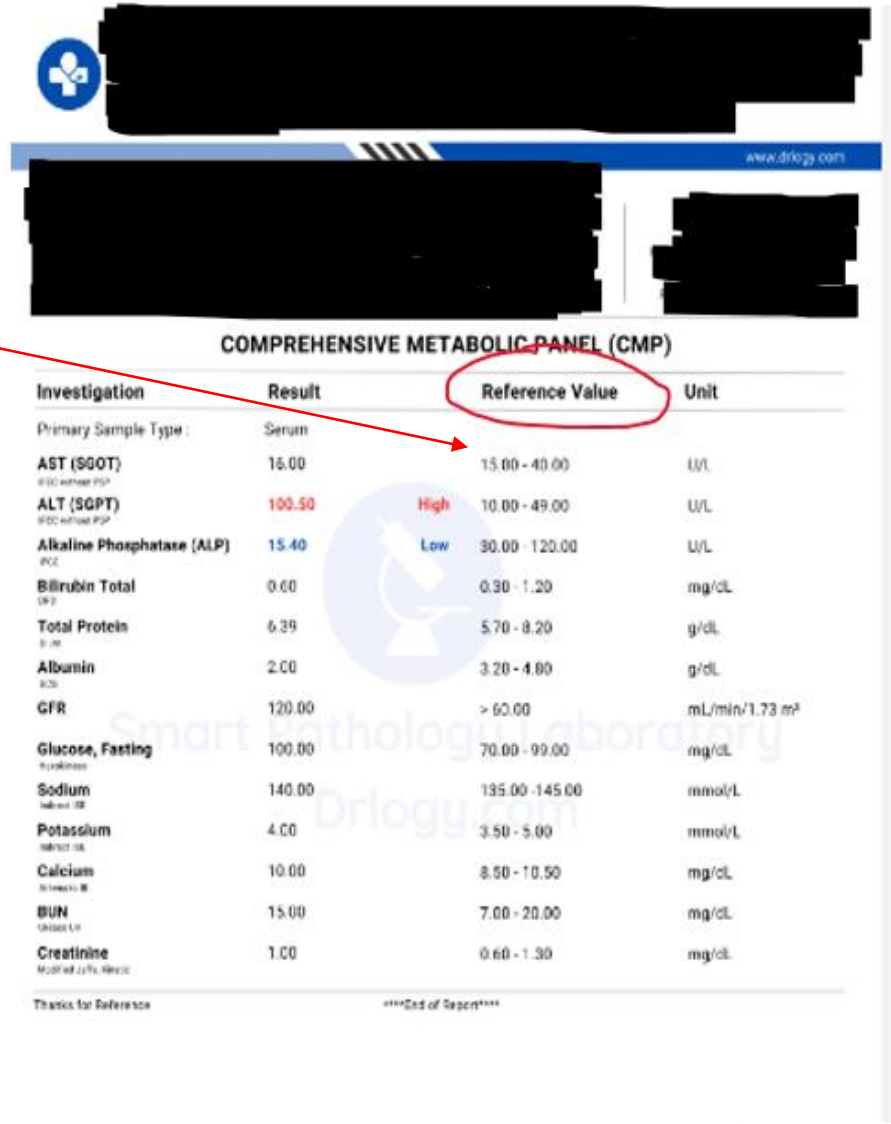
ALT: **10 - 40 u/L**

Alk. Phos: **35-104 u/L**

T. Bili. : **0.3-1.2 ng/dL**

Let's Do the Math

Reference Value:
ALT: 10 - 40 u/l
AST: 10 - 42 u/L
Alk. Phos: 35 -104 u/L
T. Bili: 0.3 -1.2 ng/dL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COMPREHENSIVE METABOLIC PANEL (CMP)

Investigation	Result		Reference Value	Unit
Primary Sample Type :	Serum			
AST (SGOT)	16.00		15.00 - 40.00	U/L
ALT (SGPT)	100.50	High	10.00 - 49.00	U/L
Alkaline Phosphatase (ALP)	15.40	Low	30.00 - 120.00	U/L
Bilirubin Total	0.60		0.30 - 1.20	mg/dL
Total Protein	6.39		5.70 - 8.20	g/dL
Albumin	2.00		3.20 - 4.80	g/dL
GFR	120.00		> 60.00	mL/min/1.73 m²
Glucose, Fasting	100.00		70.00 - 99.00	mg/dL
Sodium	140.00		135.00 -145.00	mmol/L
Potassium	4.00		3.50 - 5.00	mmol/L
Calcium	10.00		8.50 - 10.50	mg/dL
BUN	15.00		7.00 - 20.00	mg/dL
Creatinine	1.00		0.60 - 1.30	mg/dL

Thanks for Reference ****End of Report****

Pt. Labs:

Baseline:

ALT 38, AST 25, Alk Phos 37, T. bili 0.5.

Follow-up:

ALT 97, AST 304, Alk phos 72, T. bili 0.8

Divide abnormal lab result by higher number of reference value

Divide abnormal lab result by higher number of normal value

ALT 97/40 = ?

AST 304/42 = ?

Reference Value:
ALT: 10 - 40 u/l
AST: 10 - 42 u/L
Alk. Phos: 35 -104 u/L
T. Bili: 0.3 -1.2 ng/dL

Pt. Labs:
Baseline:
ALT 38, AST 25, Alk Phos 37, T. bili 0.5.
Follow-up:
ALT 97, AST 304, Alk phos 72, T. bili 0.8

Divide abnormal lab result by higher number of normal value

ALT 97/40 = 2.45 x ULN

AST 304/42 = 7.23 x ULN

As the nurse managing this patient’s anti-TB therapy, what are you going to do?

Case Study

Hold all TB meds!!!

Probable drug induced liver toxicity

What Do We Do?

Hold TB medications!

TB medications should be held if any of the liver enzymes exceed **3x** the upper limit of normal **with symptoms** present

or

5x the upper limit of normal **without symptoms**.

Case Study

- Cannot restart anti-TB therapy until LFT's **≤ 2 times** upper limit of normal
  - Re-challenge medications
    - **Introduce one drug at a time**
    - **Monitor enzymes carefully**
    - Stop therapy if symptomatic or increased enzymes and eliminate last drug added from regimen

Case Study– Hepatotoxicity

Anti-TB therapy was re-started by re-introducing one medication at a time when liver enzymes < 2 times upper limit of normal. Liver enzymes were monitored carefully. At a follow up appointment patient admitted to drinking 6 -12 oz. beers almost every day with his neighbor

What risk factors can you identify that place this patient at risk for developing hepatoxicity?

He drinks 6 - 12 oz. beers almost every day with his neighbor.

Most at Risk for Hepatotoxicity

- **Underlying liver disease**
  - Clarify preexisting conditions that may increase risk of hepatotoxicity
    - Hepatitis B and C
- **Alcoholics**
  - Take a good social history
  - Ask specific questions about daily ETOH use
- **Immediate (4 months) post-partum period**
- **Those on other hepatotoxic medications**
  - Prescribed
  - Over the counter

Case Study - Hepatotoxicity

How do we monitor him for the remainder of his treatment?

- Monitor closely/ monitor LFT's
- Review adverse effects
- Instruct patient to self monitor for side effects while on meds
- Re-educate patient to abstain from alcohol while on anti-TB medication
- Encourage compliance
- Consider a liver friendly regimen (Rifampin, Moxifloxacin/Levofloxacin, EMB)

Most importantly:

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

Test Your Knowledge

What anti-TB medications place the patient at risk for vision related toxicities?

