

## VI. TB Drugs

### A. NC TB Program

1. Supplies drugs, including PPD, only to health departments.
2. Contracts with a vendor to ship drugs within 24 hours of the drug order. (Note: Counties that have contracts with Cardinal for weekly drug deliveries will only receive drug orders on Wednesday).
3. Does **not** provide medications for the treatment of non tuberculosis mycobacterium (NTM).
4. Allows rifampin use for contacts to *Hemophilus influenza* and meningococcal disease. Communicable Disease (919) 733-3419 must be consulted if more than two bottles are needed to treat all the contacts.

### B. Health Department Pharmacy

1. Maintains contract with the state vendor so TB drugs can be shipped directly to the county.
2. Dispenses medications in compliance with applicable laws and health department policy.
3. Labels medications for dispensing on an as needed basis. The N.C. TB Control Branch cannot return pre-labeled drugs to the pharmaceutical company for credit.
4. Prepares suspension/liquid forms of rifampin, PZA or other drugs.
5. Does not provide medications for the treatment of non-tuberculosis mycobacterium (NTM).
6. Does not provide PPD to other health care providers or other agencies.
7. Maintains a log with patient name, lot number, manufacturer, and expiration date.
8. Follows the Public Health Pharmacy Rule § G.S. 90-85.34A. (Refer to Chapter XI).

### C. Drug Information

1. Purified Protein Derivative (PPD)
  - Must be refrigerated during shipping.
  - Should be stored in refrigerator between 35°-46° F.
  - Should never be frozen.
  - Discard 30 days after opening, or if solution becomes cloudy.
  - Protected from light.
  - If you have questions about PPD stability you should call Sonofi-Aventis (Tubersol) at 1-800-822-2463. They will need to know if the vial has been opened, the temperature of the room, the length of time at this temperature,

and, if this was a shipment, length of transit since removal from refrigeration.

- Health departments are not permitted to supply PPD to any other provider.
- State-provided PPD may only be used on those persons who are considered high-risk for developing TB. See Chapter II for clarification about who is at high-risk.
- Locally purchased PPD should be used for low risk tuberculin skin testing.

2. See Tuberculosis Biologicals Requisition and Inventory (DHHS 3093) on the next page for available medications.

#### D. Ordering Drugs

1. Complete Tuberculosis Biologicals Requisition and Inventory form (DHHS 3093) which can be found at:  
[http://epi.publichealth.nc.gov/cd/tb/docs/dhhs\\_3093.pdf](http://epi.publichealth.nc.gov/cd/tb/docs/dhhs_3093.pdf)
2. Fax orders to Eric Davis at (919) 733-2054.
3. Contracts with a vendor to ship drugs within 24 hours of the drug order. (Note: Counties that have contracts with Cardinal for weekly drug deliveries will only receive drug orders on Wednesday).
4. Orders shipped from Cardinal Health are delivered by commercial carrier and require a signature upon receipt.
5. The Cardinal invoices shipped with the TB biologicals are to be documented as “received” and initialed by an agency representative. Any missing TB biologicals are to be noted on the invoice. Then call the Field Development Unit at (919) 733-7286 ext. 118 to report the missing TB biologicals.
6. The original Cardinal invoice is required for payment. It should be signed and mailed within three business days to Eric Davis:

DHHS/Division of Public Health  
Epidemiology Section, Communicable Disease Branch  
Field Development Unit  
1933 Mail Service Center  
Raleigh, NC 27699-1933  
Att: Eric Davis

7. All expired drug disposal is the responsibility of the local health department in accordance with state and local drug disposal guidelines.
8. If you have questions about TB drugs and cannot reach Eric Davis please contact Ron Higginbotham at 919-733-2030 ext 201 and if he is unavailable contact Pete Moore at 919-733-2030 ext. 203.
9. Do not order drugs more than once per month except in emergencies.

10. All drugs except INH, RIF, Rifapentine (RPT), PZA, and EMB must have approval from a TB Nurse Consultant or Medical Director before it can be shipped.

