

A Model for Planning and Monitoring Infectious Disease Syndemics in San Francisco

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Centers for Disease Control and Prevention
Turning Research Into Prevention
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Coordination and Integration

All federal initiatives are asking for the same thing: expand collaboration within and outside of health departments to implement targeted integrated services and programs that promote positive health outcomes for affected communities.

- The Affordable Care Act- National Prevention and Health Promotion Strategy.
- National HIV/AIDS Strategy
- US Department of Health and Human Services 12 Cities Project
- NIH: TNT, TLC+, Multi-Layered Prevention (etc.)
- Ryan White HIV/AIDS Treatment Extension Act of 2009
- Program Collaboration and Service Integration (PCSI)
- Enhanced Comprehensive HIV Prevention Plans (ECHPP)
- Minority AIDS Initiative Targeted Capacity Expansion (MAI-TCE)
- Expanded Testing Initiative (ETI)

Addressing Syndemics Through Program Collaboration and Service Integration CDC-PA-PS10-10175

Purpose of award: The purpose of this grant is to plan, scale-up, and support the implementation of a syndemic approach to the prevention of HIV/AIDS, viral hepatitis, STD's and TB.

System Level Intervention: The goal of the grant is to develop system level changes that can be sustained over time.

Service Delivery:

1. Reimbursement through third party payers (i.e., insurance)
2. Use existing categorical funding (e.g., current CDC cooperative agreements)
3. PCSI grant is the payer of "last resort"

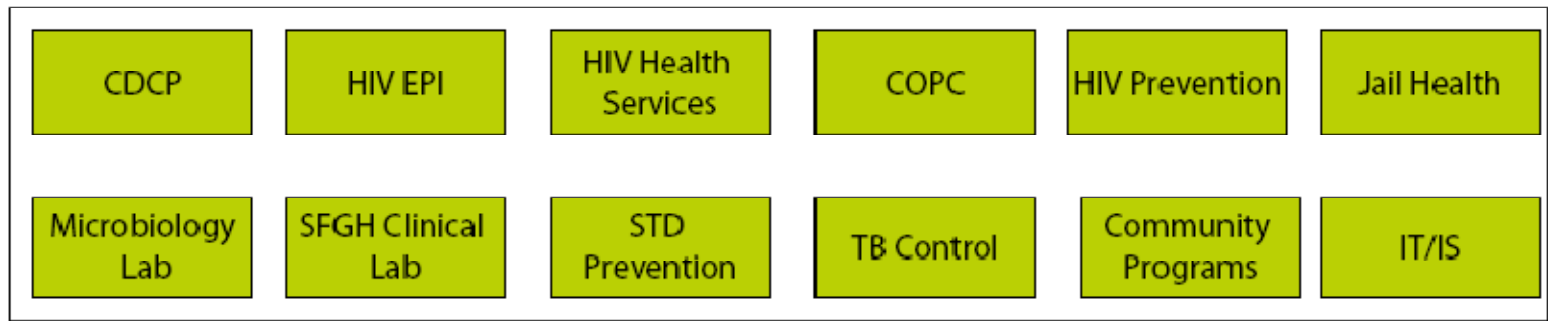
Program Collaboration and Service Integration Planning Structure

*Prevention, screening,
treatment, monitoring, and
control of HIV/AIDS, STD, Viral
Hepatitis, and TB.*

PCSI Champions
Barbara Garcia
Tomas Aragon

PCSI Manager
Israel Nieves

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Key Staff/Stakeholders
(e.g. HPPC, Hep C Task Force, CARE Council)

Health Disparities &
Clinical/Prevention
Guidelines

DPH Data Systems

Workgroup 3 (?)

Workgroups

SFDPH Program Collaboration and Service Integration Planning Framework

Phase 1

Review Vision, Mission, and Principles

Comprehensive Assessment

Review Vision, Mission Statement, and Principles

Surveillance Baseline Assessment

- Identify populations with co-morbid conditions
- Identify challenges in current surveillance system in monitoring and tracking co-morbid conditions

Assessing Feasibility of Integrated Services

- Identify challenges in tracking integrated services in DPH and community programs
- Identify integrated services in STD, LCR, and Jail Health databases

Database Inventory

- Identify existing database systems
- Understand data elements
- Identify limitations and challenges

Phase 2

Analysis

Successful Integration Efforts

- Identify SF integration efforts within each section
- Understand integration approaches nationwide
- Develop case studies

Obtain Input from Clinical and IT Experts

Develop Recommendations

Phase 3

Key Components

Develop Plan

Health Disparities and Clinical/Prevention Guidelines

- Identify at-risk populations and appropriate settings for integrated services
- Identify systems changes necessary for successful integration of services. Generate clinical guidelines for integrated services based on local EPI data
- Generate educational materials for integrated services
- Provide TA on clinical guidelines and best practices for integrated services

DPH Data Systems

- Develop new policies on the sharing of surveillance, clinical and programmatic data to improve reporting of syndemics
- Identify improvements to LCR and reporting of categorical funding activities to increase services and monitor settings offering integrated services
- Identify improvements to make to lab and billing systems to maximize reimbursement for integrated screening and treatment efforts

Develop Implementation and Evaluation Plan

Phase 1: Develop Foundation of Planning Process

Mission:

To collaboratively develop a sustainable system of primary prevention and clinical care in San Francisco that comprehensively addressing HIV, other STDs, viral hepatitis, and TB to prevent transmission, disease, disability, and death; to reduce co-infections; and to increase health equity.

