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Louisiana Morbidity Report

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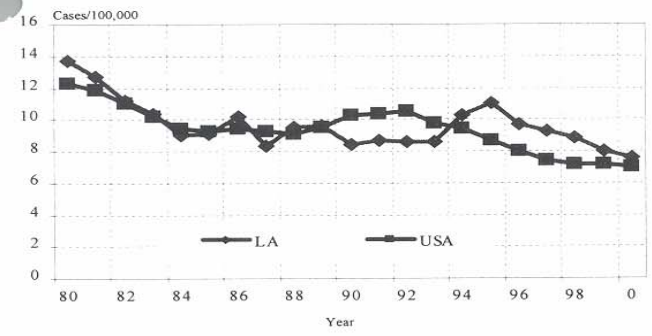
High Rates of Reported Tuberculosis Cases in Some Specific Population Groups

Although tuberculosis is slowly declining in Louisiana, there remains some pockets with high incidence of reported tuberculosis cases. These foci present a threat that needs to be addressed if tuberculosis elimination is a goal.

The incidence of tuberculosis in Louisiana is slightly higher than the average incidence in the US (Figure 1). As in the US, incidence was decreasing progressively with a short interruption in the late 90s from 1994 to 1996.

Figure 1: Incidence (New Reported Case Rate) of Tuberculosis /100,000 by Year in Louisiana and the USA, 1980-2000



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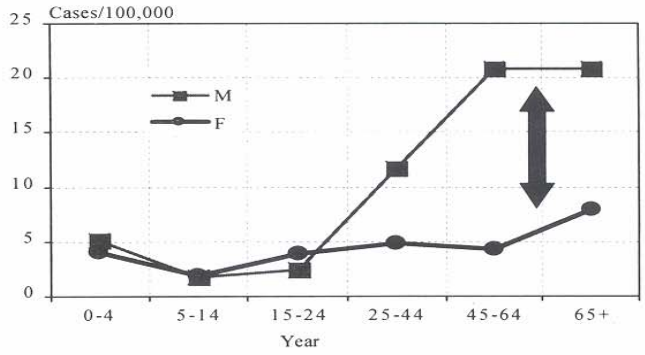
The most striking feature of tuberculosis epidemiology in Louisiana is the vast disparity in tuberculosis incidence in gender, ethnic groups and geography.

In the older age groups, the incidence in males is close to three-fold higher than among females while throughout the world the difference is two-fold (Figure 2).

Figure 2: Incidence (New Reported Case Rate) of Tuberculosis /100,000 by Year in Louisiana by Age group and Gender.



The **major disparities are seen among ethnic groups**: Incidence among Caucasians has slowly decreased from 9.1/100,000 in 1980 to 4.2 in 2000. The 1994/95 increase peaked at 6.4 /100,000. Incidence among African-Americans also decreased from 22.4/100,000 in 1980 to 13.1 in 2000. The decrease has been more important among Caucasians (54% reduction) than among African-Americans (41% reduction). Incidence among Asians has shown dramatic variations from year to year: highs of 46.8/100,000 in 1980, 43.6 / 100,000 in 2000 and lows of 12.3 /100,000 in 1992. The overall trend seems to reflect a significant decrease from 1980 to 1992 (slope of -1.5 case/year, confidence interval –1.85 to –0.11, p= 0.03) then a slightly increasing non significant trend from 1992 to 2000 (of +2.01 case/year, -0.72 to 4.75, p=0.12).

A comparison of incidence by **age and ethnic groups** shows even more important disparities between Caucasians and African-Americans particularly during the last 10 years.

During the 1994-96 peak: incidence among Whites increased by about 35% throughout all age groups except for the youngest age group with an increase of 320%. Among African-Americans the average increase was 53% with huge increases among the younger age groups:

(Continue on next page)

- 871% increase among the youngest (age 0-4)
- 76% increase among the 5-14 years old

The high rates observed among the youngest African-Americans remain very high and have not come back down to the pre 1994 levels.

Table: Tuberculosis case rate by race, 1993-2000

	1993	1994	1995	1996	1997	1998	1999	2000
W 0-4	0.5	0.5	1.6	1.6	0.6	1.1	1.1	1.1
W 5-14	1.2	0.7	0.5	0.8	0.5	0.5	1.1	0.5
W 15-24	0	1	0.7	1.5	0.7	1.2	1	1.2
W 25-44	4.6	4.5	5.3	4.2	3.9	4.4	3.6	3.6
W 45-64	6.1	11.1	10.7	6.5	8.4	4.8	7.8	6.3
W 65+	13.3	15.6	15.5	14.1	10.3	9.9	11.6	9.5
W tot	**4.6**	**6**	**6.2**	**5**	**4.6**	**4**	**4.7**	**4.1**
AfAm 0-4	0.7	0.7	4.5	6.1	8.7	8.8	6.4	8.1
AfAm 5-14	3.8	3	6.7	4.5	1.9	1.9	1.9	2.8
AfAm 15-24	3.3	3.7	5.2	5.8	6.1	5	3.9	4.7
AfAm 25-44	16	19.3	22.9	22	25.5	19.6	19.3	16.6
AfAm 45-64	40.9	38.5	34.7	33.6	32.1	32	26.7	23.8
AfAm 65+	34.4	48.4	52.5	30.5	32.9	45.5	36.2	26.7
AfAm tot	**15.1**	**16.8**	**19**	**16.8**	**17.7**	**16.8**	**14.6**	**13.1**

The geographical distribution is presented in two separate maps, one for Caucasians and one for African-Americans since the two distributions are very different. Figure 3 shows very low rates in Caucasians in most parishes except for:

- High rates in Orleans Parish partly due to a concentration of population with high risk factors (homeless, HIV infection, older adult alcoholic males, drug abuse)
- Higher rates in a few parishes resulting from small clusters of cases, mostly family centered. The years of these clusters are presented in the maps.
- High rates in Cameron Parish (southwest corner of the state) resulting from an outbreak around a highly infectious fisherman.

