Index

Acid fast bacilli, 8, 70 Active TB description, 3 diagnosis, 8,70-72 drug-susceptibility determination, 8-9,71-72 immune responses, 31-32 incidence trends, 3-4 infectiousness, 29	ALA. See American Lung Association Alaska Natives case rate, 99 child case rate, 38, 99 American Indians. See Native Americans American Lung Association DOT recommendation, 19 support for international TB control activities, 21-22
manifestation, 30 positive tuberculin skin tests and, 30	TB control budget recommendations, 93-94 American Thoracic Society
risk factors, 30, 58	BCG vaccination recommendations, 66-67
treatment, 72-80	INH preventive treatment recommendations, 61 National Tuberculosis Training Initiative, 95
Advisory Council for the Elimination of Tuberculosis , 88	treatment regimen guidelines, 86
African Americans. See Black Americans Age factors. See Elderly individuals; Immunocompetent adults; Infants and young children; Race,	Americans of Asian or Pacific Islands origin case rates, 4, 37 child case rate, 38
ethnicity, age, and sex	Amikacin, 77
Agency for Health Care Policy and Research, 102-103 AHCPR. See Agency for Health Care Policy and Research Aid to Families with Dependent Children, 105 AIDS. See <i>also</i> HIV infection	Antimicrobial treatment. See <i>also</i> INH preventive treatment; <i>specific drugs by name</i> infectiousness and, 29 mechanism of action, 74-75
association between TB and AIDS among IVDUs , 42	Bacillus Calmette-Guérin vaccination. See BCG vaccination
BCG vaccination and, 65	BACTEC™ , 8,71
clinical and radiographic presentation of TB and, 51 clinical course of TB, 32 epidemiologic association with TB, 5-6,4243,48 IPT and, 60 treatment of active TB and, 76	BCG vaccination CDC recommendations, 63 efficacy trials, 8, 64-65 impact on TB incidence, 65-66 mechanisms of action, 63
WHO program, 99	safety factors, 65

142 | The Continuing Challenge of Tuberculosis

Tice strain, 63	TB control law survey, 85
U.S. policy, 8,66-67	treatment regimen guidelines, 86
WHO recommendations, 7-8,62-63	treatment regimen studies, 73-74
Bellevue Hospital, NY	Centers of excellence for patients with TB, 23-24,9
infection control measures, 55	Chest x-rays, 8,20,70
Black Americans	Chicago
case rates, 4 , 5 , 37	Cook County Hospital infection control measures
BMRC. See British Medical Research Council	56
British Medical Research Council	epidemiology of TB report, 84
treatment studies, 73, 77, 78	Children. See Infants and young children
	Cities. See also Chicago; New York City
Capreomycin, 10,77	direct Federal intervention, 18-19
Case rates. See Epidemiology	TB case rates, 35-37
Casual contact	Clofazimine, 77
tuberculous infection and, 3, 28	CMI. See Cell-mediated immunity
CDC. See Centers for Disease Control and Prevention	Completion of treatment
Cell-mediated immunity, 32	consequences of treatment failure, 82
Centers for Disease Control and Prevention	directly observed treatment and, 89-90
Advisory Council for the Elimination of	HIV-infected individuals, 76,77
Tuberculosis, 88	INH preventive treatment, 58-59
AIDS incidence and TB , 42-43	MDR-TB and, 77
BCG vaccination recommendations, 63,66-67	outcome data, 10, 82-84
costs and effectiveness of treatment, 102-103	patient behavior and, 10-11, 87
directly observed treatment, 12, 89	Cook County Hospital, Chicago
drug costs, 10, 11,20,79-80	infection control measures, 56
drug shortages, 78	Core Curriculum on Tuberculosis , 95
failure to implement TB control	Correctional institutions. See also Prisoners and
recommendations, 2	inmates
formation of State and local TB elimination	Federal prison system, 99
advisory committees, 97	MDR-TB outbreaks, 6,41
funding increase allocation, 96	prevalence of TB , 40
infection control guidelines, 6-7, 52-54	Cough-inducing medical procedures
INH preventive treatment, 58,61,62	health care worker exposure and, 50
institutional screening for TB, 58	infectiousness factor, 29, 52
MDR-TB surveys, 6,4446	Crack cocaine use
National Action Plan to Combat Multidrug-	TB and, 41
Resistant Tuberculosis, 14,22,23,67, 83, 86,	Culture examination methods of diagnosis, 8,71
95-97,98	Cycloserine, 10,77
National TB Action Plan, 83	
National Tuberculosis Training Initiative, 95	Delayed-type hypersensitivity, 32,59-60
prescribing practices of physicians in private	Delivery of treatment. See also Completion
practice, 86	of treatment; Treatment of active TB
RVCT surveillance system, 33-34, 82,84	outcome data, 82-84
skin testing for health care workers, 50	social factors, 82, 87
spending for TB , by function, 94	strategies for improvement, 88-90
Strategic Plan for the Elimination of Tuberculosis in	treatment outcome factors, 84-87
the United States, 12, 86, 94-95	Demographic changes
TB control budget, 12, 13, 14,92-94	geographic distribution, 4, 35-37

