

SYPHILIS IN THE DAKOTAS

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NORTH DAKOTA
DEPARTMENT *of* HEALTH

OBJECTIVES

- ◉ Briefly describe the diagnosis and treatment of syphilis.
- ◉ Describe the changing epidemiology of syphilis in North Dakota.
- ◉ Identify three strategies that can be used when screening the target population within a community during an outbreak.
- ◉ Describe role and needed preparedness of public health nurses during a sexually transmitted disease outbreak.

CLINICAL MANAGEMENT OF SYPHILIS



Electron photomicrograph, 36,000 x.

Source: CDC/NCHSTP/Division of STD Prevention, STD Clinical Slides

TRANSMISSION

◉ Infection:

- *T. pallidum* enters the body through abrasions in the skin or mucous membranes usually through sexual contact
- Transmitted across the placenta from mother to baby during pregnancy

◉ Dissemination:

- Travels through the lymphatic system to regional lymph nodes and then throughout the body via the blood stream
- Invasion of the CNS can occur during any stage of syphilis
 - Neurosyphilis

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NATURAL HISTORY OF SYPHILIS INFECTION

◉ Stages of Syphilis:

- Primary
- Secondary
- Latent
 - Early latent (Infected less than 1 year ago)
 - Late Latent (Infected more than 1 year ago)
- Tertiary

- Neurosyphilis can occur at any stage.

PRIMARY SYPHILIS

- ⦿ Primary lesion or "chancre" develops at the site of inoculation
- ⦿ **Chancre:**
 - Progresses from macule to papule to ulcer
 - Typically painless, indurated, and has a clean base
 - ⦿ The bacteria destroys the nerves around the site of the infection.
 - Highly infectious
 - Heals spontaneously within 1 to 6 weeks
 - 25% present with multiple lesions
- ⦿ Regional lymphadenopathy: classically rubbery, painless, bilateral
- ⦿ Serologic tests for syphilis may not be positive during early primary syphilis

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PRIMARY CHANCRE



SECONDARY SYPHILIS

- ◉ Secondary lesions occur 3 to 6 weeks after the primary chancre appears; may persist for weeks to months
- ◉ Primary and secondary stages may overlap
- ◉ Mucocutaneous lesions most common
- ◉ Manifestations:
 - Rash (75%-100%)
 - Lymphadenopathy (50%-86%)
 - Malaise
 - Mucous patches (6%-30%)
 - Condylomata lata (10%-20%)
 - Alopecia (5%)
- ◉ Serologic tests are usually highest in titer during this stage

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Palmar Lesions



Secondary Rash



Plantar Rash



Body Rash

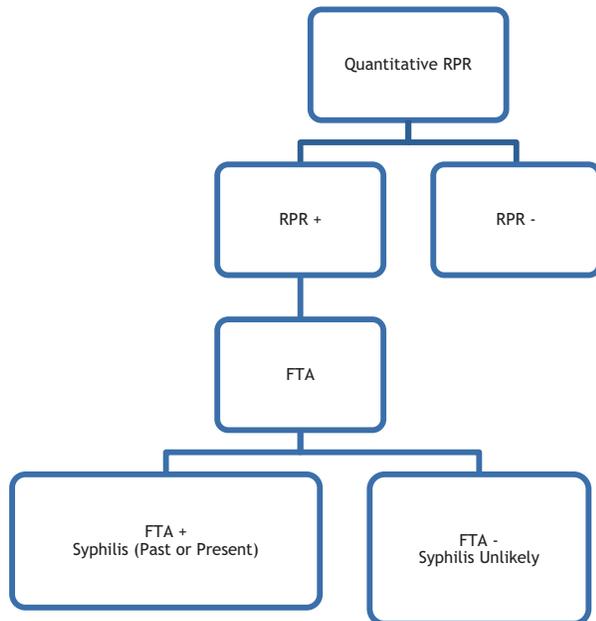
LATENT SYPHILIS

- ⦿ After clinical presentation, the host suppresses infection
 - No lesions are clinically apparent
 - Patient does not have signs or symptoms of disease
- ⦿ Only evidence is positive serologic test
- ⦿ May occur between primary and secondary stages, between secondary relapses, and after secondary stage
- ⦿ Categories:
 - Early latent: <1 year since infection
 - Late latent: ≥1 year since infection or unknown

TERTIARY SYPHILIS

- ⦿ Cardiac abnormalities
- ⦿ Ophthalmic abnormalities
- ⦿ Gummatous lesions
- ⦿ Auditory abnormalities

SYPHILIS TESTING



- RPR—non-treponemal test
 - Followed by antibody titer
 - Example (1:32 or 1:128)
- FTA or TP-PA—treponemal
 - Syphilis is confirmed