Figure 3: Incidence of Tuberculosis from cases reported in African Americans, 1996-2000 (per 100,000)

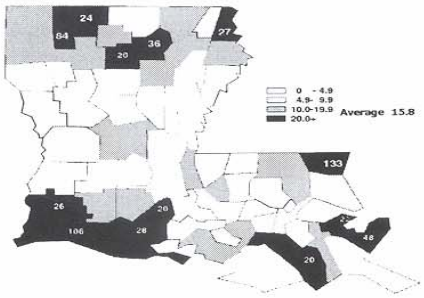
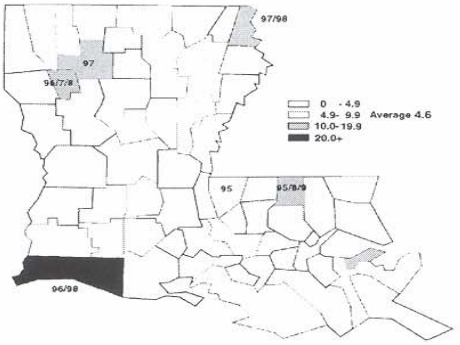


Figure 4 shows a completely different picture for African Americans with much higher rates throughout the state.

- Orleans Parish does not stand out as the highest parish as it does for the Whites in spite of a concentration of high risk factors among the African-Americans (HIV infection and homelessness)
- Consistently high rates in small population parishes such as East Carroll (north east corner of the state), Washington Parish (eastern corner of the state) both parishes close to Mississippi, parishes from the southwestern corners of the state close to Texa

Figure 4: Incidence of Tuberculosis from cases reported in Whites, 1996-2000 (per 100,000)



Incidence maps do not necessarily represent the case load which in fact is more concentrated, since two thirds of the cases come from 7 parishes (240 / 380 cases). As expected high case loads are found mostly in the cities, one fourth of the cases are from Orleans Parish.

Foreign born cases represent only a small fraction (5-7%) of the cases since Louisiana still has relatively high rates among the indigenous population. The number of cases among foreign born hispanics seems to be the group where the increase of foreign born cases is expected. The largest group of foreign born is Vietnamese (15 of 37 foreign born cases in 2000), with no other group standing out (Latin America 6 cases, other southeast Asian countries 10 cases). Most foreign born cases reside in large cities (Orleans, Baton Rouge, Lafayette and Shreveport) and in the Lafayette area where large numbers of Vietnamese have settled. Half of the cases occurring among Vietnamese occur within 5 years of their coming into the US. Cases occur among all age groups, particularly among young adults and not as much among older age groups.

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TUBERCULOSIS

Tuberculin Skin Test (TST)

Once positive no need to repeat TST * Positive TST may remain positive for life or may wane over time (size decreases)**
No contra-indication to repeat TST if doubt or if mm reading needed * Most TST convert in 8 wks, max 12 wks post exposure**

Administering the test

- Intradermal Mantoux: 0.1mL of 5TU PPD tuberculin
- Disposable tuberculin syringe w short 3/8" 26-27G needle
- Clean volar or flexor surface of left forearm 2-4" below the elbow
- Allow arm to dry completely before giving TST
- Follow standard (universal) precautions

Reading the reaction

- Read TST at **72** hrs (48-96 hrs)
- Locate induration (not redness) by palpating
- Measure INDURATION crosswise to long axis of forearm
- Record induration in mm and document date of reading (no induration = 0mm)

False Negative Test

Recent viral infection (measles, mumps, rubella, flu, chickenpox)
Recent (4-6wks) immunization with live virus vaccine (MMR, cpox)
Immunosuppression: old age, debility, malnutrition, infants ≤6mos
High dose steroids (≥15mg prednisone qd 1 month) & immunosuppressive meds
Severe TB disease or Recent TB infection ≤ 8 weeks

False Positive Test

Infection by MOTT	BCG within few years
Reading redness instead of induration	

Interpretation

TST	Risk group: probably infected
≥ **5 mm**	Close contact to infectious case TB suspect on clinical or cXray HIV infection Old TB Organ Transplant, Immsuppress, High Csteroid
≥**10 mm**	Children <4 Foreign born, in US ≤5yrs Injectable Drug User & Crack cocaine user Resident of Long Term Care Facility, Prison HCW in low, intermediate, high risk /Risk Assessment Mycobacteriology laboratory staff High risk medical condition (see Latent TB infection)
≥**15 mm**	No risk factors: routine reactor Contact to non-infectious HCW minimal or very low risk per Risk Assessment

Converter Definition

past 2 years: increase ≥**10mm**

Two step Boosting

Apply and read first TST in usual fashion
First test positive: No need for booster or 2nd step: **Patient infected**
First test is negative apply second TST 1-3 weeks later
Read 2nd test : 2nd test positive : **Patient infected**
: 2nd test negative: **Patient NOT infected**

When to administer two step test

When annual skin testing will be done
To rule out a false negative TST:
Suspecting an old infection in a negative TST
When does boosting occur?
Boosting is maximum when interval between tests is 1-6 wks
Boosting may be seen after 1 year

