Tuberculosis Policies and Procedures
State of Hawaii Department of Health
Communicable Disease and PHN Division
Tuberculosis Control Branch

TITLE: LTBI Treatment: Standing Orders for Nurse Assessment and Management of Adverse Drug Reactions		
CHAPTER: Clinical	**CONTACT PERSON/S:** M. A. Ware, MD	**NUMBER**: 2.019
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APPLIES TO: All Hawaii TB programs		

PURPOSE

- Patients treated for latent TB infection or for "window prophylaxis" by DOH will be safely treated
- TB Clinic nurses are authorized to assess patients on LTBI treatment for potential adverse drug reactions and to hold or continue medication as indicated while waiting for TBCMD consult

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1. Hepatitis: *anorexia* *nausea* *vomiting* *malaise* *dark urine* *jaundice* *abdominal pain*	**About hepatitis** - Hepatitis can vary from mild to severe - Early symptoms of hepatitis include: fatigue, anorexia (poor appetite), malaise, nausea, abdominal discomfort, bloating - Later symptoms include: vomiting, abdominal pain, jaundice, very dark urine (often when pts. complain of "dark urine", the urine is merely concentrated. This is common and of no diagnostic value). - Can be caused by INH or rifampin/rifapentine, other medications, alcohol, viruses and other causes. - Cannot distinguish clinically between hepatitis caused by medication and viral hepatitis or other types of hepatitis. **Nursing assessment** Interview pt. - Duration of symptoms and relationship to medication - Any other associated symptoms - Record all medications taken & last dose (include herbal and over-the-counter medication) - Alcohol or injection drug use – last used **Nursing Intervention** STANDING ORDERS - HOLD medication at first symptoms suggestive of hepatitis, notify TBCMD - Send Pt. for bloodwork or consult with TBCMD regarding blood work (DLS 1951)

2. GI upset:
nausea
vomiting
abdominal pain
	About GI upset
	- Symptoms of GI upset include: anorexia, nausea, vomiting, malaise, abdominal pain/discomfort (note overlap with hepatitis)
	- Can be caused by INH or rifampin/rifapentine, other medications, or other causes
	- Note overlap of symptoms with relatively common adult problems of dyspepsia, esophageal reflux (GERD) etc.
	Nursing assessment
	Interview pt.
	- Duration of symptoms and relationship to TB medication
	- Other associated symptoms
	- History of ulcer, dyspepsia, GERD, irritable bowel
	- Record all medications taken & last dose; in addition to prescription medications, include herbal medication and over the counter medication including aspirin, ibuprofen (Advil and others), acetaminophen (Tylenol & others) etc.
	- Likelihood new pregnancy
	Nursing Intervention STANDING ORDERS
	- HOLD TB medication if hepatitis suspected or if client unable to tolerate medication
	- Review with TBCMD
	- If hepatitis ruled out, nurse to work with Pt. as follows
	- Pregnancy test or referral for test as indicated
	  ○ Take medication with light snack such as crackers or toast, tea or soda
	  ○ Advise Pts. to eliminate or minimize alcohol use
	  ○ Minimize use of NSAIDs (e.g. aspirin, ibuprofen, naproxen)
	  ○ Take medication at bedtime