NON-TREPONEMAL TESTS

RPR and VDRL

- Titer values are important for clinical management of the case
 - Can not stage the disease based on titer
 - Treatment Response
 - Fourfold change in titer (i.e. 1:4 to 1:16) indicates a clinical difference or treatment response
- Cannot compare RPR and VDRL
 - If you first start with one test, you must stay with that test for monitoring the patient's titers.
- Can remain positive after treatment
 - However, titers may be low
- False positives occur due to other clinical conditions

TREPONEMAL TESTING

FTA-ABS and TP-PA

- ◉ Required confirmatory test
- ◉ Generally remain positive for life (15-25% revert to seronegative)
- ◉ Cannot be used to gauge clinical response

FALSE-POSITIVE REACTIONS IN SYPHILIS

Disease	RPR/VDRL	FTA-ABS	TP-PA
Age		Yes	
Autoimmune Diseases	Yes	Yes	
Cardiovascular Disease		Yes	Yes
Dermatologic Diseases	Yes	Yes	--
Drug Abuse	Yes	Yes	
Febrile Illness	Yes		
Glucosamine/chondroitin sulfate		Possibly	
Leprosy	Yes	No	--
Lyme disease		Yes	
Malaria	Yes	No	
Pinta, Yaws	Yes	Yes	Yes
Pregnancy	Yes*		
Recent Immunizations	Yes	--	--
STD other than Syphilis		Yes	

*May cause increase in titer in women previously successfully treated for syphilis

Source: Syphilis Reference Guide, CDC/National Center for Infectious Diseases, 2002

TREATMENT SYPHILIS

- **Benzathine penicillin G: 2.4 million units IM**
 - Primary, Secondary and Early Latent Syphilis
 - 1 dose
 - Late Latent Syphilis or Late Unknown
 - 3 Doses at one week intervals

- **Alternatives:**
 - Primary, Secondary, Early Latent
 - Doxycycline: 100mg PO BID x 2 weeks **OR**
 - Tetracycline 500 mg PO QID x 2 weeks **OR**
 - Ceftriaxone 1-2 gm IM/IV QD x 10-14 days
 - Late Latent or Unknown Latent
 - Doxycycline 100mg PO BID x 4 weeks **OR**
 - Tetracycline 500 mg PO QID x 4 weeks

(2015 CDC Treatment Guidelines)

RISKS FOR HIV TRANSMISSION

- Persons with a genital ulcer disease are at 2-5 times greater risk for HIV acquisition
- HIV-infected persons are more likely to transmit HIV if co-infected with a genital ulcer disease
- Integrated testing is recommended

MANAGEMENT OF SEX PARTNERS

- For sex partners of patients with syphilis in any stage:
 - Draw syphilis serology
 - Perform physical exam

- For sex partners of patients with primary, secondary, or early latent syphilis
 - Treat presumptively for early syphilis at the time of examination, unless:
 - The non-treponemal test result is known and negative AND
 - The last sexual contact with the patient is > 90 days prior to examination.

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SYPHILIS IN PREGNANCY

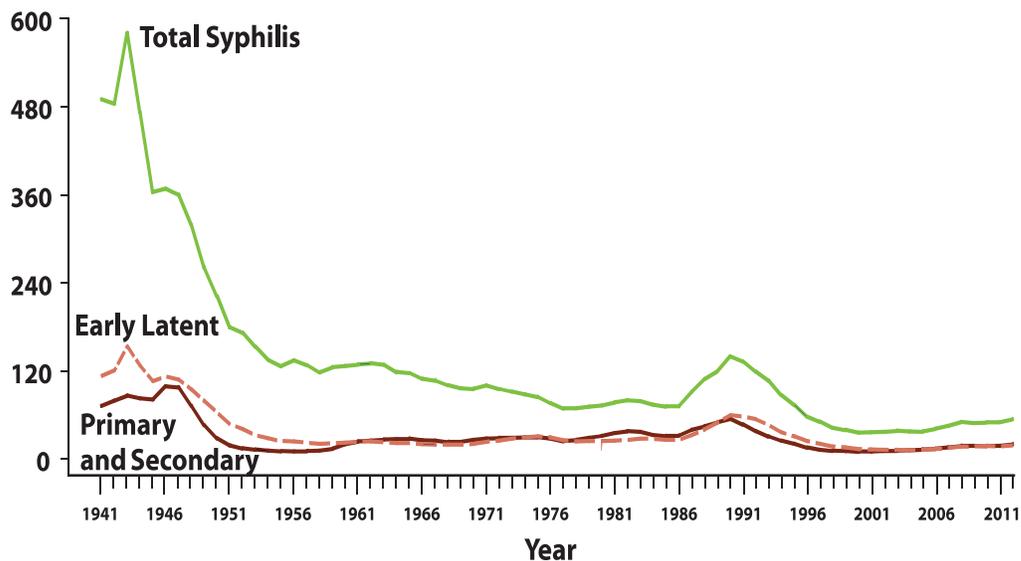
- **Transmission rate by stage of maternal infection:**
 - Primary: 70-100%
 - Secondary: 90%-100%
 - Latent: 10-30%