Skin Testing Indications - Rules - Regulations

Close contacts of infectious cases	HIV infected patient	Migrant, seasonal farm workers	Injectable drug user (IDU)
Suspect of TB disease	Foreign born in USA ≤ 5 yrs	Homeless	Crack cocaine user (ccu)

Ambulatory w hirisk procedures on TB: employees.... /RA
Autopsy room: employees ..... /RA
Day care, Adult wHIV: employees ..... /RA
Day care, children: employees ..... /RA
Dental health: employee with TB patient contact in hospital or correctional facility..... /RA
Drug treatment center: employees..... /RA
EMS: employees with patient contact..... /RA
Health Care Facility: employees..... /RA
Home health care: employees with patient contact..... /RA

Homeless shelter: employees ..... Employment +2step
clients ..... Clinical Screen
Hospice w patient ctc: employees..... /RA
Prisons: State inmates..... Annual
State employees w+ inmate contact.... Annual
Local Jails: employees ..... Employment & RA
inmates ..... /RA
LongTerm Care Facilities: employees, patients Employment,admission,RA
Mycobacteriology lab: employees..... /RA

/RA=per risk assessment see box at bottom right for explanations. Use 2-STEP if annual

Contact investigation

Consider
- Home
- Work
- Leisure
- Infectiousness of source,
- Air space shared
- Time air shared

Priority order:
1-Contacts of infectious TB pulmonary, smear+ culture+
2-Contacts of non-infectious TB cases
3-Look for a source case for new pos TST in<5 years old,
4-look for a source case for new positive pregnant woman
Positive close contact = 5mm; Treat all
Negative close contact: repeat TST @3 month;
Prev Tx for hi risk: children ≤5, anyone in group highly positive

Risk assessment (RA): Health Care Facility, Long Term Care, Prison

Risk category	Infectious TB case during past year: in county	Infectious TB case during past year: in facility	Transmission in facility	TST Required
Minimal	0	0	none	One
Very low	yes	0	none	One
Low	yes	≤ 6	no cl, no T *	Annual
Intermediate	yes	> 6	no cl, no T *	Annual
High	yes	> 6	cluster & T **	Quarterly

* No cl, no T = no clusters of HCW TST conversions, no evidence of transmission among patients or HCW
**cluster & T = cluster of conversions & evidence of transmission among patients & employees

Chest Xrays

Adult: Posterior-Anterior view (PA) indicated; **Children:** PA & Lateral; **Pregnancy**: PA with shield

Indications
- Newly identified positive TST
- Active TB suspect (pulmonary & extra-pulmonary
- Negative TST starting LTBI Tx

Monitoring response to Tx in clinical pulmonary cases
Monitoring response to Tx in culture positive cases done by **bacteriology**

Old TB	= Old fibrotic lesions, **high risk** of reactivation
Old Primary Infection	= calcified solitary pulmonary nodules, calcified hilar lymph nodes, apical pleural scarring, **low risk** of reactivation

Classification Of Tuberculosis

(from Diagnostic Standards and Classification of tuberculosis, American Thoracic Society 14th Edition, November 1980)

0 No tuberculosis exposure, not infected; no history of exposure, reaction to tuberculin skin test not significant (negative)

1 Tuberculosis exposure, no evidence of infection: history of exposure, reaction to tuberculin skin test not significant (negative).

2 Tuberculous infection, no disease: significant reaction to tuberculin skin test, negative bacteriological studies (if done) no clinical or roentgenographic evidence of tuberculosis.

3 Tuberculosis, current disease

A-Site: 1-pulmonary, 2-pleural, 3-lymphatic, 4-bone or joint, 5-genitourinary, 6-miliary, (disseminated), 7-meningeal, 8-peritoneal, 9-other

B-Bacteriological Status: 1-positive by microscopy only, culture only or both.

4 Tuberculosis, no current disease; History of previous tuberculosis, or abnormal stable roentgenographic findings in a person with significant (positive) reaction to tuberculin skin test, negative bacteriologic studies, no clinical and/or Xray evidence of current disease.

5 Tuberculosis suspect; diagnosis pending.

Diagnosis of Tuberculosis

- Get a firm diagnosis before embarking on TB treatment: TB treatment is long and some drugs are toxic
- When a doubt exist between bacterial pneumonia and TB, treatment for bacterial pneumonia should be given first and TB therapy witheld until adequate sputums are obtained, and response to antibiotics assessed

Latent TB Infection (LTBI)

Infection vs Disease	Infection	Disease
TB Bacilli in the body	dormant	active
TST	usually positive	usually positive
Sputum smear & culture	negative	often positive
ChestXray	usually normal	usually abnormal
Symptoms	none	cough, fever...
Infectious	no	Yes
TB Case	no	yes

High risk medical condition

- HIV infection
- diabetes
- hi steroids (Prednisone >15mg qd ≥2 wks)
- other immunosuppressive rx
- end stage renal disease
- leukemia, lymphomas,
- Hodgkin, head/ neck cancer,
- weight loss ≥10% below ideal body weight
- silicosis
- gastrectomy
- jejunoileal bypass
- chronic malabsorption syndrome

Indications for Treatment of Latent Infection

TST mm	Risk group
By definition	**Converters**
Any	**HIV** + recent exposure
Any	HIV + old TB
≥ 5mm	HIV infection
≥ 5mm	**Immuno-Suppressed**
≥ 5mm	**Close contacts** to infectious case
Any	Close contacts to infectious case <5yrs age other contacts: see routine reactors
≥ 5mm	**Old TB** / TB not properly treated
≥ **10mm**	Children < 4 years age Injectable drug user (IDU), crack coke (ccu) High risk medical condition Foreign born, in US ≤5yrs LTCF resident Mycobacteriology lab HCW low, intermediate, high risk
≥ **15mm**	Routine reactor, no risk factors,
	HCW minimal, very low