3. Rash ***See Table 1***	**About rashes**

	- Rashes can vary from mild to life-threatening (rare)[1], e.g. toxic epidermal necrolysis, Stevens-Johnson syndrome, drug reaction with eosinophilia and systemic symptoms - May occur with INH or rifampin/rifapentine, other medications, or other causes - May include itching – *see #4 below* - May accompany anaphylaxis *see #6 anaphylaxis below* **Nursing assessment** Interview pt. - When did it start? Where is it? What does it look like now? Has it spread? - What makes it better or worse? Itching present? Have you had an insect bite? - History other skin problems (eczema, psoriasis, acne, etc.) - Associated symptoms? Itching, wheezing, joint pain, muscle aches, fever, stomach upset - Record all medications taken Physical assessment recommended if possible - Measure and record temperature - Describe color & appearance of rash *see Table 1*: maculopapular, hives, acne, petechiae - Describe extent & location of rash: trunk, arms, legs, face, palms/soles, mouth - Look for rashes suggestive of scabies or lice **Nursing Intervention** STANDING ORDERS **Significant rash** - HOLD treatment, if possible take photo, consult TBCMD within 1 working day as follows: o Involvement of palms or soles, high fever, chills, oral involvement o Petechiae & Pt. on rifampin/rifapentine o Hives o Rash generalized (extensive) or atypical appearance or of great concern to pt. - Send Pt for bloodwork or consult with TBCMD o Petechiae – CBC with platelet count o Generalized rash - CBC with differential, and DLS 2151 (LFTs, creatinine) - If anaphylaxis, act quickly as described in #6 below **Mild maculopapular rash localized to arms or legs or trunk** - Can occur with INH, rifampin/rifapentine, or other medications – common early side effect – often resolves after first few weeks - OK continue treatment unless extensive (significant rash) or of particular concern for pt. - Monitor pt.- if rash becomes generalized, HOLD medication review with TBCMD - Advise over-the counter skin moisturizer *see Table 2* - Consider advising use of topical over-the counter 1% hydrocortisone cream **Acne face & upper back** - INH can exacerbate acne – reversible after treatment stops - OK continue treatment unless of particular concern for pt. - Advise see PCP to treat acne as pt. desires– reversible after INH discontinued - HOLD INH if of particular concern for Pt. – review with TBCMD
4. Itching	**About itching** - Commonly caused by INH

[1] http://www.currytbcenter.ucsf.edu/sites/default/files/tb_sg3_chap9_adverse_reactions.pdf#sevreactions
Curry International Tuberculosis Center and California Department of Public Health, 2016: Drug-Resistant Tuberculosis: A Survival Guide for Clinicians, Third Edition p 257-258

	- Sometimes accompanied by rash, but may be sole complaint - Symptoms usually respond to treatment with anti-histamine - Dry skin may contribute to itching **Nursing assessment** Interview pt. - Duration of itch & relationship to treatment - Presence of rash/hives Physical assessment recommended - Examine skin for rash or dry skin or other causes of itch (scabies, lice etc.) **Nursing Intervention** STANDING ORDERS - OK continue meds if itching alone - Consult TBCMD for prescription for non-sedating anti-histamine (loratidine) - Advise use over-the counter skin moisturizer *see Table 2*
5. Peripheral Neuropathy: *Numbness, tingling hands or feet*	**About peripheral neuropathy** - Symptoms include numbness and tingling in the feet or the hands and feet - Can be caused by INH, may be more common in predisposed individuals such as alcoholics, diabetics, HIV, renal insufficiency, malnourished - INH neuropathy often blocked by administration of vitamin B6 (pyridoxine) - Neuropathy is not caused by rifampin/rifapentine **Nursing assessment** Interview pt. - Duration of symptoms & relationship to medication - Any effect on sleep or activities daily living (ADL e.g. walking, writing) - Any associated symptoms - Record all medications taken & last dose (include herbal and over-the-counter medication) **Nursing Intervention** STANDING ORDERS - If vague or minor symptoms of peripheral neuropathy with no disruption of ADL, continue INH inform consult TBCMD who will add B6 or increase dose of B6 by 25-50 mg (do not exceed 100 mg)

6. Anaphylaxis	**About anaphylaxis** - Rare with INH, rifampin/rifapentine, or other TB meds, but can happen - Presents within minutes of medication dose - Symptoms: stridor (high-pitched noisy respiration, sign of respiratory obstruction, especially trachea or larynx), wheezing, throat closed, swelling of tongue, hoarseness - Additional symptoms: shock, urticaria (hives), angioedema (swelling deep inside the skin can affect the patient's hands, genitals, feet, the lining of the throat and bowel, and the eyes), confusion, pruritis (itching), nausea, vomiting, cramping, diarrhea **Nursing assessment & intervention** STANDING ORDERS - If pt. in clinic with any of above act quickly see 2.024 "Epinephrine for Anaphylaxis" - If pt. not in clinic, advise ER visit ASAP, call 911 (unlikely to occur) - Hold medication, review with TBCMD
7. Other rifampin/ rifapentine	**Flushing** - Flushing and/or itching of the skin with or without a rash - Usually involves the face and scalp; may cause redness/watering of the eyes - Usually occurs 2-3 hours after drug ingestion - Flushing is usually mild and resolves without therapy - If flushing is bothersome to the patient, review with TBCMD for consideration of an anti-histamine which may be administered to treat or prevent the reaction **Flu syndrome** - Fever, chills, headache, bone pain - Symptoms begin 1-2 hours after the dose of medication and resolve spontaneously after 6-8 hours - Typically develops after several months of therapy and is more common with intermittent therapy **Nursing assessment & intervention** STANDING ORDERS - Hold medication and review with TBCMD, watch for itch and rash