- **Outcome in untreated early syphilis:**
 - 25% intrauterine death
 - 25% perinatal death
 - 50% congenital syphilis (50% asymptomatic)

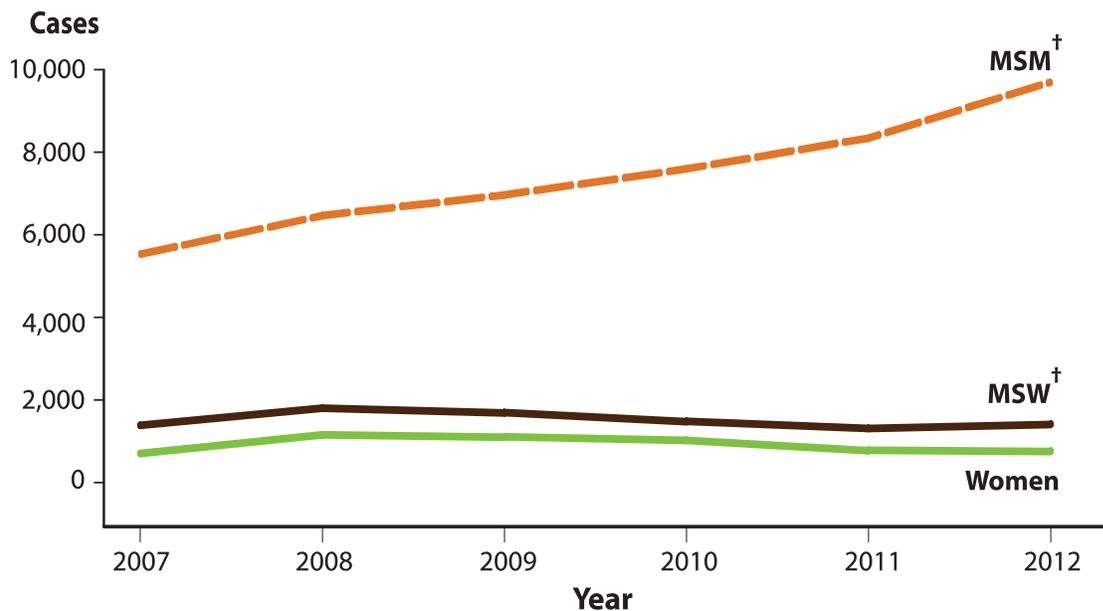
SYPHILIS DATA IN THE U.S. AND NORTH DAKOTA

SYPHILIS—REPORTED CASES BY STAGE OF INFECTION, UNITED STATES, 1941-2012

Cases (in thousands)



PRIMARY AND SECONDARY SYPHILIS—BY SEX AND SEXUAL BEHAVIOR, 33 AREAS*, 2007-2012



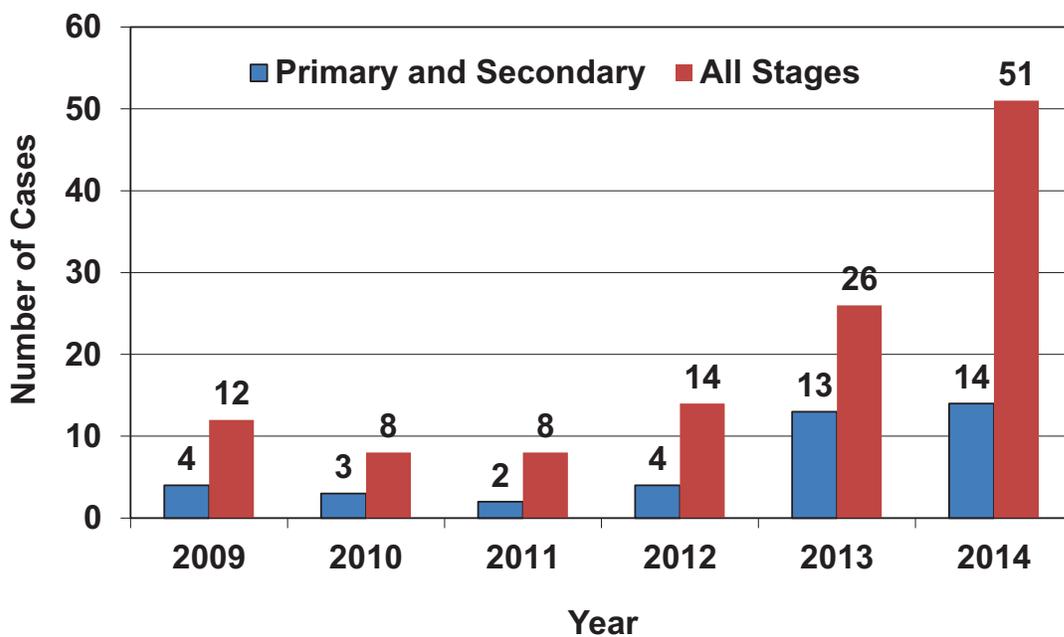
*32 states and Washington, DC; representative of partner data for 100% of cases of P&S syphilis for each year during 2007-2012.