high-risk populations, 5,40-42	description, 3, 31
race, ethnicity, age, and sex, 4-5, 37-40	HIV infection and, 76
shift to narrower populations, 34-35	
Developing countries	FDA. See Food and Drug Administration
AIDS impact on TB, 43	Federal Bureau of Prisons
IPT use, 58	TB control activities, 12-14,20,99
MDR-TB and, 44	Federal Government involvement in TB control. See
TB control policy option, 22	also specific agencies and programs by name
DI. See Social Security Disability Insurance	health services research, 102-103
Diagnosis of active TB	housing, 103
basis for, 8, 70	public health activities, 92-100
chest x-rays, 8, 70	regulation of technologies, 15, 102
culture examination, 8, 71	reimbursement for TB services, 103-106
delayed diagnosis and MDR-TB outbreaks, 8,71-72	research and development, 14-15, 100-102
deoxyribonucleic acid method, 9,71	Federal health insurance programs
necessity for rapid diagnosis, 8, 70, 72	Medicaid, 15-16,25-26, 104-105
sputum smear, 8, 70	Medicare, 15-16, 106
Directly observed treatment, 12,22, 88-90,93, 105,	Fluoroquinolones, 78
106	Food and Drug Administration
policy option, 19	BCG vaccination approval, 63
Disability insurance, See Social Security Disability	drug development, 23
Insurance	drug shortages, 10,78
DNA. See TB diagnosis and, 9,71	new drug approval, 78
DOT. See Directly observed treatment	TB control activities, 102
Droplet nuclei, 30	Foreign-born individuals. See Immigrants and
Drug shortages, 78	refugees
Drug-susceptibility testing, 8-9,71-72	-
Drug users, See Intravenous drug users	Gender factors. See Race, ethnicity, age, and sex
DTH. See Delayed-type hypersensitivity	Gene probes, 71
	Geographic distribution
Elderly individuals	case rates, 35-37
case rate, 4, 40, 41	
hepatitis side effect to treatment, 75	Hansen Disease Center, Carville, LA, 100
Epidemiology	HCFA. See Health Care Financing Administration
case rates by locality, 4, 35-37	HCWs. See Health care workers
case rates by race, ethnicity, age, and sex, 37-40	Health Care Financing Administration
case rates for high-risk populations, 40-42	Medicaid regulation, 16, 105
demographic changes, 4-6,3442	Medicare funding, 106
HIV and AIDS, 42-44	Health care workers. See <i>also</i> Primary care physicians
incidence trends, 33-34	annual screening, 50
multidrug-resistant TB, 44-47	BCG vaccination recommendations, 66
resurgence factors, 1, 47-48	directly observed treatment and, 12, 88-89,90
Ethambutol, 9,73,75,76,79, 80	HIV-infected, 50-51
Ethionamide, 10,77	job-specific infection rates, 50
Ethnicity. See Race, ethnicity, age, and sex	MDR-TB exposure, 50
Etiology of tuberculosis, 27	MDR-TB infectiousness and, 29
Extrapulmonary TB	National Tuberculosis Training Initiative and, 95
AIDS and, 43	powered air purification respirators and, 54

