

Jurisdictional scan of integrated surveillance reporting for HIV STIs viral hepatitis and TB

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Disclosure Statement

- I have no affiliation (financial or otherwise) with a pharmaceutical, medical device or communications organization.

Outline

- Background
- Objectives
- Methods
- Findings:
 - Part 1 - Review of publicly available public health reports
 - Part 2 - Semi-structured interviews with selected jurisdictions

Syndemics

- “the aggregation of two or more health issues [that] interact synergistically to contribute to increased health burden for individuals or communities” (Singer, 2009).

Disease Syndemics

- HIV, sexually transmitted infections (STIs), viral hepatitis, and tuberculosis (TB) are synergistically interacting epidemics
- Risk of acquiring any of these infections is associated with:
 - Biology (e.g., STIs increase the risk for HIV)
 - Behaviour (e.g., needle sharing and HIV, HCV)
 - Social and environmental conditions (e.g., stigma, poverty)
- Disproportionately common among:
 - Gay, bisexual and other men who have sex with men (MSM)
 - People who use injection drugs (IDU) and other substances
 - Immigrants
 - Prisoners

Supporting integration of surveillance

Integration of surveillance data for HIV, STIs, viral hepatitis and TB to:

- i. Enhance the quality of surveillance data across programs
- ii. Understand how these infections overlap geographically or within population subgroups
- iii. How these overlaps might affect the effectiveness and efficiency of public health programs

Objective

To determine:

- i. The extent of integration in STI, bloodborne infections (STBBI) and TB public health surveillance reports with the aim to identify leading practices
- ii. Barriers and enablers of sustainable integrated STBBI and TB analysis and reporting
- iii. Its utility in informing public health action

Methods – Part 1

- i. Targeted website review of publicly-available surveillance reports

Country	Public Health Organization
Canada	PHAC, all provincial/territorial public health organizations and local public health unit of major cities
US	CDC, selected local or state public health organizations (CDC funded, a priori knowledge), and local public health unit of major cities
UK	All national level organizations including Scotland, Ireland, Wales and England
Australia	Kirby Institute for Infection and Immunity in Society and major regional public health jurisdictions

Methods – Part 1

ii. Data abstraction

- The type of report
- By or among a population subgroup/risk factors/setting
- Co-occurrence of infection at the geographic level or among a subgroup
- Co-infection at the individual level and whether this was done by case investigation or database matching
- Other novel ways of reporting e.g. re-infections or timing of infections

iii. Data summarized in an excel collection tool

Methods – Part 1

iv. Reports categorized into level of integration

Non-integrated	No report or single infection routine reporting E.g. single infection by sex (male/female), age category, and race/ethnicity
Limited	Single infection by or among a subgroup population E.g. reports of HIV in a youth population
Expanded	Co-occurrence of infection at the geographic level or among a subgroup E.g. rates of chlamydia, gonorrhea and syphilis in an MSM population
Comprehensive	Co-infection or multiple infections at the individual level based on database matching, and other novel ways of reporting such as re-infection E.g. reporting on timing of infections

v. Jurisdictions were categorized by their report with the highest level of integration