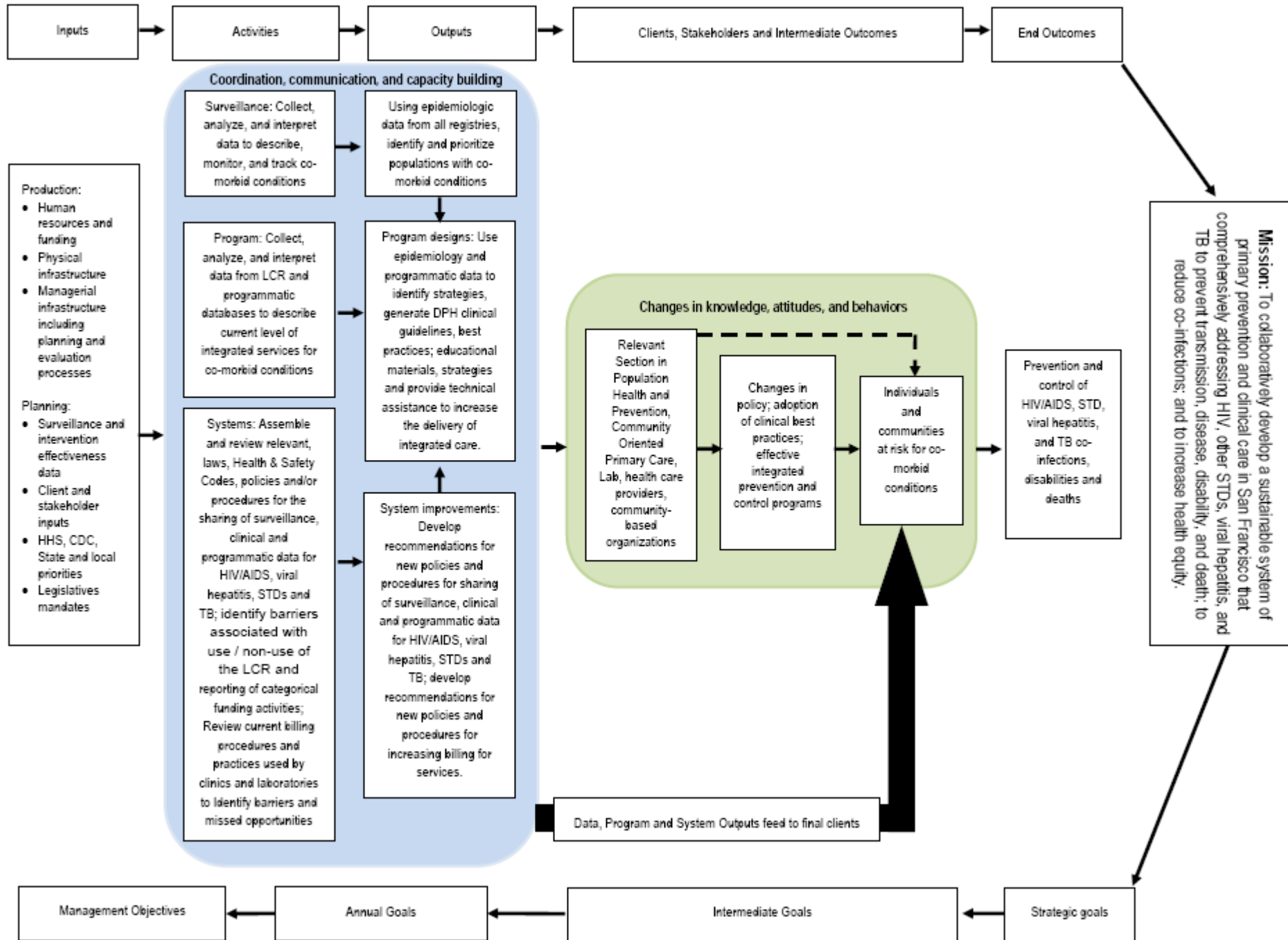
Vision:

The DPH PCSI project envisions a system of primary prevention and clinical care which effectively prevents, screens, treats, and monitors HIV, other STDs, viral hepatitis, and TB in a coordinated and efficient manner that maximizes health outcomes. DPH will build on existing best practices and find new ways to foster collaborative work, coordinate disease control and surveillance efforts, expand programmatic flexibility, and facilitate the appropriate integration of service delivery at the client level.

Principles:

- Client's first, systems second
- We must create a Win-Win-Win-Win
- Maximizing collective resources across sections
- We must lead, so that others may follow

