

Health of Refugees in Minnesota, 2003-2004

The number of new refugees arriving in Minnesota declined dramatically following the events of September 11, 2001. In the years since, refugees have increased from a low of 1,033 in 2002 to 2,401 in 2003 and an estimated 6,000-8,000 in 2004. The stories of these new refugees reflect troubling world events and result in a continuous evolution in Minnesota's population demographics.

The Minnesota Department of Health (MDH) is the single point of notification for new refugee arrivals to the state. The MDH Refugee Health Program (RHP) is federally funded to offer each of these refugees a comprehensive health screening, which serves two

purposes. The health screening addresses the health needs of each refugee, optimizing their health as they move into schools and work in our communities. The health screening also protects the public health of all Minnesotans by identifying, treating, and preventing the transmission of infectious diseases that are common in many parts of the world. MDH collaborates with local public health agencies and healthcare providers statewide to accomplish these goals.

Refugees are persons who have been forced to flee their homelands because of civil strife or war. The U.S. Department of Homeland Security defines refugees as foreign-born persons who

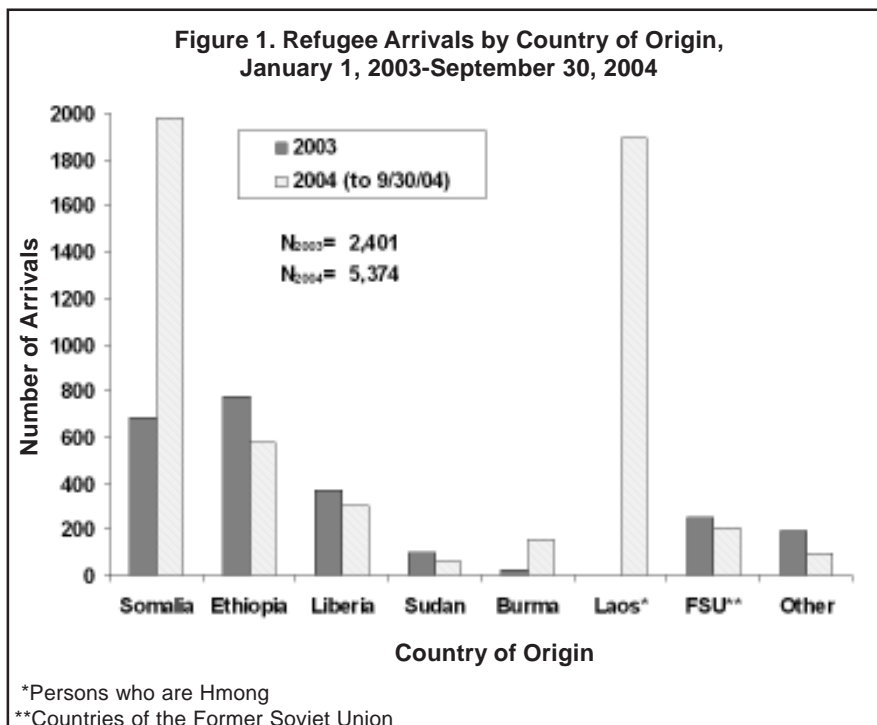
have fled their countries of origin and cannot return because of persecution or a well-founded fear of persecution due to race, religion, nationality, political opinion, or membership in a particular social group.

This report describes the health of new refugee populations arriving to Minnesota from January 1, 2003 through September 30, 2004, as well as their health screening results by ethnicity for those who arrived in 2003. A previously published article provided results for 1999-2003 (*DCN* 32;2:11-13).

Population Trends

The MDH RHP was notified of 7,775 refugee arrivals from January 1, 2003 through September 30, 2004 (Figure 1).

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During 2003, 2,401 refugees settled in Minnesota. Of those refugees, 32% were Ethiopians, 28% were Somalis, 16% were Liberians and 11% were from countries of the Former Soviet Union (FSU; Belarus, Kazakhstan, Moldova, Russia and Ukraine). Karen/Burmese refugees from a camp in Northern Thailand, sponsored by a Baptist Church in Saint Paul, began to resettle in Minnesota in 2003.

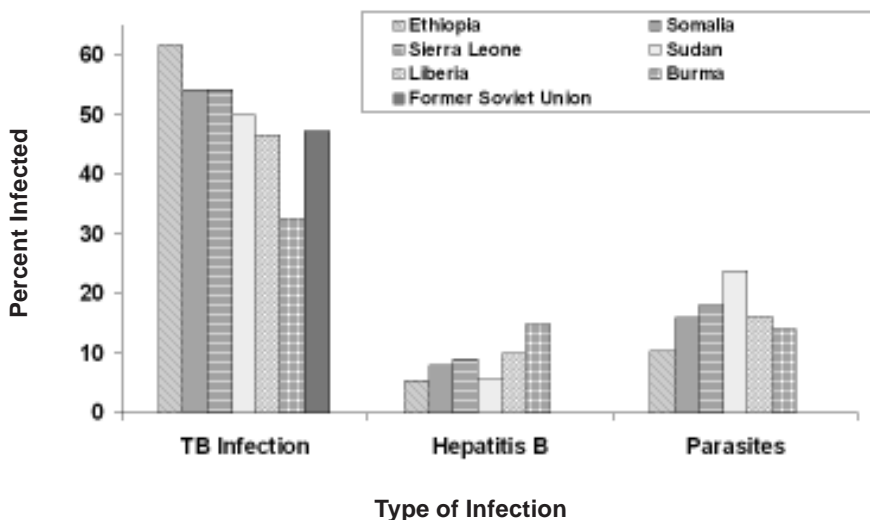
In contrast, in the first 9 months of 2004, the numbers of new Hmong refugees have increased to rival the numbers of Somalis. Although refugees from Somalia and Ethiopia

continued to arrive in large numbers (representing 36% and 11% of total refugee arrivals respectively), the Hmong refugees from Thailand dominate the arrivals in 2004. The increase in Hmong resettlement is due to a recent agreement by the United States Department of State to accept 15,500 Hmong refugees who have been living in Thailand since the end of the Vietnam War. This population originated in Laos, but fled into Thailand with the Communist takeover of the Laotian government. Minnesota expects to resettle a third of this population or approximately 5,000 individuals. Of the total 5,374 arrivals as of September 2004, 35% (1,878)

were Hmong including 1,370 who arrived in the month of September alone. One hundred sixty Burmese refugees also arrived during this time frame.

