Communicable Disease & Immunization Update

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Healthy People in Healthy Communities

Increase in Syphilis Cases

Syphilis is increasing across the nation and locally. In Pierce County, primary and secondary syphilis cases have increased more than four fold in the last decade (see figure). Most of the increase is among men who have sex with men (MSM). In 2016, 36% of primary and secondary syphilis cases in Pierce County were also HIV positive; nationally, 50% of new syphilis cases are HIV positive. Men age 20-29 years had the highest rates of infection in 2014. Although the current epidemic is primarily in men, cases in women have also been identified. Congenital syphilis cases are increasing in the U.S. and two cases of congenital syphilis have occurred in Pierce County since 2015.

Syphilis is caused by the bacterial spirochete, *Treponema pallidum*. The spirochete is transmitted by contact with lesions, mucous patches or condylomata lata during sexual activity, and can also be transmitted from mother to fetus. It is a complicated disease that can mimic many other conditions and frequently, symptoms are mild or hidden and may be overlooked.

STAGES AND TYPES

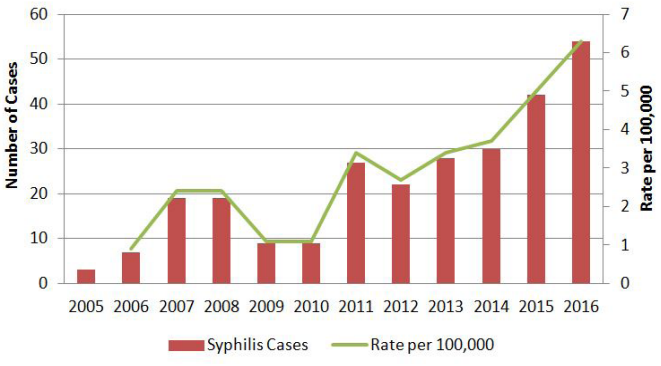
Staging is done after seroconversion and a careful history of symptoms and potential exposures. It is important to be knowledgeable about the stages of syphilis in diagnosing, treating and determining infectiousness. The following describes the average incubation periods for the stages of syphilis. But it is possible for symptoms to occur simultaneously or in rapid succession.

Primary syphilis— The first symptom of syphilis is the appearance of a single sore called a chancre which is the point of spirochetal invasion. Occasionally, multiple chancres can appear. The incubation period is from 10 to 90 days (average 21 days). The chancre is usually firm, round, non-itchy and painless. It heals without treatment in 3–6 weeks. This lesion often goes unnoticed by the patient as it frequently appears inside the mouth, vagina or anus. In over 40% of women infected, the lesion is located on the cervix. The patient is most infectious during this stage.

Secondary syphilis— This stage usually starts 4–8 weeks after the onset of chancre with non-pruritic rash appearing on one or more areas of the body. The rash can be macular, papular, squamous, or rarely, pustular, or a combination. Rash usually appears on the chest, back, palms and soles. Lesions of the mucous membrane, called mucous patches can appear in the mouth, pharynx or genitals. Condylomata lata, which are moist, wart-like growths appear in the genital or perianal area in 10-20% of cases. Other symptoms of secondary syphilis may include fever, swollen lymph glands, patchy hair loss, headaches, weight loss, muscle aches, and fatigue. The signs and symptoms of secondary syphilis will resolve with or without treatment, but without treatment, the infection will progress to the latent and possibly late stages of disease. The patient is infectious during the secondary stage.

Latent syphilis— This stage is defined by continued infection with *T. pallidum*, however there are no symptoms of syphilis. Latency can last for years. Early latent syphilis occurs within the first 12 months after the initial infection, and is treated with the same regimen as primary and secondary syphilis (Benzathine penicillin G 2.4 million units IM in a single dose). Late-latent syphilis, infection greater than one year in duration is the default diagnosis if you cannot prove early latent syphilis on the basis of symptoms or exposure within the previous 12 months. Late latent syphilis is treated with 2.4 million units of penicillin G IM, once per week x 3 weeks.

Primary & Secondary Syphilis Cases
Pierce County WA 2005-2016



Tertiary syphilis— If untreated, symptoms of tertiary syphilis appear 10–20 years after infection was first acquired. Damage may occur to internal organs, including the brain, nerves, eyes, heart, blood vessels, liver, bones, and joints. Symptoms include difficulty coordinating muscle movements, paralysis, numbness, gradual blindness, and dementia.