A. Rifampin
B. Ethambutol
C. Linezolid
D. B & C only
E. All of the above

Test Your Knowledge

- What anti-TB medications place the patient at risk for vision related toxicities?
  - A. Rifampin
  - B. Ethambutol
  - C. Linezolid
  - **D. B & C**
  - E. All of the above

First Line Drugs

INH • G.I. upset • Rash • Hepatotoxicity • Peripheral neuropathy • Mild CNS Toxicity	**Rifampin** • G.I. upset • Rash • Hepatotoxicity • Thrombocytopenia, hemolytic anemia • Renal toxicity • Flu-like syndrome • Orange staining of body fluids	**Rifabutin** • Rash/Skin discoloration • Hepatotoxicity • Leukopenia • Thrombocytopenia • Uveitis • Arthralgias
PZA • G.I. upset • Rash • Hepatotoxicity • Arthralgias • Gout (rare	**Ethambutol** • **Optic Neuritis** • Rash	**Streptomycin** (no longer considered a first line drug)

Second in Line Drugs

Cycloserine • Rash • CNS toxicity, may include seizure, depression, suicidal ideation,psychosis • Peripheral neuropathy • Skin changes (lichenoid eruptions, Stevens-Johnson Syndrome)	**Para-Aminosalicylate (PAS)** • Rash • G.I. upset, may be significant • Hepatoxicity • Reversible hypothyroidism
Clofazamine • Rash • G.I. upset • Discoloration and dryness of skin • Photosensitivity • Retinopathy	**Linezolid** • Rash • Myelosuppression • Nausea and Diarrhea • **Optic neuropathy** • Peripheral neuropathy

Case Study:

Missed Opportunities for Identifying Visual Toxicity

Case Study

- 21 year old male arrested and incarcerated in county jail in **February**.
- In May, after being incarcerated for 3 months he began to complain of fever, chills, productive cough, chest pain, night sweats, and weight loss. He was evaluated and given a cough suppressant.
- **8 mos later (since onset of symptoms)** on **October 7,** he continued to have complaints of same the symptoms. He was evaluated again. This time a chest x-ray & a sputum collection was done. His chest x-ray showed left upper lobe cavitary infiltrate, and the sputum specimen was AFB smear (+) 1-10 per high power field.
- He was diagnosed with active pulmonary TB and started on a standard 4 drug regimen on **October 12.**
- He was responding to anti-therapy. He was afebrile, had 6 lb wt. gain, night sweats had resolved, and cough was improving
- In **November**, an isolate was reported as isoniazid and streptomycin resistant. INH was discontinued once susceptibilities were known, and he continued on a modified regimen with RIF, PZA, EMB with a plan to treat for 9 months

Case Study

In **January**, he was released from jail and he started c/o difficulty driving and reading road signs ***(he has now been on anti-TB therapy for 3 months).***

As a nurse managing this patient's anti-TB therapy, what would you do?

Review his anti-TB therapy

- RIPE started Oct. 10,
- In Nov. he was switched to RIF, PZA, EMB

Which anti-TB medication is contributing to his vision problems?

- Ethambutol

What do we do now?

- Evaluate further (snellen & Ishihara)
- Hold EMB
- Refer to the Opthalmologist

Case Study

The nurse managing his case did not re-assess him. She sent him to his “eye doctor”.

A few weeks later he was seen by optometrist and given RX for corrective lenses.

- **Ethambutol continued**

Case Study

- On May 3 he complains of worsening vision(he's been c/o vision problems for **4 months**)

- Nurse assessed his vision. Baseline visual acuity in October was 20/20 both eyes, follow up visual acuity was now 20/200 in both eyes

- On May 5 the EMB discontinued; continued on RIF, PZA and Levo added to regimen to complete 9 mos of treatment and he was referred to a retinal specialist.

Ophthalmic Toxicity

Follow-up

- Seen by retinal specialist in May and June
  - DX: EMB optic neuropathy
  - Vision uncorrected: 20/200

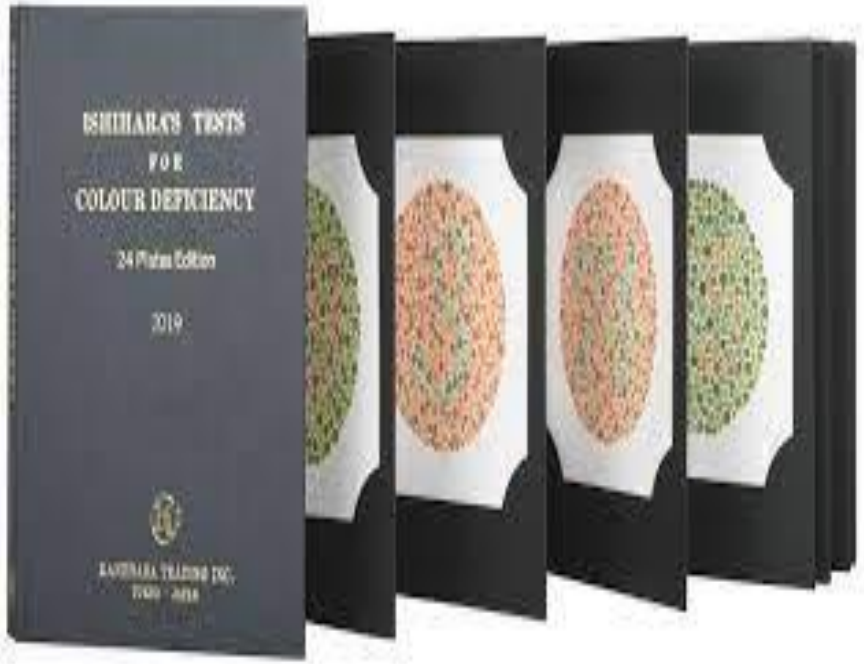
******Nurse was ***not*** performing visual acuity screening (Snellen chart), she was only doing the color discrimination testing (Ishihara plates)

Vision Screening

Ishihara Testing

Snellen Eye Exam

- eyeShihara

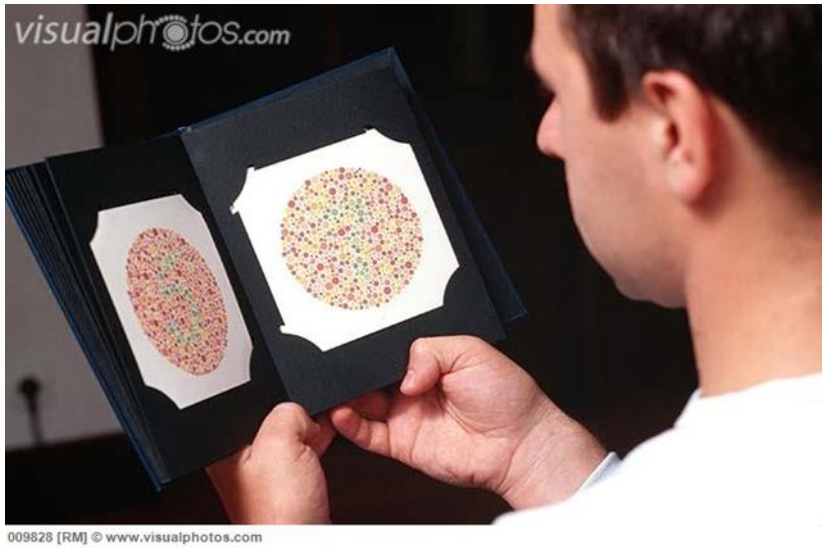

ISHIHARA'S TESTS
FOR
COLOUR DEFICIENCY
24 Plates Edition
2019

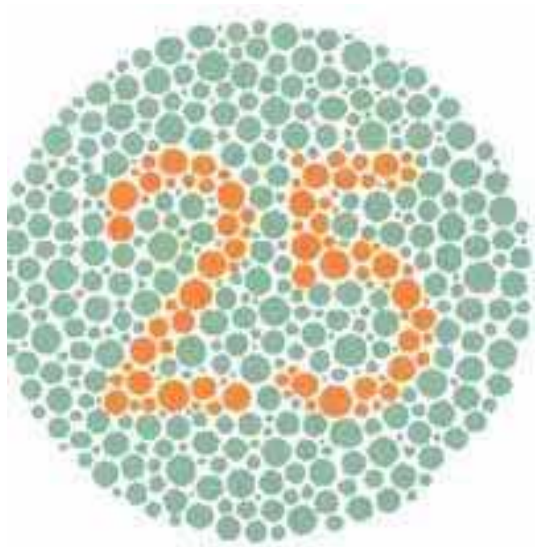
Ishihara Instructions

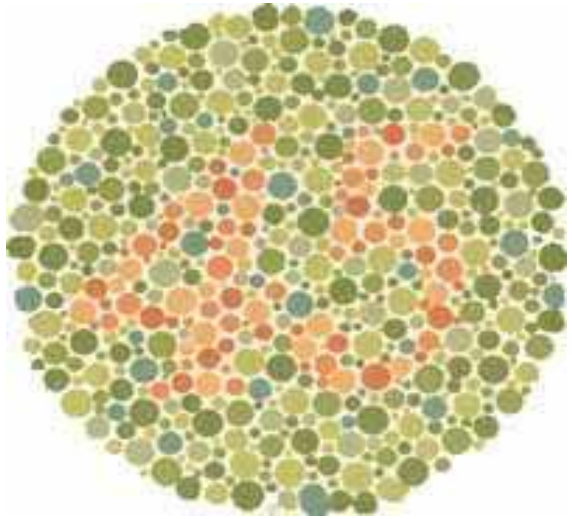
- **Designed to give quick & accurate assessment of color vision**
- Most effectively done in room with adequate daylight
- Held 75 cm from the patient (approx. arm length)
- Sit & tilt plate at right angle to patients line of vision
- Screen all plates
- Must pass 10 of 11 plates to be regarded as Normal
- If unable to read numerals use winding lines and have patient trace between the 2 X’s with a finger