Program Collaboration and Service Integration Logic Model



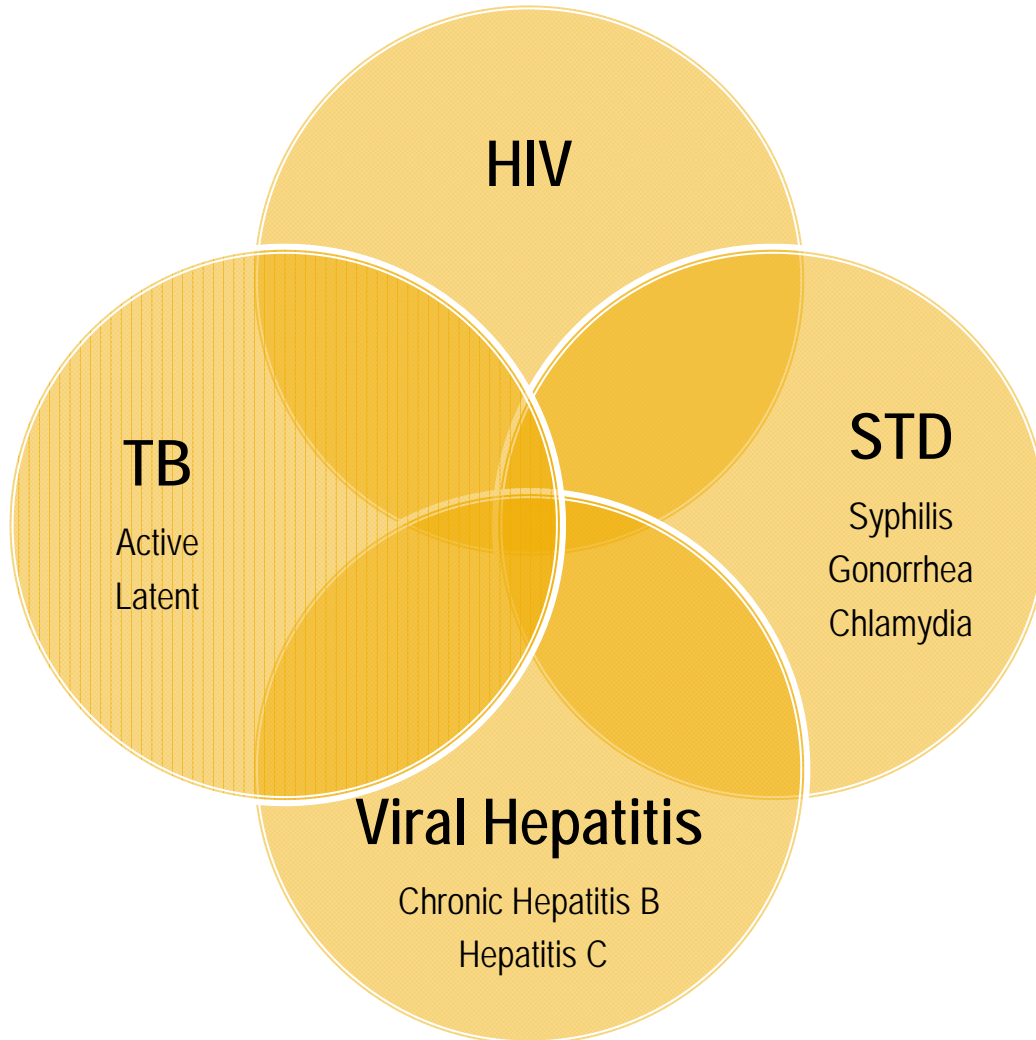
Phase 1-Step 1: Surveillance Baseline Assessment

(CSTE 2011 breakout presentation)

- Completeness and maturity of registry
- Reporting by laboratory
- Analytical timeframe
 - Epidemiology
 - Reporting standards
- Matching fields
- Demographic fields in common

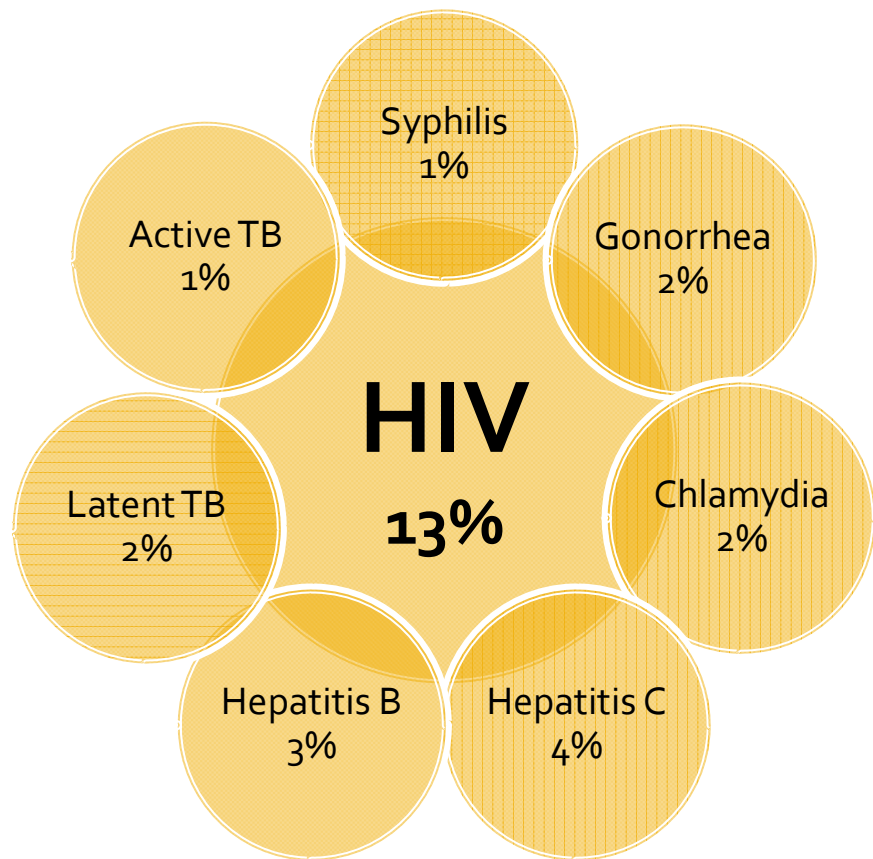


Phase 1-Step 1: Surveillance Baseline Assessment



Phase 1-Step 1: Surveillance Baseline Assessment –HIV

(2011 HIV Prevention Conference abstract submitted)



- HIV N=16,768
- Syndemic rate 13,047 per 100,000 HIV cases
- Highest HIV co-morbidity rates were HCV, HBV, Chlamydia, and latent TB
- Populations with higher rates of HIV infection are also at higher risk for co-infection with other transmittable diseases

Correlates for Co-Morbidities with HIV

	Estimate	Lower CL	Upper CL
Sex			
Female	0.94	0.76	1.16
Transgender	0.90	0.67	1.20
Male (ref)			
Race/ethnicity			
African-American*	1.64	1.44	1.86
Latino/a*	1.25	1.10	1.42
API*	1.72	1.41	2.09
Other	1.06	0.75	1.45
White (ref)			

