Initiating the MDR-TB Treatment Regimen: Nursing Considerations

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Disclosures

• No conflict of interest

 No relevant financial relationships with any commercial companies pertaining to this educational activity

Objectives



Nursing considerations prior to starting treatment

Baseline labs and assessments and follow-up



Recognizing potential toxicities and adverse effects



Appropriate and timely nursing interventions



Providing holistic patient-centered care

Terminology

Mono-resistant: resistant to only one drug

Poly-resistant: resistant to more than one drug, but not the combination of INH and RIF

Multi-drug resistant (MDR): resistant to at least INH and RIF

Pre-extensively drug-resistant (Pre-XDR): MDR plus resistance to fluoroquinolone (FQ) <u>or</u> a second-line injectable (Amikacin, Kanamycin, or Capreomycin)

Extensively drug-resistant (XDR): MDR-TB plus resistant to a FQ **and** at least one second line injectable

Who is at risk for MDR-TB?

History of previous TB treatment, particularly if recent

Known exposure to MRD-TB case

HIV (+)

• Higher incidence of Rifampin mono-resistance

Poor response to standard 4-drug regimen

• Culture remains positive (+) after 2 months of treatment

First Client Encounter

The nurse case manager conducts a face-to-face interview with the client in efforts of develop a plan of care

- Lengthy process
- Develop a trusting relationship
- Educate patient and significant others

The purpose of the initial visit is not only to develop a treatment plan, but to physically view the client

The initial visit will give us a clue to just how ill the client is

- Frequency of cough
- Appearance (i.e. thin, frail...)

Oh No!!



Call from lab

 Sputum: Smear positive (+), culture and DST pending, NAAT: Xpert MTB/RIF (+Mtb with Rifampin resistance)

Usually Phenotypic second line tests are ordered and rapid molecular test for drug resistance also ordered

Stop meds

CDC Molecular Detection of Drug Resistance (MDDR) service (tests for INH, RIF, FQ, EMB, PZA, capreomycin, kanamycin)

DSHS Consultation

REQUIRED:

- Client is a contact to an MDR-TB, Pre-XDR, or XDR-TB
- Client has a lab confirmed drug resistance or is suspected to have drug resistance
 - Defined as resistance to INH and/or Rifampin, or to any other drug other than streptomycin on DST panel
 - Consult must occur within 3 days
 - Drug resistance should be considered in any client with:
 - Known exposure to an individual with drug resistance
 - Residence in a setting with high rates of primary drug resistance
 - Persistently positive smear or culture results at or after 4 months of treatment
 - Previous TB treatment, particularly if it was not DOT or if interrupted for any reason
- Client has been prescribed a second-line medication



Initiating Treatment

Medical history and physical evaluation

- Demographic information
- Full TB history
- Past medical history
- Social history
- Physical exam
- Height and weight
- Source case and contact information

Baseline exams

- Laboratory exams
- Hearing and vision
- Radiography
- Sputum
- EKG
- Psychosocial assessment

Isolate patient

Texas Department of State Health Services Tuberculosis Initial Health Risk Assessment/History

Middle Birth Date atient Name: Lat Text Sex Race Ethnicity dires: Street City County State Zip Ceasin Tract Phone: Home / Work/Cell late of Mistory: Primary Care Provider Phone Number of Primary Care Provider MEDICAL HISTORY +/- COMMENTS +/- COMMENTS Allergies Leukemia Diabetes Type 1____Type 2 ____ Lymphoma Well Controlled Y___N Respiratory Problems (Levaquin or other antibiotic use?) Silicosis Cancer Head____Neck____ Other____ If HIV+, CD4 count____ HIV status Date Asbestosis STD history Chronic Renal Failure Environmental Exposures Corticosteroids (Received Dialysis Current or Past Listschedule equivalent of >15 mg/day Prednisone for >1 month) Liver Disease/Hepatitis (see risk for Hepatitis B/C in Organ Transplant Standing Delegation Orders Use of TNF alfainhibitors Length of therapy/Reason: Autoimmune Disease (i.e., Remicade, Humira) (1.4., Additional, Hundra) GL/Gastractomy or jejunoileal bypass, Crohn's, ucerative golittiis, pancraditis, or factors impacting GL absorption Weight at least 10% less than Arthritis/Gout Chronic Malabsorption Syndrome Hospitalizations ideal body weight Anorexia/bulimia Mental Illness/Retardation If yes, list power or attorney Surgeries or legal guardian: Skin Disease/Rash Contraception/LMP Type Date Hypertension/CVA Blood Pressure Premancy Weeks' pestation Heart Disease PVD Breast Feeding Thyroid Post-Partum Neurological/Seizures Other: Vision Disorder Hearing Disorder + = If History Is Positive - = If History Is Negative