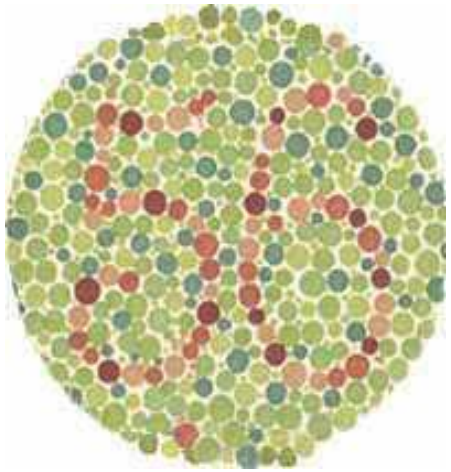
Ishihara Test

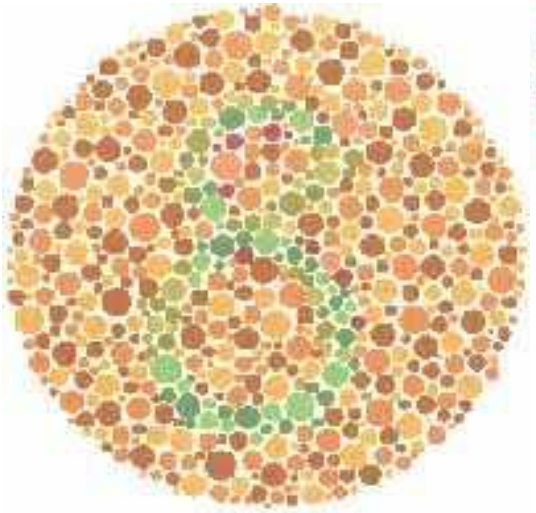
- **Things you will need:**
  - Ishihara's Tests for Color Deficiency, 24 Plates Edition
  - **Well lit room**(natural day light is preferred)
  - Comfortable chair for patient
  - **Quiet room**