Refugees from Southeast Asia are younger compared to refugees from sub-Saharan Africa. For example, 56% of Hmong arrivals and 39% of Burmese arrivals are less than 15 years of age, compared to 21% of Somali and 16% of Ethiopian arrivals who are in this age group. The majority of sub-Saharan African arrivals are young adults; 49% of Somali arrivals and 58% of Ethiopian arrivals are between the ages of 15 and 24 years.

Figure 2. Tuberculosis, Hepatitis B, and Intestinal Parasitic Rates by Country of Origin Among Refugee Arrivals, 2003

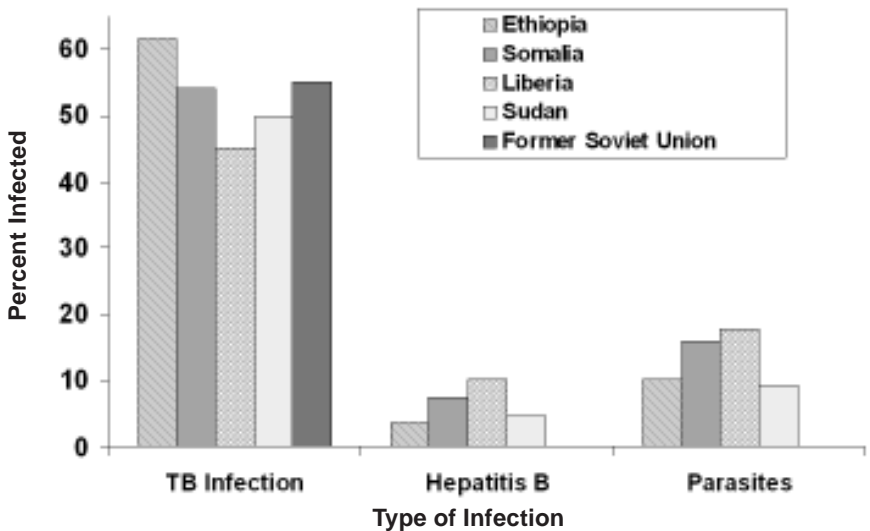


Health Status of Refugees in 2003

Refugees often arrive in Minnesota with numerous health concerns due to primitive living conditions in refugee camps or during the forced flight from their homeland. Many refugees come from parts of the world where infectious diseases are endemic. Many have not had access to medical care for prolonged periods. The MDH RHP tracks the incidence of infectious diseases, such as tuberculosis (TB), hepatitis B, intestinal parasites, and HIV, as well as more chronic health concerns, such as anemia. Referrals for vision, hearing, and dental work are common.

Federal guidelines recommend that all refugees receive a health screening within 90 days of arrival in the United States. For those with HIV infection or any acute health condition, an appointment with a health care provider is made as soon as possible. Some refugees are not eligible for the health screening because public health agencies cannot locate them or because they have moved out of state. Health care providers are asked to return all screening results to the MDH RHP.

Figure 3. Tuberculosis, Hepatitis B, and Intestinal Parasitic Rates by Country of Origin Among Refugee Arrivals in Hennepin County, 2003



In 2003, 94% of the 2,241 arrivals who were eligible for screening received a health assessment, although some of these assessments did not include screening for all of the recommended conditions. Of 2,061 refugees screened for TB, 53% had positive tuberculin skin test (TST) results with ≥ 10 mm induration (Figure 2). The hepatitis B infection rate among 2,055 tested for the hepatitis B surface

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Figure 4. Tuberculosis, Hepatitis B, and Intestinal Parasitic Rates by Country of Origin Among Refugee Arrivals in Ramsey County, 2003

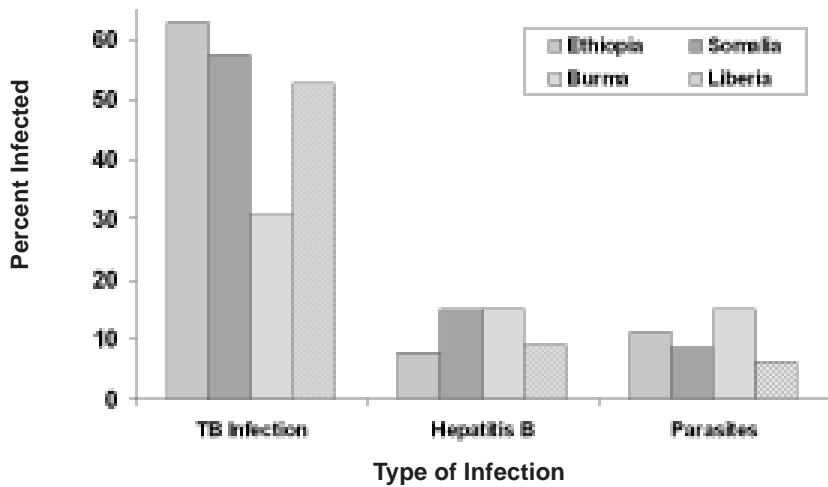
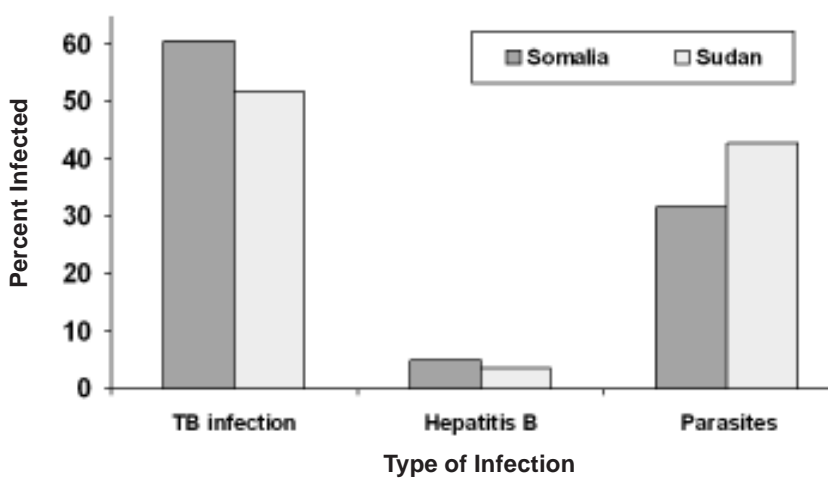