| | +/- | COMMENTS | | |
|-----------------------------------|-----|--------------|-------------------|--------------|
| Live virus vaccine in last6 weeks | | List: | | |
| History of BCG | | Date(s): | Arri | val to US: |
| Prior Tuberculin Skin Test (TST)/ | | Date of TST: | Dat | e of IGRA: |
| IGRA blood test | | TST (mm): | IGR | A Result: |
| Prior Chest X-Ray | | Date: | Result: | Location: |
| Prior Treatment of TB | | Date: | Location: | Length of Tx |
| Prior Treatment of LTBI | | Date: | Location: | Length of Tx |
| Family History of TB | | Date: | Relationship To F | atient: |
| Contact to TB case | | Date: | Where? | Source Case? |
| Contact to MDR-TB case | | Date: | Where? | Source Case? |

CURRENT TUBERCULOSIS ASSESSMENT AND SYMPTOMS

| Fever / Chills | | |
|---|---|------------------------------|
| Weight Loss Fever / Chills | _ | |
| | _ | m h h h |
| Fever / Chills Shortness of Breath | | Today's wt Est. wt. 3 mo.ago |
| Shortness of Breath | | Today's temperature |
| | | |
| Chest Pain . | | |
| Fatigue | | |
| Loss of Appetite | | |
| Night Sweats | | |
| Hemoptysis | | |
| Hoarseness | | |
| Eye Pain or Blurry Vision | | |
| Swelling of Lymph Node(s) | | |
| Frequent Urination, Bloody Urine or Flank Pain | | |
| Swelling/pain of Joint / Vertebra | | |
| Headache, Decreased Level of Consciousness or Neck Stiffness | | |
| Pain / Swelling in Other Locations | | |

SOCIAL HISTORY +/- COMMENTS Education: []Elem.Sch. []Jr.Hi. []Hi.Sch. []College Tobaccouse/Cigaret E-cig, other tobacco products pkg/da years of use Howing: []Own []Rent []Homaiss []Inne city resident []Binational (USAmico) [] Low Incoma []Darg [Tarkwich Alene]] Low Mothers [] Colontá []Menal Marce I] Neurag Mong, []Pop-Band []Residentia []Menal Facer I] Neurag Mong, []Pop-Band []Residentia []Menal Facer I] Neurag Mong Markov []Pop-Incorecentian (]Pot Priora [] Status Priora [] Local Jac [] (ICE []_InvenileCorrectoual [] Other Cor. [] Unknown. Incorecention disk Alcohol Current # alcoholic drinks per week: HIV/AIDS Risk Drug Abuse ____ Non-injecting Drugs ____ Injecting Drugs? |].correctionderstand Occupation: []Health Care []Correctional []Migrant Seasonal []Not amployed in part 34 mo []Student [] School Tascher []Child []Homemaker []Retires []Institutionalized []Unk Malnutrition/Diet low in sources of Be] Other Occupation | | J-mest Occupation If Pediatric TB Case/Surpect (<15 years old) Country of brinf for primary guardian(); Patient lived outside US for > 3 months [] Yes. []No If yes, country. Locating Info: Foreign Birth If foreign-born, Country:_____ Date Entry US: unknown Foreign Travel or Residence Consume unpasteu dairy products? Describe Barriers to Compliance + = If History Is Positive - = If History Is Negative

SOCIAL HISTORY/TUBERCULOSIS RISK FACTORS

| | | EDICATION LIST | | |
|---|----------------|-----------------|-----------|--------------------------|
| MEDICATIONS TAKING, EXCLUDING TB DRUGS | START DATE | DOSAGE/SCHEDULE | STOP DATE | PRESCRIBING PHYSICIAN |
| | | | | |
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| ttach additional medication list, | if needed) YES | NO | | |
| | | | | |

| Signature of person taking history: | Signature of interpreter (if used): |
|-------------------------------------|-------------------------------------|
| Date: | |

+ = If History Is Positive - = If History Is Negative

Case Management

Provide patient-centered care

Stop transmission

Use at least 5 drugs (including a fluoroquinolone and a aminoglycoside)



Inpatient management



Addressing the patient's social, economic, and additional medical needs



Careful monitoring to detect adverse effects quickly and intervene to avoid significant toxicity

At Baseline

Chest X-ray (PA & Lat), compare to previous films

Request and review previous records

Create drug-o-gram

Review previous laboratory results: CBC, BUN, Cr, LFTs, 24hr Cr Clearance, Ca+, Mg, HB, HCV, glucose