ReTreatment of Latent Infection

Infection prior to new exposure ⇨ 80% protection against new primary disease **so do not re-treat for new exposure** unless: HIV+, infants, very high risk of disease

PreTx Evaluation

Rule out active TB: Symptoms, Chest Xray,
Medical Risk Factor: HIV test, other MRF
Rule out Contra-indications: Previous adverse reactions, Active hepatitis, chronic liver disease

AST only	**for H+**	Alcohol ≥3/d, HIV+,
CBC+platelet +AST+Bili	**for RZ +**	Chronic liver dis, H intolerance, Pregnancy, Post-partum (3 mos)

Monitoring

H, R: Monthly; RZ: 2, 4, 8 weeks

ALL patients: Adherence, adverse reaction

AST for H & abnormal baseline, Pregnancy, Post-partum Adverse reaction, high risk of adverse reaction

CBC+Platelets+AST+Bili: RZ or R + abn baseline, adv reaction

Normal to 3times N	3times N to 5 times N	≥ 5 times Normal
Continue	Repeat AST q2 wks	Stop H, consult

AST/SGOT=0-40 more important than other liver function tests

Treatment Regimen

Indication	Regimen	DOT	Dose mg	Acceptable doses	P*
H=INH; R=Rifampin; Z=PZA; E=Ethambutol; *=according to body weight					
Standard	H daily 6 mos		300	180 within 9 mos	70%
	H 2/w 6 mos	DOT	900	52 within 9 mos	
Best	H daily 9 mos		300	270 within 12 mos	90%
	H 2/w 9 mos	DOT	900	78 within 12 mos	
Best protection for compliant patients					
Short	RZ daily 2 mos		R600 Z*	60 within 3 mos	
Course	RZ 2/w 2 mos	DOT	R600 Z*	16 within 3 mos	
Close Contact to Hresistant infectious case,H intolerance, Unlikely to complete 6 mos due to lifestyle or preference					
No H/Z	R daily 4 mos		600	120 within 6 mos	
Contact to H resistant & Z intolerance; H & Z intolerance					

Special indications

Old TB H daily or 2/w 9mos -or- RZ daily or 2/w 2 mos -or- HR daily 4 mos
Children H daily or 2/w 9 mos
Pregnant H daily or 2/w 6 mos -or- R daily -not- RZ
Hiv, close contact, converter, hi-risk medical: Start immediately
Others: OK to start immediately or delay until after delivery

Doses same as for Treatment of Disease except Z at 15-20 mg/kg

Exposure to H Resistant Case

Age ≤ 15: R 4-6m	Age > 15: RZ 2m

Exposure to MDR Source Case

Rx decision Depend on
- Likelihood of newness of infection
- Likelihood of MDR case as source
- Risk of developing primary TB

Contact to MDR + Low risk of primary disease: no treatment
Contact to MDR + High risk of primary disease: 2 drug rx
Regimen: ZE; ZQ; Child: ZE; EA; not rec: A,T Y; Duration: 6-12m

B6

Diabetes, Alcohol ≥3/d, Malnutrition, HIV+, Dialysis, Seizure
Pregnancy, Infant breastfeeding mother on H

Normal Values

AST/SGOT	0-40	Bilirubine	0.1-1.2	GGT	0-80
ALT/SGPT	0-50	Alkphos	25-150		

Treatment of Disease

INH most important anti-TB drug – Bactericidal – Most important in early bacterial kill
RIF important for **short course** – Bactericidal – specially active on dormant bacilli or persisters – without R, treatment last 9-18 months
PZA active on special group of Mtb (bacilli at acid pH) – important for early sterilization – Not useful after 2 months (in standard rx)
EMB weak, bacteriostatic, only useful to cover possible resistance. If HR are effective, E not useful
TB meds given at one time, high peak more effective than constant low level - no daily divided dose except some second line drugs or intolerance

Patient Regimen

Adult, Pulm Sputum pos: HRZ E* 2m + HR E* 4m =Total 6m
DOT; first 2weeks daily then daily or twice weekly (2/w)
E* stop EMB if Mtb sensitive to HRZ
Adult, Xpm: same regimen, extend only if poor clinical response

Adult, Pulm Sputum neg: HRZ daily or 2/w ⇨ Total 4m

Pregnancy: HR E* No Z, No S ⇨ Total 9m

Children, Pm & Xpm: HRZE* 2m + HRE 4m ⇨ Total 6m

Children, CSF, BoneJnt, miliary: same but ⇨ Total 12m

HIV Positive no difference w HIV neg except poor response ⇨ 9m
HIV+Xpm: tuberculoma, Bonejoint: 12 m; **HIV+Pregnancy**:PZA ok
Regimen with Rifabutin: E part of induction for **entire** 2m

Regimen for Resistance or Drug Intolerance

Consult TB clinician for appropriate regimen

Adult, No Z	HR E*	9 mos
Adult, No H	RZE	6 mos
	RE	12 mos
	RZ QNL	9 mos
Adult, No HZ	RE Am/Cp	9 mos
Adult, No R	HZES	9 mos
	HZES/HZE	12 mos
	HZE/HE	18 mos

NEVER ADD A SINGLE DRUG TO A FAILING REGIMEN

Response to Treatment

Pulmonary: Monitor sputum monthly until negative, Continue if Resist
chestXrays are not reliable to evaluate activity of pulmonary lesion
Extrapulmonary: clinical and functional evaluation

DOT required:

2/w reg, age<15, resistance, HIV, senile, Homeless,
Sub abuse, Relapse, Non-adherence
2/w= Mon&Thu, Mon&Fri, Tue&Fri

Monitoring First Line Drugs

Baseline for HRZ:
Med Hx (EPI) record; Signed contract; Sputum (3); TST; HIV;
Blood (Age ≥15) for AST, Bili, CBC, W platelet, Uric acid;
E only: Visual acuity & color vision;

Monitoring for HRZ: monthly
Hepatotox Sx: nausea, vomiting, anorexia, dark urine, Jaundice, unexplained fever ≥3days
Rash, pruritus (hepatotox or other)
Paresthesia hands, feet
Bruising, abnormal bleeding
Flu-like sx

Any sx ⇨ stop rx ⇨lab work ⇨ consult

E only: Visual acuity & color vision;

Monitoring for Second Line Drugs

Baseline and monitor for side effects /toxicity listed below

Sm Bline & q 2mos: Hearing / Ataxia test

THA Bline: Renal; LFT; glycemia; thyroid FT; visual acuity
Monthly: LFT; glycemia; visual acuity

Cy Bline: Renal; LFT; Reflex, tremor, mental status; CBC
Monthly: LFT; Reflex, tremor, mental status; CBC
Monitor CNS closely if THA & Cyc used together

QNL Bline: Hx of convulsion; Glycemia in diabetic;
Monthly: Glycemia in diabetic;

Ami Bline: Hx of muscular dis, parkinson; renal;
KAN Monthly: Renal; q 2 mos: Hearing / Ataxia test

Cp Bline: Renal; LFT; CBC; hearing, ataxia test
Monthly: Renal; LFT; CBC; hearing, ataxia test

Renal= Renal function: BUN, Creatinin LFT=Liver function test: AST mainly

B6 required:

diabetes, Alc ≥3/d, malnutrition, HIV+, Pg, seizure; Renal F 100mg

First Line drugs

Drug	1 / 2	Pt	Daily max	Daily mg/kg	2/week max	2/week mg/kg	Formulation mg	Blood Level	Pg	Toxicity (See bottom line for abbreviations)
Isoniazid INH	**H**	Adult	300	5	900	15	Tab 300	* 3-5	ok	**Hepatotox,** fever, rash, **peripheral neuropathy**: B6
		Child	300	10-20	900	20-40	3$/mo	**10-15		Interaction: phenytoin, acetaminophen, anticoagulant
Rifampin RIF	**R**	Adult	600	10	600	10	Cap 150,300	8-24	ok	**Hepatotox**, fever, rash, **Flu-like sx** (intermittent>10mg/kg)
		Child	600	10-20	600	10-20	15 $/mo			**Thrombopenia**, hemolytic anemia,
Rifabutin RFB	**R**	Adult	300	5	300	5	Cap 150	0.3	ok	Uveitis (painful, red eye with vision loss) rare
		Child						0.9		
Pyrazinamide PZA	**Z**	Adult	2,000	15-30	4,000	50-70	Tab 500	20	av	**Hepatotox, GI upset**, fever, rash, **Uricemia** ⇧
		Child	2,000	15-30	4,000	50-70	80 $/mo	-60		**Note: in Ltbi Tx lower dose: daily 15-20mg/kg**
Ethambutol EMB	**E**	Adult	2,000	15-25	4,000	50	Tab100,400	2-6	ok	Optic neuritis (hi dose), caution in children
		Child	2,000	15-25	4,000	50	180 $/mo			**Renal insufficiency: adjust dose**
Rifamate	Cap = H150 + R300				Daily 2 caps		1 cap /30kg		ok	
Rifater	Cap = H50 +R120 +Z300				Daily 6 caps		1 cap /10kg		av	
Streptomycin Sm	**S**	Adult	1,000	10-15	1,500	25-30	Inj		**NO**	**Max 120g** 8th n (vestible, auditory), anaphylaxis,
		Child	1,000	10-20	1,000	25-30				exfoliative dermatitis, angioedema, blood dyscrasia,

1=Abbreviation, 2:Blood Level μg/mL=blood level after *daily **twice weekly, 3: Pg=Use in pregnancy, ok, av=avoid, no

Second Line Drugs

Drug			Daily max	mg /kg	$/m	Formul mg	Level	Pg	/d = divide dose for better tolerance if necessary
Ethionamide	THA		500-1,000	15-20	110	Tab 250	1-5	no	BuildUp 250>1000; /d; **GI upset; Renal insufficiency:** adjust dose;
Cycloserine	CYS	**Y**	500-1,000	15-20	260	Cap 250	20-35	av	posturalhypoT, **optic neuritis**, depression, convulsion, metal taste (/d), **CNS** hyper reflexia, tremor (**B6**), convulsions, psycho, suicide; if psycho stop/ chlorpromazine /2wks to ok Renal fail: adjust dose**, No alcohol, Monitor blood level**
PAS	PAS	**A**	8-12,000	150		Tab500 Gr4g	20-60	ok	/d; **GI upset**, sodium load, hepatotoxicity,
Clofazimine	CFZ	**Cl**	100-300	1.5-5			0.5-2	av	Skin dark coloration, GIupset,
Ciprofloxacin	CIP	**C**	1-1,500	15-20	190	250,500,750	4-6	no	Not with Ca+, photosensitizer,
Ofloxacin	OFL	**O**	600-800	10-15	220	200,300,400	8-12	no	not for kid,
Levofloxacin	LEV	**L**	500-1,000	15-20	450	250,500	1-6	no	
Kanamycin	KAN	**K**	1,000	10-15	300	injectable	35-45	av	**Nephrotoxicity,** ototoxicity, aggravation of neuro-muscular
Amikacin	AMI	**Am**	1,000	15	3,000	injectable	35-45	av	Disorders (mysasthenia, parkinson), eosinophilia
Capreomycin	CAP	**Cp**	1,000	15	600	injectable	35-45	av	Nephrotoxicity**,** ototoxicity, eosinophilia