[†]MSM—men who have sex with men; MSW—women who have sex with women only.

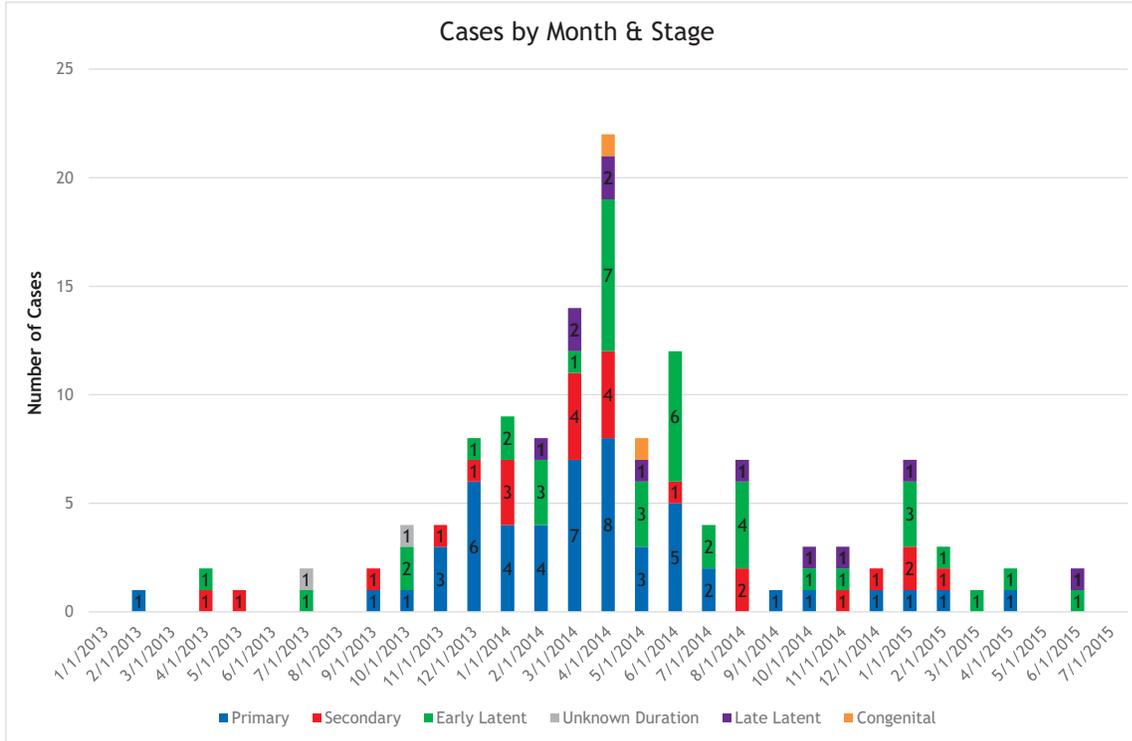
2012-Fig 30. SR, Pg 32



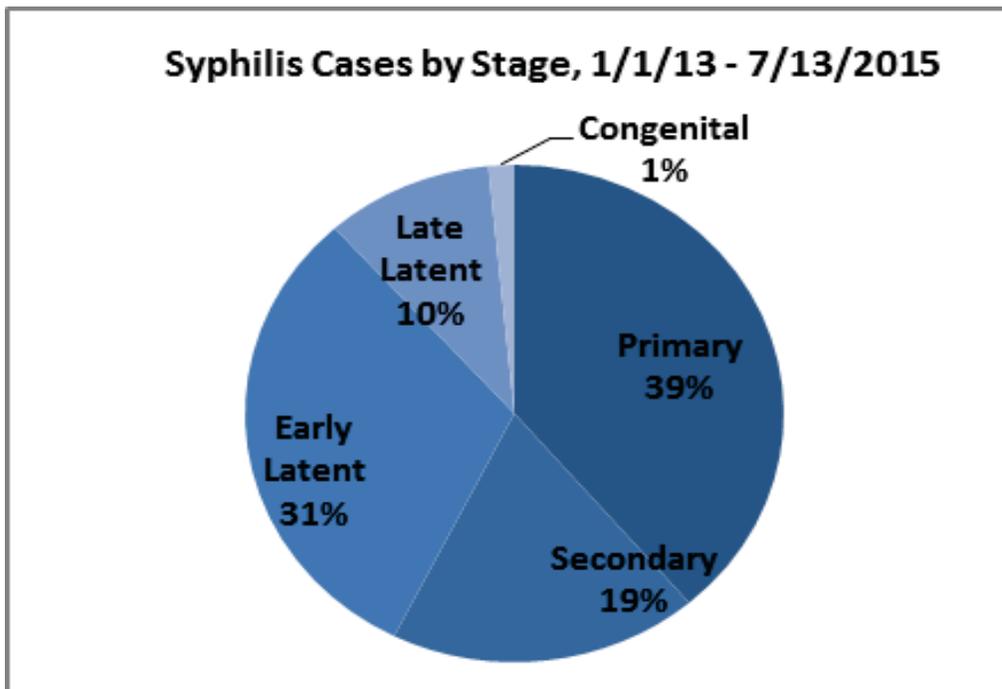
