UTAH DEPARTMENT OF HEALTH

Utah Health Status Update:
Pediatric Tuberculosis in Utah

March 2016

Pediatric tuberculosis (TB) is defined as a case of TB disease in a child <15 years. From 2009–2015, 8% (19 of 229) of Utah's TB disease cases were among pediatric patients (Figure 1). Of these cases, 68% were among children <5 years, which is concerning as TB disease in this age group is more likely to be life-threatening than in older children and adults.

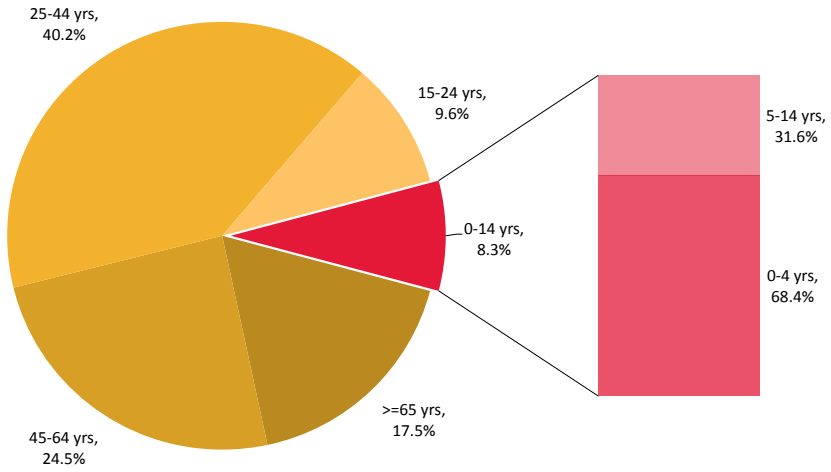
Background: TB is caused by the bacteria *Mycobacterium tuberculosis* and is spread when a person with infectious TB disease of the lungs or throat expels tiny airborne particles in the air. People nearby may breathe in these particles and become infected. Persons with TB infection have TB bacteria in their bodies but do not feel sick, do not have symptoms, and cannot spread TB. However, if TB infection is left untreated, about 10% of persons will progress to TB disease during their lifetime. Certain groups are at a higher risk for progression to TB disease, including children <5 years.

KEY FINDINGS

- **From 2009–2015, 68% of pediatric TB disease cases (aged <15) were among children <5 years, which is concerning as TB in this age group is more likely to be life-threatening than in older children and adults.**
- **Of the pediatric cases reported in Utah from 2009–2015, 74% were known contacts to adults with infectious TB disease.**
- **Of the pediatric cases reported from 2009–2015, 74% were born in the United States; and all of these children had at least one parent who was foreign-born. Of the five cases that were foreign-born, four arrived as refugees.**
- **From 2009–2014, 70 children <5 years were contacts to infectious TB disease cases and were determined not to have TB disease; and 57% (40 of 70) of these children were started on prophylactic treatment.**
- **From 2009–2014, 10 children were identified to have TB infection as a result of a contact investigation, and nine completed treatment for TB infection.**

Tuberculosis Disease Cases Distributed by Age Group

Figure 1. Percentage of tuberculosis cases by age group, Utah, 2009–2015



Source: Utah Department of Health, Bureau of Epidemiology

Pediatric TB Cases: Of the pediatric cases reported in Utah from 2009–2015, 74% were known contacts to adults with infectious TB disease—including one child who is being treated as Utah's first pediatric multidrug resistant (MDR) case. It is extremely challenging to treat a young child with MDR-TB since most of the medications are not commonly used in children and can be quite toxic; total treatment is typically two years and an IV line is required for at least six months. Another case involved a newborn who contracted TB disease from its mother and died before treatment could be initiated.

Two of the pediatric cases were the initially-reported TB case, with the source adult cases subsequently identified. In 2015, a young child was diagnosed with meningeal TB and the source case was found to be an uncle. The uncle's contact investigation (CI) resulted in four additional children being diagnosed with TB disease. A similar situation occurred in 2009, resulting in two additional pediatric cases. This illustrates the importance of conducting CIs in a timely manner. Current guidelines stipulate that CIs be initiated within one working day of an infectious TB disease case being reported to public health.