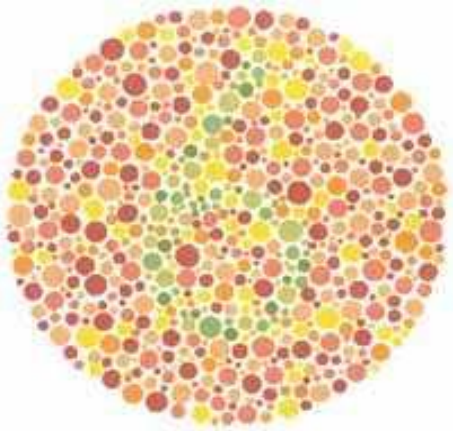


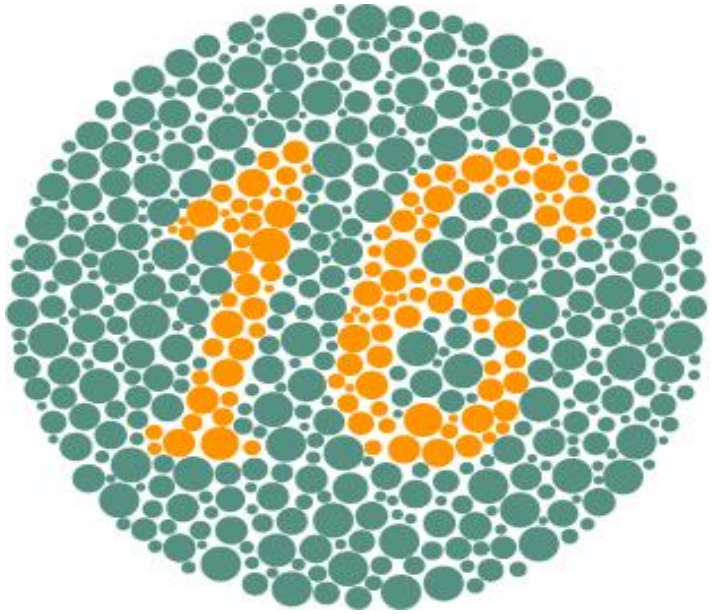


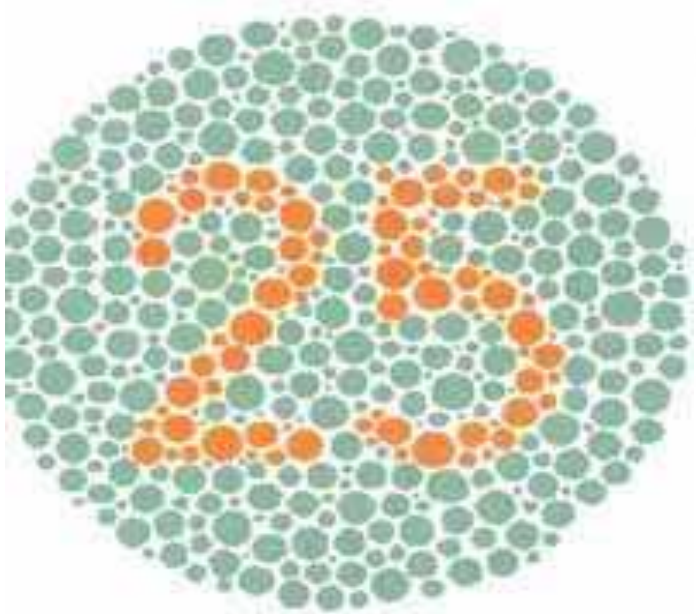


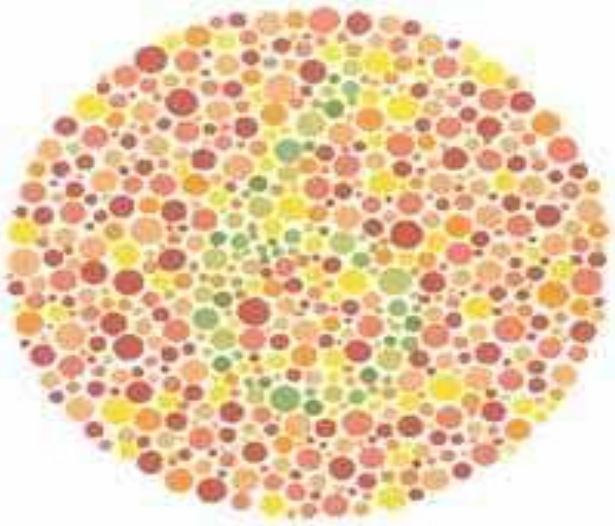


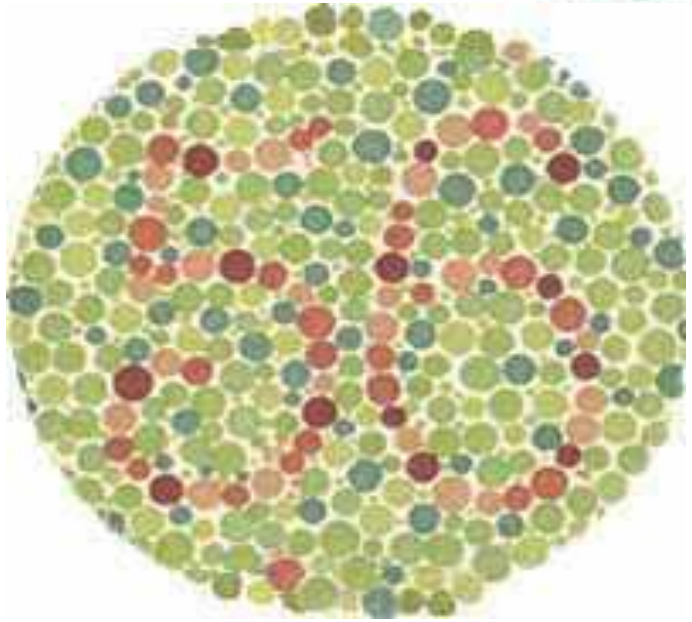


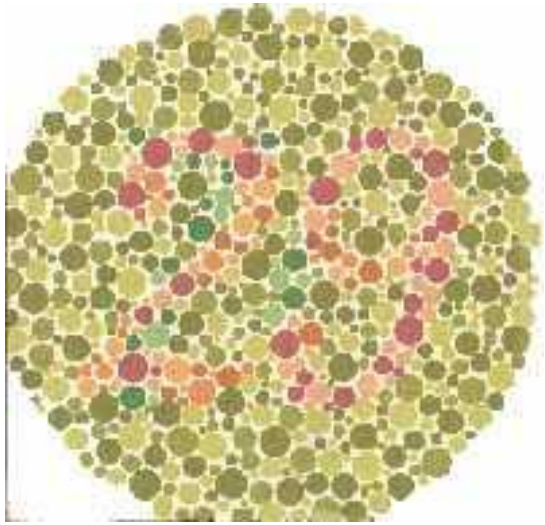


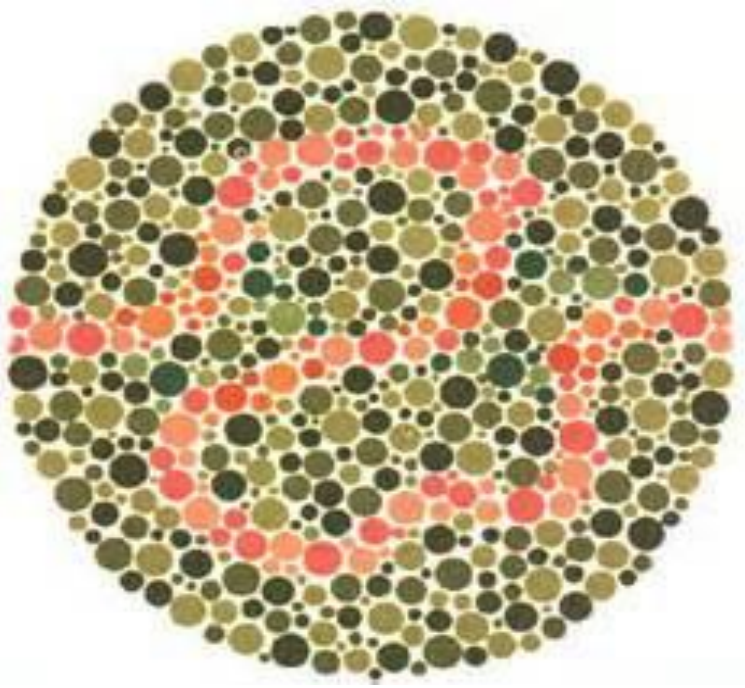


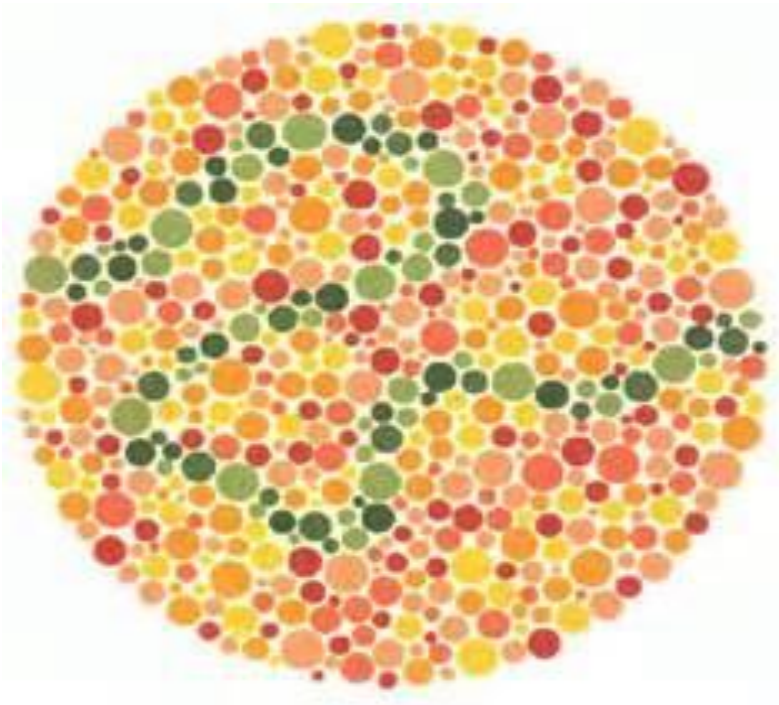






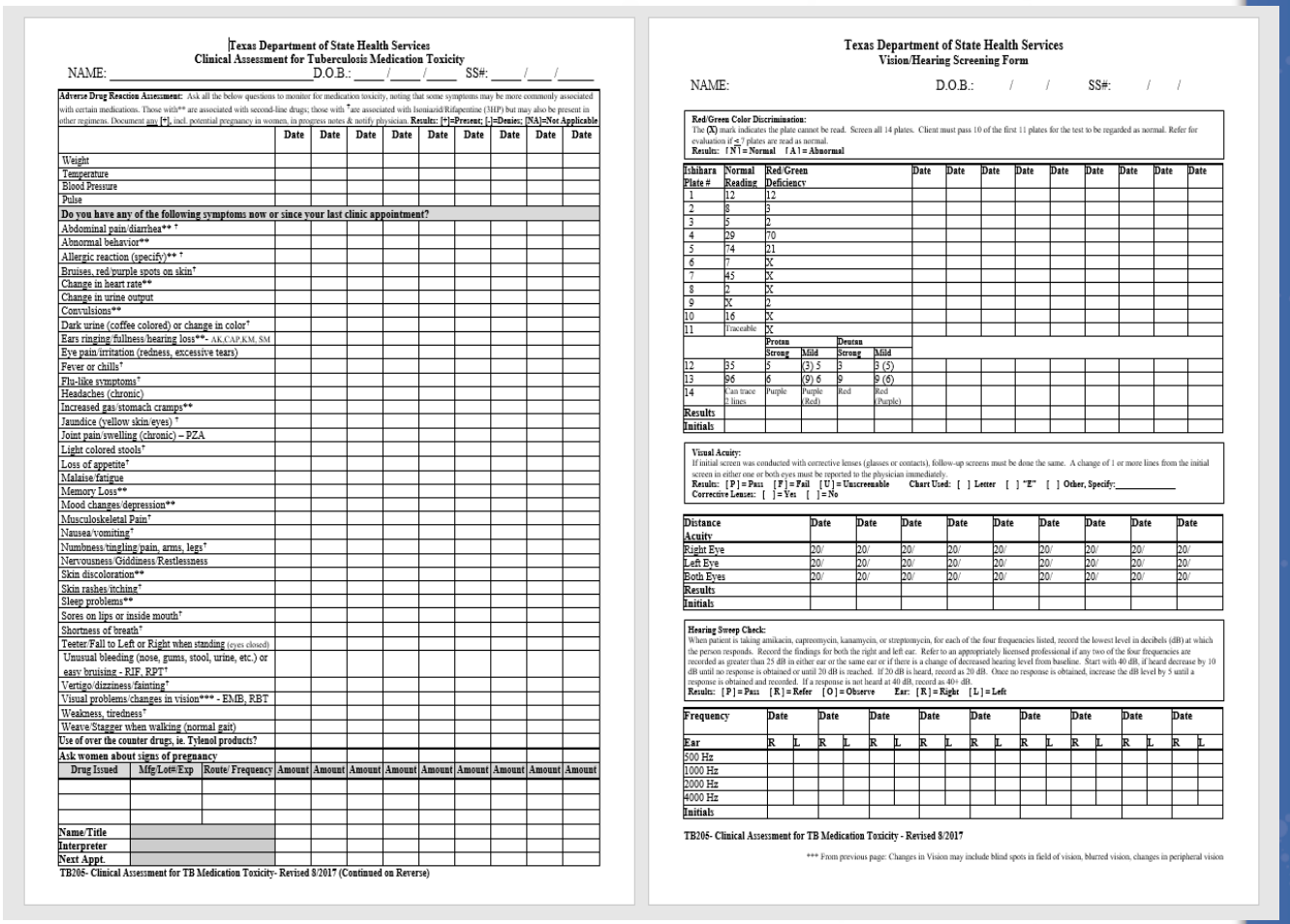






Ishihara Results

- Document Baseline
- Document monthly
  - Screen all plates
  - Mark (X) if plate cannot be read
  - Must pass 10 of first 11 plates for test to be regarded as normal
  - Refer for evaluation if 7 or less plates are read as normal



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/Rifapentine (3HP) but may also be present in other regimens. Document any [*], 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/Giddiness/Restlessness									
Skin discoloration**									
Skin rashes/itching†									
Sleep problems**									
Sores on lips or inside mouth†									
Shortness of breath†									
Teeter/Fall to Left or Right when standing (eyes closed)									
Unusual bleeding (nose, gums, stool, urine, etc.) or easy bruising - RIF, RPT†									
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 Issued	Mfg/Lot#/Exp	Route/ Frequency	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount
Name/Title											
Interpreter											
Next Appt.											