Figure 5. Tuberculosis, Hepatitis B, and Intestinal Parasitic Rates by Country of Origin Among Refugee Arrivals in Olmsted County, 2003



antigen (HBsAg) test was 7% (139). Of the 1,888 tested for intestinal parasites, 260 (14%) tested positive for at least one type of parasite. *Giardia intestinalis* (97 cases), *Trichuris trichiura* (69 cases) and *Schistosoma* spp. (13 cases) were the most common parasites identified. Among the 92 children less than 5 years of age who were tested for pathogenic parasites, 13% (12) were positive, accounting for 5% of all parasitic infections. The prevalence of infection among the 352 children aged 5-14 years who were screened for parasites was 26% (91), making up 35% of all cases.

In the four Minnesota counties that resettled the largest number of new

refugees during 2003, six refugee populations were selected to evaluate the completeness and outcome of their health assessments. The following narrative describes the incidence of positive screening results in each of the six populations. In 2003 Hennepin County resettled 1,373 refugees, 57% of the total arrivals. Ramsey County resettled 538 (22%), Anoka County resettled 135 (6%) and Olmsted County resettled 109 (5%) of the total arrivals for that year. Of all eligible refugees, Hennepin County screened 96%; Ramsey County screened 97%, Anoka County 91% and Olmsted County 100%. The figures below show these same data but are arranged by county of residence revealing each

county's burden of disease by refugee's country of origin (Figures 3-6).

Ethiopians

Ethiopians reside mostly in Hennepin (51%), Ramsey (38%) and Anoka (4%) counties. Of the 773 total Ethiopian arrivals, 722 were eligible for a health screening and 93% (672) of those received a health assessment. Among the 658 (98%) Ethiopians screened for TB, an overall 62% had positive TST results. The overall rate of HBsAg positivity among the 662 screened was 5%; in Ramsey County, the rate was slightly higher at 8%. A total of 624 were tested for intestinal parasites; 10% (64) were positive for at least one type. *Giardia intestinalis* (22 cases), *Trichuris trichiura* (14 cases) and *Schistosoma* spp. (7 cases) were the most common intestinal parasites in this population.

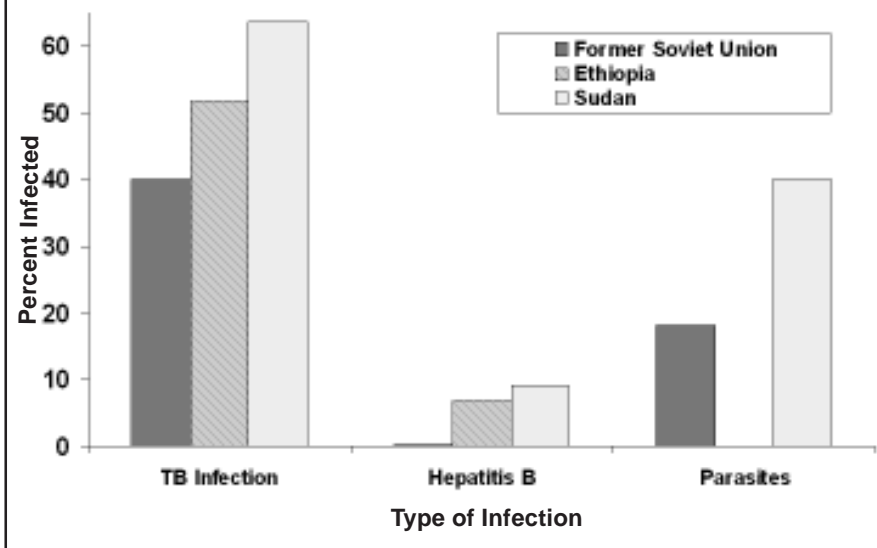
Somalis

The majority of Somalis who arrived in 2003 resettled in Hennepin County (61%); an additional 13% settled in Ramsey County and 9% located in Olmsted County. Dakota and Stearns counties each received 6%. The screening rate for this refugee group was 93% and 601 (88%) of the eligible 683 received a health assessment. Among the 588 (98%) tested for TB, 54% had positive TST results. The rates for a positive TST were 54%, 58%, and 61% in Hennepin, Ramsey, and Olmsted counties respectively. The overall rate for HBsAg positivity was 8% (48) among the 589 who were tested; the rate was 15% for those living in Ramsey County. A total of 553 were tested for intestinal parasites and 16% were positive for at least one type of parasite. The most common parasites found were *Trichuris trichiura* (42 cases) and *Giardia intestinalis* (33 cases).