Methods – Part 2

Semi-structured telephone interviews with selected jurisdictions

i. Selection of jurisdictions for interview

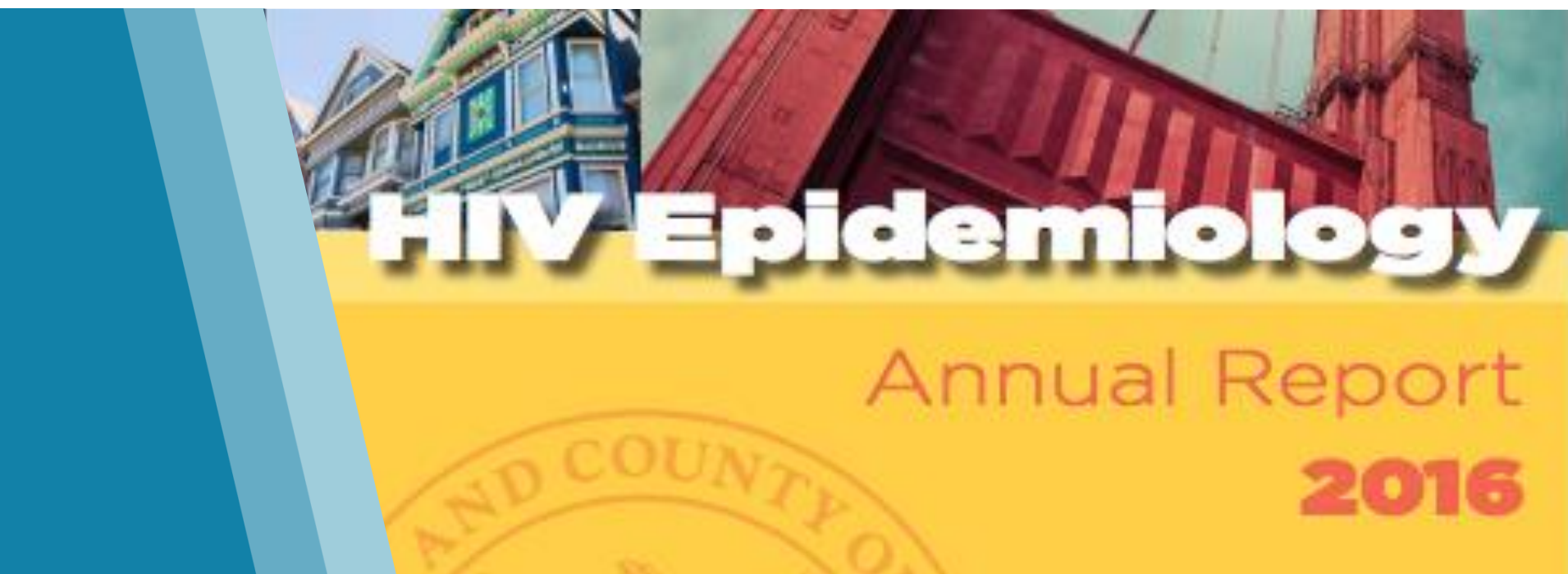
- A prior knowledge, expanded and/or comprehensive reporting or referral by another jurisdiction.
- 9 contacted, 8 agreed, 5 (n = 2 Canada, n = 3 US) available within the time frame of the project

ii. Developed an interview guide

- Questions informed by previous survey and with input by from PHO public health physicians/manager
- To assess the scope of integrated surveillance activities, to understand their methods, barriers and enablers of sustainable analysis and reporting, and its utility for informing public health action

iii. Interviews were recorded in adobe connect or in an audio recording file, notes transcribed, abstracted for key themes within and across interviews

Results



Part 1 – Findings from publicly available reports

Summary of jurisdictions by their highest level of integration in surveillance reporting

Non-integrated (n=6 *not exhaustive list for North America)

- Newfoundland and Labrador, Prince Edward Island, Nunavut, Northwest Territories, and Yukon, Hamilton

Limited (n=20)

- PHAC, PHO, Manitoba Health, Saskatchewan Health, New Brunswick, Nova Scotia, Vancouver Coastal Health, Winnipeg, New York State, Houston, San Antonio, Dallas, Phoenix, Baltimore, Chicago, Public Health Northern Ireland, Australian Government Department of Health, Queensland Health, Victoria State Health, South Australia

Expanded (n=10)

- INSPQ, BCCDC, Ottawa Public Health, CDC, Florida State, Washington DC, Health Protection Scotland, Public Health Wales, Kirby Institute(Australia), Western Australia