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

Texas Department of State Health Services
Vision/Hearing Screening Form

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

Red/Green Color Discrimination:
The (X) mark indicates the plate cannot be read. Screen all 14 plates. Client must pass 10 of the first 11 plates for the test to be regarded as normal. Refer for evaluation if ≤ 7 plates are read as normal.
Results: [N] = Normal [A] = Abnormal

Ishihara Plate #	Normal Reading	Red/Green Deficiency									
1	12	12									
2	8	3									
3	5	2									
4	29	70									
5	74	21									
6	7	X									
7	45	X									
8	2	X									
9	X	2									
10	16	X									
11	Traceable	X									
		Protan		Deutan							
		Strong	Mild	Strong	Mild						
12	35	5	(3) 5	3	3 (5)						
13	96	6	(9) 6	9	9 (6)						
14	Can trace 3 lines	Purple	Purple (Red)	Red	Red (Purple)						
Results											
Initials											

Visual Acuity:
If initial screen was conducted with corrective lenses (glasses or contacts), follow-up screens must be done the same. A change of 1 or more lines from the initial screen in either one or both eyes must be reported to the physician immediately.
Results: [P] = Pass [F] = Fail [U] = Unscreenable **Chart Used:** [ ] Letter [ ] "E" [ ] Other, Specify:_____
Corrective Lenses: [ ] = Yes [ ] = No

Distance Acuity	Date	Date	Date	Date	Date	Date	Date	Date	Date
Right Eye	20/	20/	20/	20/	20/	20/	20/	20/	20/
Left Eye	20/	20/	20/	20/	20/	20/	20/	20/	20/
Both Eyes	20/	20/	20/	20/	20/	20/	20/	20/	20/
Results									
Initials									

Hearing Sweep Check:
When patient is taking amikacin, capreomycin, kanamycin, or streptomycin, for each of the four frequencies listed, record the lowest level in decibels (dB) at which the person responds. Record the findings for both the right and left ear. Refer to an appropriately licensed professional if any two of the four frequencies are recorded as greater than 25 dB in either ear or the same ear or if there is a change of decreased hearing level from baseline. Start with 40 dB, if heard decrease by 10 dB until no response is obtained or until 20 dB is reached. If 20 dB is heard, record as 20 dB. Once no response is obtained, increase the dB level by 5 until a response is obtained and recorded. If a response is not heard at 40 dB, record as 40+ dB.
Results: [P] = Pass [R] = Refer [O] = Observe **Ear:** [R] = Right [L] = Left

Frequency	Date		Date		Date		Date		Date		Date		Date		Date		Date	
Ear	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
500 Hz																		
1000 Hz																		
2000 Hz																		
4000 Hz																		
Initials																		

TB205- Clinical Assessment for TB Medication Toxicity - Revised 8/2017

*** From previous page: Changes in Vision may include blind spots in field of vision, blurred vision, changes in peripheral vision

https://www.dshs.texas.gov/tuberculosis-tb/texas-dshs-tb-program-tb-forms-resources

Snellen Eye Test

- Place Snellen Chart on wall
- Measure 20 feet from wall to where chart is placed & mark line on floor
- Have patient stand on marked line
- Have patient cover one eye with an eye cover
- Have the patient read letters aloud
- **If patient misses only one letter have them continue reading the next line**
- **Record the last line the patient reads accurately**
- **Note the visual acuity measures marked at the end of each row of letters**
- Ask patient to repeat the process with the other eye
- Then repeat with both eyes
- **Each time, recording the last line patient reads**
- You are recording the visual acuity for each eye and with both eyes uncovered

Visual Acuity

- If initial screen was conducted with corrective lenses (glasses/contacts), follow-up screens must be done the same.

- Change of 1 or more lines from initial screen in either one or both eyes must be reported to physician immediately

Managing & Monitoring Visual Toxicities

- Baseline & monthly visual acuity test (Snellen chart)

- Baseline & monthly color discrimination test (Ishihara tests)

- If change from baseline:
  - Hold Rx
  - Refer for Ophthalmologic evaluation
  - Permanent vision impairment if ethambutol continued

Initial Assessment requires that we collect thorough info @ baseline

Medical history

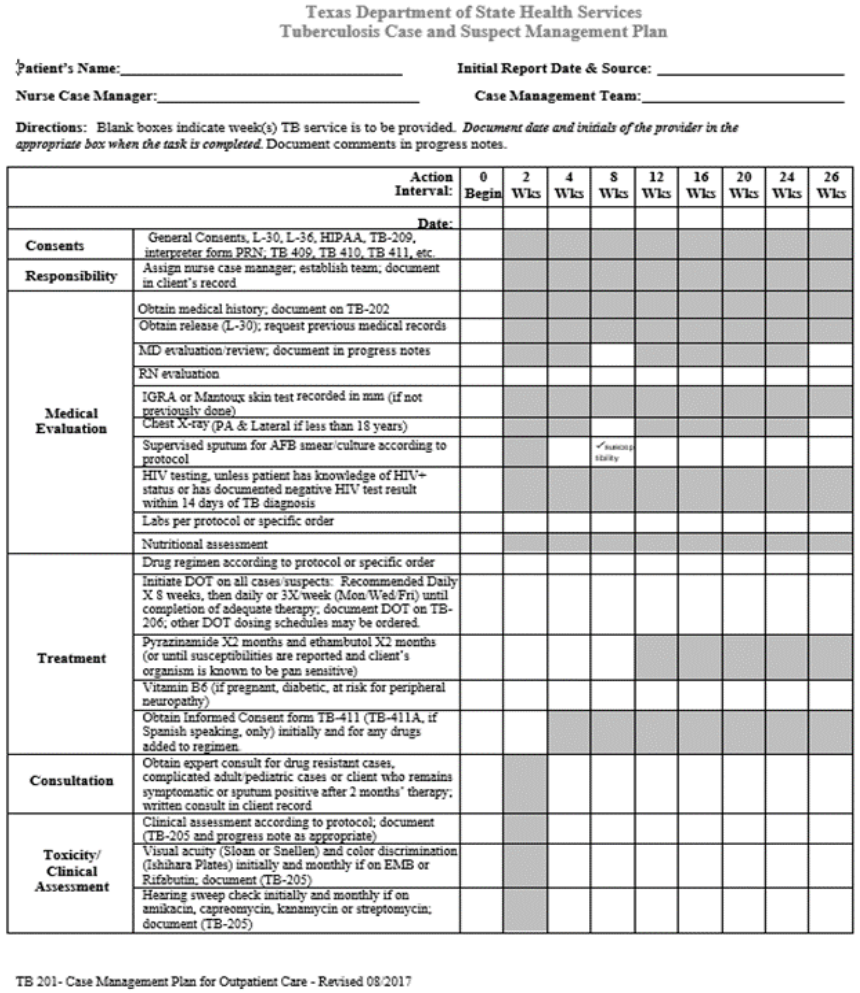
- Co-morbidities
- Medication list
- Social history
- TB history
  - Signs & Symptoms
    - Have symptoms improved/worsened?