Liberians

Of the 374 Liberians who came to Minnesota in 2003, 313 (84%) settled in Hennepin County. Ramsey County received 16% (60) of these newly arriving refugees. The aggregate screening rate for the eligible Liberians was 97% (339/351); Ramsey County had a screening rate of 100% for Liberian arrivals. Of the 333 Liberians screened for TB, 47% (154) had a positive TST (53% for those in Ramsey County). Of the 328 tested for hepatic...
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Figure 6. Tuberculosis, Hepatitis B, and Intestinal Parasitic Rates by Country of Origin Among Refugee Arrivals in Anoka County, 2003



tis B, 10% (33) tested positive for HBsAg. Of the 321 tested for intestinal parasites, 16% (51) were positive for at least one type. *Giardia intestinalis* (26 cases) and *Schistosoma* spp. (14 cases) were the most prevalent parasites.

Sierra Leoneans

A total of 62 refugees from Sierra Leone arrived in 2003. The majority (63% or 39) settled in Hennepin County, while 26% (16) settled in Ramsey County. Of the 61 Sierra Leonean refugees who were eligible, 60 (98%) received a health assessment. Of the 59 (98%) who were tested for TB, 54% had a positive TST. For hepatitis B, 9% (5/55) were positive for HBsAg. Intestinal parasites is a concern in this population; 18% (10/55) tested positive for at least one type of parasite. *Schistosoma* spp. (5 cases) and *Giardia intestinalis* (3 cases) were detected in this population.

Sudanese

The Sudanese settled mostly in Hennepin (47%), Olmsted (30%) and Anoka (12%) counties. Of the 100 who arrived in 2003, 90 (92%) of the 98 eligible refugees received a health assessment. Of these individuals screened for TB, 50% had a positive

TST; those in Anoka County had a positive rate of 64%. The hepatitis B rate among the 88 refugees who were screened was 6% (5). Among the 84 individuals screened for intestinal parasites, 20 (24%) tested positive for at least one type; 12 (43%) of the 28 tested in Olmsted County were positive for a parasite. *Schistosoma* spp. (5 cases), *Entamoeba histolytica* (5 cases), *Giardia intestinalis* (3), *Hymenolepis nana* (3 cases) and *Dientamoeba fragilis* (3 cases) were identified.

Former Soviet Union

In 2003, 249 refugees from the Russian-speaking countries of the FSU arrived in Minnesota including refugees from Belarus (54), Kazakhstan (8), Moldova (78), Russia (51) and the Ukraine (58). The majority moved to Hennepin (50%) and Anoka (24%) counties; others live in Ramsey, Dakota and Scott Counties. Of those eligible for a health assessment, 99% (230/233) were screened. Among these, the TB infection rate was 47%. The rates of HBsAg positivity (0.01%) and intestinal parasites (0.07%) were very low.

Burmese (Myanmar)

In 2003, the first refugees arrived in Minnesota from Burma. The majority

resettled in Ramsey County (96% or 26/27). All of these refugees received a health assessment: 30% had positive TST results and 15% were positive for HBsAg. Of the 21 individuals who were screened for parasites, 14% (3) tested positive for at least one parasite.

Points of Interest

- The *Minnesota Refugee Health Provider Guide*, a manual for providers who complete the refugee health screening examination, now is available on the MDH Refugee Health Program's website at www.health.state.mn.us/refugee. Many clinical and non-clinical resources were developed to assist providers with the large influx of Hmong arrivals this year. These items are also available on the RHP website.
- Of the 139 refugees found to be infected with hepatitis B in 2003, 18 had one or more family members who were also infected (45 total). The risk of hepatitis B infection is increased among household contacts and sexual partners. All susceptible family and household contacts should be immunized against hepatitis B. Data on the endemicity of hepatitis B by region of origin is available in the *Minnesota Refugee Health Provider Guide*.
- The geographic distribution of specific parasitic infections is varied. While all newly arrived refugees should be screened for ova and parasites, information such as country of origin, refugee migration, dietary habits, lack of shoes, lack of safe drinking water, quality of sanitation, and history of insect bites may be helpful in ruling-in or ruling-out certain parasitic infections.

For more information about refugee health, visit www.health.state.mn.us/refugee. For information on TB, visit www.health.state.mn.us/tb. To contact either the MDH Refugee Health Program or the MDH TB Prevention and Control Program, call (612) 676-5414.

Revised Recommendations for Screening and Treating Latent Tuberculosis (TB) Infection in Children and Adolescents

Revised national pediatric guidelines for screening, targeted testing, and treating latent tuberculosis infection (LTBI) were recently developed by the Pediatric Tuberculosis Collaborative Group. The guidelines, "Targeted Tuberculin Skin Testing and Treatment of Latent Tuberculosis Infection in Children and Adolescents," were published in a supplement to the October edition of *Pediatrics* (2004;114:1175-1201). The Pediatric Tuberculosis Collaborative Group is composed of health professionals from health departments, the National TB Model Centers, academic institutions, and the Centers for Disease Control and Prevention (CDC).

Timely identification and treatment of LTBI in pediatric patients play a critical role in preventing future cases of TB. Infected children are at higher risk than adults of progressing to active TB disease and have many years to potentially develop active TB. This document provides a single comprehensive reference for clinicians regarding LTBI in children and adolescents. The information contained in these guidelines is especially pertinent for primary care providers in Minnesota, where the prevalence of TB in the general population is quite low and nearly all TB disease occurs in easily identified risk groups (specifically, approximately 80% of TB cases occur among foreign-born persons).

Key highlights of the new guidelines include:

- Children and adolescents should be screened for risk factors for TB and tested with a Mantoux tuberculin skin test (TST) only if ≥ 1 risk factor is present. A template questionnaire is provided, which can be adapted based on local epidemiological trends and circumstances.
- TSTs should be administered only "if coupled to systems that start children who have LTBI on treatment and help them to complete it."
- "Administrative" skin testing of low risk children (such as that mandated prior to school entry, summer camp, day care, and WIC enrollment) is strongly discouraged, because of the low yield associated with such testing. Providers should write "TST not indicated" on such forms and explain the rationale for not performing a TST to the patient and family.