Of the pediatric cases reported from 2009–2015, 74% were born in the United States; and all of these children had at least one parent who was foreign-born. Of the five cases that were foreign-born, four arrived as refugees. The Utah Department of Health (UDOH) Refugee Health Program ensures that newly-arriving refugees receive a health exam within 30 days of arrival, and these children were diagnosed with TB disease

during this process. Two of these children had been given a TB Class B designation at their overseas health screening, which identified them as requiring a full TB evaluation soon after arrival in the United States. The family of the fifth foreign-born child had lived abroad for an extended period. This toddler was diagnosed with meningeal TB within several months of returning to Utah and died after starting TB treatment.

Contact Investigations (CI): CIs are the second most important strategy for TB control in the United States, after the rapid diagnosis and treatment of TB disease cases. In Utah, CIs are conducted by local health departments (LHDs), and when necessary, by other healthcare facilities. During a CI, persons who have been exposed to TB cases are identified, evaluated, and offered treatment. TB CIs are one of the most effective ways of finding TB disease cases. From 2009–2014, 4% (7 of 965) of contacts to infectious TB disease cases in Utah who were evaluated were found to have TB disease, and 71% of these were pediatric cases.

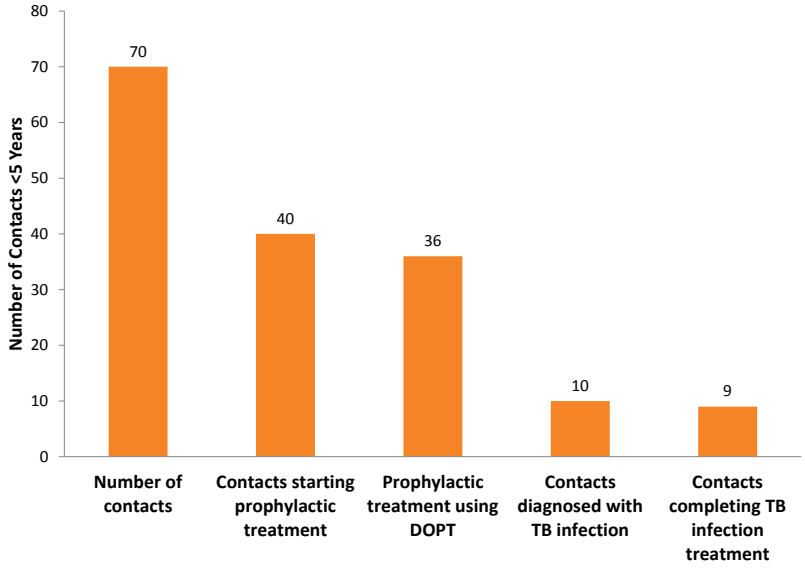
The goal of CIs is to stop further transmission of TB and to prevent future cases; therefore, TB contacts should be tested as soon as possible after an exposure. However, this can result in a false negative result since it can take 8–10 weeks before an infected contact will test positive. Consequently, the evaluation of TB contacts can require a second round of testing 8–10 weeks following exposure. Because they can rapidly progress to TB disease, children <5 years who test negative during the first round of testing are started on treatment for TB infection. The UDOH TB Control Program encourages this treatment to be given using directly observed prophylactic treatment (DOPT), which involves the visual observation of the child's ingestion of medication. If the child tests negative on the second round, treatment is terminated; if the child tests positive, TB infection treatment—which typically lasts nine months—is continued.

UDOH ANNOUNCEMENT:

The Utah State Systems Development Initiative (SSDI) Grant is focused on the expansion of analytic capacity. The funding has allowed the Data Resources Program to develop a web-based system to streamline the coordination process of the yearly submission of the Title V MCH Block Grant Application. For more information, visit http://health.utah.gov/mch/?p=about.