Daily Monitoring

- DOT log
- Assess tolerance to meds daily by nurse or outreach worker
  - Side effects
  - Adverse drug reactions

Monthly Toxicity checks

- Assess patient, get updates, and modify regimen if needed



Texas Department of State Health Services
Tuberculosis Case and Suspect Management Plan

Patient's Name:_____ Initial Report Date & Source: _____

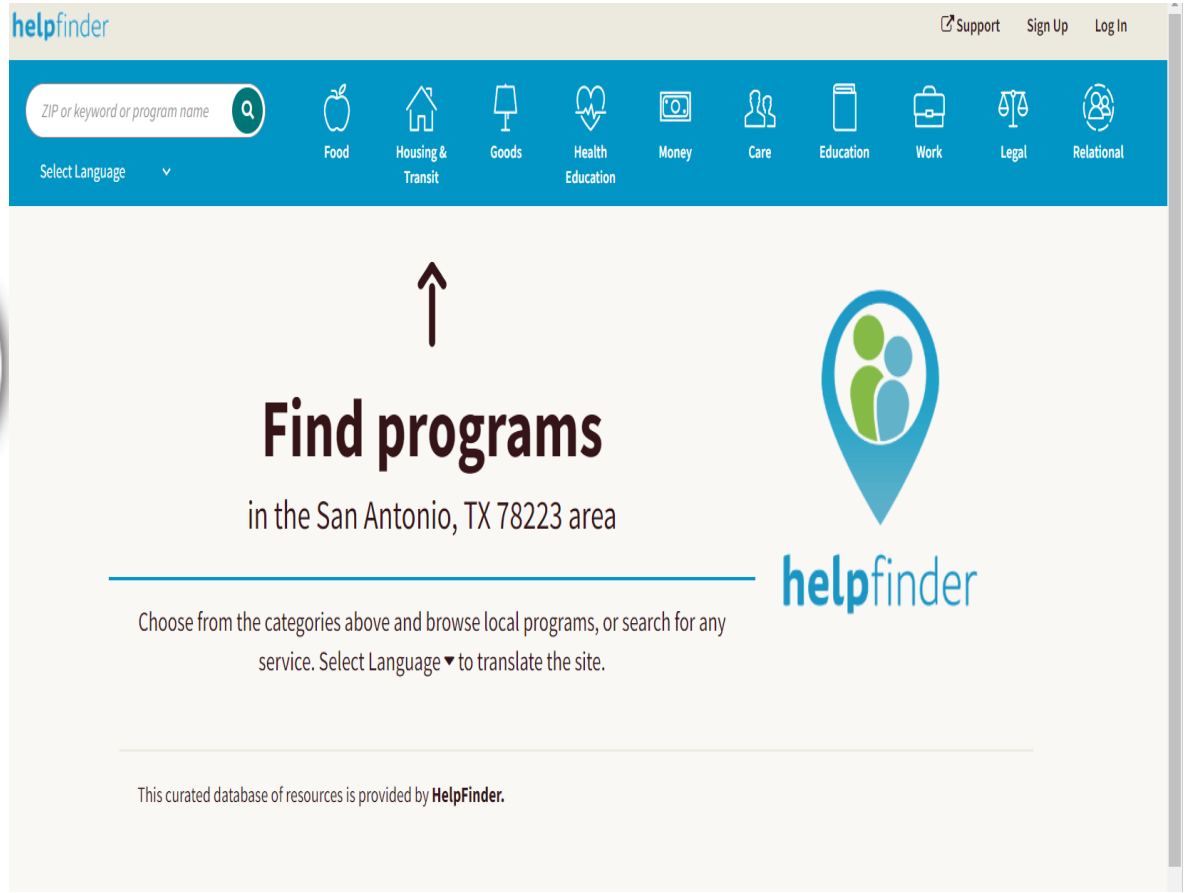
Nurse Case Manager:_____ Case Management Team:_____

Directions: Blank boxes indicate week(s) TB service is to be provided. *Document date and initials of the provider in the appropriate box when the task is completed.* Document comments in progress notes.

	Action Interval:	0 Begin	2 Wks	4 Wks	8 Wks	12 Wks	16 Wks	20 Wks	24 Wks	26 Wks
	Date:									
Consents	General Consents, L-30, L-36, HIPAA, TB-209, interpreter form PRN, TB 409, TB 410, TB 411, etc.									
Responsibility	Assign nurse case manager; establish team; document in client's record									
Medical Evaluation	Obtain medical history; document on TB-202									
	Obtain release (L-30); request previous medical records									
	MD evaluation/review; document in progress notes									
	RN evaluation									
	IGRA or Mantoux skin test recorded in mm (if not previously done)									
	Chest X-ray (PA & Lateral if less than 18 years)									
	Supervised sputum for AFB smear/culture according to protocol				✓					
	HIV testing, unless patient has knowledge of HIV+ status or has documented negative HIV test result within 14 days of TB diagnosis									
	Labs per protocol or specific order									
	Nutritional assessment									
Treatment	Drug regimen according to protocol or specific order									
	Initiate DOT on all cases/suspects: Recommended Daily X 8 weeks, then daily or 3X/week (Mon/Wed/Fri) until completion of adequate therapy; document DOT on TB-206; other DOT dosing schedules may be ordered.									
	Pyrazinamide X2 months and ethambutol X2 months (or until susceptibilities are reported and client's organism is known to be pan sensitive)									
	Vitamin B6 (if pregnant, diabetic, at risk for peripheral neuropathy)									
	Obtain Informed Consent form TB-411 (TB-411A, if Spanish speaking, only) initially and for any drugs added to regimen.									
Consultation	Obtain expert consult for drug resistant cases, complicated adult/pediatric cases or client who remains symptomatic or sputum positive after 2 months' therapy; written consult in client record									
Toxicity/ Clinical Assessment	Clinical assessment according to protocol; document (TB-205 and progress note as appropriate)									
	Visual acuity (Sloan or Snellen) and color discrimination (Ishihara Plates) initially and monthly if on EMB or Rifabutin; document (TB-205)									
	Hearing sweep check initially and monthly if on amikacin, capreomycin, kanamycin or streptomycin; document (TB-205)									

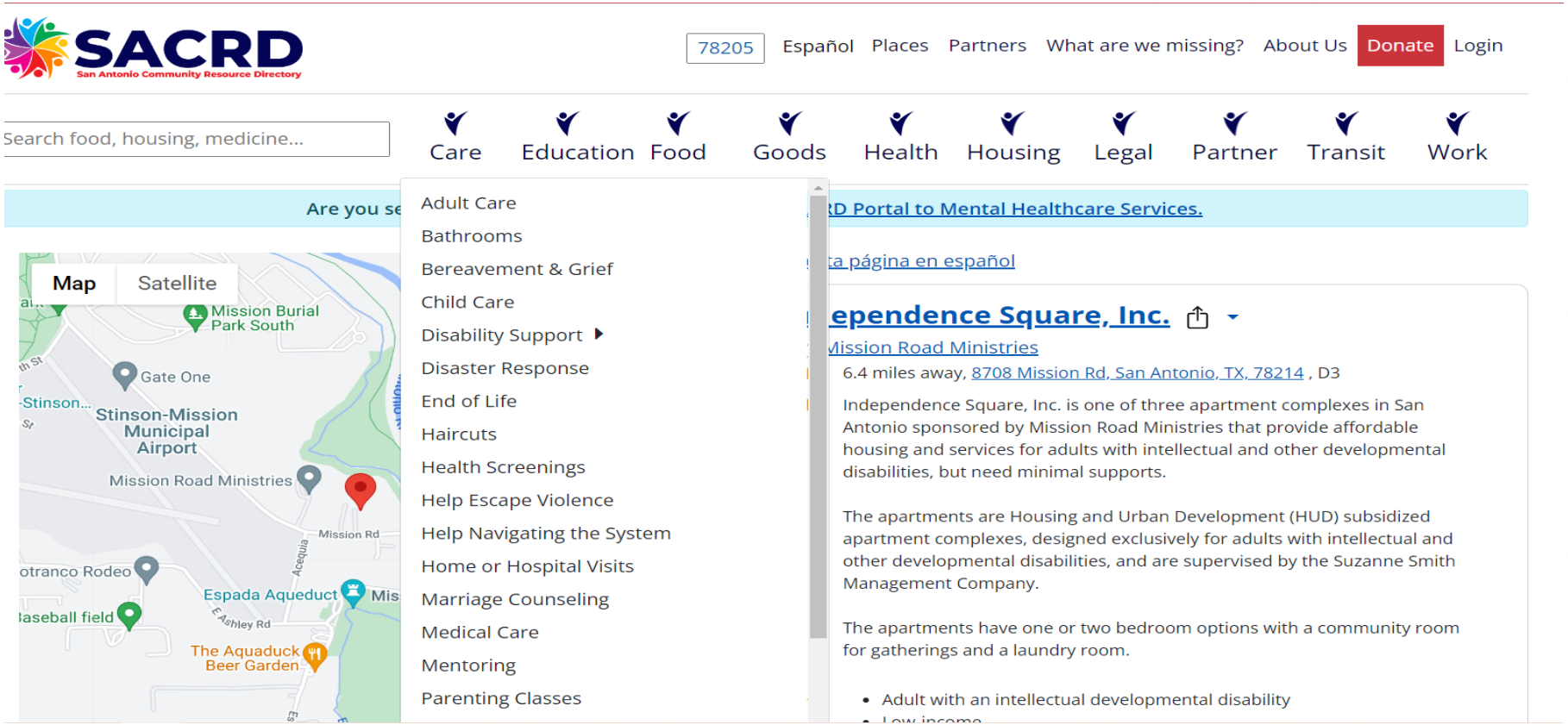
TB 201- Case Management Plan for Outpatient Care - Revised 08/2017