TABLE 1. Medical History to be Obtained for a Child With a Positive TST

Evaluations	Comments
Signs and symptoms of TB disease	Cough; wheezing; fever; weight loss; failure to thrive; anorexia; decreased activity, playfulness, or energy; hemoptysis; musculoskeletal pain; lymph node swelling; personality changes
Past medical history	Previous history of LTBI or TB treatment
TB disease or LTBI	Previous TST history
Other	Concomitant medications With INH: alterations in phenytoin drug levels and carbamezipime increases risk of hepatotoxicity With rifampin: many drugs may interact, and potential interactions should be reviewed Past hospitalizations Underlying diseases (eg., hepatitis, HIV) Drug allergies Maternal HIV status (if known) Recent immigration from an area with a high incidence of TB-drug resistance
Potential source-case identification	Known contact with TB patient TB treatment history (erratic or previous treatment predicts drug resistance) of source case Susceptibilities of isolate of source case (if known)
Assessment of factors that can impact adherence	Living in temporary housing or shelter Family remaining in treatment area Travel plans while on treatment Availability of Directly Observed Therapy (DOT) program Understanding of TB disease and LTBI

Source: *Pediatrics* (2004;114:1175-1201)

Additional highlights include:

- Components of the baseline medical history and targeted physical examination prior to starting treatment of LTBI are described in detail (Tables 1 and 2.) Adequate pre-treatment histories and examinations are critical because children with TB disease identified through targeted testing often have no TB-related symptoms. Ruling out active TB disease before starting treatment for LTBI helps prevent the emergence of drug-resistant strains of TB.
- Three recommended drug regimens are available for treatment of LTBI in children and adolescents. Although children usually tolerate LTBI medications very well, monitoring for adverse

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effects from treatment is recommended and described.

- Several strategies to help patients adhere to LTBI treatment are suggested (Table 3). Administering treatment for a defined period of time without accounting for the number of doses ingested may result in undertreatment.

- New data regarding the risk for TB among internationally adopted children are reviewed, especially regarding children from China and Russia.
- Public health departments are responsible for conducting contact investigations surrounding cases of infectious TB. Although such investigations may find additional

TB cases, they frequently provide an opportunity to identify and treat recently infected persons at high risk of progressing to active TB disease. Health departments may also conduct targeted testing and treatment programs, but LTBI in children and adolescents is more often identified and treated in pediatric primary care settings.

TABLE 2. Elements of the Targeted Physical Exam for Children With a Positive TST

Elements of Targeted Physical Examination	Physical Findings of TB Disease
General appearance and growth	Poor weight gain, falling off growth curve
Conjunctiva	Scleral icterus
Neck flexion	Neck stiffness
Lymph node palpation	Lymphadenopathy (neck, axilla)
Ascultation of lung	Rales, wheezes, decreased breath sounds over affected lung field
Auscultation of heart	Tachycardia, friction rub
Abdomen and flanks	Hepatosplenomegaly, flank tenderness
Spine/bones	Bone tenderness/limping
Skin	Jaundice or preexisting rashes (nodules, ulcers, papules, erythema nodosum)

Source: *Pediatrics* (2004;114:1175-1201)

TABLE 3. Interventions to Promote Adherence to Treatment of LTBI

Educational	Disease-specific Language/culture-specific Content-appropriate cognitive level Parents/guardian Children Counseling Medical staff Peers
Organizational/support	Directly observed therapy (DOT) Clinic Home School Enablers Language interpreters Minimal waiting time in clinic Extended clinic hours Transportation assistance Dedicated staff Free medication Medication on site Medication reminders Appointment reminders
Behavioral	Reinforcement at each visit Incentives Monetary Entertainment coupons Refreshments

Adapted from: *Pediatrics* (2004;114:1175-1201)

The guidelines recommend the following steps to appropriately screen, test, evaluate, and treat children and adolescents for LTBI:

1. Assess individual children and adolescents for risk factors for LTBI or TB disease by using a risk-factor questionnaire;
2. If any risk factors are present, administer a TST;
3. Determine the induration of the TST by measuring the transverse diameter of the reaction and record in millimeters;
4. Decide if the millimeters of induration represent a positive TST based on the criteria for the 3 cutoff levels;
5. If the TST is positive, decide if further evaluation is needed, including a complete history, targeted physical examination, and chest radiograph (Tables 1, 2);
6. After evaluation is complete, determine if treatment for LTBI is indicated; and
7. Ensure appropriate treatment and follow-up to promote completion of LTBI therapy (Table 3).

The Minnesota Department of Health (MDH) TB Prevention and Control Program collaborates with clinicians and local public health departments to ensure that patients with LTBI receive timely, accessible, and effective treatment. Services provided by MDH include free TB medications and access to expert clinical consultation and written recommendations for health care providers. In addition, patient education materials about the

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Mantoux skin test and treatment for LTBI have been translated into 12 languages commonly spoken by foreign-born persons in Minnesota and are available on the MDH web site, www.health.state.mn.us/tb. Concise, up-to-date training materials (including

a video) for health care professionals who give and read Mantoux TB skin test may be ordered at no cost from CDC at www.cdc.gov/tb; request the "Mantoux tuberculin skin test" kit. The revised pediatric screening and treatment guidelines are available at

the web site of the journal *Pediatrics*: pediatrics.aappublications.org. For additional information, contact the MDH TB Program at www.health.state.mn.us/tb or call 612-676-5414.

Shortage of Pneumococcal Conjugate Vaccine, 7-valent (PCV7) is Resolved

The supply of PCV7 (Prevnar) produced by Wyeth Vaccines, Inc. is now sufficient to meet the demand for the routine, 4-dose immunization schedule. In September 2004, CDC recommended that providers resume

administration of PCV7 according to the routine schedule. Providers should conduct active recall for catch-up in order to protect children most vulnerable to invasive disease.

The following children have been identified for prioritized recall. Their age or health condition increases their risk for invasive disease if not fully vaccinated.