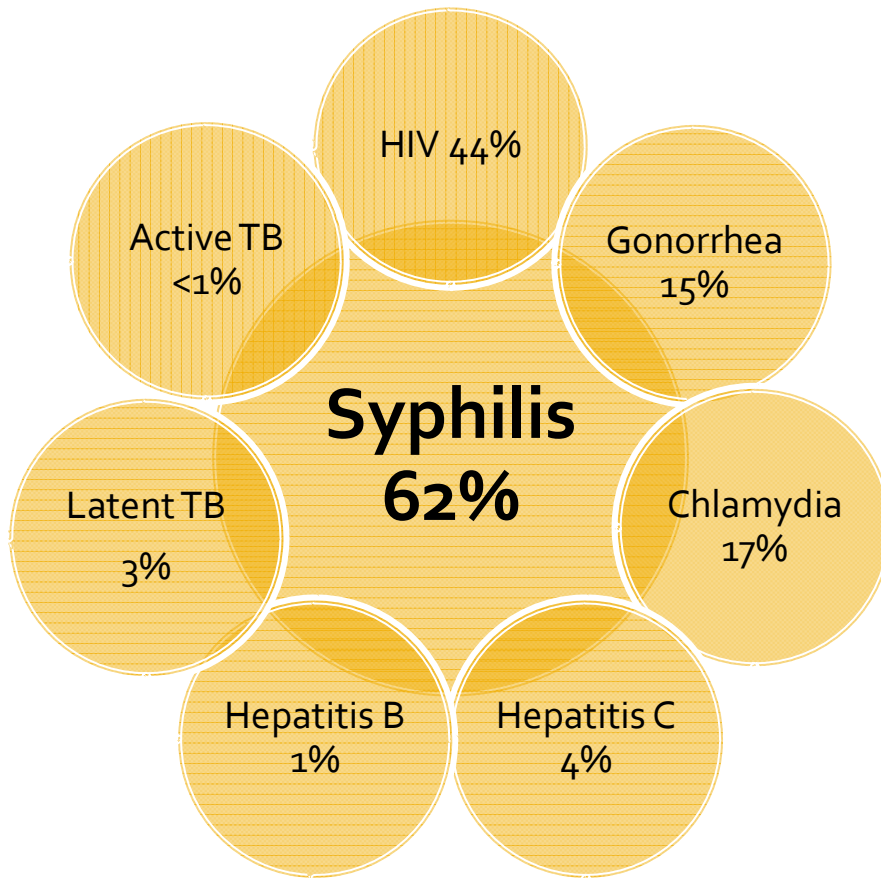
*significant factors for having co-morbidity

Correlates for Co-Morbidities with HIV (cont.)

	Estimate	Lower CL	Upper CL
Age at diagnosis			
0-19	1.70	0.83	3.65
20-29*	2.54	1.46	4.88
30-39*	2.25	1.30	4.31
40-49*	2.28	1.31	4.38
50-59*	1.99	1.12	3.90
60 and up (ref)			
Behavioral risk			
IDU*	2.82	2.36	3.35
MSM-IDU*	2.61	2.32	2.93
Other risk	0.82	0.68	0.98
MSM (ref)			

*significant factors for having co-morbidity

Phase 1-Step 1: Surveillance Baseline Assessment-Syphilis



- Syphilis N=508
- Syndemic rate 61,614 cases per 100,000 Syphilis cases
- Highest Syphilis co-morbidity rates were HIV, Chlamydia, and Gonorrhea

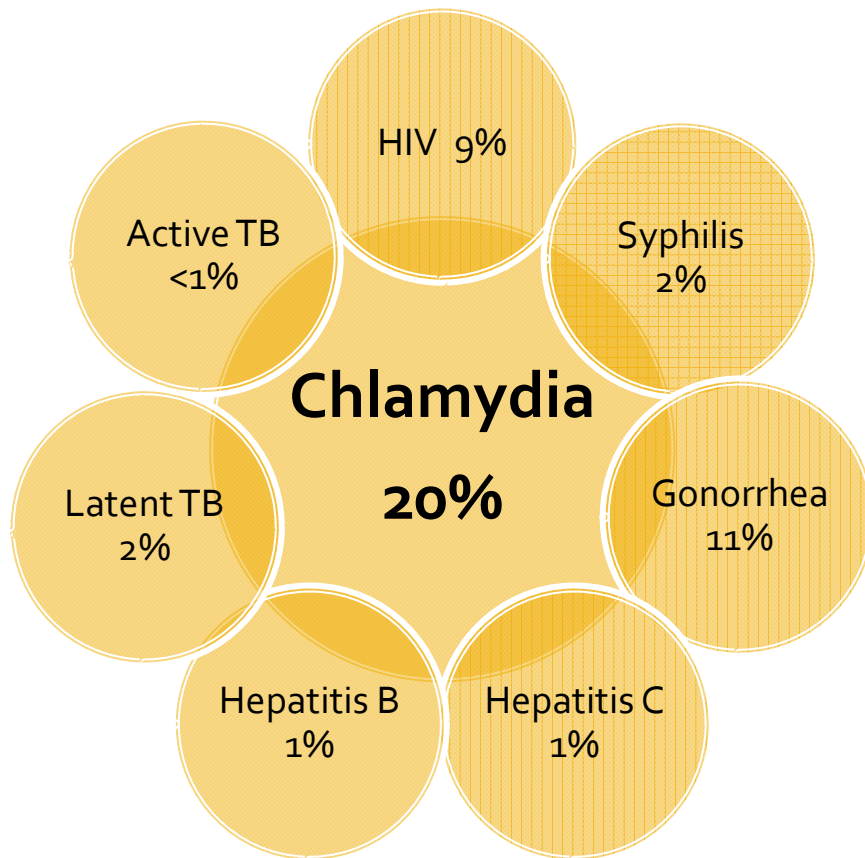
Correlates for Co-Morbidities with Syphilis

	Estimate	Lower CL	Upper CL
Sex			
Female	0.89	0.18	4.50
Transgender	0.59	0.03	6.91
Male (ref)			
Race/ethnicity			
African-American	1.12	0.57	2.26
Latino/a	1.12	0.69	1.85
API	0.58	0.31	1.07
Other	1.13	0.45	3.11
White (ref)			

Correlates for Co-Morbidities with Syphilis (cont.)