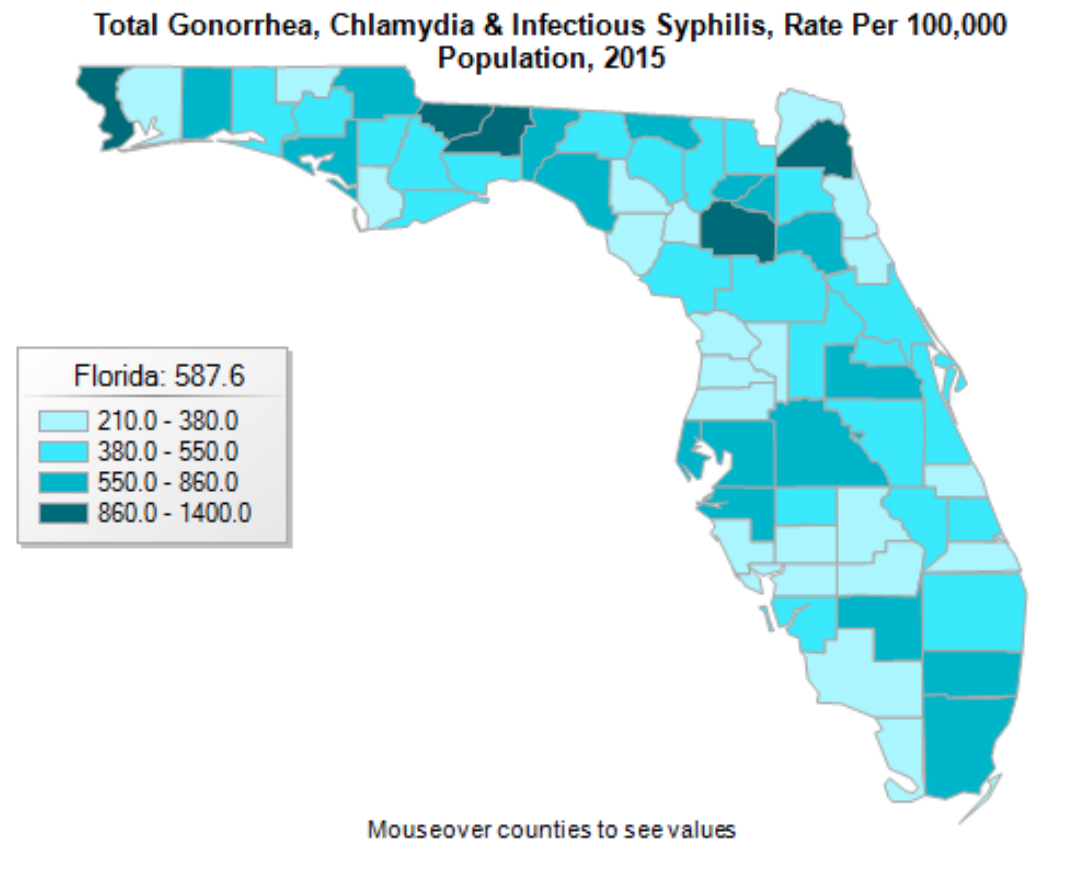
Comprehensive (n=13)

- Alberta Health, Toronto Public Health, Michigan State, Arizona State, California State, Texas State, Los Angeles County, San Francisco, Philadelphia, New York City, Public Health England, Ireland (HPSC), New South Wales

Expanded Integration Reports

- Co-occurrence in Populations
 - Adolescents and young adults, MSM, Aboriginal and Torres Strait Islander status, adults aged 55+, Transgendered persons, racial and ethnic minorities
 - PWID, female sex workers, incarcerated persons, street youth
- Co-occurrence of Infections
 - Overlap of STIs (commonly gonorrhea, chlamydia and infectious syphilis), HIV and STIs or HIV/STIs/Hepatitis
- Co-infection at the individual level by sub-population
 - Infectious syphilis diagnoses among MSM by HIV status (by enhanced report for notified cases)