Contact Investigation Activities

Figure 2. Cascade of tuberculosis contact investigation activities in contacts aged <5 years,* Utah, 2009–2014



* Contacts to sputum acid-fast bacillus smear-positive cases; excludes contacts diagnosed with TB disease.
Note: DOPT=directly observed prophylactic treatment
Source: Utah Department of Health, Bureau of Epidemiology

From 2009–2014, 70 children <5 years were contacts to infectious TB disease cases and were determined not to have TB disease; and 57% (40 of 70) of these children were started on prophylactic treatment. Reasons for children not starting prophylactic treatment included children who were contacts to MDR-TB cases who were awaiting test results to determine the correct treatment regimen, children being identified >8-10 weeks following exposure and therefore not requiring a second round of testing, or parents declining treatment. Treatment for TB infection is not mandatory; and public health nurses do their best to educate and use incentives, but some barriers (e.g., culturally not taking medications when not sick or wanting to stay below the radar if undocumented) are difficult to overcome. Of the 40 children who started prophylactic treatment, 90% were treated using DOPT—usually observed by a LHD staff member or their designee. Ten children were found to have TB infection and nine completed treatment (see Figure 2). Ensuring that high-risk pediatric contacts initiate and complete prophylactic treatment is critical in order to prevent their progression to TB disease.

Conclusion: TB disease in children can have catastrophic consequences. It is imperative that children at high risk for TB disease and infection be rapidly screened, start on treatment (including prophylactic treatment if necessary), and complete treatment.

For additional information about this topic, contact Larry Niler, Utah Department of Health, (801) 538-9906, email: lniler@utah.gov or the Office of Public Health Assessment, Utah Department of Health, (801) 538-9191, email: chdata@utah.gov.

Breaking News, March 2016

Training on Investigation of Healthcare-Associated Infection (HAI) Outbreaks

More than 200 persons who oversee infection prevention or emergency preparedness at healthcare facilities and local health departments (LHDs) recently attended trainings to increase understanding of their roles in future healthcare-associated infection outbreaks. *Regional Medical Surge Coalitions* collaborated with the Utah Department of Health to provide these trainings, the purpose was to strengthen community partnerships and increase knowledge regarding outbreak recognition, investigation, and response. The trainings were held in eight locations throughout the state from January 11 through February 25, 2016. Participants learned that future healthcare-associated outbreaks might include a variety of emerging infections such as Middle East Respiratory Syndrome (MERS) and Ebola, as well as influenza or norovirus. Participants also learned about resources available to their communities to aid future outbreak investigation needs. "All outbreaks begin and end at the local level," noted Dr. Allyn Nakashima, State Epidemiologist. Participants agreed; one said, "I appreciate that this training was applicable to our local level. We all have outbreaks, some with more or less needs. We all need to know how to respond and who to involve. I now realize how many partners might need to be involved in these kinds of outbreaks. We are all vital members necessary to our community's outbreak prevention and response teams."

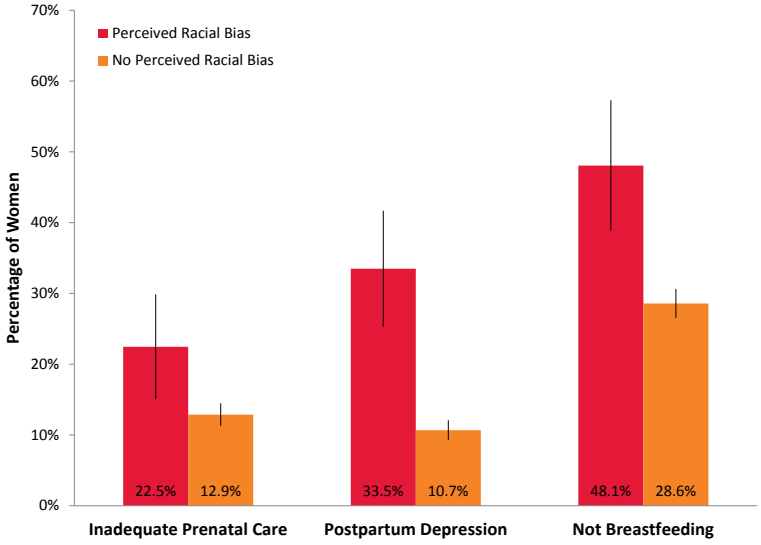
There are seven Regional Medical Surge Coalitions in Utah. These coalitions foster local partnerships, enhance communications, and develop plans to assist health and medical partners during disasters, medical surge events, and public health emergencies.