8. Other INH	**Elevated liver enzymes without hepatitis** - INH can cause hepatitis as discussed in #1, but INH can also cause elevated liver enzymes (AST/ALT) without hepatitis - TBCMD will determine management of elevated AST based on presence or absence of symptoms and degree of elevation of enzymes **Headache** - Commonly caused by INH, usually self-limited - It may be useful for Pt. to avoid tyramine-rich foods & beverages e.g. cheese, red wine, salami, tuna *see PH-9 Medicines for Treatment of TB infection (LTBI)* - Review with TBCMD if severe or major concern for pt. **Insomnia** - Commonly caused by INH, usually self-limited - Review with TBCMD if severe or major concern for Pt. **Behavioral changes** - Reported with INH - Review with TBCMD, consider medication change, consider adding/increasing vitamin B6 – do not go above 100 mg **Optic neuritis** - Uncommon side effect of INH - Symptoms*:* blurred vision, eye pain **Nursing assessment & intervention** STANDING ORDERS - If eye pain, hold meds, review with TBCMD ASAP - If significant blurred vision, hold meds, facilitate eye exam with eye care professional, review with TBCMD **Drug –induced lupus syndrome** - Uncommon side effect of INH - Symptoms include: arthralgia (joint pain), muscle pain (myalgia), rash, constitutional -, fever, weight loss, fatigue - Diagnosed by blood test called ANA (anti-nuclear antibody, must be ordered by TBCMD), reversible if INH discontinued **Acne** *see Table 1* - INH can exacerbate acne on the face and shoulders. - Treatment is the same as for usual acne - Support Pt., consider change in medication if major concern for Pt.

Table 1 Definitions of skin rash terms	
Maculopapular	- Also called morbilliform, similar to measles - Macule: Flat skin lesion, color different from surrounding normal skin - Papule: Small elevated skin lesion less than 0.5 cm in diameter - Reddish macules & papules, often confluent in large areas. - Common appearance of drug eruption – usually begins within several days of initiation of drug, may be delayed as long as 1 week but seldom longer. - Itching may be present, fever is rarely found
Petechiae	- Purpuric (purple, not red) macules less than 3 mm - Not blanchable – color does not change with direct pressure because blood is extravasated outside vessel walls - May be generalized but are usually most pronounced in areas of dependency; easy bruising may be noted, mucosal bleeding may be present
Hives	- Hives are skin lesions that are easily identifiable - Transient wheals: edematous plaque with pale center & red border - Individual hive is transient (last less than 24 hours) although new hives may continuously develop - May assume geographic shapes & sometimes are confluent - May be scattered usually generalized
Acne	- Clinical lesions range from non-inflamed comedones (blackheads or whiteheads) to inflammatory papules, pustules, nodules & cysts - Nodule: elevated, "marble-like" lesion greater than 0.5 cm in both diameter & depth - Cyst: a nodule filled with expressible material that is either liquid or semisolid
Reference: Lookingbill, DP, Marks, JG "Principles of Dermatology" 2nd edition. W.B Saunders company 1993	

Table 2 Over-the -Counter Skin Moisturizers	
Names of products available at drugstores*	Approximate price $ (2016)
Cetaphil cream	12
Curel lotion	10
Eucerin lotion	11
Gold Bond lotion	6
Lubriderm lotion	8
Nivea cream	13

*Partial list, commonly available