	Estimate	Lower CL	Upper CL
Age at diagnosis			
0-19	-	-	-
20-29	1.17	0.46	2.97
30-39	1.90	0.78	4.59
40-49	1.19	0.50	2.80
50-59	1.92	0.71	5.19
60 and up (ref)			
MSM			
Yes	1.81	0.86	3.80
No (ref)			

Phase 1-Step 1: Surveillance Baseline Assessment-Chlamydia



- Chlamydia N=3,890
- Syndemic rate 19,820 per 100,000 Chlamydia cases
- Highest Chlamydia co-morbidity rates were Gonorrhea, HIV, Syphilis, and Latent TB

Correlates for Co-Morbidities with Chlamydia

	Estimate	Lower CL	Upper CL
Sex			
Female	0.40	0.31	0.52
Transgender*	3.43	1.21	9.26
Male* (ref)			
Race/ethnicity			
African-American*	1.50	1.12	1.99
Latino/a	1.13	0.86	1.48
API	0.90	0.65	1.24
Other	0.79	0.57	1.08
White (ref)			

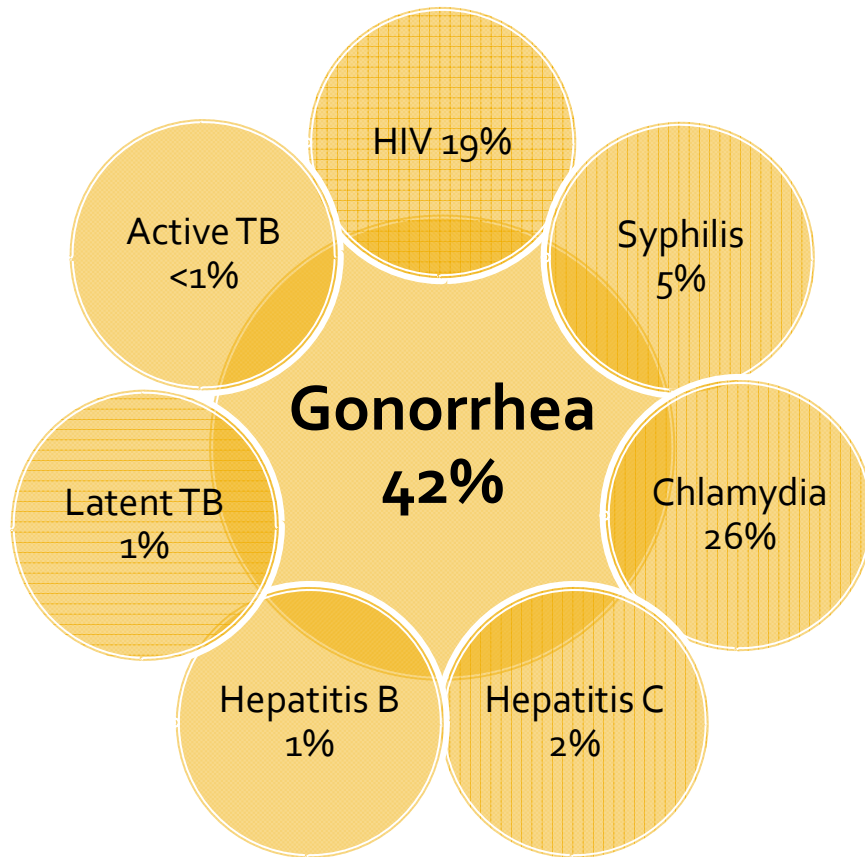
*significant factors for having co-morbidity

Correlates for Co-Morbidities with Chlamydia (cont.)

	Estimate	Lower CL	Upper CL
Age at diagnosis			
0-19	0.22	0.09	0.54
20-29	0.19	0.08	0.44
30-39	0.35	0.15	0.82
40-49	0.51	0.22	1.20
50-59	0.50	0.20	1.23
60 and up (ref)			
MSM			
Yes*	5.47	4.36	6.89
No (ref)			

*significant factors for having co-morbidity

Phase 1-Step 1: Surveillance Baseline Assessment-Gonorrhea



- **Gonorrhea N=1,674**
- **Syndemic rate 41,995 per 100,000 Gonorrhea cases**
- **Highest Gonorrhea co-morbidity rates were Chlamydia, HIV, and Syphilis**

Correlates for Co-Morbidities with Gonorrhea

	Estimate	Lower CL	Upper CL
Sex			
Female	0.97	0.67	1.39
Transgender	2.74	0.80	9.77
Male (ref)			
Race/ethnicity			
African-American*	1.63	1.20	2.22
Latino/a	1.32	0.97	1.79
API	1.11	0.74	1.67
Other	0.90	0.62	1.29
White (ref)			