Expanded Integration – Florida Health Charts

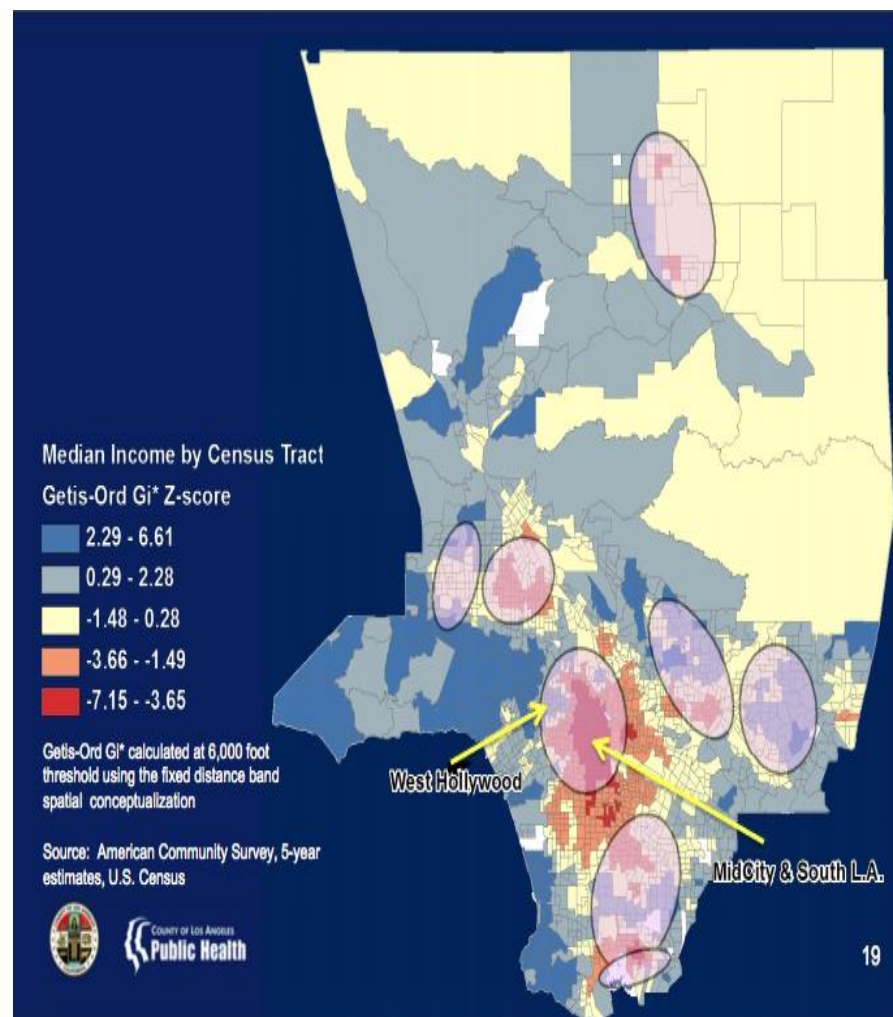
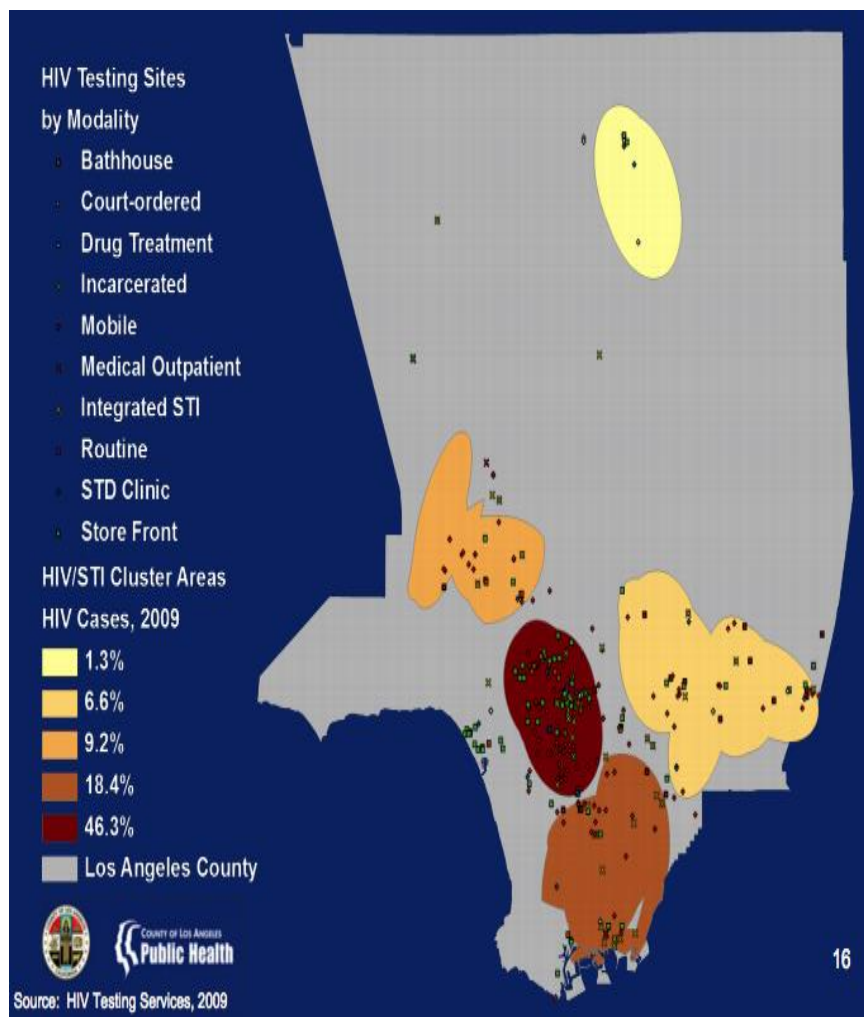