E. Common Drug Interactions with Tuberculosis Medications <sup>1</sup>

<b>Tuberculosis Medication</b>	<b>Drug or Drug Type</b>	<b>Interaction</b>
Isoniazid (INH)	Acetaminophen	Increased toxic metabolites
	Antacids	Decreased INH absorption
	Anticoagulants (oral)	Increased anticoagulant effect
	Benzodiazepines	Increased benzodiazepines toxicity
	Carbamazepines	Increased toxicity of both drugs
	Cycloserine	Increased CNS effect of cycloserine
	Disulfiram	Severe psychotic episodes
	Enflurane	Increased nephrotoxicity
	Haloperidol	Increased haloperidol toxicity
	Ketoconazole	Decreased ketoconazole effect
	Phenytoin	Increased phenytoin toxicity
	Theophyllin	Increased theophyllin toxicity
	Valproate	Increased hepatic and CNS toxicity
	Rifampin (RIF) Rifabutin Rifapentine	Aminosalicylic acid
Anticoagulants (oral)		Decreased anticoagulant effect
Antidepressants		Decreased anticoagulant effect Tricyclic, barbiturates, benzodiazepines
Beta-adrenergic blockers		Decreased beta blockade
Metoprolol		Possible increased beta blockade
Chloramphenicol		Decreased chloramphenicol effect
Clofibrate		Decreased clofibrate effect
Contraceptives		Decreased contraceptive effect
Corticosteroids		Marked decreased corticosteroid effect
Cyclosporine		Decreased cyclosporine effect
Dapsone		Possible decreased dapsone effect
Delavirdine		Marked decreased delavirdine effect
Digitoxin		Decreased digitoxin effect
Digoxin		Decreased digoxin effect
Diltiazem		Decreased diltiazem effect
Disopyramide		Decreased disopyramide effect
Fluconazole		Decreased fluconazole effect
Haloperidol		Decreased haloperidol effect
Itraconazole		Decreased itraconazole effect
Mephenytoin		Decreased mephenytoin effect
Mexiletin		Decreased antiarrhythmic effect
Methadone		Decreased methadone effect
Nefedipine		Decreased antihypertensive effect
Nesoldepine		Decreased antihypertensive effect
Phenytoin		Decreased phenytoin effect
Progesterone		Decreased progesterone effect

<b>Tuberculosis Medication</b>	<b>Drug or Drug type</b>	<b>Interaction</b>
Continued: Rifampin	Propaferrone Protease inhibitors (PI)	Decreased propaferrone effect Marked increase serum levels of Rifabutin RIF and marked decreased serum levels in PI
Rifapentine	Quinidine Sulfonylurea Tetracyclines Theophyllines Tocainide Trimethrprim-sulfamethoxazole Verapamil	Decreased quinidine effect Decreased sulfonylurea effect Decreased tetracycline effect Decreased theophylline effect Possible increased tocainide effect Possible rifampin toxicity  Decreased verapamil effect
Aminoglycoside	Amphotericin Bumetanide Capreomycin  Cephalosporins Cisplatin Cyclosporines Enflurane Ethacrynic acid Furosemide  Gallium Methotrexate  Neuromuscular blocker Vancomycin	Nephrotoxicity (synergism) Increased ototoxicity Increased ototoxicity and nephrotoxicity  Increased nephrotoxicity Increased nephrotoxicity Increased nephrotoxicity Possible increased nephrotoxicity Increased ototoxicity Increased ototoxicity and nephrotoxicity  Increased nephrotoxicity Possible increased methotreate toxicity with kanamycin Increased neuromuscular blockade Increased ototoxicity and nephrotoxicity
Pyrazinamide	Allopurinol	Failure of allopurinol to decrease serum uric acid level
Pyridoxine	Barbiturates Levodopa Phenytoin	Decreased Barbiturate effect Decreased levodopa effect Decreased phenytoin effect
Cycloserine	Alcohol Isoniazid Ethionamide	Increased alcohol effect & seizures Increased CNS effect of cycloserine Increased CNS effect of cycloserine
Quinolones	Antacid with metal cations (Ca, Mg, Al, Fe) Sucralfate Probenecid	Reduced absorption of quinolones  Reduced absorption of quinolones Increased serum level of quinolone

<b>Tuberculosis Medication</b>	<b>Drug or Drug type</b>	<b>Interaction</b>
Quinolones continued	NSAIDS  Drugs metabolized By cytochrome P450 (cyclosporine, theophyllin, warfarin, phenytoin, sulfonylurea	Increased CNS stimulation and possible convulsions Increased action of additional drug
Para-aminosalicylic Acid (PAS)	Digoxin	Possible decreased digoxin action
Cycloserine	Isoniazid Ethionamide	Increased CNS effect Increased CNS effect of cycloserine
Ethionamide	Cycloserine	Increased CNS effect of cycloserine

<sup>1</sup> Clinical Policies and Protocols, Bureau of Tuberculosis Control, New York City Department of Health. Appendix F, pg.109

For in-depth information about TB drugs please refer to Centers for Disease Control and Prevention. Treatment of Tuberculosis, American Thoracic Society, CDC, and Infectious Diseases Society of America. MMWR 2003;52 (NO. RR-11):19-32

There is also a publication for clinicians treating tuberculosis in patients taking certain antiretroviral drugs for HIV infection called "Managing Drug Interactions in the Treatment of HIV-Related Tuberculosis ". The site can be accessed at:  
[http://www.cdc.gov/tb/publications/guidelines/tb\\_hiv\\_drugs/default.htm](http://www.cdc.gov/tb/publications/guidelines/tb_hiv_drugs/default.htm)

F. TB Drug Abbreviations

<b>Drug</b>	<b>Abbreviation</b>
Isoniazid	INH
Rifampin	RIF
Rifabutin	RBT
Rifapentine	RPT
Pyrazinamide	PZA
Ethambutol	EMB
Streptomycin	SM
Cycloserine	CIS
Kanamycin	KM
Ethionamide	THA
Capreomycin	CAP
Ciprofloxacin	CIP
Amikacin	AK
Para-aminosalicylic acid	PAS