144 I The Continuing Challenge of Tuberculosis

risk of tuberculous infection, 3, 29	description, 31-32
Health Resources and Services Administration	development of active TB and, 30
TB control activities, 14, 100	Immunocompetent adults
Hepatitis	chest x-rays findings of TB , 70
drug side effect, 75	development of active TB , 30
INH preventive treatment and, 61-62	Implantable devices for TB treatment, 10,78, 102
High-risk populations, 40-42 . See <i>also specific groups</i>	Incidence trends, 33-34
by name	Indian Health Service
Hispanic Americans	TB control activities, 14,99
case rates, 4-5, 37	Infants and young children
child case rate, 38	acquiring active TB after tuberculous infection, 28
History of TB , 2-3,27	BCG vaccination, 8,66
HIV infection. See also AIDS	case rates, 5, 38-39, 99
active TB , development of, 30	clinical course of TB , 27, 32
BCG vaccination and, 6344,65,66-67	diagnosis of active TB , 71
chest x-rays findings and, 70	prevalence of TB , 56
clinical course of TB , 27, 32	treatment of active TB , 75
completion of TB treatment and, 76, 77	Infection control
DTH and CMI impairment, 32	CDC guidelines, 6-7,52-54
epidemiologic association with TB , 5-6,4243	combining interventions, 54
extrapulmonary TB and, 31	MDR-TB outbreaks, 50-52,72
infectiousness and, 29-30	personal protection devices, 54
INH preventive treatment and, 56,58,61	respiratory isolation, 51, 53
MDR-TB and, 42	W radiation, 53-54
nontuberculous mycobacterial infections and, 70	ventilation systems, 51, 53
risk factor for TB , 55	veterans hospital guidelines, 98
TB manifestation, 32	Infectiousness
tuberculin skin testing and, 60	concentration of infectious particles in the air, 30
Homeless individuals	factors, 3
case rate, 5,40, 48	MDR-TB, 29
IPT for, 58	tuberculous infection, 29
Hospitals	INH. See Isoniazid
MDR-TB outbreaks, 6,46,50	INH preventive treatment. See also Isoniazid;
Medicare reimbursement, 106	Treatment of active TB
VA hospital infection control guidelines, 98	adverse effects, 61-62
HRSA. See Health Resources and Services	completion problems, 58-59
Administration	efficacy in TB prevention, 7, 55, 61
	policy option, 20
IHS. See Indian Health Service	purpose, 61
Immigrants and refugees	selective use policy, 56, 58-59
case rate, 5, 40, 48	Inmates. See Prisoners and inmates
child case rate, 39	INS. See Immigration and Naturalization Service
INS TB screening activities, 98	Institutional settings. See <i>also</i> Correctional
MDR-TB and, 44	institutions; Hospitals; Nursing homes
tuberculin skin testing, 60	MDR-TB outbreaks, 6,46,50-52
Immigration and Naturalization Service	Intravenous drug users
TB control activities, 14,98	association between TB and AIDS, 42
Immune responses	case rate, 5, 40