HIV screening with pre and post counseling

Baseline TSH

Review previous sputum results, repeat sputum

Infection control precaution-isolation

Baseline height and weight

Drug-O-Gram

| SUMMARY DAT | TE: | NAM | E | | | | DOB: | | | HEALTH | DEPAR | TMENT: | | TR | EATING | PHYSICIAN: | | R | ILE NO: |
|-------------|-----|-----|-----|-----|------|-------|------|-----|-----|--------|-------|--------|-----|----|--------|------------|------|---------|----------|
| | | | | TRE | АТМЕ | NT RI | GIME | IN | | | | | | | | | В | ACTERI | OLOGY |
| Date | Wt. | INH | RIF | PZA | EMB | AK | CM | MFX | LFX | ETA | CS | PAS | LZD | | | Date | spec | sm/cult | Comments |
| | | | | | | | | | | | | | | | | | | | |
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SUSCEPTIBILITY RESULTS

| Date | Spec. | Lab | INH | RIF | PZA | EMB | SM | AK | CM | MFX | LFX | ETA | CS | PAS | LZD | RFB | BDQ | | Reported |
|------|-------|-----|-----|-----|-----|-----|----|-----------|----|-----|-----|-----|----|-----|-----|-----|-----|--|----------|
| | | | | | | | | | | | | | | | | | | | |
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Treatment Key: • = DDT; ▲ = SAT

Adapted from Los Angeles County TB Control Program Drug-O-Gram

Initiation of Treatment

Consider CT and alternate views

Physician assessment

Update drug-o-gram

NEW sputum collection early a.m. x3 for smear and culture

Infection Control Isolation: continue until culture negative x3

Aminoglyciside and/or capreomycin IV (IM) 5 days/week

4-6 oral medications

DOT initiated

Patient education (on-going)

Pyridoxine 100mg

Calculate BMI

Nutritional Assessment

Treatment Start Date: May 5, 2015 Treatment Regimen: EMB, Moxifloxacin, Amikacin, Linezolid, PAS

| A set of a | Dessline | | | | | | | | N | lonth of | Treatme | nt | | | | | | | |
|--|---|---|--|--|---|--|--------------|--|---|--|--|---|---|--|---|--|--------------------------------|--------------------------------|-----|
| Activity | Baseline | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| Date | May | Jun | Jul | Aug | Sep | 0 ct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov |
| CLINICAL MONITORING | | | | | | | | | | | | | | | | | | | |
| Sputum smear and culture1 | X | | | | | | | | | | | | | | | | | | |
| CXR ² | X | | | | | | | | | | | | | | | | | | |
| We ig ht ^a | X | | | | | | | | | | | | | | | | | | |
| Symptom review | X | | | | | | | | | | | | | | | | | | |
| DST ³ | х | | | | | | | | | | | | | | | | | | |
| LAB MONITORING FOR TOXIC | TY / CO-MORB | DITIES | | | | | | | | | | | | | | | | | |
| CBC ⁴ | X | | | | | | | | | | | | | | | | | | |
| Creatin ine? | X | | | | | | | | | | | | | | | | | | |
| LFTS ¹ | X | | | | | | | | | | | | | | | | | | |
| K+, Ca, Mg++* | X | | | | | | | | | | | | | | | | | | |
| Drug level ¹⁰ | | | | | | | | | | | | | | | | | | | |
| TSH | | | | | | | | | | | | | | | | | | | |
| HN™ | X | | | | | | | | | | | | | | | | | | |
| Pre gna ncy | | | | | | | | | | | | | | | | | | | |
| MONITOR IN G PROCEDURES | | | | | | | | | | | | | | | | | | | |
| Aud iogram ¹³ | | | | | | | | | | | | | | | | | | | |
| Vestibular exam ^w | | | | | | | | | | | | | | | | | | | |
| Vision exam [®] | X | | | | | | | | | | | | | | | | | | |
| Peripheral neuropathy** | X | | | | | | | | | | | | | | | | | | |
| Arth ra Igias ^o | X | | | | | | | | | | | | | | | | | | |
| Depression [®] | | | | | | | | | | | | | | | | | | | |
| EKG* | | | | | | | | | | | | | | | | | | | |
| *Important: Monitoring recomme | n dation s m ay c h | ange if trea | tment regin | nen orpatio | ent statusc | hanges. A | box indicat | es monitori | ng activity i | is recomme | nded. Che | c k box whe | n activity is | s completed | I. | | | | |
| Collect three AFB smear and culture have converted to negative. Once cul 2 Obtain baseline CXR and monitor q 3 3 Monitor weight monthly and adjust n 4 Monitor for symptoms monthly. 5 Obtain first- and second-line CS Tres again if patient fails to convert cultur 6 Obtain weekly for first month, then m 7 Obtain creatinine at baseline and mor 8 LFIs at baseline and then monthly wil 9 K+, Ca++, and Mg++ at baseline and 10 Therapeutic drug levels (TDM) shou develop. TDM may be obtained for a | tures have convert months during the nedications as nee ults at baseline. R re after 3 months o conthly for patients onthly while patient hile patient is on P2 monthly while pati d be obtained for | ed, obtain at first year an ded epeat if patie n treatment. on linezolid. is on an inje (A, ethionam jent is on an matients rece | least 1 spec d q 6 months ent on RIPE a ctable agent ide or PAS. injectable ag iving cyclose | imen monthl in the secon nd remains o gent. | ly throughout nd year of tre culture positi | t therapy. atment. We prior to N | NDR-TB Rx, a | 11 12 13 14 15 16 17 18 | abnormalitie Obtain base Perform aud Perform visi Monitor for Monitor for Monitor for Obtain EKG | is. line HIV. liogram at ba tibular exam Jal acuity plu peripheral ni ones. arthralgias a depression, at baseline a | seline andm at baseline is color discr europathy at t baseline an agitation, or and at least 2 | nonthly while and monthly imination ex- baseline and ad monthly w mental statu | e patient is o while patien ams at basel d monthly will while patient s change at weeks for p | n an injectab it is on an inj ine and mon hile patient is is on PZA or baseline and | le agent. ectable agent thly while pa s on linezolid fluoroquinol monthly wh | atient is on et landasclinio one. ille patient or | thembutel or cally indicate | r linezolid. ed for patient | |