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Table 1. Recommended Catch-up Schedule for Pneumococcal Conjugate Vaccine, 7-valent for Incompletely Vaccinated Children Up to 60 Months of Age*

Age at assessment	Previous PCV7 vaccination history	Recommended catch-up ¹
2-6 months of age ²	0 doses	3 doses, 8 weeks apart, and dose 4 at 12-15 months of age
	1 dose	2 doses, 8 weeks apart, and dose 4 at 12-15 months of age
	2 doses	Give dose 3 now, and dose 4 at 12-15 months of age
7-11 months of age	0 doses	2 doses 8 weeks apart, and dose 3 at 12-15 months of age
	1 or 2 doses before 7 months of age	1 dose now and a final dose at 12-15 mos of age, at least ≥ 2 months after previous dose
12-23 months of age	0 doses	2 doses ≥ 2 months apart
	1 dose before 12 months of age	
	1 dose given ≥ 12 months of age 2 - 3 doses before 12 months of age	1 additional dose ≥ 2 months after most recent dose
Healthy children 24-59 months of age	0 doses or an incomplete schedule	Consider 1 dose ≥ 2 months after most recent dose
At-risk children 24 – 59 months of age ³	< 3 doses	1 dose ≥ 2 months after most recent dose, and another dose ≥ 2 months after that
	3 doses	Give 1 dose ≥ 2 months after the most recent dose

*Adapted from table in: "Notice to Readers: Pneumococcal Conjugate Vaccine Shortage Resolved," *MMWR* 2004; 53(36):851

¹For children vaccinated at < 1 year of age, the minimum interval between doses is 4 weeks. Doses administered at ≥ 12 months of age should be at least 8 weeks apart.

²Children in this age group should receive a complete series: 3 doses at least 8 weeks apart followed by a booster at 12-15 months of age.

³Children with sickle cell disease, asplenia, HIV infection, chronic illness, cochlear implant, or immunocompromising conditions.

1. Children aged <5 years who are at high risk for invasive pneumococcal disease because of certain immunocompromising or chronic conditions (e.g., sickle cell disease, asplenia, chronic heart or lung disease, diabetes, cerebrospinal fluid leak, cochlear implant, or human immunodeficiency virus infection).
2. Healthy children aged <24 months who have not received any doses of PCV7.

3. Healthy children aged <12 months who have not yet received 3 doses.

Please note that all children requiring catch-up vaccination may not need 4 doses of PCV7. The total number of doses needed depends upon age at initial vaccination, current age, and number of doses previously administered. (See Table 1.) You will find complete information regarding the resolution of the PCV7 shortage and subsequent recommendations at

www.cdc.gov/mmwr/PDF/wk/mm5336.pdf.

If you use the Minnesota Immunization Information Connection (MIIC), check the MIIC home page (www.health.state.mn.us/divs/idepc/immunize/registry/index.html) on how to use the registry to recall patients who were deferred for PCV7.

If you have any questions call the Minnesota Department of Health Immunization Hotline at 1-800-657-3970 or locally at 612-676-5100.

Recommended Childhood and Adolescent Immunization Schedule, Minnesota, 2005

The Minnesota Department of Health (MDH) 2005 Recommended Childhood and Adolescent Immunization Schedule is unchanged from 2004, the first time in many years. MDH issues the childhood immunization schedule annually to incorporate changes as newly licensed vaccines become available, products change, and vaccine recommendations are modified. The schedule consolidates recommendations of national advisory bodies such as the ACIP, the AAP, and the AAFP. The MDH Immunization Practices Advisory Committee reviews the schedule and, as necessary, suggests modifications specific to Minnesota.

The Minnesota schedule is available on the MDH web site, at www.health.state.mn.us/immunize; scroll down to "Schedules and Recommendations." Color copies of the childhood schedule are being printed; MDH will distribute them to all clinics, hospitals, local public health agencies, and health plans when they become available. Additional copies can be ordered by calling the

Minnesota Immunization Hotline at 612-676-5100 or 1-800-657-3970, or by contacting MDH at idepcweb@health.state.mn.us. For more detailed information, consult the CDC's complete listing of ACIP statements at www.cdc.gov/nip/acip/; click on "Recommendations."

Providers are reminded to provide the required vaccine risk-benefit information provided by the Centers for Disease Control and Prevention for each vaccine and every time a vaccination is given. These two-sided sheets called Vaccine Information Statements (VIS) contain valuable information regarding the specific vaccine preventable disease(s), who should or should not receive the vaccine, what minor to severe side effects to watch for, and who to contact in the event of an adverse reaction to vaccination. The VIS's are available to download from the web at www.cdc.gov/nip/publications/vis/.


Other resources regarding vaccine recommendations include:

- American Academy of Pediatrics. Pickering LK, ed. *Red Book: 2003 Report of the Committee on Infectious Diseases*. 26th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2003.
- Minnesota Immunization Hotline (M-F, 9:00 a.m. – 12:00 p.m. and 1:00 p.m.– 4:00 p.m.) at 612-676-5100 or 800-657-3970.
- Centers for Disease Control and Prevention Immunization Hotline at 800-232-0233 or www.cdc.gov/nip/.
- Department of Health and Human Services, Centers for Disease Control and Prevention. Atkinson WA, Wolfe C, eds. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. 8th ed. Washington, DC: Public Health Foundation; 2004.
- Vaccine manufacturers' telephone help-lines and package inserts.