Reported Syphilis Cases by Year North Dakota, 2009-2014



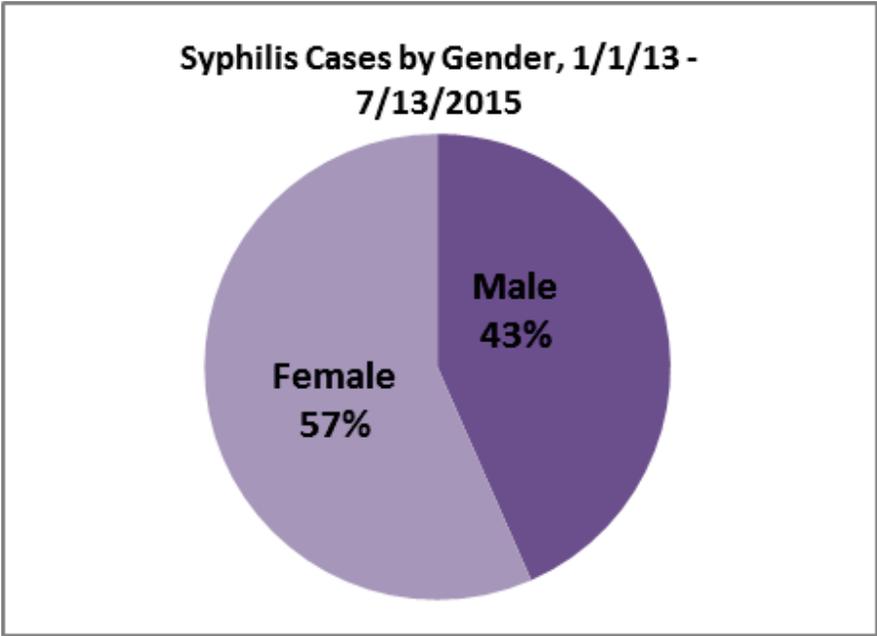
SYPHILIS OUTBREAK, ND-SD 2013-15



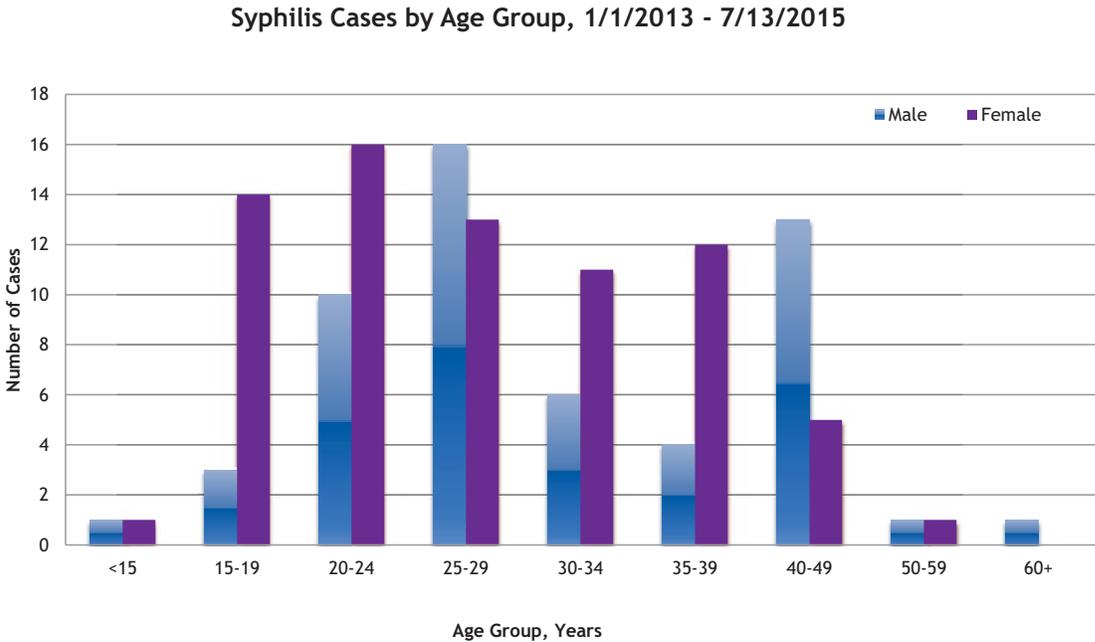
MULTI-STATE OUTBREAK SYPHILIS CASES BY STAGE