<http://www.flhealthcharts.com/charts/OtherIndicators/NonVitalIndNoGrpDataViewer.aspx?cid=0203>

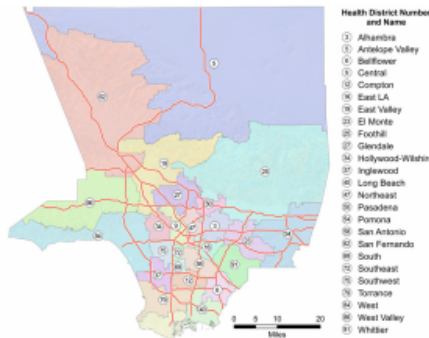
Comprehensive Integration Reports

- i. Matched separate data sources to determine co-infection or multiple infections at the individual level (n = 12)
 - HIV/STI, HIV/hepatitis, HIV/TB, STI/STI and STI/hepatitis
 - Report using different denominators
 - HIV-STI co-infections: the burden of STIs among PLWH OR the burden of HIV among persons with other STIs.
 - HIV-TB co-infections: HIV/TB Co-Infections among Confirmed Tuberculosis Cases OR TB Co-Infection among People Living with HIV (PLWH).
- ii. Novel reporting by re-infection or timing of infections (n = 6)
 - Re-infection or timing of infections

Geographic Overlap/Spatial Analysis – LA County



Los Angeles County



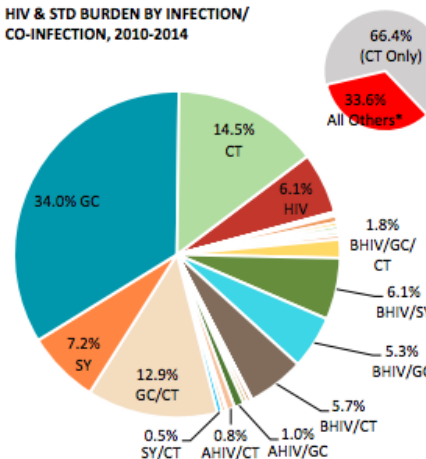
This overview of the 2010-2014 HIV & STD Burden by Health District summarizes surveillance data for HIV, Syphilis and Gonorrhea during the 5-year period, accounting for each person with a diagnosis in Los Angeles County, Long Beach or Pasadena.

Average infections *per infected person* **1.53**

Average infections *per year per square mile* **4.76**

ALL HIV & STD INCIDENTS ²	
Rate Per 100,000 Person-Years	Los Angeles County (LAC) Rate
HIV, 2010-2014	19
Syphilis, 2010-2014	32
Gonorrhea, 2010-2014	112
Chlamydia, 2010-2014 ³	461

HIV & STD BURDEN BY INFECTION/ CO-INFECTION, 2010-2014



*Residents with a HIV, Syphilis, Gonorrhea or high risk Chlamydia incident in 2010-2014. Residents with only Chlamydia incidents are excluded from the larger pie chart and data shown "among infected persons".