Recommended Childhood and Adolescent Immunization Schedule, Minnesota, 2005

****Chart must be used with guidelines below****

Vaccine ↓	Range of recommended ages		Catch-up vaccination						Preadolescent assessment				
	Age →	Birth	1 mo	2 mos	4 mos	6 mos	12 mos	15 mos	18 mos	24 mos	4-6 yrs	11-12 yrs	13-18 yrs
Hepatitis B¹		HepB-1	only if mother is HBsAg(-)	HepB-2		HepB-3			HepB series				
Diphtheria, Tetanus, Pertussis²				DTaP	DTaP	DTaP		DTaP ²		DTaP	Td ²		
Haemophilus influenzae type b³				Hib	Hib	Hib ³		Hib ³					
Inactivated Poliovirus				IPV	IPV	IPV				IPV			
Measles, Mumps, Rubella⁴							MMR-1			MMR-2 ⁴	MMR-2 ⁴		
Varicella⁵							Varicella		Varicella				
Pneumococcal⁶				PCV	PCV	PCV	PCV		PCV	PPV			
Influenza⁷		Vaccines below this line are for selected populations					Influenza (yearly) as of fall 2004			Influenza (yearly)			
Hepatitis A⁸										HepA series			

Guidelines: This schedule is for children through age 18 yrs. It indicates the recommended ages for routine administration of childhood vaccines licensed as of January 1, 2004. Any dose not given at the recommended age should be given at any subsequent visit when indicated and feasible.  Indicates age groups that warrant special effort to administer those vaccines not previously given. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and the vaccine's other components are not contraindicated. Consult the manufacturers' package inserts for detailed recommendations.

1. Hepatitis B (hepB): All infants should receive hepB-1 soon after birth and before hospital discharge; the 1st dose also may be given by age 2 mos if the infant's mother is hepatitis B surface antigen (HBsAg) negative. Only monovalent hepB vaccine can be used for the dose given before age 6 wks. Monovalent or combination vaccine containing hepB may be used to complete the series. Four doses of vaccine may be administered when a birth dose is given. The 2nd dose should be given at least 4 wks after the 1st dose, except for combination vaccines that cannot be administered before age 6 wks. The 3rd dose should be given at least 16 wks after the 1st dose and at least 8 wks after the 2nd dose. The last dose in the vaccination series (3rd or 4th dose) should not be administered before age 24 wks. **Infants born to HBsAg-positive mothers** should receive hepB-1 and 0.5 mL hepatitis B immune globulin (HBIG) at separate sites within 12 hrs of birth. The 2nd dose is recommended at age 1-2 mos and the 3rd dose at age 6 mos (no sooner than age 24 wks). Test these infants for HBsAg and antibody to HBsAg (anti-HBs) at age 9-15 mos. **Infants born to mothers whose HBsAg status is unknown** should receive hepB-1 within 12 hrs of birth. Maternal blood should be drawn as soon as possible to determine the mother's HBsAg status. If the HBsAg test is positive, the infant should receive 0.5 mL of HBIG as soon as possible (no later than age 1 wk). HepB-2 is recommended at age 1-2 mos. The last dose of the series should not be given before age 24 wks.

2. Diphtheria, tetanus, and acellular pertussis (DTaP): DTaP-4 may be given as early as age 12 mos if at least 6 mos have passed since DTaP-3 and the child is unlikely to return at age 15-18 mos. The final dose should be given at age ≥4 yrs. Td (tetanus and diphtheria toxoids, for persons age ≥7 yrs) is recommended at age 11-12 yrs if at least 5 yrs have passed since the last dose of tetanus- and diphtheria-containing vaccine. Subsequent routine Td boosters are recommended every 10 yrs.

3. Haemophilus influenzae type b (Hib) conjugate: Three Hib conjugate vaccines are licensed for infant use. If PRP-OMP (PedvaxHIB or Comvax) is given at age 2 and 4 mos, a dose at 6 mos is not required. Do not use DTaP/Hib combination products for the 1st, 2nd, or 3rd doses (primary series). Use any Hib conjugate vaccine as a booster. The final dose in the series should be given at age ≥12 mos.

4. Measles, mumps, rubella (MMR): MMR-2 is recommended at age 4-6 yrs but may be given during any visit, provided at least 4 wks have elapsed since MMR-1 and both doses are given at age ≥12 mos. Those who have not received a 2nd dose should do so by age 11-12 yrs.

5. Varicella: Varicella vaccine is recommended at any visit at age ≥12 mos for susceptible children, i.e., those who lack a reliable history of chickenpox. Susceptible persons age ≥13 yrs should receive 2 doses given at least 4 wks apart.

6. Pneumococcal: The 7-valent pneumococcal conjugate vaccine (PCV) is recommended for all children age 2-23 mos and for certain children age 24-59 mos. The final dose in the series should be given at age ≥12 mos. **Pneumococcal polysaccharide vaccine (PPV)** is recommended in addition to PCV for certain high-risk groups, age ≥2 yrs. See *MMWR* 2000;49(RR-9):1-35.

7. Influenza: Beginning in the fall of 2004, influenza vaccine is recommended annually for children age 6-23 mos because they are at substantially increased risk for influenza-related hospitalizations. It also is recommended for children age ≥2 yrs with certain risk factors, including but not limited to asthma, cardiac disease, sickle cell disease, HIV, and diabetes. See *MMWR* 2003;52(RR-8):1-34. Children age ≥2 yrs who are household contacts of at-risk persons, including infants age <6 mos, should also be vaccinated. Other children wishing to obtain immunity may be vaccinated. For healthy persons age 5-49 yrs, the intranasally administered live-attenuated influenza vaccine (LAIV) is an acceptable alternative to the intramuscular trivalent inactivated influenza vaccine (TIV). See *MMWR* 2003;52(RR-13):1-8. Children receiving TIV should receive the age-appropriate dosage: 0.25mL if age 6-35 mos or 0.5mL if age ≥3 yrs. Children age ≤8 yrs who are receiving influenza vaccine for the first time should receive 2 doses separated by ≥4 wks following a dose of TIV or 6 wks following a dose of LAIV.

8. Hepatitis A (hepA): Give hepA vaccine to children and adolescents who are at increased risk of infection, as defined by ACIP*, and consider it for all others age ≥2 yrs who wish to obtain immunity. Give a booster dose 6 mos after initial dose.

Based on recommendations of the Advisory Committee on Immunization Practices (ACIP), the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP), and endorsed by the Immunization Practices Advisory Committee of the Minnesota Department of Health (MDH).