MULTI-STATE OUTBREAK SYPHILIS CASES BY GENDER



MULTI-STATE OUTBREAK SYPHILIS CASES BY AGE GROUP





Strategies that can be used when Screening the Target Population within a Community During an Outbreak



I H S Screening Prompt

- January 2013
- I H S implemented screening prompt in the electronic health record at Indian Nation Hospital and their community clinic
- All persons ages 12-65 will have this prompt in their medical chart



Interagency Outbreak Collaboration

- Tribal Health Director
- HEW committee
- Community Health Representatives
- Indian Health Service
 - Clinical Director
 - CEO
 - Infection Control Officer
 - Public Health Nurses
 - Great Plains/Aberdeen IHS
- State Health Departments
 - ND, SD STD Program Managers
 - ND, SD Disease Intervention Specialists
- CDC Response Team



Epi-Aid Activities (I)

- Indian Nation Tribal Council presentation
- Clinical presentations
 - I H S (Adobe Connect/Recorded)
 - Private Medical Center
 - Community Clinic I H S
- Partner Services presentation
 - I H S Hospital (Adobe Connect/ Recorded)
 - CHRs, PHNs, State DIS



Epi-Aid Activities (2)

- Disease Intervention Technical Assistance
 - Field based partner services training by CDC PHA
- Review of cases
 - I H S (ongoing)
 - State health department surveillance data
 - Private Health Clinic
- Two Mass Screening Events
 - Community number 1 (66 screened, 11 field treatments)
 - Jail Screening (38 screened, 5 field treatments)
- Media
 - Radio Live 20 min Phone-in
 - 4 minute PSA for replay



Epi-Aid Activities (3)

- Field treatment (18 patients)
 - 2 Community # 2
 - 11 Community # 1
 - 5 Corrections
- Review of Data Sharing and Case Investigation Plan
 - Draft flow charts with duties and timing
- Stillbirth and perinatal death review
- Partnership building
 - Corrections
 - Private facilities serving tribal members