INFECTION CHARACTERISTICS AMONG INFECTED PERSONS¹

	N	% of LAC Total
Infections & Co-infections ⁴	97,211	100.0%
Incidents Represented ²		
HIV Incidents	9,652	100.0%
Syphilis Incidents	16,148	100.0%
Gonorrhea Incidents	55,606	100.0%
Chlamydia Incidents	37,078	100.0%

ACRONYMS
 SY = Syphilis GC = Gonorrhea CT = Chlamydia
 PLWH (+ STD) = Persons living with HIV who had an STD in 2010-2014 or were diagnosed with HIV in 2010-2014
 AHIV = Acquired HIV 30 days or more after STD infection
 BHIV = Acquired HIV 30 days or more before STD infection
 WHIV = HIV co-infected at time of STD infection (within +/- 30 days)
 LAC = Los Angeles County
 % of LAC = (# in Health District w/characteristic ÷ Total LAC)
 LAC % = (# in LAC w/characteristic ÷ Total LAC)

Data Source: LAC/DPH HIV and STD Surveillance (as of 9/26/16), Long Beach Health and Human Services STD Surveillance (as of 7/1/15), Pasadena Health Department STD Surveillance (as of 6/9/16), LAC/DPH OHAE [Health District boundaries], Los Angeles Times [LA Times Neighborhood boundaries], 2010-2014 population estimates and 2014 population demographics provided by LAC/ISD & contracted through Hedderson Demographic Services. Data Creation and Cartography: Program Evaluation & Data Management, Division of HIV and STD Programs, LAC/DPH

Count of infected persons PLWH (+ STD): **18,037**
 STD Only: **45,460**

RESIDENT CHARACTERISTICS AMONG INFECTED PERSONS¹

	N	% of LAC Total
Residents Represented ⁵	63,497	100.0%

	N	LAC %
Current Gender ⁶		
Male	44,243	69.7%
Female	19,007	29.9%
Transgender	195	0.3%
Transgender M-F	149	0.2%
Transgender F-M	17	0.0%
	N	LAC %

Race/Ethnicity ⁶		
White	13,215	20.8%
African American	18,718	29.5%
Latino	24,176	38.1%
Asian	2,246	11.6%
AI/AN ⁷	196	3.5%
NHOPI ⁷	187	0.3%
	N	LAC %