Neurosyphilis— can occur at any stage. Early forms include meningitis or meningovascular syphilis that can appear like a stroke-like syndrome with seizures. Late neurosyphilils is rarely seen and can manifest in varied neurological symptoms.

Ocular syphilis can also occur at any stage. Ocular syphilis can involve almost any eye structure, but posterior uveitis and panuveitis are the most common. Ocular syphilis may lead to decreased visual acuity including permanent blindness. An increase in ocular syphilis has been observed in the U.S. since 2014, especially among HIV infected MSM. In 2016 in Pierce County, 6 cases of ocular syphilis were detected. Patients with syphilis and ocular complaints should receive immediate ophthalmologic evaluation.

Congenital syphilis—
Transmission from mother to fetus can occur during any trimester of pregnancy. Untreated syphilis during pregnancy may lead to fetal demise, neonatal death, and birth defects. Routine screening is recommended for pregnant women at the first prenatal visit. Women at higher risk for syphilis should be screened in the third trimester and at delivery. Acquisition of syphilis during pregnancy, rather than prior to pregnancy is more dangerous for the fetus. In both congenital syphilis cases in Pierce County since 2015, neither mother had risk factors known to their health care providers.

SEROLOGIC TESTING

The most common method currently used is syphilis EIA for initial screening. Positive tests reflex to a quantitative nontreponemal test that measures antibody (VDRL or RPR). RPR is commonly used by local labs. In this algorithm, if the RPR or VDRL is negative, a treponemal test (TP-PA or FTA-ABS) is then performed. For patients who test positive, the decision on whether this is a current or past infection is dependent upon history and symptoms. Qualitative non-treponemal titers are used to monitor disease activity and treatment response. A fourfold change in titer (e.g. from 1:16 to 1:4) is considered necessary to demonstrate a clinically significant change.

The CDC recommends at least annual screening for sexually active MSM and HIV infected men and women; more frequent screening can be done based on individual risk factors. US Preventive Task Force guidelines issued in June 2016 state that frequency of screening for these populations is not well established; however, studies point to increased disease identification if screening is done every three months. Persons at high risk for STD (multiple partners, drug use during sex, sex workers) should also be screened frequently.

PUBLIC HEALTH FOLLOW UP

Health Department STD specialists examine each case of syphilis to determine stage and ensure treatment. Each primary, secondary and early latent case is interviewed to ascertain and trace sexual contacts. Asymptomatic recent (within 12 month) sexual contacts to primary, secondary and early latent cases should receive prophylactic treatment with 2.4 U penicillin G.

Health care providers are required to report syphilis to the Health Department. We will assist with treatment information and resources as needed and follow up with contacts. Fax case reports to (253) 798-7666.

To learn more about syphilis and other STDs, the National STD Curriculum provides on-line training and free CME at www.std.uw.edu.

Sources:

1. 2015 CDC STD Treatment Guidelines. www.cdc.gov/std/tg2015/default.htm
2. Californina Dept of Public Health. Use of Treponemal Immunoassays for Screening and Diagnosis of Syphilis.
3. www.cdph.ca.gov/pubsforms/Guidelines/Documents/Treponemal_Immunoassays_for_Syphilis_Screening_and_Diagnosis.pdf
4. Primary and Secondary Syphlis- United States, 2005-2013. MMWR May 9, 2014/63(18);402-406.
5. Screening for Syphilis Infection in Nonpregnant Adults and Adolescents. US Preventive Services Task Force Recommendation Statement. JAMA; June 7, 2016:(21)315; 2321-2327.

Tuberculosis Screening Recommendation from USPSTF

Worldwide, about one-third of the world's population is infected with TB, and in 2014, there were estimated to be 1.5 million TB related deaths. Since 1992, tuberculosis disease in the U.S. has declined to a rate of 3.0/100,000 population with 9,563 cases reported in 2015. However, the rate of decline since 2012 has remained flat, and progress toward TB elimination in the U.S. appears to have stalled[1]. To resume the decline in the United States, a key strategy is to detect and treat latent TB infection (LTBI) before it progresses to disease.

In September 2016, the US Preventive Services Task Force (USPSTF) recommended screening for LTBI for persons at increased risk (B recommendation), supporting long-standing CDC guidance[2]. The USPSTF recommends that clinicians discuss preventive services with an A or B recommended grade with eligible patients and offer these screenings as a priority.