MDR TB CARE PLAN

| | | | MONTO | CAREFLAN | | | | | | |
|--|--|---|--|---|---------------------------|---|--|---|----------|--------------------|
| Baseline | Initiation of Treatment | Month 1 | Month 2 | Month 3 | Month 4 | Month 6 | Month 9 | Month 12 | Month 18 | Month 24 |
| CXR-PA/Lat, Compare to old films | Consider CT & alternate views | | | Consider CXR | | CXR | | CXR Consider CT | CXR | CXR Consider CT |
| TST/Report case | | | | | | | | | | |
| Request/review old records | Physician assessment | Physician assessment q 1-2 wks | Physician assessment q 1-2 wks | Physician assessment q month | | | | | | |
| Create drug-o-gram | Update drug-o-gram | Update drug-o-gram | | | | | | | | |
| Review prior lab: CBC, BUN, Cr, LFT's, 24 hr Cr Cl*, Ca#, Mg#, HB, HCV, glucose | | CBC, BUN, Creat, LFT's, K, Ca, Mg at least q month | | | | | | | | |
| HIV screen with pre/post counseling | | If positive CD4, viral load | If positive evaluate for treatment | | | | | | | |
| Baseline TSH | | | | TSH q 3 months if on PAS and/or Ethionamide. If elevated Levothyroxine Rx | | | | | | |
| Review prior sputum results. Repeat sputum | Sputum q a.m. x3 days smear & culture | Sputum q a.m. x3 days smear & culture | Sputum q month culture | | | | | | | |
| Review susceptibility, request extended susceptibility test [®] | | | Repeat susceptibility if sputum positive | Repeat q month if culture positive | | | | | | |
| Infection control isolation | Continue until culture negative x3 | | | | | | | | | |
| | Aminoglycoside and/or Capreomycin IV (IM) 5 day/wk | Peak/trough drug level | Peak/trough drug level | | Peak/trough drug level | ∆ to 3x/wk after 4-6 months if culture negative | D/C after culture neg x6-12 month | | | |
| | 4-6 oral drugs | Peak drug levels 2 hrs post dose (PAS 6 hr) | | Peak drug levels 2 hrs post dose (PAS 6 hr) | | | | Peak drug levels 2 hrs post dose (PAS 6 hr) | | |
| | DOT initiated/patient educated | Educate as needed | | | | | | | | |
| | Pyridoxine 100mg | As long as ethionomide, linezolid, or cycloserine given | | | | | | | | |
| Baseline weight & height | Calculate BMI | Weigh weekly | Weigh monthly | | | | | | | |
| | Nutritional assessment | Nutritional supplem | ent as needed (no milk pr | oducts, aluminum, CA, M fluroquinolone) | lg containing ar | ntacids, iron o | or MVI's withi | n 2 hours of | | |
| | | tinue monthly as long as a | | | | | | | | |
| Visio | | ng as ethambutol, rifabutir | | | | | | | | |
| Assess & Address | | tance abuse/psychosocial | | | | | | | | |
| *Repeat clearance if decrease | And a second | mpletion of Assess & Addr | | the second se | | | | | | |