Link Patients to Community Services Aunt Bertha



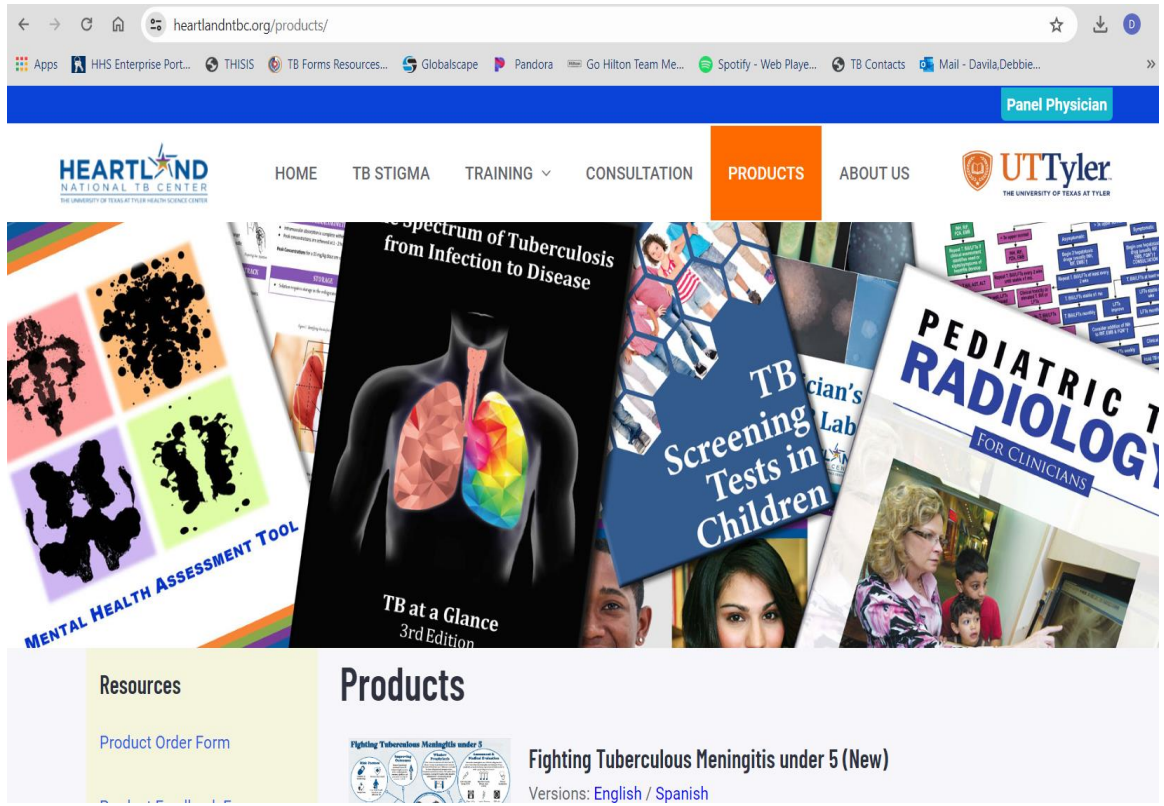
https://helpfinder.auntbertha.com/

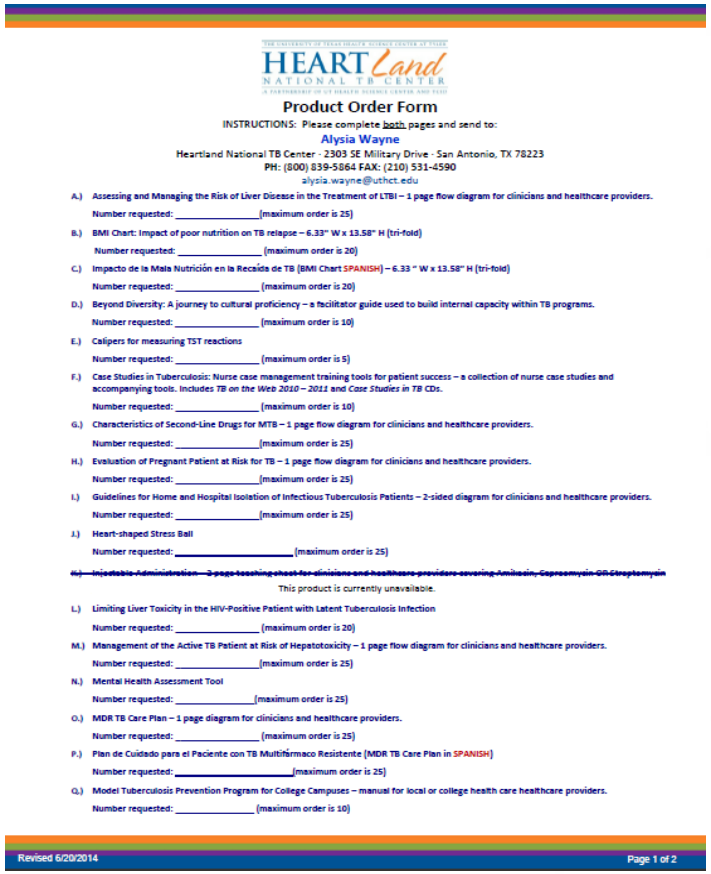
San Antonio Resource Directory



https://www.sacrd.org/directory/program/292

HNTC Products @ http://www.heartlandntbc.org/products.asp





HEARTLAND NATIONAL TB CENTER

Product Order Form

INSTRUCTIONS: Please complete both pages and send to:

Alysia Wayne
Heartland National TB Center · 2303 SE Military Drive · San Antonio, TX 78223
PH: (800) 839-5864 FAX: (210) 531-4590
alysia.wayne@uthct.edu

A.) Assessing and Managing the Risk of Liver Disease in the Treatment of LTBI – 1 page flow diagram for clinicians and healthcare providers.
Number requested: _____(maximum order is 25)

B.) BMI Chart: Impact of poor nutrition on TB relapse – 6.33" W x 13.58" H (tri-fold)
Number requested: _____ (maximum order is 20)

C.) Impacto de la Mala Nutrición en la Recaída de TB (BMI Chart SPANISH) – 6.33 " W x 13.58" H (tri-fold)
Number requested: _____ (maximum order is 20)

D.) Beyond Diversity: A journey to cultural proficiency – a facilitator guide used to build internal capacity within TB programs.
Number requested: _____ (maximum order is 10)

E.) Calipers for measuring TST reactions
Number requested: _____ (maximum order is 5)

F.) Case Studies in Tuberculosis: Nurse case management training tools for patient success – a collection of nurse case studies and accompanying tools. Includes *TB on the Web 2010 – 2011* and *Case Studies in TB* CDs.
Number requested: _____ (maximum order is 10)

G.) Characteristics of Second-Line Drugs for MTB – 1 page flow diagram for clinicians and healthcare providers.
Number requested: _____(maximum order is 25)

H.) Evaluation of Pregnant Patient at Risk for TB – 1 page flow diagram for clinicians and healthcare providers.
Number requested: _____(maximum order is 25)

I.) Guidelines for Home and Hospital Isolation of Infectious Tuberculosis Patients – 2-sided diagram for clinicians and healthcare providers.
Number requested: _____(maximum order is 25)

J.) Heart-shaped Stress Ball
Number requested: _____(maximum order is 25)

~~K.) Injectable Administration – 2 page teaching sheet for clinicians and healthcare providers covering Amikacin, Capreomycin OR Streptomycin~~
This product is currently unavailable.