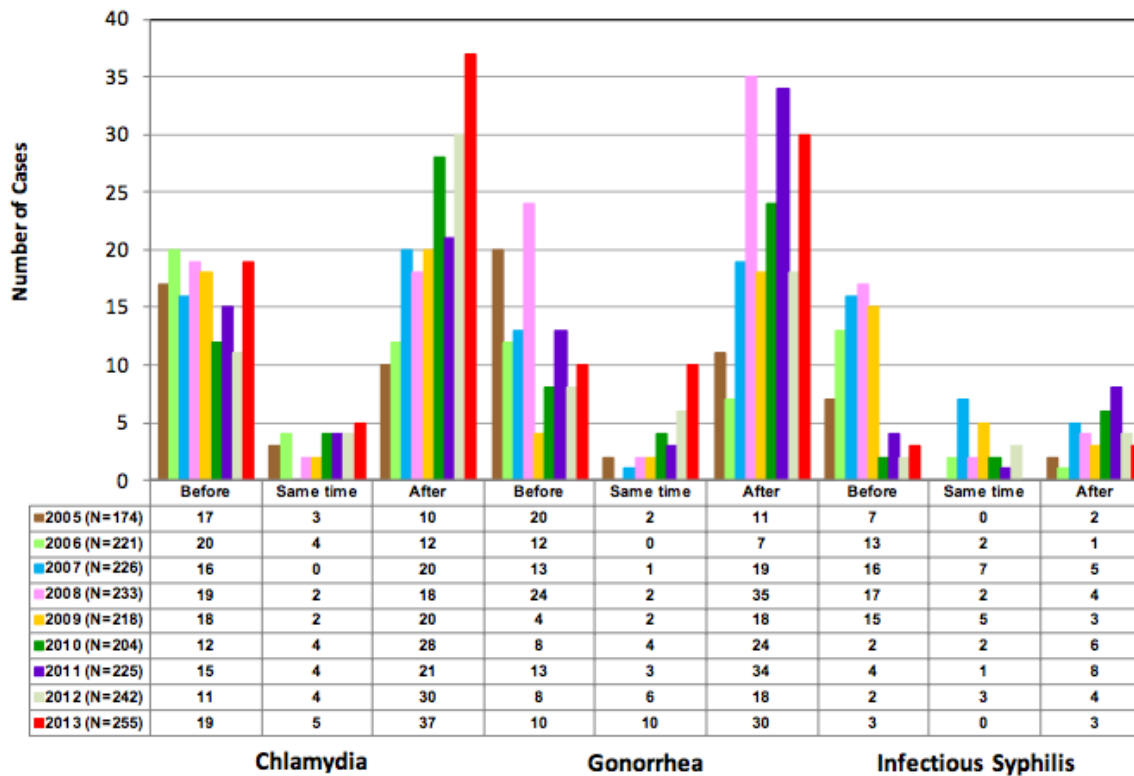
Select Populations		
MSM/MSMW	24,354	38.4%
Youth (15-19 years) ⁸	8,494	13.4%
Youth (15-24 years) ⁸	24,331	38.3%
Pregnant ⁹	2,763	4.4%
	N	LAC %

Syphilis Stage (if any) ⁸		
Early Syphilis ⁹	8,867	14.0%
Congenital Syphilis	70	0.1%

Temporal relationships – Alberta Health

- Surveillance and Assessment STI and HIV 2013 Annual Report

Figure 4.8: Number of Newly Diagnosed HIV Cases Infected with and Timing of Chlamydia, Gonorrhea, or Infectious Syphilis in Alberta, 2005 to 2013



Results



Part 2 – Findings from Interviews

Barriers to integrated surveillance

i. Technical barriers

- Statistical/analytic challenges to develop algorithms
- Time to generate high quality duplicate free data
- Work in defining co-infection, re-infection
- Technical capacity - requires more powerful servers/computer hardware

ii. Resources

iii. Data stewardship and the protection of privacy

iv. Organizational structure

Integrated surveillance considerations

- Results must be relevant to stakeholders, actionable by public health
- Concerns about inadvertent re-stigmatization of vulnerable groups
- Difficult to communicate how to interpret the data to the end user of the report



Usefulness of Integrated Surveillance

- Adapt testing strategies
 - HIV/STI analysis to develop eligibility criteria for HIV screening and the provision of PrEP
 - Hepatitis C testing added to routine testing among MSM at STI clinic in response to a cluster of sexually transmitted hepatitis C among MSM
- Support case and contact management
 - HIV/syphilis monthly to prioritize those who are co-infected to re-engage in care
 - Partner service interviews for people newly diagnosed with HIV include checking STI and hepatitis registries

Usefulness of Integrated Surveillance

- Target interventions for prevention and service delivery
 - HIV/syphilis co-infection data used to educate prevention and care communities re: screening PLWH annually for syphilis, gonorrhea and chlamydia and to inform public education campaigns.
 - Identify “priority populations” for dedicated funding
 - HIV/HCV co-infection data – could the Ryan White Program modify their formulary to include Hepatitis C medications?
- Identifying and managing STBBI outbreaks
 - HIV/HCV used HIV demographic, acquisition risk info to determine AMONG MSM
 - Opioid epidemic – monitor HIV/HCV to watch for HIV outbreak amongst Hepatitis C infected PWID

Conclusion

- Most public health agencies do not incorporate a syndemic lens to their STBBI surveillance reporting
- There are challenges and important ethical and privacy considerations for integrating STBBI data
- There are examples from leading jurisdictions, including some from within Canada, that demonstrate both that these challenges can be overcome and the benefits of doing so.

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