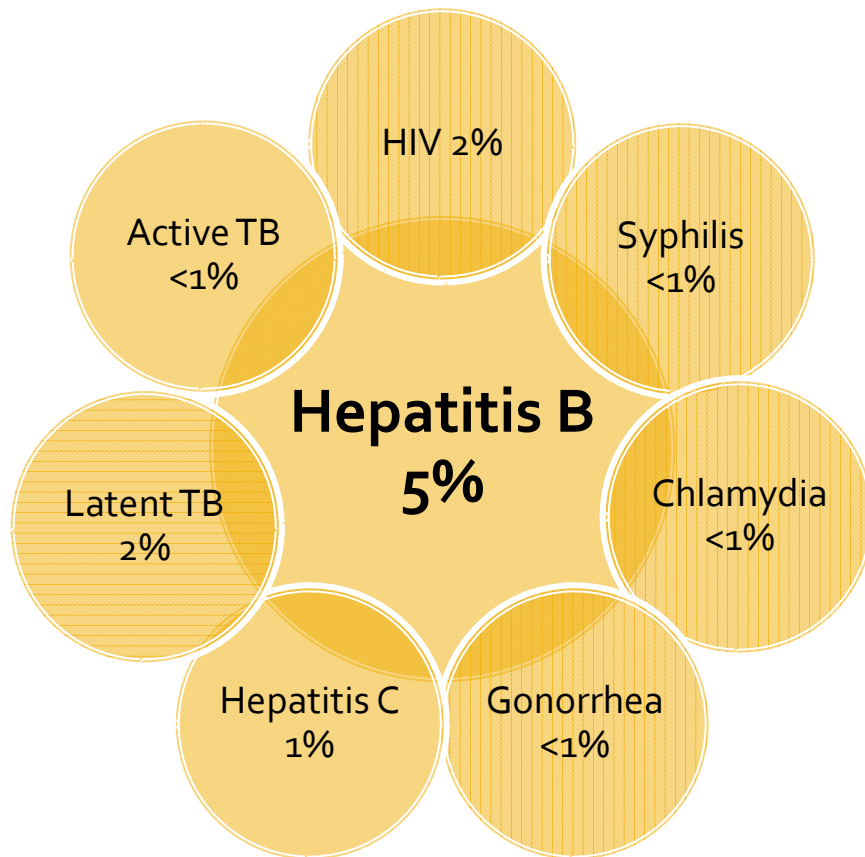
*significant factors for having co-morbidity

Correlates for Co-Morbidities with Gonorrhoea (cont.)

	Estimate	Lower CL	Upper CL
Age at diagnosis			
0-19	1.62	0.62	4.29
20-29	0.54	0.23	1.29
30-39	0.72	0.31	1.71
40-49	0.87	0.37	2.06
50-59	1.12	0.45	2.84
60 and up (ref)			
MSM			
Yes*	2.62	2.07	3.33
No (ref)			

*significant factors for having co-morbidity

Phase 1-Step 1: Surveillance Baseline Assessment-Hepatitis B



- Hepatitis B N=36,195
- Syndemic rate 4,752 per 100,000 chronic Hepatitis B cases
- Highest HBV co-morbidity rates were Latent TB, HIV, and HCV

Correlates for Co-Morbidities with Chronic Hepatitis B

	Estimate	Lower CL	Upper CL
Sex			
Female	0.57	0.51	0.64
Male* (ref)			
Race/ethnicity			
African-American*	1.22	1.02	1.46
Latino/a	1.11	0.85	1.43
API	0.30	0.26	0.35
Other	0.16	0.14	0.19
White (ref)			

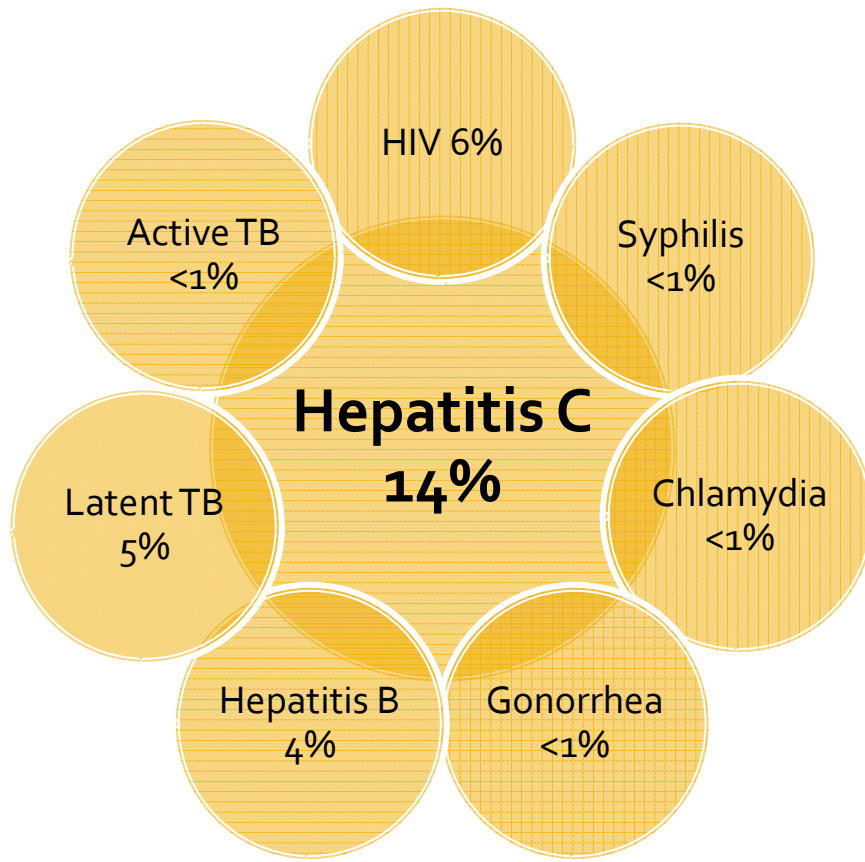
*significant factors for having co-morbidity

Correlates for Co-Morbidities with Chronic Hepatitis B (cont.)