PERSONS AT HIGHER RISK FOR LTBI[3]

- Contacts to someone with active TB (only persons with active, pulmonary TB can spread the disease, not those with LTBI);
- People from countries where TB is common (Latin America, the Caribbean, Africa, Asia,

Eastern Europe, and Russia);

- People who visit areas where TB is common, especially if visits are frequent or prolonged;
- People who live or work in high-risk settings (correctional facilities, long-term care facilities, homeless shelters);
- Health care workers who serve patients who are at increased risk for TB disease;

Although evaluating people at risk is important, relatively few people with LTBI develop TB disease. Without treatment, approximately 5% of persons with LTBI will develop disease in the first two years after infection, and another 5% will develop disease sometime later in life. Thus, without treatment, approximately 10% of persons with normal immune systems who are infected with *M. tuberculosis* will develop TB disease at some point in their lives. Persons who are at increased risk for progression of LTBI to TB disease are

- Persons infected with HIV;
- Children younger than 5 years of age;
- Persons who were recently infected with *M. tuberculosis* (within the past 2 years);
- Persons with a history of untreated or inadequately treated TB disease, including persons with fibrotic changes on chest radiograph consistent with prior TB disease;
- Persons who are receiving immunosuppressive therapy such as tumor necrosis factor-alpha (TNF) antagonists, systemic corticosteroids equivalent to/greater than 15 mg of prednisone per day, or immunosuppressive drug therapy following organ transplantation;
- Persons with silicosis, diabetes mellitus, chronic renal failure, leukemia, or cancer of the head, neck, or lung;
- Persons who have had a gastrectomy or jejunoileal bypass;
- Persons who weigh less than 90% of their ideal body weight;
- Cigarette smokers and persons who misuse drugs and/or alcohol.

For people with untreated LTBI and diabetes, the risk of TB disease is approximately 30% over a lifetime. In Pierce County, 18.4% of our patients with tuberculosis since 2012 also have been diagnosed with diabetes.

TESTING

A thorough discussion of Mantoux tuberculin skin testing (TST) and interferon-gamma release assays (IGRAs) can be found in the TB Core Curriculum www.cdc.gov/tb/education/corecurr/pdf/chapter3.pdf. IGRAs are preferred for testing persons who have received BCG vaccine (or therapy) which is commonly used in childhood vaccination programs in high prevalence countries. They should not be used in children younger than age 5 unless used in conjunction with TST.

THINK TB

Frequently, a diagnosis of active TB is delayed. Consider TB in patients who are born in endemic areas and who have a cough (often productive) lasting three weeks or more, unexplained night sweats, fatigue and weight loss, persistent fevers, and/or hemoptysis. Extrapulmonary TB should be considered for patients at risk for TB who have infections that are not responding to conventional antibiotics.

REPORTING

Tuberculosis disease is immediately reportable to the Health Department. Positive TB skin test or positive IGRA are reportable within 7 work days. For questions about tuberculosis infection or disease, or to report, call (253) 798-6410.

Sources:

1. www.cdc.gov/mmwr/volumes/65/wr/mm6511a2.htm
2. www.uspreventiveservicestaskforce.org/Page/Name/grade-definitions
3. www.cdc.gov/tb/education/corecurr/pdf/chapter1.pdf

HPV Vaccine- New Recommendations

On Oct. 19, 2016, CDC updated recommendations for HPV vaccination. CDC now recommends two doses of HPV vaccine for people starting the vaccination series before the 15th birthday. Three doses of HPV vaccine are recommended if the vaccine series is started on or after the 15th birthday and for people with certain immunocompromising conditions.

Immunogenicity studies have shown that two doses of HPV vaccine given to 9–14 year-olds 6 months apart were as good or better than 3 doses given to older adolescents and young adults. Studies have not been done to show this in adolescents age 15 years or older.

The vaccine is recommended routinely for all adolescents at age 11 or 12 years, and can be given as early as age 9. CDC also recommends vaccination through age 26 for females and through age 21 for males. Males age 22-26 may be vaccinated.

If the first dose of HPV vaccine was given before the 15th birthday, vaccination should be completed according to a 2-dose schedule. If the first dose of any vaccine was given on or after the 15th birthday, vaccination should be completed according to a 3-dose schedule.

Recommended Number of Doses	Dosing Schedule	Population
2	0, 6-12 months	Girls and boys initiating vaccine age 9 through age 14
3	0, 1-2 months, 6 months	Persons initiating vaccine age 15 through age 26; and Immuno-compromised* persons initiating vaccine at age 9-26 yrs

* for example -due to HIV infection, cancer, autoimmune disease, or taking immunosuppressant medications. Children with asthma, diabetes, and other conditions that would not suppress immune response to HPV vaccination can receive a 2-dose schedule.