HIV infection and, 43	National Action Plan to Combat Multidrug-Resistant
Isoniazid, 9,73-80. See also INH preventive treatment	Tuberculosis, 14,23,67, 86, 95-97, 98, 101
MDR-TB and, 44	National Center for Nursing Research, 101
side effects, 7	National Center for Research Resources, 101
IVDUs. See Intravenous drug users	National Heart, Lung, and Blood Institute, 101
-	National Institute for Environmental
Kanamycin, 10, 77	Health Sciences, 101
Koch, Robert, 2, 27	National Institute for General Medical Sciences, 101
	National Institute for Occupational Safety and Health
Laryngeal TB, 29,31	occupational risks from respiratory exposures to
Latent TB. See Tuberculous infection	TB, 97
Lmng-term care facilities	powered air purification respirators, 7, 54
TB risk, 40	National Institute of Allergy and Infectious Diseases
Louisiana	IPT efficacy trials, 61
Hansen Disease Center, 100	TB research activities, 101
Hansen Disease Center, 100	vaccine development efforts, 67
MDR-TB. See Multidrug-resistant TB	National Institute of Mental Health, 101
Medicaid	National Institute on Drug Abuse, 101
eligibility and benefits for TB patients, 104-105	National Institutes of Health
policy options, 25-26	TB Prevention and Control Research Units, 101
reimbursement for DOT, 105	TB research, 100-102, 103
Medicare, 106	National TB Action Plan, 83
Migrant farm workers	National Tuberculosis Training Initiative, 95
case rate, 5, 41-42	National Vaccine Program Office
	TB research, 100
Mortality rates	Native Americans
AIDS and, 43	case rates, 37, 99
before antibiotic treatment, 72	child case rate, 38, 99
MDR-TB outbreaks in institutions, 46	New York City
Multidrug-resistant TB	Bellevue Hospital infection control measures, 55
categories of resistance, 44	case rate, 4, 35-36, 48
completion of treatment and, 77	homeless population cases, 5,40
correctional institution outbreak, 6, 41	intravenous drug use and MDR-TB association,
delayed diagnosis and, 71-72	40-41
epidemiology, 44-47	MDR-TB case rate, 6,46
infectiousness, 29	MDR-TB incidence, 72
institutional outbreaks, 6, 41, 46-47, 50-52	MDR-TB transmission, 44
intravenous drug use and, 40	Rikers Island Correctional System infection control
risk factors, 72	measures, 57
second-line drugs, 77	TB among HIV-infected persons, 30
transmission, 44, 46-47	TB control services, 85-86
treatment, 76-78	treatment completion trials, 83-84
Mycobacterium avium	New York State
AIDS patients and, 43	Medicaid funding for DOT, 105
Mycobacterium bovis. See BCG vaccination	prison system prevalence, 41
Mycobacterium tuberculosis, 2, 27	NIAID. See National Institute of Allergy
subpopulation characteristics, 74-75	and Infectious Diseases

146 | The Continuing Challenge of Tuberculosis

NIOSH. See National Institute for Occupational Safety	prescribing errors, 86
and Health	Prisoners and inmates. See also Correctional
Non-Hispanic white Americans	institutions
case rates, 37	case rate, 5, 41, 48
child case rate, 38	MDR-TB outbreaks, 6,46
Nonadherence. See Completion of treatment	Pulmonary TB
Noncompliance. See Completion of treatment	BCG vaccination efficacy, 66
Nontuberculous mycobacteria. See also Mycobacterium	description, 3, 30
avium	Pyrazinamide
AIDS patients and, 43	active TB treatment, 9, 73-80
sputum smear and, 70	efficacy in TB prevention, 61
North Carolina	PZA. See Pyrazinamide
migrant farm worker survey, 42	
Nursing homes	Quinolones, 77
TB risk, 40	
	Race, ethnicity, age, and sex
Occupational Health and Safety Administration	case rates, 4-5, 37-40
responsibilities, 97	Refugees. See Immigrants and refugees
TB-related activities, 14,97-98	Reimbursement for TB services
OSHA. See Occupational Health and Safety	Federal health insurance programs, 103-106
Administration	Social Security programs, 103
	Report of a Verified Case of Tuberculosis, 33-34,
PAPRs. See Powered air purification respirators	82, 84
Para-aminosalicylic acid, 10,73,76,77,78,	Research and development
79,80, 102	National Institutes of Health, 14, 100-102
Particulate respirators, 7,54	National Vaccine Program Office, 100
PAS. See Para-aminosalicylic acid	Substance Abuse and Mental Health Services
Personal protection devices	Administration, 14, 100
infection control measure, 54	Respiratory isolation, 51, 53
Phenazines, 78	RIF. See Rifampin
PHS. See U.S. Public Health Service	Rifamate [™] , 10,73,78,79, 80, 88
Physicians. See Primary care physicians	Rifampin
Policy options	active TB treatment, 9, 73-80
categories, 16	efficacy in TB prevention, 61
description, 16-26	MDR-TB and, 44
financial issues, 24-26	Rifamycin, 78
public health infrastructure, 16-22	Rifater TM , 10,73,78,79,80, 88
research and development, 22-24	Rikers Island, NY, Correctional System
Polymerase chain reaction, 9, 71 Powered air purification respirators, 7,54	infection control measures, 57
	RVCT. See Report of a Verified Case of Tuberculosis
Prevention strategies BCG vaccination, 62-67	Ryan White Comprehensive AIDS Resources Emergency Act, 100
infection control, 50-54	Emergency Act, 100
INH preventive treatment, 55,56,58-59,61-62	Screening tests. See Tuberculin skin testing
tuberculin skin testing, 55-56, 59-61	Sex. See Race, ethnicity, age, and sex
Primary care physicians	Skin testing. See Tuberculin skin testing
National Tuberculosis Training Initiative and, 95	SM. See Streptomycin
patient monitoring, 11-12, 86-87	Social Security Disability Insurance, 15,24, 103
Parisin monitoring, 11 12, 00 07	201111 2001111 210111111 11101111100, 13,21, 103