	Estimate	Lower CL	Upper CL
Age at diagnosis			
0-19*	1.69	1.25	2.27
20-29*	1.80	1.45	2.27
30-39*	1.87	1.52	2.32
40-49*	1.65	1.33	2.07
50-59*	1.54	1.22	1.96
60 and up (ref)			
Homeless			
Yes	1.21	0.06	8.29
No (ref)			

*significant factors for having co-morbidity

Phase 1-Step 1: Surveillance Baseline Assessment-Hepatitis C



- Hepatitis C N=10,718
- Syndemic rate 14,462 per 100,000 Hepatitis C cases
- Highest HCV co-morbidity rates were HIV, Latent TB, and HBV

Correlates for Co-Morbidities with Hepatitis C (past or present infection)

	Estimate	Lower CL	Upper CL
Sex			
Female	0.51	0.45	0.58
Male* (ref)			
Race/ethnicity			
African-American*	1.52	1.32	1.75
Latino/a*	1.36	1.10	1.69
API*	1.72	1.35	2.17
Other	0.32	0.27	0.38
White (ref)			

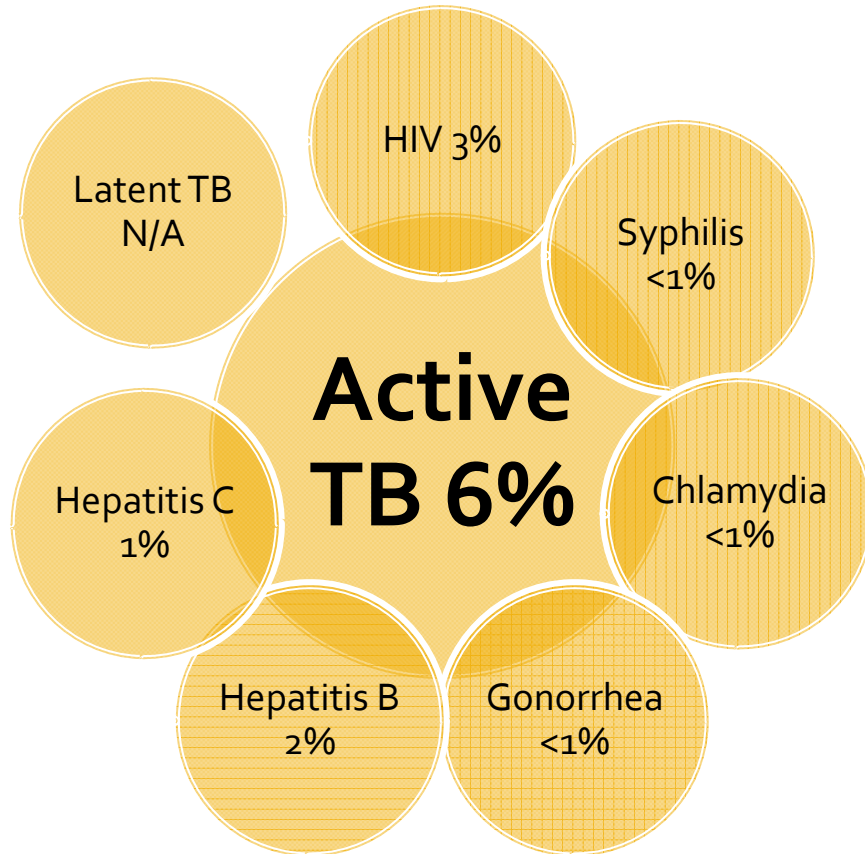
*significant factors for having co-morbidity

Correlates for Co-Morbidities with Hepatitis C (past or present infection) (cont.)

	Estimate	Lower CL	Upper CL
Age at diagnosis			
0-19	1.91	0.89	3.72
20-29*	2.68	1.96	3.63
30-39*	3.24	2.63	4.01
40-49*	2.07	1.73	2.50
50-59*	1.32	1.11	1.58
60 and up (ref)			
Homeless			
Yes	2.23	0.47	8.03
No (ref)			

*significant factors for having co-morbidity

Phase 1-Step 1: Surveillance Baseline Assessment-Active TB



- **Active TB N=4,072**
- **Syndemic rate 5,796 per 100,000 Active TB cases**
- **Highest Active TB co-morbidity rates were HIV, HBV, and HCV**

Correlates for Co-Morbidities with Active TB

	Estimate	Lower CL	Upper CL
Sex			
Female	0.48	0.33	0.69
Male* (ref)			
Race/ethnicity			
African-American	1.01	0.71	1.43
Latino/a	0.60	0.10	2.10
API	0.47	0.33	0.68
Other	0.82	0.30	1.89
White (ref)			