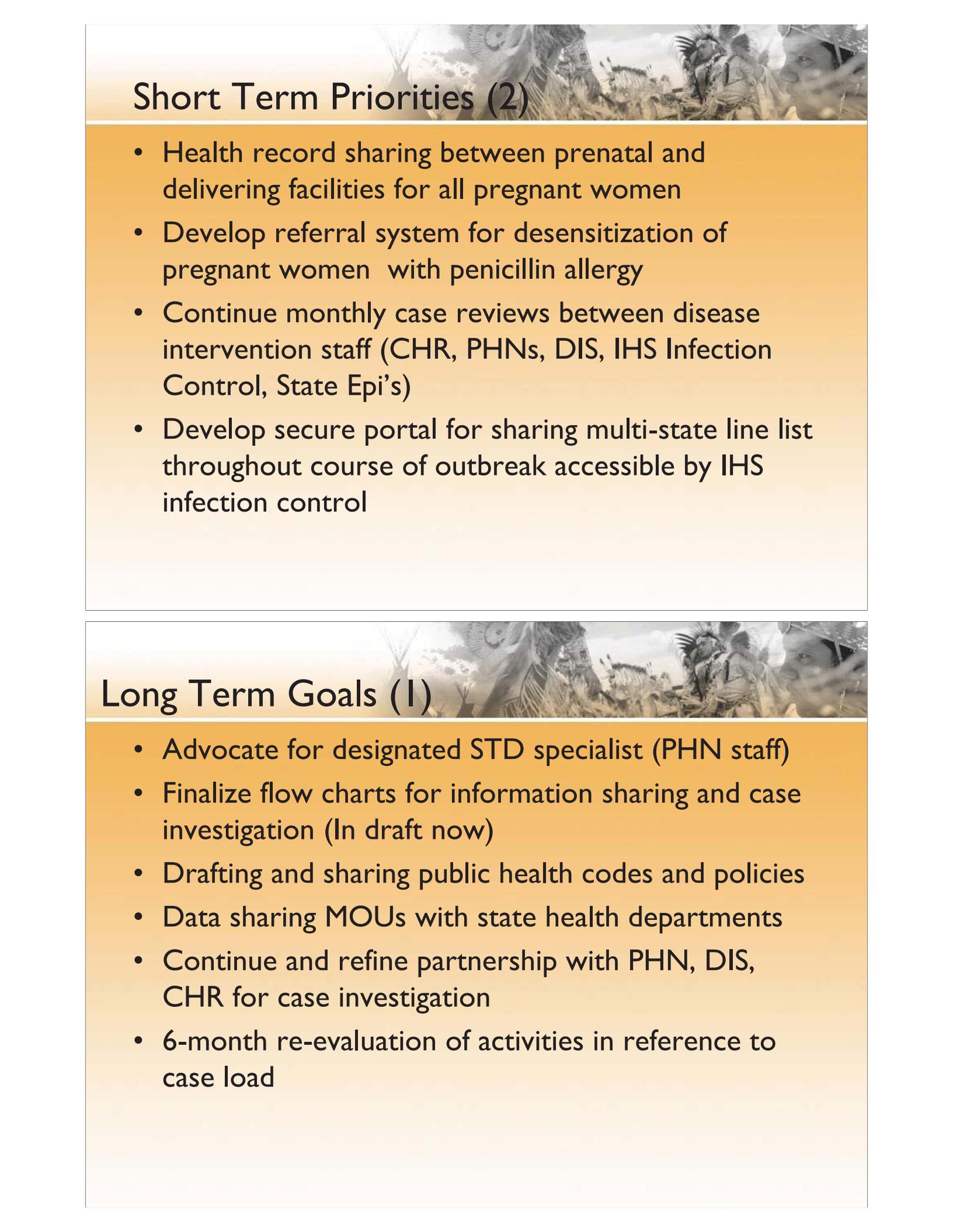
Short Term Priorities (I)

- Continue active clustering activities
 - Jail screening
 - Youth drug/alcohol treatment facility
 - Group Youth Home
 - High School screenings
- Disease Investigation
 - DIS trained staff conduct at least one of two interviews with Tribal contact
 - Diagnosing provider contact DIS/PHN during patient encounter
 - Continue PHN field experience with partner services, including field blood draws
- Continue I H S screening
 - Ages 12-65, using standard counseling script



Standard Offer of STD Screening

- “Our area is experiencing high numbers of sexually transmitted diseases. If you are sexually active, you may be at risk and should be tested. Results will be available in 3 days (not including weekends) and you will be contacted if anything comes back positive.”
- If you are not contacted, you may call the clinic to get your results.



Short Term Priorities (2)

- Health record sharing between prenatal and delivering facilities for all pregnant women
- Develop referral system for desensitization of pregnant women with penicillin allergy
- Continue monthly case reviews between disease intervention staff (CHR, PHNs, DIS, IHS Infection Control, State Epi's)
- Develop secure portal for sharing multi-state line list throughout course of outbreak accessible by IHS infection control

Long Term Goals (1)

- Advocate for designated STD specialist (PHN staff)
- Finalize flow charts for information sharing and case investigation (In draft now)
- Drafting and sharing public health codes and policies
- Data sharing MOUs with state health departments
- Continue and refine partnership with PHN, DIS, CHR for case investigation
- 6-month re-evaluation of activities in reference to case load

Long Term Goals (2)

- Continue collaborative communication for case investigation with PHN, DIS, CHR (buddy system)
- Continue partner services training with focus on timeliness of case investigation and closure
- Provider awareness activities for off-reservation contract and non-contract providers
- Follow up with KAT communications to produce local video education for waiting rooms