Community Health Indicators Spotlight, March 2016

Effects of Perceived Racism during Pregnancy in Utah

Research shows that racial discrimination is a chronic stressor that may increase the risk for adverse pregnancy outcomes such as low birth weight and preterm labor.[1] According to 2012–2013 Utah Pregnancy Risk Assessment Monitoring System (PRAMS) data, approximately 5,133 (5.2%) of Utah women who answered the survey reported feeling emotionally upset as a result of how they were treated based on their race. Feelings of racial bias were more likely to be reported among women who were of younger ages, unmarried, of lower educational levels, of non-White race, Hispanic, and of lower income levels. In addition to adverse birth outcomes, PRAMS data indicate there are other aspects of a healthy pregnancy and postpartum period that may be affected by the stress caused by feelings of racial discrimination. Figure 1 shows significantly higher rates of inadequate prenatal care, postpartum depression, and not breastfeeding at the time of the survey among women with perceptions of racial bias during pregnancy. These results suggest that healthcare providers should consider the potential risk for increased stress among their patients who report feelings of racial bias. The American College of Obstetricians and Gynecologists (ACOG) recommends that clinicians screen patients at least once during the perinatal period for depression and anxiety symptoms using a standardized, validated tool.[2] Relaxation and other stress reduction techniques should be recommended to assist women living with stressful circumstances such as perceived racial bias.

Selected Impact of Perceived Racial Bias during Pregnancy, Utah PRAMS, 2012–2013



1. Giurgescu, Zenk, Dancy, Park, Dieber, and Block (2012). Relationships among Neighborhood Environment, Racial Discrimination, Psychological Distress, and Preterm Birth in African American Women. *Journal of Obstetric, Gynecologic, & Neonatal Nursing.* (41) E51–E61.

2. The American College of Obstetricians and Gynecologists Committee Opinion (2015) Number 630 http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Screening-for-Perinatal-Depression.

Monthly Health Indicators Report

(Data Through January 2016)

Monthly Report of Notifiable Diseases, January 2016	Current Month # Cases	Current Month # Expected Cases (5-yr average)	# Cases YTD	# Expected YTD (5-yr average)	YTD Standard Morbidity Ratio (obs/exp)
Campylobacteriosis (*Campylobacter*)	15	26	15	26	0.6
Shiga toxin-producing *Escherichia coli* (*E. coli*)	2	3	2	3	0.8
Hepatitis A (infectious hepatitis)	1	0	1	0	2.5
Hepatitis B, acute infections (serum hepatitis)	0	1	0	1	0.0
Influenza*	Weekly updates at http://health.utah.gov/epi/diseases/influenza				
Meningococcal Disease	0	0	0	0	0.0
Pertussis (Whooping Cough)	6	79	6	79	0.1
Salmonellosis (*Salmonella*)	31	18	31	18	1.7
Shigellosis (*Shigella*)	3	4	3	4	0.8
Varicella (Chickenpox)	23	29	23	29	0.8
Quarterly Report of Notifiable Diseases, 4th Qtr 2015	**Current Quarter # Cases**	**Current Quarter # Expected Cases (5-yr average)**	**# Cases YTD**	**# Expected YTD (5-yr average)**	**YTD Standard Morbidity Ratio (obs/exp)**
HIV/AIDS†	24	26	89	106	0.8
Chlamydia	2,194	1,878	8,630	7,431	1.2
Gonorrhea	464	200	1,564	692	2.3
Syphilis	13	10	56	49	1.2
Tuberculosis	9	7	37	31	1.2
Medicaid Expenditures (in Millions) for the Month of January 2016	**Current Month**	**Expected/ Budgeted for Month**	**Fiscal YTD**	**Budgeted Fiscal YTD**	**Variance - over (under) budget**
Capitated Mental Health	$ 15.3	$ 15.7	$ 102.2	$ 102.8	$ (0.6)
Inpatient Hospital	$ 11.5	$ 11.7	$ 62.1	$ 62.5	$ (0.4)
Outpatient Hospital	$ 4.0	$ 2.5	$ 23.7	$ 25.3	$ (1.6)
Long Term Care	$ 17.4	$ 17.1	$ 109.9	$ 109.9	$ (0.0)
Pharmacy	$ 12.0	$ 12.1	$ 64.3	$ 64.8	$ (0.6)
Physician/Osteo Services	$ 4.2	$ 4.0	$ 23.4	$ 27.5	$ (4.2)
TOTAL MEDICAID	$ 205.4	$ 204.5	$ 1,383.0	$ 1,390.9	$ (7.9)

