Mapping of Sexually Transmitted Diseases to Optimize Intervention and Prevention Strategies

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Surveillance

• Sexually Transmitted Disease
  – Chlamydia (CT)
    • Most frequently reported infection in US and Sacramento County
  – Gonnorhea (GC)
    • Second most frequently reported disease in US and Sacramento County.
Surveillance

• Sexually Transmitted Disease
  – 65 million US residences living with STD
    • 19 million new infections each year in US
    • 11-12,000 new infections in Sacramento County each year
  – Annual Direct Medical Cost
    • Up to $15.3 billion annually
Public Health Importance

- 2012 CDC* study revealed that up to 75% of sexually active women may not be screened annually for Chlamydia (CT) and Gonorrhea (GC) unless symptoms are present.
- What about cases without symptoms?
  - 70% of women with CT or GC may not experience any symptoms.
  - A higher percent of men may be asymptomatic (no symptoms).

Public Health Importance

• Sexually Transmitted Diseases
  – Consequences of Asymptomatic infections if left *Untreated*:
    • 10-40% of CT cases develop PID.
    • 30-40% of infections responsible for female infertility.
    • Women with PID are 6-10 times more likely to develop an ectopic (tubal) pregnancy compared to women without PID.
    • 40-50% of ectopic pregnancies are attributed to PID.
    • Ectopic pregnancies previous primary cause of maternal mortality.
Public Health Importance

- Adverse Pregnancy Outcomes
  - Consequences of Asymptomatic infections
    - Untreated syphilis:
      - 25% of pregnancies result in still birth.
      - 14% of pregnancies result in neonatal death.
    - Untreated Gonorrhea:
      - 35% of pregnancies result in spontaneous abortion or prematurity.
      - 10% perinatal death.
    - Untreated Chlamydia:
      - 30% in the absence of prophylaxis develop eye infection (ophthalmia neonatorum).
2011 Statistics

• Chlamydia
  – California-164,591 cases in 2011. Rate: 438
  – Sacramento County-9,080 (5.5% of total) cases in 2011. Rate: 634.7
  – Sacramento County Statewide **Rank: 3**

• Gonorrhea
  – California-27,455 cases in 2011. Rate: 73.1
  – Sacramento County-1,813 (6.6% of total) cases in 2011. Rate: 126.7
  – Sacramento County Statewide **Rank: 3** (failed to meet HP 2020)

• Syphilis* (Primary & Secondary)
  – California-2,448 cases in 2011. Rate: 6.5
  – Sacramento County-118 (4.6% of total) cases in 2011. Rate: 8.2
  – Sacramento County Statewide **Rank: 4**
  – *Syphilis cases increased from 52 in 2010 to 118 in 2011
California – Chlamydia, Gonorrhea, and P&S Syphilis

Ranking of County Rates for 2011
(with 95% Confidence Intervals*)

Chlamydia

State Rate = 438

Gonorrhea

State Rate = 73.1

P&S Syphilis

State Rate = 6.5

* Confidence intervals were calculated using Poisson exact method; not shown for counties with zero cases.

Note: Rates are per 100,000 population.

Source: California Department of Public Health, STD Control Branch
California – Chlamydia, Gonorrhea, and P&S Syphilis
Rates by County, 2011

Note: Rates are per 100,000 population.
Source: California Department of Public Health, STD Control Branch
2011 Statistics

• **Chlamydia**
  – Majority of infections are females (72.7%) of the 9,080.
  – Peak age for females: 15-19 (34.2%) and 20-24 (40.3%) or 74.5% of all infections (target populations)

• **Gonorrhea**
  – Evenly divided amongst males and females (47.1% vs. 52.7%)
  – Females-15-19 (35.9%), 20-24 (33.1%), 25-29 (14.2%) or 83.2% of all infections (target populations)
  – Males in the same age groups account for 66.1% of all infections.

• **Syphilis* (Primary & Secondary)**
  – Majority of infections are males (94.1%) of the 118..
  – 26.1% of cases for males less than age 24 years. No true peak.
  The majority of cases (73.9%) are aged 25 years and older.
Sacramento County – Chlamydia, Gonorrhea, and P&S Syphilis
Rates by Age Group (2011), Race/Ethnicity (2011), and Year

* Race data may be missing for a substantial number of cases. See the Data Limitations page for further information.

Note: Rates are per 100,000 population.
Source: California Department of Public Health, STD Control Branch
Chlamydia Rates per 100,000 Population, Sacramento County, Fresno County, San Francisco County and California, 2006-2011

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Chlamydia Rates per 100,000 Population for Females Aged 15-24 years, Sacramento County, Fresno County, San Francisco County and California, 2006-2011

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Chlamydia Case Distribution by Clinic Site
Sacramento County, 2011

Chlamydia Cases
- Clinic Site
- Highway

Legend:
- 10 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- Less Than 10

SCHOOL DCCRTIES:
- 0 - GALT JCTI UNI ON HIGH
- 1 - ELMER A JCTI
- 2 - GALT JCTI UNI ON ELEMENTARY
- 3 - AREONE UNI ON
- 4 - ELK GROVE UNI ON
- 5 - RIVER DELTA UNI ON
- 6 - SACRAMENTO CTTY UNI ON
- 7 - FOLSOM CORR D UNI ON
- 8 - SAN JUAN UNI ON
- 9 - NATOMAS UNI ON
- 10 - ORLA
- 11 - DRY CREEK JCTI
- 12 - CENTER UNI ON
- 13 - ROSELLE JCTI UNI ON HIGH
- 14 - TWIN RIVERS UNI ON
Chlamydia Rates per 100,000 Population by Clinic Site
(Selected Area 1), Sacramento County, 2011