L.) Limiting Liver Toxicity in the HIV-Positive Patient with Latent Tuberculosis Infection
Number requested: _____(maximum order is 20)

M.) Management of the Active TB Patient at Risk of Hepatotoxicity – 1 page flow diagram for clinicians and healthcare providers.
Number requested: _____(maximum order is 25)

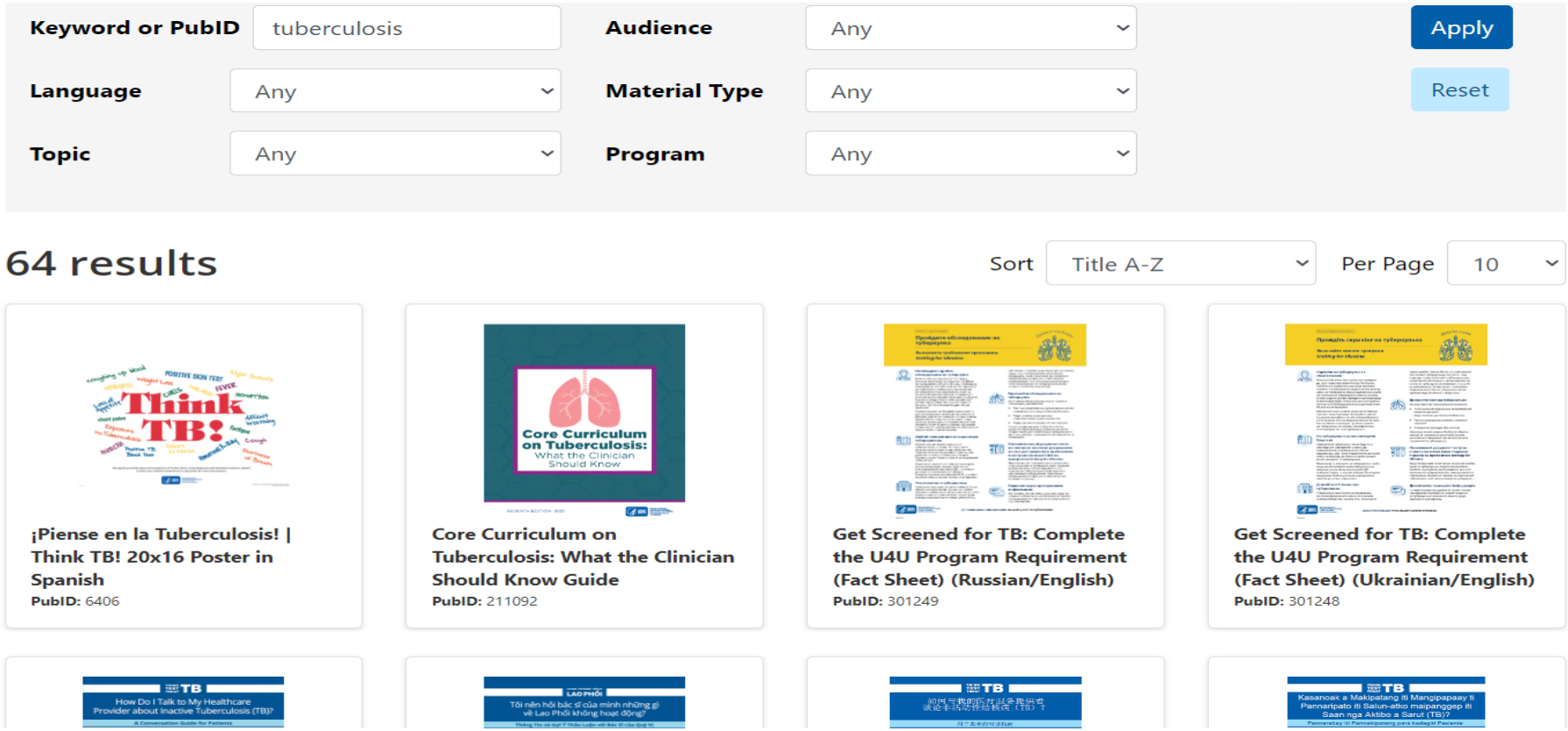
N.) Mental Health Assessment Tool
Number requested: _____(maximum order is 25)

O.) MDR TB Care Plan – 1 page diagram for clinicians and healthcare providers.
Number requested: _____ (maximum order is 25)

P.) Plan de Cuidado para el Paciente con TB Multifármaco Resistente (MDR TB Care Plan in SPANISH)
Number requested: _____(maximum order is 25)

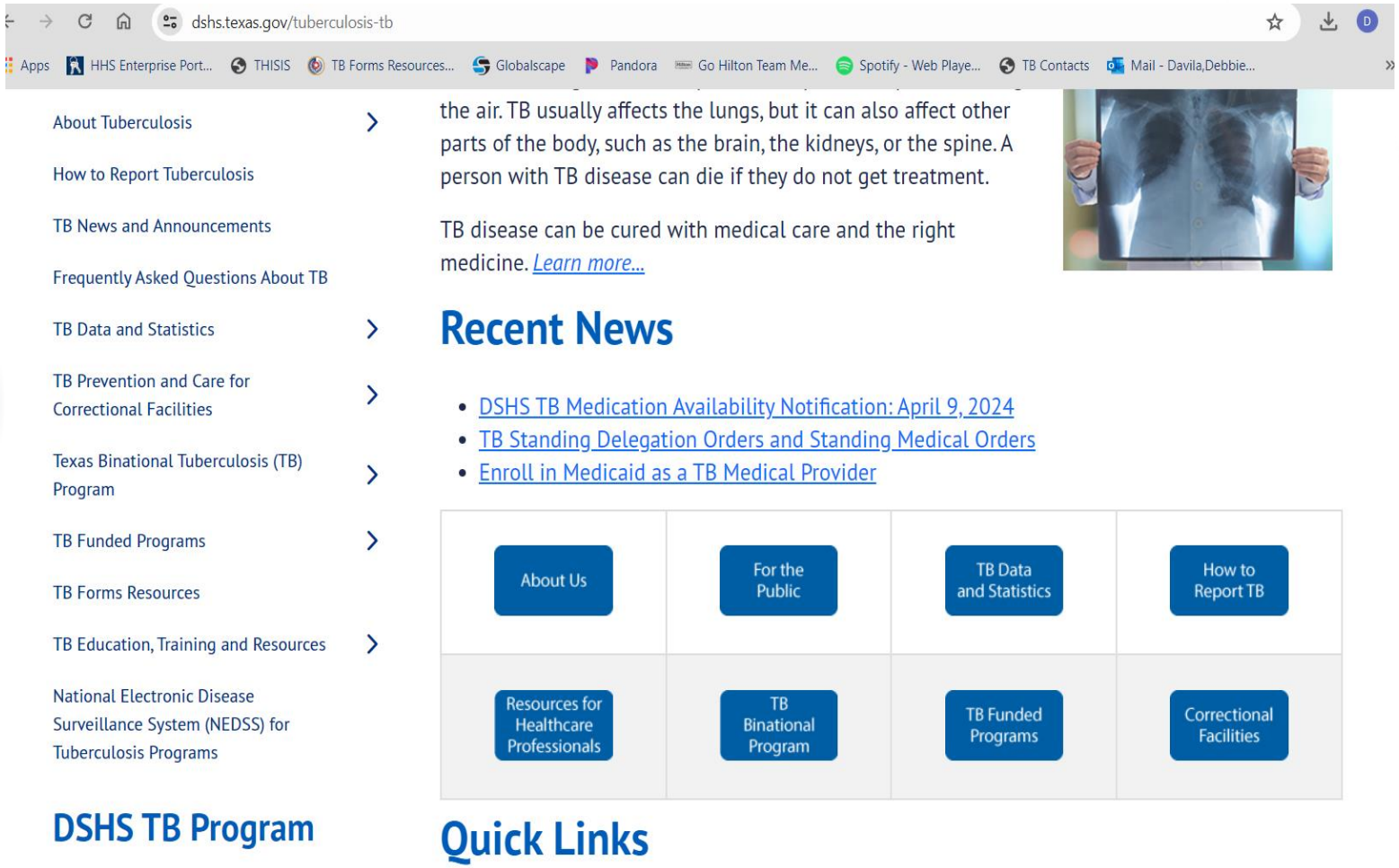
Q.) Model Tuberculosis Prevention Program for College Campuses – manual for local or college health care healthcare providers.
Number requested: _____ (maximum order is 10)

CDC Publications



- https://wwwn.cdc.gov/pubs/

DSHS Texas TB Resources



https://www.dshs.texas.gov/tuberculosis-tb

Monitoring Goals

- Become familiar with monitoring tools to manage TB patient
  - Find what works best for you
- Educate patient to become familiar with potential side effects and adverse reactions
- Recognize problems/address complaints quickly
- Intervene rapidly
  - **Minimize treatment interruptions**

Complete Adequate TB treatment Sucessfully!!!!


Thank You !