Adverse Reaction		Lab	Causes	Management
Dermatitis	Pruritus, rash, hives fever		H	**Pruritus:** Diphenhydramine (Benadryl)
	maculopapular, urticaria, acne, pustular erythema multiforme, red man smx		R	25-50mg q6h, = 1.25mg/kg q6h
	macupapular, urticaria		Z	
Hepatitis	Nausea, vomiting, abd tenderness Icterus & hiBili (+R), dark urine Rash, pruritus, Malaise, flu sx, Unexplained fever Bruising, abnormal bleeding	AST Bilirubin	H, R, Z	AST N⇨*3 Continue AST *3⇨*5 Continue & repeat AST 2w AST ≥ *5 Stop & consult If AST ⇨N in 2 days, INH probable cause If hi AST for long time ⇨ PZA probable cause
Gastritis	Anorexia, nausea, vomiting, epigastric pain		Z, R, T	Hydroxyzine(Atarax) 25mg q6h 0.5mg/kg Promethazine(Phenergan) 25mg q6h, 0.1mg/kg
Peripheral neuropathy	Numbness and paresthesia of hands and feet		H	B6 to 100mg
Joint	Pain, swelling, heat, redness	Uric acid	Z, H	
Renal	Hematuria, uremia	creatinine	S, R	
Hematologic	Leukopenia, thrombopenia	CBC, platelet	R, H, Z, E	
8th cranial nerve	Hearing loss, vertigo, tinnitus		S	

Severe toxicity: stop drugs & restart

Restart daily by dose #	dose 1-H100; dose 2-H300; dose 3-H300; then AST, if OK continue H300 and add dose 4-H+R300; dose 5-H+R600; then AST, if OK continue HR and add dose 6-HR+Z500; dose 7-HR+Z1000; dose 8-HR+Zfull; then AST, if OK add E
Restart biweekly by dose #	dose 1-H100; dose 2-H600; dose 3-H900; AST, if OK continue H900 and add dose 4-H+R300; dose 5-H+R600; AST, if OK continue HR and add 6-HR+Z500; 7-HR+Z1000; 8-HR+Zfull; AST, if OK add E
Food & Drug absorption	Food decrease slightly H absorption, decrease R absorption, little effect on absorption of E Z P T Y

Anti HIV drugs

NRTI = Nucleoside Analog Reverse Transcriptase Inhibitor; **OK w RIF**

AZT	Zidovudine	Retrovir
3TC	Lamivudine	Epivir
AZT+3TC		Combivir
ddI	Didanosine	Videx
ddC	Zalcitabine	Hivid
d4T	Stavudine	Zerit
1592U89	Abacavir	Ziagen

NNRTI = NON Nucleoside Analog Reverse Transcriptase Inhibitor

Nevirapine	Viramune	RFB 300mg daily or 2/w
NVP		**Possibly RIF**
Efavirenz	Sustiva	⇧RFB→450mg/d; 600 2/w
EFV		**RIF 600mg qd**
Delarvidine	Rescriptor	**Incompatible w RIF**
DLV		**or RFB**

Call TB & HIV Clinicians for appropriate regimen. These tables to be used as screening tools to detect potential problems

PI (Protease inhibitor)

Saquinavir hard SQV/HGC	Invirase	RFB 300mg/d;300mg 2/w **NO RIF**
Saquinavir soft gel SQV/SGC	Fortovase	RFB ⇩dose 150 mg /d **NO RIF**
SQV (HCG or SGC) + RTV		RIF 600mg/d or 600mg 2/w RFB ⇩dose 150 mg/d or 2/w
Ritonavir RTV	Norvir	⇩RFB 150mg/d; 300 mg 2/w **RIF OK**
Indinavir IDV	Crivixan	⇩RFB 150mg/d; 300 mg 2/w **NO RIF**
Nelfinavir NFV	Viracept	⇩RFB 150mg/d; 300 mg 2/w **NO RIF**
Amprenavir APV	Agenerase	⇩RFB 150mg/d; 300 mg 2/w **NO RIF**

Dialysis		Max	mg/kg	Creatinine clearance ml /mn		
				25-49	10-24	<10
Patient on hemodialysis or peritoneal dialysis: assume Creatinine Clearance<10mL/mn	H qd	300	5	"	"	"
	2/w	900	15	"	"	"
	3/w	900	15	"	"	"
	R qd	600	10	"	"	"
Creatinine clearance = 140 - patient's age serum creatinine	2/w	600	10	"	"	"
	3/w	600	10	"	"	"
	Z qd	2,000	15-30	"	20	Not daily
	2/w	4,000	50-70	"	60	60 afterHD
	3/w	4,000	50-70	"	60	25-30 after HD

R	F	Max	mg/kg	Creatinine clearance ml /mn		
E	qd		15-25	15		Not daily
	2/w		50	50	50	45
	3/w		25-30	25	25	15-25
S	qd	1,000	15			Not daily
	2/w	1,500	25-30	750	750	750 after HD
	3/w	1,500	25-30	750	750	750 after HD

QNL ⇩dose in RenalFailure; Not removed by HD
ETH, PAS, CFZ Not removed by HD
CYS removed so adm after HD