CANCER PREVENTION

Most HPV infections are asymptomatic and spontaneously clear within one year; however, a small proportion of persons will have persistent infection that can pose a risk for development of certain cancers. High-risk HPV types are detected in 99% of cervical cancers. Types 16 and 18 together account for about 70% of cervical cancers[1]. HPV infection is also associated with anogenital cancers such as cancer of the vulva, vagina, penis and anus. Additionally, about 70% of oropharyngeal cancers can be attributed to oncogenic HPV types[2].

The National Health and Nutrition Examination surveys 2003-2010 found a significant reduction in the prevalence of vaccine-type HPV infection within the first four years of vaccine introduction. From the 2003-06 survey to the 2007-10 survey, infection prevalence decreased in females 14-19 years, from 11.5% to 5.1%, a 56% decline[3].

HPV VACCINATION REMAINS LOW

As of 12/31/15, only 47% of Pierce County adolescents age 13-17 had received one or more doses of HPV vaccine, and only 25% had received the 3 doses that were recommended for adolescents prior to the new recommendation[4]. Tdap and meningococcal vaccine coverage for the same population is 67% and 63% respectively, indicating many missed opportunities for HPV immunization. In a study using data from the Washington State Immunization System, investigators found that 33% of girls and 38% of boys age 11-17 in Washington in 2013 had one or more missed opportunities for HPV vaccine[5].

Some parents are hesitant to have their child vaccinated, and some providers are not giving as strong of a recommendation for HPV vaccine as they do other vaccines. The strong recommendation from a health care provider is the most important factor in parents' decision to have their child vaccinated. The vaccine is safe and should be recommended with the same types of health messages that we give for all vaccines. For example, HPV vaccine has been described as an "optional vaccine" as it is not currently required for school attendance, which can diminish its importance to parents. HPV vaccine helps to prevent a serious infection that can lead to cancer later in life, just as other vaccines prevent serious illnesses.

Importantly, parents need to know that if they delay vaccination for their young adolescent, more doses will be needed if they wait until after the 15th birthday to get the series started. The earlier a child is vaccinated, the better their immune response and the new two-dose schedule gives us added opportunity to discuss the importance of this. Reminder/recall systems can help ensure the second dose is given six months later.

CDC has a wealth of information for clinicians to improve HPV immunization rates in their practice here www.cdc.gov/hpv/hcp/index.html.

Sources

1. Pink Book; HPV. CDC Publication. www.cdc.gov/vaccines/pubs/pinkbook/hpv.html.
2. Saraiya J. et al. US assessment of HPV types in cancers: Implicatios for current and 9-valent HPV vaccines. JNCI (2015) 107(6) djv086.
3. Markowitz LE, et al. Reduction in human papillomavirus (HPV) prevalence among young women following HPV vaccine introduction in the United States, National Health and Nutrition Examination Surveys, 2003–2010., Infect Dis. (2013) 208 (3): 385-393. www.jid.oxfordjournals.org/content/208/3/385.
4. State of Washington Dept of Health Immunization Data www.doh.wa.gov/DataandStatisticalReports/HealthBehaviors/Immunization/ImmunizationInformationSystem
5. Oltean, H. et al. HPV Vaccination in Washington state: Estimated Coveraage and missed opportunities, 2006-2014. Public Health Reports May-June 2016; Vol 131, 474-482.

Selected Notifiable Diseases, 2016 & 2015

	2016 (Preliminary)	2015	% Increase or Decrease
Campylobacter	236	250	6% ↓
Chlamydia	4,985	4,646	7% ↑
enterohemorrhagic E. coli	30	26	15% ↑
Gonorrhea	1,198	1,363	12% ↓
Hepatitis A	2	0	NC
Hepatitis B, acute	6	5	NC
Hepatitis B, chronic	*204	*182	12% ↑
Hepatitis C, acute	30	22	36% ↑
Hepatitis C, chronic	*1,350	*1,463	8% ↓
Mumps	14	0	NC
Measles	0	0	NC
Meningococcal	8	1	NC
Pertussis	89	157	43% ↓
Salmonella	104	95	9% ↑
Shigella	17	14	21% ↑
Syphilis, early	109	69	58% ↑
Syphilis, late	59	50	18% ↑

*Unduplicated reports to the Health Department.
NC- Not calculated as numbers are too small for valid comparison