Program Enrollment for the Month of January 2016	Current Month	Previous Month	% Change‡ From Previous Month	1 Year Ago	% Change‡ From 1 Year Ago
Medicaid	291,698	290,211	+0.5%	279,572	+4.3%
PCN (Primary Care Network)	18,504	17,096	+8.2%	19,342	-4.3%
CHIP (Children's Health Ins. Plan)	17,000	16,815	+1.1%	15,150	+12.2%
	Annual Visits			Annual Charges	
Health Care System Measures	**Number of Events**	**Rate per 100 Population**	**% Change‡ From Previous Year**	**Total Charges in Millions**	**% Change‡ From Previous Year**
Overall Hospitalizations (2013)	279,393	9.0%	-2.8%	$ 6,513.8	+5.9%
Non-maternity Hospitalizations (2013)	177,191	5.6%	-2.5%	$ 5,554.8	+6.6%
Emergency Department Encounters (2013)	683,415	22.3%	-1.5%	$ 1,555.4	+7.1%
Outpatient Surgery (2013)	404,303	13.1%	+7.3%	$ 2,167.9	+11.5%
Annual Community Health Measures	**Current Data Year**	**Number Affected**	**Percent/ Rate**	**% Change‡ From Previous Year**	**State Rank§ (1 is best)**
Obesity (Adults 18+)	2014	524,000	25.7%	+6.5%	8 (2014)
Cigarette Smoking (Adults 18+)	2014	197,800	9.7%	-6.1%	1 (2014)
Influenza Immunization (Adults 65+)	2014	171,300	58.0%	+1.0%	36 (2014)
Health Insurance Coverage (Uninsured)	2014	303,100	10.3%	-11.2%	n/a
Motor Vehicle Traffic Crash Injury Deaths	2014	234	8.0 / 100,000	+20.2%	9 (2013)
Poisoning Deaths	2014	641	21.8 / 100,000	+0.4%	47 (2013)
Suicide Deaths	2014	555	18.9 / 100,000	-4.0%	49 (2013)
Diabetes Prevalence (Adults 18+)	2014	144,800	7.1%	-0.1%	8 (2014)
Poor Mental Health (Adults 18+)	2014	324,200	15.9%	-3.0%	19 (2014)
Coronary Heart Disease Deaths	2014	1,574	53.5 / 100,000	+2.5%	1 (2013)
All Cancer Deaths	2014	3,033	103.1 / 100,000	+1.0%	1 (2013)
Stroke Deaths	2014	854	29.0 / 100,000	+1.4%	18 (2013)
Births to Adolescents (Ages 15-17)	2014	537	7.9 / 1,000	-8.8%	11 (2013)
Early Prenatal Care	2014	39,005	76.2%	-0.2%	n/a
Infant Mortality	2014	251	4.9 / 1,000	-4.7%	9 (2012)
Childhood Immunization (4:3:1:3:3:1)	2014	36,700	74.6%	n/a#	24 (2014)

* Influenza-like illness activity is low/moderate in Utah. As of February 13, 2016, 226 influenza-associated hospitalizations have been reported to the UDOH since the start of the influenza season on October 4, 2015. More information can be found at http://health.utah.gov/epi/diseases/influenza/surveillance/index.html.

† Diagnosed HIV infections, regardless of AIDS diagnosis.

‡ Relative percent change. Percent change could be due to random variation.

§ State rank based on age-adjusted rates where applicable.

In 2014, NIS analysis for the complete 4:3:1:3:3:1 series was updated to provide a more accurate assessment of Haemophilus influenzae type B vaccination. Due to this change, the 2014 results for 4:3:1:3:3:1 coverage are not comparable to prior years.

Notes: Data for notifiable diseases are preliminary and subject to change upon the completion of ongoing disease investigations. Active surveillance for West Nile Virus will start in June for the 2016 season.