*Repeat clearance if decreased & adjust medications (aminoglycosides, capreomycin, ethambutol, PZA, levofloxacin, cycloserine) † For patients at high risk for MDR-TB request rapid molecular assay for drug resistance [consultation required]

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MDR - TB Toxicity Monitoring Checklist

| Evaluation | Baseline | _ | | | | | | | | | | | | |
|--|----------|---|---|---|---|---|---|---|---|---|----|----|----|-------|
| Laboratory/Myco/Radiology | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Notes |
| HIV (baseline and following exposure) | | | | | | | | | | | | | | |
| СВС | | | | | | | | | | | | | | |
| СМР | | | | | | | | | | | | | | |
| CXR (q 6 months) | | | | | | | | | | | | | | |
| Sputum | | | | | | | | | | | | | | |
| Hb A1C (q 3 - 6 months) | | | | | | | | | | | | | | |
| TSH (Ethion, PAS) | | | | | | | | | | | | | | |
| Clinical | | | | | | | | | | | | | | |
| Weight | | | | | | | | | | | | | | |
| Pregnancy | | | | | | | | | | | | | | |
| Cough / Hemoptysis | | | | | | | | | | | | | | |
| Systemic Symptoms | | | | | | | | | | | | | | |
| Energy | | | | | | | | | | | | | | |
| Monitoring | | | | | | | | | | | | | | |
| Audiology (if on SLID) | | | | | | | | | | | | | | |
| Visual Acuity (EMB or LZD) | | | | | | | | | | | | | | |
| Ishihara (EMB or LZD) | | | | | | | | | | | | | | |
| Neuropathy Assessment (INH, Ethion, LZD) | | | | | | | | | | | | | | |

| Patient label: | | _ | | | | |
|---|----------------------------------|---|----------|------|--------|---|
| Intermediate Outcomes | Time Frame | D | ate(s) A | ccom | plishe | d |
| TB Contact Interview | 3 days | | | | - | |
| Contacts Identified and tested | 15 days | | | | | |
| Medical evaluation of TST + contacts | 30 days | | | | | |
| Appropriate medication regimen | at 1 st visit/monthly | | | | | |
| DOT arranged | 24 hours | | | | | |
| Testing/Screening | Baseline and prn | | | | | |
| • Blood | | | | | | |
| • Vision | | | | | | |
| Hearing | | | | | | |
| • Sputum | | | | | | |
| Peripheral Neuropathy | | | | | | |
| X-rays | | | | | | |
| • HIV | | | | | | |
| Sputum Smear Conversion | 2-3 weeks | | | | | |
| Sputum Culture Conversion | 8-10 weeks | | | | | |
| Clinical Improvement | Monthly | | | | | |
| • Subjective | - | | | | | |
| • Objective | | | | | | |
| Patient Education | | | | | | |
| • Initiation | At 1 st visit | | | | | |
| • Documented | Monthly | | | | | |
| Appointments | | | | | | |
| Physician follow-up | Monthly | | | | | |
| • DOT adherence | Monthly | | | | | |
| Referrals | PRN | | | | | |
| Nursing care Plan | | | | | | |
| Initiated | At 1 st visit | | | | | |
| Documented | Monthly | | | | | |
| Tox Checks | Monthly or PRN | | | | | |



Monthly Monitoring

Weight

Pregnancy (if applicable)

Audiogram/vestibular screen if on aminoglycoside/ capreomycin

Vision screen if on ethambutol, rifabutin, linezolid, clofazimine

Consider CXR:

- Month 3
- Month 6
- Month 12
- Month 18
- Month 24

Consider CT:

- Month 12
- Month 24



Physician Assessment

After the initial Physician Assessment:

- Every 1-2 weeks
- Monthly after the 3rd month



Laboratory Monitoring

CBC, BUN, Creatinine, Liver Function Tests, potassium, calcium, magnesium monthly

Hgb A1C (every 3-6 months)

TSH (on Ethionomide and/or PAS) every 3 months

Sputum

CULTURE

Every month (preferably early morning specimens) x 3 for duration of treatment



DRUG SUSCEPTIBILITY

Request drug susceptibility if sputum positive at month 2

Repeat every month if culture remains positive

Antituberculosis medications

Amikacin Capreomycin Cycloserine Ethionamide Kanamycin Meropenum Para-aminosalicylate Rifapentine