Clinic Site

Highway

Chlamydia Rates

- 152 - 250
- 961 - 740
- 741 - 850
- 681 - 730
- 631 - 640
- 620 - 610
- 515 - 600
- Less Than 10

Sacramento County Public Health
Caucasian Chlamydia Rates per 100,000 by Clinic Site
Sacramento County, 2011
Gonorrhea Rates per 100,000 Population, 2006-2011
Sacramento County, San Francisco County, Alameda County and California

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<td>Alameda</td>
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<td>155.1</td>
<td>122.1</td>
<td>106.4</td>
<td>121.5</td>
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Prevention

- Screening programs (reduce PID up to 60%)
- Up to 75% of sexually active women may not be tested annually
- Consequences - increase pool of asymptomatic infections
- Leading to increased PID
- Most effective method: abstain from all forms of sexual intercourse.
- Sexual intercourse with long-term uninfected partner in mutually monogamous relationship.
- Use of latex condoms.

Health Education - Science based Primary Prevention.

Communicable disease investigators.

Gonorrhea Rates per 100,000 Population for Females Aged 15-24 years, Sacramento County, San Francisco County, Alameda County and California, 2006-2011

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<td>345.0</td>
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<td>228.7</td>
<td>241.6</td>
<td>233.2</td>
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<td>Sacramento</td>
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<td>762.3</td>
<td>553.5</td>
<td>633.9</td>
<td>695.0</td>
<td>601.0</td>
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<tr>
<td>San Francisco</td>
<td>676.6</td>
<td>461.2</td>
<td>456.7</td>
<td>421.3</td>
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<td>Alameda</td>
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<td>742.5</td>
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Gonorrhea Case Distribution by Clinic Site
Sacramento County, 2011

Gonorrhea Cases
- Clinic Site
- Highway

Legend:
- 10 - 14
- 15 - 21
- 22 - 28
- 29 - 54
- 55 - 77
- 78 - 145
- 95 - 300
- Less Than 10
Gonorrhea Rates per 100,000 Population by Clinic Site
Sacramento County, 2011
Gonorrhea Rates per 100,000 Population by Clinic Site
(Selected Area 1), Sacramento County, 2011

Clinic Site

Highway

Gonorrhea Rates
- 27 - 35
- 36 - 60
- 61 - 80
- 81 - 120
- 121 - 150
- Less Than 10

Sacramento County
Public Health
Gonorrhea Rates per 100,000 Population by Zip Clinic Site
(Selected Area 2), Sacramento County, 2011

[Map showing Gonorrhea Rates per 100,000 Population by Zip Code and Clinic Site within Sacramento County, 2011.]
Caucasian Gonorrhea Rates per 100,000 Population by Clinic Site
Sacramento County, 2011

Gonorrhea Rates
- Yellow: 21 - 50
- Blue: 81 - 100
- Green: 51 - 80
- Red: 101 - 150
- Purple: 41 - 60
- Black: 151 - 197
- Gray: Less than 5 cases
African American Gonorrhea Case Distribution by Clinic Site
Sacramento County, 2011
African American Gonorrhea Rates per 100,000 Population by Clinic Site, Sacramento County, 2011
Hispanic Gonorrhea Rates per 100,000 Population by Clinic Site
Sacramento County, 2011
Syphilis Rates per 100,000 Population, Sacramento County, San Francisco County and California, 2006-2011

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<tr>
<td>California</td>
<td>5.0</td>
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<td>5.2</td>
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<tr>
<td>San Francisco</td>
<td>29.2</td>
<td>24.3</td>
<td>40.0</td>
<td>36.5</td>
<td>42.6</td>
<td>46.2</td>
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Summary

• From 2008 to 2011 CT rates increased by 26.9%
• From 2008 to 2011 GC rates increased by 7.8%
• From 2010 to 2011 Syphilis rates increased by 127.7%
  – Local, State and Federal effort to eliminate syphilis
    – [www.cdc.gov/stopsyphilis/](http://www.cdc.gov/stopsyphilis/)
• CT and GC Rates highest amongst females aged 15-24 years
• Health inequities-CT, GC rates nearly 4 times higher for African Americans
Summary

• CT and GC rates high in 95823 (Sacramento), 95832 (Freeport), 95814 (Downtown), 95828 (Florin), 95822 (Sacramento), 95820 (Oak Park), 95670 (Rancho Cordova)a, 95811 (Downtown) and 95838 (Del Paso Heights)

• Areas with high counts/rates had fewer screening facilities

• Areas with low counts/rates had higher numbers of screening facilities
Opportunities

• 75% of sexually active females may not be screened annually
  – Opportunity to increase screening in select geographic areas
  – Screening programs can reduce PID by up to 60%

• Informatics and repeat testing? *(areas with high rates, low resources)*
  – Repeat infections persist in Sacramento County. Clients should be re-tested 3 months after infections
  – CDPH study* (Holly Howard, MPH) studied 6 family planning clinics and found only 70% of clients were re-tested
  – Informatics-Clinics installed pop-up reminders within the EHR. Retesting rate for CT increased from 16% to 89%

• Other?

Questions?