Rifampin may interfere with

Antacids: Maalox,Tums; **AntiAsthmatics**: Theophylline **AntiAlcohol**: Disulfiram; **Antibiotic**: Chloramphenicol, Cipro, Cycloserine, Cotrimoxazole, Dapsone Fluconazole, Itraconazole, Ketoconazole; **Anticoagulants**: Coumadin,**Anticonvulsants**:Dilantin,Depakene,Mysoline, Tegretol ;**AntiHTA**: Inderal, Tenormin, Vasotec; **Antihyperlipidemics**: Clofibrate; **AntiRheumatics**: Sulfasalazine; **Anti-Gout**: Probenecid; **Antipsych**: Haloperidol; **Anti-Diabetes**: Diabinese, Orinase **Barbiturates**: phenobarbital, Nembutal; **CNS**: **Antidepressant** Nortriptylin; **Tranquilizers**: Valium and Xanax; **CV med**: Calan, Cardizem, Lanoxin, Norpace, Mexitil, Procardia, Quinidex, Tonocard; Levodopa **Immunosuppressor**: Cyclosporine; **Steroid; Narcotic analgesics**: Darvon, Demerol, Percocet, Percodan; **Progestins**: Megace

INH may interfere with

Acetaminophen (Tylenol) rx Iboprofen in children, Anticoagulants: coumadin; Anticonvulsants: **phenytoin or dilantin,** carbamazepine; Antifungals: ketoconazole or miconazole; Steroids; Psychotropes: benzodiazepines (Librium, Valium), phenobarbital

TB Infection Control

Infection Control in Health Care Facility

Health Care Facility must have written **infection control policy**	
Designated person for TB control	
Risk assessment (see TST page 1)	
Administrative controls	Early identification of suspects
	Education, counseling of HCW
	Baseline TST of HCW and periodic TST re RA
Engineering controls for induction	Negative pressure rooms
	≥6 air exchange / hr
	Exhaust outside or filtered if recirculated
Respiratory protection	NIOSH certfied personal respirators (N95)
	Procedure for training and fit testing

How Infectious ?

Most infectious are:
- Smear positive with high AFB counts (>10 very inf, 1-10 and <1 inf)
- Coughers, specially if mouth not covered
- Cavitary disease

Lower infectiousness: sputum smear neg, culture positive Mtb
Not infectious: extra-pulmonary TB

Return to work

Patients are not considered infectious if they meet the following criteria:
- adequate therapy for 2 to 3 weeks + favorable clinical response to therapy + environment not conducive to TB transmission
- **OR 3** consecutive neg sputum smear from sputum collected on different days

Abbreviations

AFB=Acid Fast Bacillus; Alcohol= ≥3 drinks /day, ccu=Crack cocaine user; Ctbrk=after breaking infectious contact; cXray=chest Xray; old TB= cXray suggest previous TB, lung disease inadequately treated or untreated; HCW=Health care worker; hx=history; IDU=Injectable drug user;Pg=pregnancy;Mott=Mycobacteria other than TB;

Medications: H=INH; R=Rifampin; Z=PZA; E=Ethambutol; S=Streptomycin; T=Ethionamide; A=PAS; Y=Cycloserine; K=Kanamycin; Am=Amikacin; QNL=Quinolones; C=Cipro; O=Oflox; L=Levoflox; Cl=Clofazimine; (2w) or 2/w=twice weekly regimen; DO= Direct Observed Therapy recommended;

High Rates of Reported Tuberculosis Cases... (Continue from page 2)

HIV infection is present among 15% of new TB cases. Most co-infected cases occur among men (83% of all cases) with males 25-44 representing 56% of cases and males 45-65 representing 26% of cases. Most cases are concentrated in Orleans and Baton Rouge. A few co-infections may have been missed since testing among TB cases is not complete: overall 50% of TB cases are not tested (mostly among gender and age group perceived at low risk of HIV infection). The proportion of cases tested is 86% among males 15-44, 65% among males 45 & over, 84% among females 15-44 and 50% among females 45 & over.

The proportion of **homeless** cases ranged from 2 to 8% with a slight increasing non-significant trend (slope +1.5 cases/year, p=0.13). Most homeless cases are in Orleans (56% of all cases).

A better understanding of the dynamics of tuberculosis transmission among high risk groups is necessary to tailor the control activities to the epidemiologic situation. For this purpose, the Office of Public Health has started to do systematically DNA fingerprinting on all new culture positive tuberculosis cases, and progressively fingerprint older cases whose cultures are still available.

-Pattern 6005 is close to pattern 6010 which was seen in 2000 in Ouachita Parish. This patient died.

Other groups were:

-Pattern 6006 spanned over three years mostly in the greater New Orleans area with only one case from Calcasieu Parish. This group includes three cases in 1999,one in 2000 and one in 2001.

-Pattern 6009: One case in Plaquemines Parish in 1999 and one case in New Orleans in 2001.

-Pattern 6014: Two cases in the Baton Rouge area in 2000

-Pattern6001: Two cases in the Lafayette area in 2001.

PFGE testing of meningococcal invasive disease isolates is a powerful new tool that provides new information that epidemiologic investigative methods cannot provide.

It is not surprising that epidemiologic links cannot be established in most cases. It is estimated that the incidence of those who acquire meningococcal colonization is 1800 times higher than the incidence of new cases. Therefore the chain of infection between two cases may include hundreds of carriers.