Amoxicillin Clarithromycin Delamanid Imipenem/cilastatin Levofloxacin Moxifloxacin Rifabutin Streptomycin Bedaquiline Clofazimine Ethambutol Isoniazid Linezolid Pyrazinamide Rifampin

Drug Toxicity

General Principles

- Counsel every patient
- Measures to minimize toxicity
 - Supplemental ancillary medication (address common side effects)
 - Non-pharmaceutical approaches
 - Change in time of dose
 - Dose some meds with food
 - Relaxation techniques

Routine toxicity monitoring

- Screen for bone marrow suppression (CBC for linezolid)
- Monitor renal function (creatinine monthly for those on aminoglycosides or capreomycin)
- Monitor liver function (monthly for PZA, ETA, PAS)
- Monitor serum electrolytes (K+, Ca+, Mg for aminoglycosides and CM)
- Screening for hypothyroidism (TSH every 3 months for ETA or PAS)

Routine Toxicity Monitoring

- Screen for bone marrow suppression (CBC for linezolid)
- Monitor renal function (creatinine monthly for those on aminoglycosides or capreomycin)
- Monitor liver function (monthly for PZA, ETA, PAS)
- Monitor serum electrolytes (K+, Ca+, Mg for aminoglycosides and CM)
- Screening for hypothyroidism (TSH every 3 months for ETA or PAS)
- Screening for hearing loss and vestibulopathy
- Screening for visual changes (EMB, LZD, CFZ)
- EKG (BDQ)
- Screening for peripheral neuropathy (LZD, FQ, high dose INH)
- Screening for depression, agitation and psychosis (CS)

Nursing Guide for Managing Side Effects to Drug-resistant TB Treatment

Stop IB Partners

Nursing Considerations

Nurses are frequently the first point of contact a patient will have when seeking health care and are the main cadre of health professionals worldwide delivering and/or overseeing a patient's daily directly observed treatment.

Nurses are often the first to hear of a patient's side effect(s) during TB treatment and therefore, are well positioned to intervene

Clinical Monitoring

Instruct patient to report any signs or symptom of a potential adverse drug reaction:

- Fever
- Headache
- Rash
- Nausea, vomiting, diarrhea, abdominal pain
- Fatigue or weakness
- Cardiac dysrhythmias
- Dark urine
- Persistent numbness in hands or feet
- Joint or muscle pain/tendon inflammation
- Vision changes
- Hearing loss
- Tinnitus
- Mood changes, sleep disturbances
- Suicidal thoughts

Appendix D: Side Effect Monitoring Checklist

| Symptom/complaint | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---------------------------------|---|---|---|---|---|---|---|---|---|----|----|----|
| Nausea | | | | | | | | | | | | |
| Vomiting | | | | | | | | | | | | |
| Abdominal pain | | | | | | | | | | | | |
| Diarrhea | | | | | | | | | | | | |
| Loss of appetite | | | | | | | | | | | | |
| Fatigue | | | | | | | | | | | | |
| Headache | | | | | | | | | | | | |
| Dizziness | | | | | | | | | | | | |
| Joint pain / arthralgia | | | | | | | | | | | | |
| Muscle pain or cramping | | | | | | | | | | | | |
| Vision changes / problem | | | | | | | | | | | | |
| Hearing loss | | | | | | | | | | | | |
| Ringing in ears / tinnitus | | | | | | | | | | | | |
| Loss of balance | | | | | | | | | | | | |
| Tingling/numbness (hands/feet) | | | | | | | | | | | | |
| Insomnia or sleep problems | | | | | | | | | | | | |
| Agitation / irritability | | | | | | | | | | | | |
| Difficulty concentrating | | | | | | | | | | | | |
| Feeling hopeless or depressed | | | | | | | | | | | | |
| Suicidal thoughts | | | | | | | | | | | | |
| Hallucinations | | | | | | | | | | | | |
| Memory problems | | | | | | | | | | | | |
| Confusion | | | | | | | | | | | | |
| Lower limb swelling (edema) | | | | | | | | | | | | |
| Frequent bruising / nose bleeds | | | | | | | | | | | | |
| Irregular or racing heartbeat | | | | | | | | | | | | |
| Skin rash or hives (urticaria) | | | | | | | | | | | | |
| Yellowing of eyes (sclera) | | | | | | | | | | | | |
| Seizure / convulsion | | | | | | | | | | | | |