For Children and Adolescents Who Start Late or Who Are >1 Month Behind

The tables below give catch-up schedules and minimum intervals between doses for children who have delayed immunizations. There is no need to restart a vaccine series regardless of the time that has elapsed between doses. Use the chart appropriate for the child's age. Footnotes apply to both charts.

Catch-up schedule for children age 4 months through 6 years

Vaccine (Minimum Age for Dose 1)	Minimum Interval Between Doses			
	Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
DTaP (6 wks)	4 wks	4 wks	6 mos	6 mos ¹
IPV (6 wks)	4 wks	4 wks	4 wks ²	
HepB ³ (birth)	4 wks	8 wks (and 16 wks after 1 st dose)		
MMR (12 mos)	4 wks ⁴			
Varicella (12 mos)	Not needed			
Hib ⁵ (6 wks)	4 wks: if 1 st dose given at age <12 mos 8 wks (as final dose): if 1 st dose given at age 12-14 mos No further doses needed: if 1 st dose given at age ≥15 mos	4 wks ⁶ : if current age <12 mos 8 wks (as final dose) ⁶ : if current age ≥12 mos and 2 nd dose given at age <15 mos No further doses needed: if previous dose given at age ≥15 mos	8 wks (as final dose): this dose only necessary for children age 12 mos to 5 yrs who received 3 doses before age 12 mos	
PCV ⁵ (6 wks)	4 wks: if 1 st dose given at age <12 mos and current age <24 mos 8 wks (as final dose): if 1 st dose given at age ≥12 mos or current age 24-59 mos No further doses needed: for healthy children if 1 st dose given at age ≥24 mos	4 wks: if current age <12 mos 8 wks (as final dose): if current age ≥12 mos No further doses needed: for healthy children if previous dose given at age ≥24 mos	8 wks (as final dose): this dose only necessary for children age 12 mos to 5 yrs who received 3 doses before age 12 mos	

Catch-up schedule for children age 7 through 18 years

Vaccine	Minimum Interval Between Doses		
	Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Booster Dose
Td	4 wks	6 mos	If age 7-10 yrs: • 6 mos if 1 st dose given before age 1 yr • 5 yrs (no sooner than age 11 yrs) if 1 st dose given at age ≥1 yr If age 11-18 yrs: • 5 yrs if 3 rd dose given before age 7 yrs • 10 yrs if 3 rd dose given age ≥7 yrs
IPV ⁷	4 wks	4 wks	
HepB	4 wks	8 wks (and 16 wks after 1 st dose)	
MMR	4 wks		
Varicella ⁸	4 wks		

- DTaP: The 5th dose is not necessary if the 4th dose was given after the 4th birthday.
- IPV: The 4th dose is not necessary in an all-IPV or all-OPV schedule if the 3rd dose was given after the 4th birthday. If both OPV and IPV were given as part of a series, a total of 4 doses should be given, regardless of the child's current age.
- HepB: All children and adolescents who have not been immunized against hepatitis B should begin the hepB immunization series during any visit. Providers should make special efforts to immunize children who were born in, or whose parents were born in, areas of the world where hepatitis B virus infection is moderately or highly endemic.
- MMR: The 2nd dose of MMR is recommended routinely at age 4-6 yrs but may be given earlier if desired.
- Hib and/or PCV: Vaccine generally is not recommended for children age ≥5 yrs.
- Hib: If current age <12 mos and 1st and 2nd doses were PRP-OMP (PedvaxHIB or ComVax [Merck]), the 3rd (and final) dose should be given at age 12-15 mos and at least 8 wks after the 2nd dose. If a 3rd dose of HbOC (HibTiter) or PRP-T (ActHib) is given at age ≥12 mos, a 4th dose is not needed.
- IPV: Vaccine generally is not recommended for persons age ≥18 yrs.
- Varicella: Give 2-dose series to all susceptible adolescents age ≥13 yrs.

Reporting Adverse Reactions

Report adverse reactions to vaccines through the federal Vaccine Adverse Event Reporting System. For information on reporting reactions following vaccines administered by private clinics, call the 24-hour national toll-free information line, 800-822-7967. Report reactions to vaccine administered in public clinics to the Minnesota Department of Health, 612-676-5414 or toll-free 877-676-5414.

Disease Reporting

Report suspected cases of vaccine-preventable diseases to the local health department or to the Minnesota Department of Health, P.O. Box 9441 Minneapolis, MN 55440-9441, 612-676-5414 or toll-free 877-676-5414.

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Notice of Intent to Adopt Amendments to Rules Governing Communicable Disease Reporting, *Minnesota Rules, Chapter 4605*

The Minnesota Department of Health (MDH) has been in a year-long process to amend its rules governing communicable disease reporting. MDH is making these changes to address diagnostic advances and issues surrounding new and emerging infectious diseases. Some of the changes include adding new diseases,

changing the type of materials submitted to the MDH Laboratory, adding a requirement to report “unexplained critical illness” that may be caused by an infectious agent, and allowing the Commissioner to select diseases for sentinel surveillance. For a detailed draft of the rule, call Patti Segal-Freeman at (612-676-5414) or see the

MDH website at www.health.state.mn.us/divs/idepc/dtopics/reportable/newrule/index.html. For instructions on submitting comments to the proposed changes, see the “Notice of Intent to Adopt” the proposed rules at the website listed. The changes in the rule are expected to be made official later this year.

Dianne Mandernach, Commissioner of Health

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Outstate: 1-877-676-5414
or email:
dcn@health.state.mn.us**

The *Disease Control Newsletter* is available on the MDH Acute Disease Investigation and Control (ADIC) Section web site (<http://www.health.state.mn.us/divs/idepc/newsletters/dcn/index.html>).

If you require this document in another format such as large print, Braille, or cassette tape, call 612-676-5414 or, in Greater Minnesota, call 1-877-676-5414