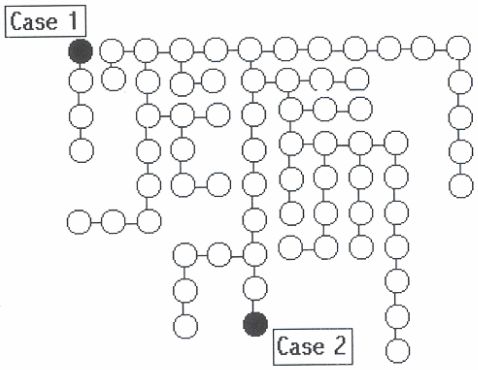
Tracking a Serial Killer

The Office of Public Health laboratories recently started performing pulse field gel electrophoresis (in other words DNA fingerprinting) on meningococci isolated since 1999 from patients with invasive meningococcal disease. The lab recently completed analysis of serogroup C isolates.

There were six isolates from the year 1999, 9 from 2000 and 17 from 2001 for a total of 32 isolates. Among these 16 (50%) had unique DNA patterns, while the rest belong to groups with repeated strains. Here is a breakdown of these groups:

-Pattern 6005 is the most interesting pattern. It appeared in February 2001 in Laplace. In March there was a case in New Orleans in a University student living on campus and one in Boyce from a boy living in Laplace. In April there was another case in New Orleans in another student living on the same campus. Finally, in May, there was another case in an elementary school student in New Orleans. None of these cases could be linked epidemiologically, specifically the two New Orleans campus residents had no common links nor did the two Laplace residents.

Within this group three cases died and 1 had disease in spite of a well documented vaccination two years before onset of disease.



The ability to establish links between cases will make a big difference for prevention and recommendations. Public health officials will be in a much better situation to detect populations at risk, issue warnings to the population and clinicians caring for these populations, and if warranted, recommend immunization.

Errata: May-June 2001

See corrected table for animal rabies for 1999.

The article "Violence in Louisiana" was written by Lauren Bodek, Preventive Medicine Resident in the Injury Research and Prevention Unit.

Table: Positivity rates of rabies for tested animals, Louisiana 1998-2000

	1998			1999			2000		
Species	Tested	Pos.	%	Tested	Pos.	%	Tested	Pos.	%
Dog	396	0	0	222	0	0	326	0	0
Cat	355	0	0	203	1	0.5	268	0	0
Raccoon	70	0	0	55	0	0	39	0	0
Bat	30	3	10	19	2	10.5	19	2	10.5
Skunk	5	0	0	11	2	18.2	9	2	22.2

LIST OF REPORTABLE DISEASES/CONDITIONS

REPORTABLE DISEASES

Acquired Immune Deficiency Syndrome (AIDS)
Amebiasis
Arthropod-borne encephalitis (Specify type)
Blastomycosis
Botulism[1]
Campylobacteriosis
Chancroid[2]
Chlamydial infection[2]
Cholera[1]
Cryptosporidiosis
Diphtheria
Enterococcus (infection; resistant to vancomycin)
Escherichia coli 0157:H7 infection
Gonorrhea[2]
Haemophilus influenzae infection[1]
Hemolytic-Uremic Syndrome
Hepatitis, Acute (A, B, C, Other)
Hepatitis B carriage in pregnancy
Herpes (neonatal)
Human Immunodeficiency Virus (HIV) infection[3]
Legionellosis
Lyme Disease
Lymphogranuloma venereum[2]
Malaria
Measles (rubeola)[1]
Meningitis, other bacterial or fungal
Mumps
Mycobacteriosis, atypical[4]
Neisseria meningitidis infection[1]
Pertussis
Rabies (animal & man)
Rocky Mountain Spotted Fever (RMSF)
Rubella (German measles)
Rubella (congenital syndrome)
Salmonellosis
Shigellosis
Staphylococcus aureus (infection; resistant to methicillin/oxacillin or vancomycin)
Streptococcus pneumoniae (infection; resistant to penicillin)
Syphilis[2]
Tetanus
Tuberculosis[4]
Typhoid fever
Varicella (chickenpox)
Vibrio infections (excluding cholera)[1]

OTHER REPORTABLE CONDITIONS

Cancer
Complications of abortion
Congenital hypothyroidism*
Severe traumatic head injury**
Galactosemia*
Hemophilia*
Lead Poisoning
Phenylketonuria*
Reye's Syndrome
Severe under nutrition (severe anemia, failure to thrive)
Sickle cell disease (newborns)*
Spinal cord injury**
Sudden infant death syndrome (SIDS)
Traumatic Brain Injury

Case reports not requiring special reporting instructions (see below) can be reported by Confidential Disease Case Report forms (2430), facsimile, phone reports, or electronic transmission.

[1] Report suspected cases immediately by telephone. In addition, all cases of rare or exotic communicable diseases and all outbreaks shall be reported.

[2] Report on STD-43 form. Report cases of syphilis with active lesions by telephone.

[3] Report on EPI-2430 card. Name and street address are optional but city and ZIP code must be recorded.

[4] Report on CDC 72.5 (f. 5.2431) card.

All reportable diseases and conditions other than the venereal diseases, tuberculosis and those conditions with *'s should be reported on an EPI-2430 card and forwarded to the local parish health unit or the Epidemiology Section, P.O. Box 60630, New Orleans, LA 70160, Phone: 504-568-5005 or 1-800-256-2748 or FAX: 504-568-5006.

* Report to the Louisiana Genetic Diseases Program Office by telephone (504) 568-5070 or FAX (504) 568-7722.

** Report on DDP-3 form; preliminary phone report from ER encouraged (504-568-2509). Information contained in reports required under this section shall remain confidential in accordance with the law.

Numbers for reporting communicable diseases

1-800-256-2748 Local # 568-5005 FAX # 504-568-5006

Web site: http://www.dhh.state.la.us/oph/infectepi/default.htm

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