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Tool 4: Laboratory Flow Sheet

| | DATE: | | | | |
|-------------|----------------------|--|--|--|--|
| | WBC | | | | |
| ШШ | Hbg/Hct | | | | |
| HEME | Platelets | | | | |
| | | | | | |
| | Na+ | | | | |
| | K+ | | | | |
| | CI- | | | | |
| | CO ₂ | | | | |
| | Ca++ | | | | |
| | Mg++ | | | | |
| | Total Bili | | | | |
| £ | Glucose | | | | |
| lis l | BUN | | | | |
| Chemistry | Creatinine | | | | |
| | Uric Acid | | | | |
| | Alk Phos | | | | |
| | AST (SGOT) | | | | |
| | ALT (SGPT) | | | | |
| | T. Protein | | | | |
| | Albumin | | | | |
| | Albuilli | | | | |
| | | | | | |
| | РН | | | | |
| | PaO ₂ | | | | |
| ABG | PaCO ₂ | | | | |
| A | HCO ₂ | | | | |
| | O ₂ Sat | | | | |
| | Spec. Gravity | | | | |
| | pH | | | | |
| | Ketone | | | | |
| Urine | Glucose | | | | |
| 5 | Protein | | | | |
| | Heme | | | | |
| | Heme Cr Clearance | | | | |
| _ | TSH | | | | |
| | | | | | |
| | PT/PTT | | | | |
| F | HgbA1C | | | | |
| Other | CD4 | | | | |
| | Viral Load | | | | |
| | Pregnancy | | | | |
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| Drug Levels | | | | | |
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Tool 5: Vision Screening Flow Sheet

Visual acuity chart used (type and distance e.g., 10 or 20 foot): _____

Color discrimination tool used (type and number of plates if applicable):

| BASELINE RESULT | | | | | | | | | | |
|-----------------|-----------|----------|--------------|----------|--------------|-------------------|--|--|--|--|
| Date | VISUAL | ACUITY | COLOR VISION | | Performed by | Comment or action | | | | |
| Date | Right eye | Left eye | Right eye | Left eye | (signature) | comment or action | | | | |
| | / | _/ | | | | | | | | |

| MONTHLY MONITORING | | | | | | | | | | |
|--------------------|-----------|----------|-----------|----------|--------------|-------------------|--|--|--|--|
| Date | VISUAL | ACUITY | COLOR | VISION | Performed by | Comment or action | | | | |
| Date | Right eye | Left eye | Right eye | Left eye | (signature) | | | | | |
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NOTE: If changes from baseline noted during monthly screening, inform treating clinician and refer for further evaluation.

Hearing and Vestibular Screening Flow Sheet

| NOTE: | Date | Change in hearing, ringing or | Dizzy, weak or unsteady? | Romberg | Walking | Heel-to-Toe Walk | Audiogram | | Signature | Comment/Action |
|--|----------|-----------------------------------|--------------------------------|---------------------------|--------------------------|--|----------------------|----------------------|------------|----------------|
| iii _ | | fullness in ears? | | | | | Left | Right | orginataro | |
| If changes from baseline noted during monthly screening, inform treating clinician and refer for further evaluation. | Bæseline | Leftear: Y/N Rightear:Y/N | Yes / No | Normal Loss of balance | OK Weaves Staggers | Does well Jerky Hesitates Sways | WNL Abn Stable | WNL Abn Stable | | |
| | | Leftear: Y / N Rightear: Y / N | Yes / No | Normal Loss of balance | OK Weaves Staggers | Does well Jerky Hesitates Sways | WNL Abn Stable | WNL Abn Stable | | |
| d during mont | | Leftear: Y / N Rightear: Y / N | Yes / No | Normal Loss of balance | OK Weaves Staggers | Does well Jerky Hesitates Sways | WNL Abn Stable | WNL Abn Stable | | |
| hly screening, | | Leftear: Y / N Rightear: Y / N | Yes / No | Normal Loss of balance | OK Weaves Staggers | Does well Jerky Hesitates Sways | WNL Abn Stable | WNL Abn Stable | | |
| inform treatin | | Leftear: Y / N Rightear: Y / N | Yes / No | Normal Loss of balance | OK Weaves Staggers | Doeswell Jerky Hesitates Sways | WNL Abn Stable | WNL Abn Stable | | |
| ıg clinician anc | | Leftear: Y / N Rightear: Y / N | Yes / No | Normal Loss of balance | OK Weaves Staggers | Does well Jerky Hesitates Sways | WNL Abn Stable | WNL Abn Stable | | |
| d refer for furth | | Leftear: Y / N Rightear: Y / N | Yes / No | Normal Loss of balance | OK Weaves Staggers | Does well Jerky Hesitates Sways | WNL Abn Stable | WNL Abn Stable | | |
| er evaluation. | | Leftear: Y / N Rightear: Y / N | Yes / No | Normal Loss of balance | OK Weaves Staggers | Does well Jerky Hesitates Sways | WNL Abn Stable | WNL Abn Stable | | |