Sputum smear, 8,70	Treatment outcome factors
SS1, See Supplemental Security Income program	clinic management, 85
State and local TB control programs	data, 82-84
outpatient medical care, 104	medical care practices, 86-87
State TB laws, 11, 84-85	patient behavior, 87
TB elimination advisory committees, 97	TB control services and, 84-86
universal purchase of anti-TB drugs, 20, 21	Tubercle bacilli. See Mycobacterium tuberculosis
Strategic Plan for the Elimination of Tuberculosis in	Tuberculin skin testing
the United States, 12, 86, 94-95	accuracy, 7, 30, 60
Streptomycin, 9,72-73,75,76,78,79, 80, 102	description, 3
Substance Abuse and Mental Health Services	false negative reading, 70
Administration	false positive reading, 60
TB research, 14, 100	high-risk groups, 55-56
Supplemental Security Income program, 15,24, 103	limitations, 60-61
Surgical intervention, 10,72,77	mechanism, 59-60
~ · · · · · · · · · · · · · · · · · · ·	policy option, 20
TB control services	positive reading, 30
description, 85	result interpretation, 60
program problems, 85	"worried well' persons and, 28
State TB laws, 84-85	Tuberculous infection
TB Prevention and Control Research Units, 101	description, 3
Tice strain of BCG vaccine, 63	host factors, 30
Transmission	probability of acquiring active TB and, 28
active tuberculosis, 30	risk factors, 28-30, 58
MDR-TB, 44,46-47	transmission, 28
stages of TB, 28	transmission, 20
tuberculous infection, 28-30	Ultraviolet radiation
Treatment failure. See Completion of treatment	inactivation of droplet nuclei, 30
Treatment of active TB	infection control measure, 7, 53-54
alternative methods of drug delivery, 10, 78	United Hospital Fund
antimicrobial treatment rationale, 74-75	directly observed treatment recommendation, 89
bactericidal phase, 9, 75	U.S. Agency for International Development
combined-drug regimens, 9, 72-74, 75, 76-77, 78	TB control budget, 14,99
	U.S. AID. See U.S. Agency for International
completion of treatment, 10, 11, 58-59, 76, 77, 82-84, 89-90	Development
current regimens, 9, 73, 75	U.S. Department of Health and Human Services. See
drug costs, 10, 11,79-80	also specific agencies and programs by name
drug shortages, 10, 78	Agency for Health Care Policy and Research,
duration, 9-10, 73,75,76,77	102-103
first-line drugs, 9,73	Core Curriculum on Tuberculosis, 95
implantable devices, 10, 78, 102	TB control budget, 14,93
individuals with AIDS and, 76	U.S. Department of Housing and Urban Development,
introduction of antibiotic treatment, 9, 72-73	103
multidrug-resistant TB, 9-10, 76-78	U.S. Department of Justice
new approaches, 10, 78	TB control activities, 14, 98
second-line drugs, 10, 73, 77, 79, 80	U.S. Department of Veterans Affairs
sterilizing phase, 9, 75	purchase of drugs in bulk, 21
surgical intervention, 10, 72, 77	TB control activities, 14, 20, 98

148 The Continuing Challenge of Tuberculosis

TB screening, 20
U.S. DHHS. See U.S. Department of Health and
Human Services
U.S. DVA. See U.S. Department of Veterans Affairs
U.S. Public Health Service. See *also specific agencies*and programs by name
history of TB prevention and control, 92-93,94
National Action Plan, 101
reporting system for TB, 3-4, 33
treatment completion trials, 83
UV radiation. See Ultraviolet radiation

Ventilation systems, 51, 53

Washington Post editorial, 28
WHO. See World Health Organization
World Health Organization
AIDS impact on T13 in developing countries, 43
BCG vaccination recommendations, 62-63
Global Program on AIDS funding from
U.S. AID, 99