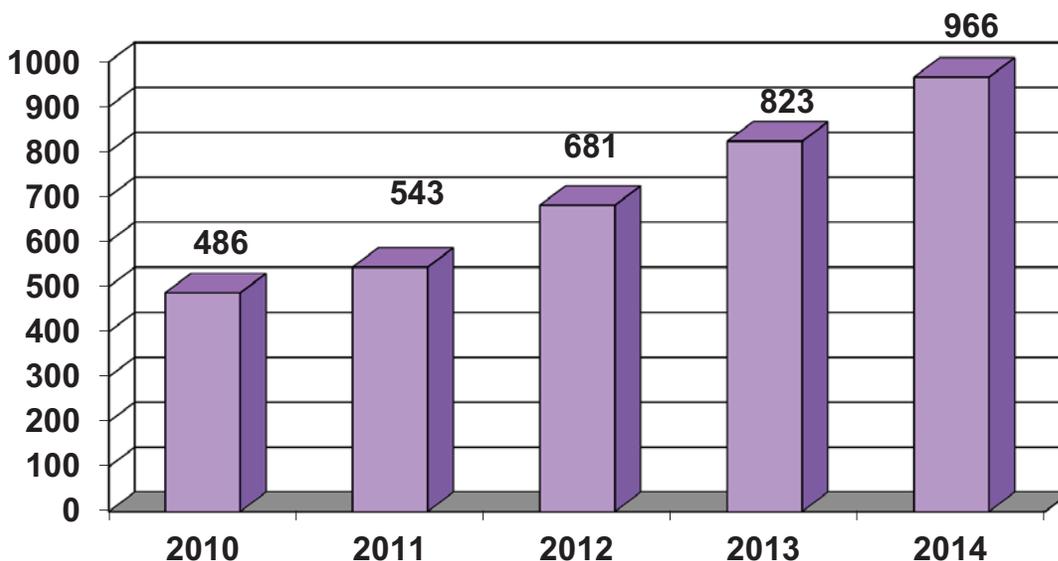
OUTBREAK RESPONSE PLANS

- ◉ What is recommended:
 - Education - On going
 - Know your data and providers
 - Develop relationships with field epidemiologists and public health nurses
- ◉ What to consider:
 - Threshold at which plan is initiated
 - Staffing considerations, including number, disciplinary mix and specific responsibilities of response team members
 - Evaluation of the effectiveness of the response
- ◉ Emerging Issues: Drug Use and Hepatitis C

RISING EPIDEMIC OF HEPATITIS C

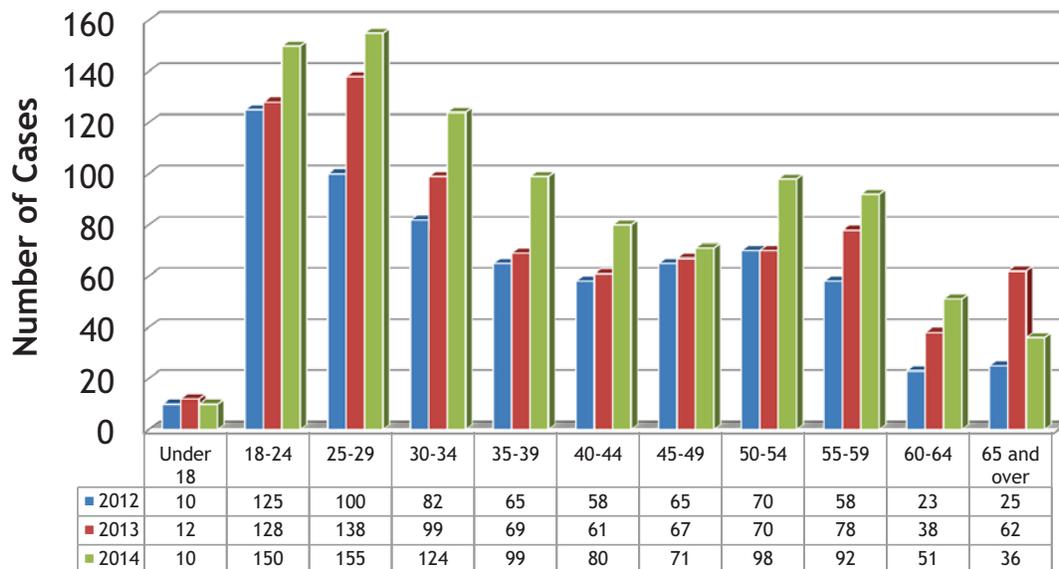
- Increased opioid use has led to an increase of hepatitis C and HIV infections and overdose exist among people who inject substances
- The opioid epidemic is both a rural and urban issue
- The number of hepatitis C cases has almost doubled in North Dakota in the past 5 years
- Hepatitis C is affecting those under 30 years

REPORTED HEPATITIS C CASES* BY YEAR NORTH DAKOTA, 2010-2014



* Includes acute and "past or present" infections

NORTH DAKOTA HEPATITIS C CASES* BY AGE GROUP, 2012 - 2014



* Includes acute and “past or present” infections

HIV OUTBREAK IN INDIANA

- As of June 19th, 2015: 170 Cases
- Community Outreach Center: state-issued ID cards, birth certificates, job counseling and local training, enrollment in insurance, HIV testing, HIV care coordination, substance abuse referrals and vaccinations against tetanus, hepatitis A and B
- Needle exchange program
 - Estimated Needles Brought In: 25,187
 - Total needles provided: 25,739



**Thank
you!**

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Jamie and Colleen