Nursing Interventions

Seek urgent medical evaluation

- Drug may be started at a lower dose and gradually increased
- Change in time administration/spacing the medication
- Medication may be ordered (Phenergan, Zofran, Reglan)
- Light snack
- Hydration
- Treat gastritis or acid reflux
- Stop meds

Counsel the patient

- Some side effects
- Maintain good hydration and nutrition
- Avoiding alcohol

Discuss with MD

- Treat underlying causes, if any
- Refer to specialist

Principles of Treatment and Management of MDR-TB

Consult with a DSHS-recognized TB Medical Specialist (Dr. Seaworth, Dr. Armitige, Dr. Starke)

An initial period of hospitalization is helpful

Prior TB treatment history is extremely important

If not already done, implement location appropriate isolation

Intervene quickly when toxicity develops



Principles of Treatment and Management of MDR-TB

- Monitor and respond quickly to clinical toxicity
- CBC, LFTs, TSH, creatinine, calcium
- Audiological evaluation
- Vestibular toxicity screen
- Visual screen
- Nutritional assessment
- Drug levels

Patient Centered Care.....

Changing: engage patients as active participants in their care

Emphasizing tailored treatment to address both patient's clinical and social concerns

Providing care that is respectful of and responsive to individual patient preferences, needs and values, and ensuring that patient values guide clinical decisions

Training (clinical care teams) to be more mindful, informative, and empathetic to transform their role from one characterized y authority to one that has the goals of partnerships, solidarity, empathy, and collaboration



TB Patient Centered Care...

Patient is assigned a nurse case manager (NCM) to assess the needs and barriers that may interfere with treatment adherence

NCM develops individualized "Case Management Plan" with interventions to address needs and barriers

Plan is reviewed and revised as needed

Involving patient and family meaningfully when making decisions regarding treatment and overall care

Get to Know Your Patient

Develop a good relationship with your patient

- Use effective communication skills
- Find common ground
- Be respectful and empathetic

Educate, educate, educate!

Find out their perceptions and knowledge of TB

Who is their support system? Do they know and understand about TB and treatment?

Do they have social or cultural influences-alcohol, drugs, alternative treatment, holistic medicinal practices

Understand your patient's home/work habits, routines

Language barriers need to be addressed

Discuss health beliefs and misconceptions

LISTEN, be open-minded, recognize patient fears, avoid criticizing, be consistent



Responsibility for Successful Treatment

Successful TB treatment is primarily the responsibility of medical providers and health care workers; <u>NOT the patient</u>

It is strongly recommended that the initial treatment strategy utilize <u>patient-centered</u> case management with an adherence plan that emphasizes direct observation of therapy (DOT)

DOT is significantly associated with improved treatment success (the sum of patients cured and patients completing treatment) and with increased sputum smear conversion during treatment, as compared to self administered treatment (SAT)

- Early recognition of adverse drug reactions
- Allow for establishing rapport with patients and families
- Addressing treatment complications expeditiously
- Remains standard practice in US





Today I am Sad.....

Because your eyes have lost their luster, hope was not accomplished, your voice was silenced, your smile extinguished, your steps stopped. Today a battle was lost, a heart departed sad for lack of love. You were only 16 years old.

At your young age, you knew fear, heartbreak, pain, and illness. But above all, the need of so many spiritual, emotional and material things.

For the time I treated you, you smiled, you felt hope, and joy was born. You had the want to live although it was late and your time came to an end.

I hope that wherever you are, you are happy. I hope that you receive the eternal embrace of love. Smile. Open your eyes and enjoy what this life was incapable of giving you.

Your nurse, Karla

"Let no one ever come to you without leaving better & happier. Be the living expression of God's kindness: Kindness in your face, kindness in your eyes, kindness in your smile."

MOTHER TERESA



Self Care for TB Nurses

Get a pedi every 2 weeks

Buy yourself morning coffee

Spend your days off in nature

Sit on the toilet at work for 10 minutes if you need a mental break

Pack a healthy lunch and EAT IT!

Take a fitness class

Start a journal

Listen to your mind and body and respond accordingly

Start reading a good book for fun or self-improvement



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