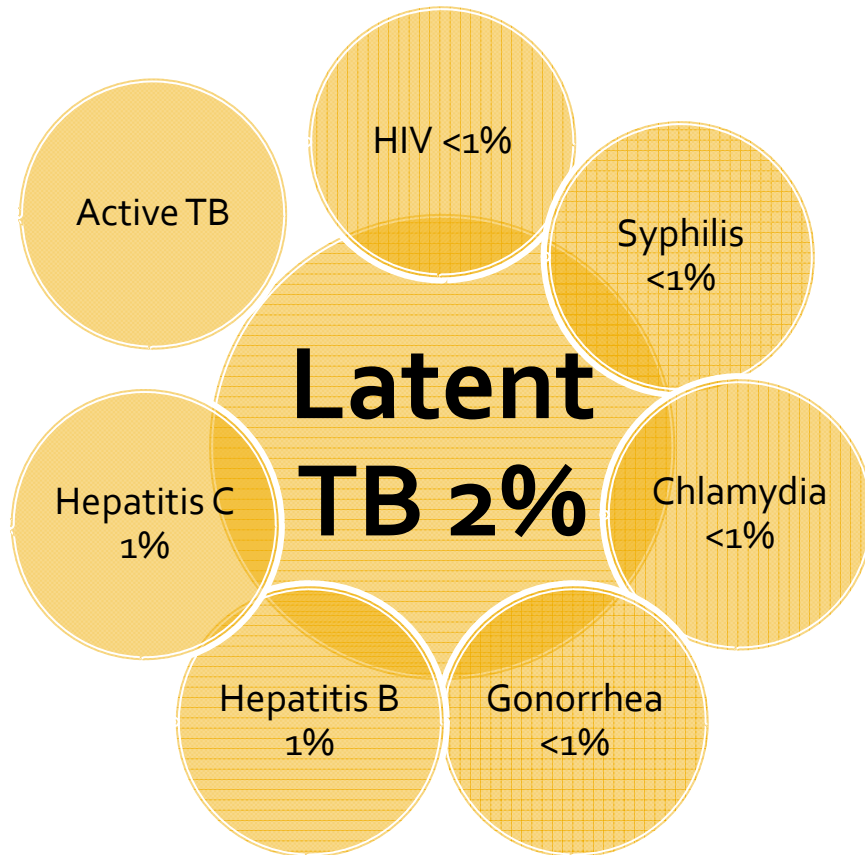
*significant factors for having co-morbidity

Correlates for Co-Morbidities with Active TB (cont.)

	Estimate	Lower CL	Upper CL
Age at diagnosis			
0-19	0.76	0.18	2.27
20-29*	1.93	1.01	3.73
30-39*	4.15	2.49	7.24
40-49*	4.68	2.82	8.15
50-59*	3.23	1.84	5.85
60 and up (ref)			
Homeless			
Yes*	2.44	1.75	3.38
No (ref)			
History of incarceration			
Yes	1.81	0.68	4.30
No (ref)			

*significant factors for having co-morbidity

Phase 1-Step 1: Surveillance Baseline Assessment-Latent TB



- Latent TB N=73,186
- Syndemic rate 2,111 per 100,000 Latent TB cases
- Highest Latent TB co-morbidity rates were HBV, HCV, and HIV

Correlates for Co-Morbidities with Latent TB

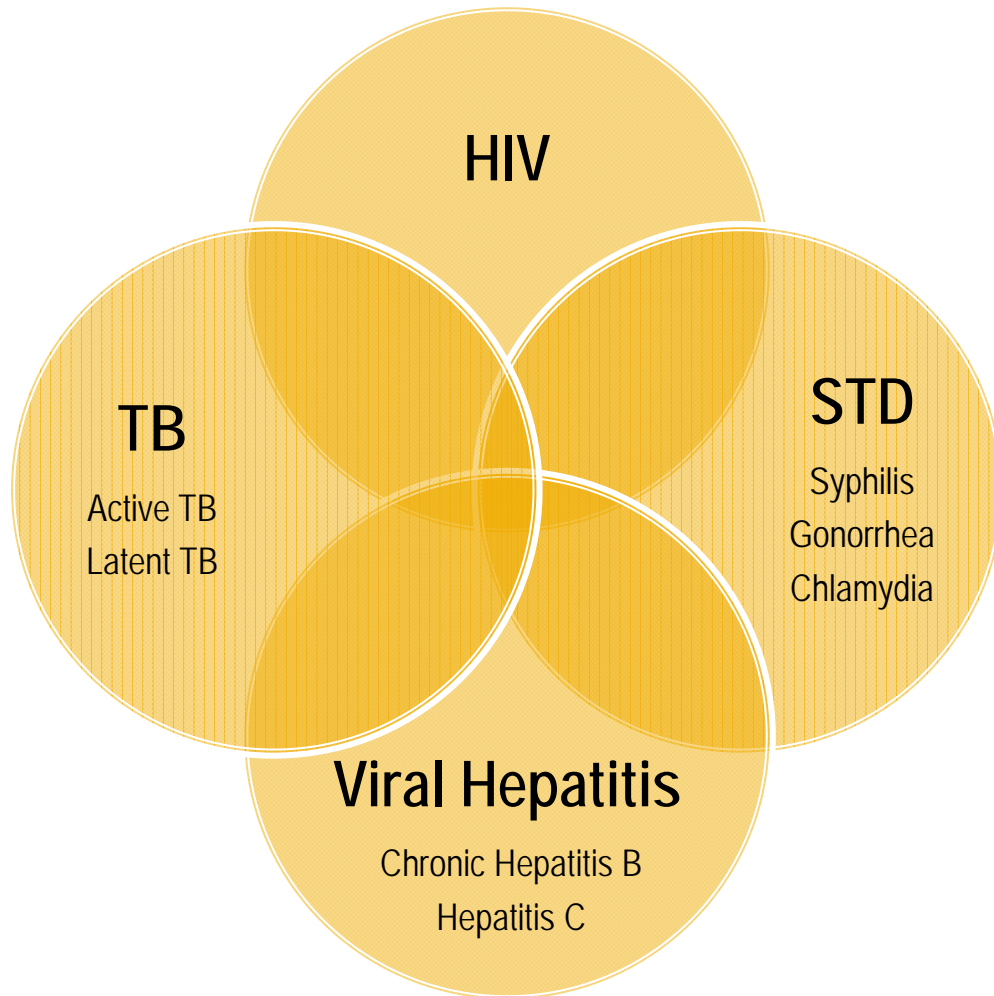
	Estimate	Lower CL	Upper CL
Sex			
Female	0.64	0.57	0.71
Male* (ref)			
Race/ethnicity			
African-American*	2.23	1.93	2.57
Latino/a	0.99	0.75	1.28
API	1.07	0.94	1.22
Other	1.26	0.88	1.76
White (ref)			

*significant factors for having co-morbidity

Correlates for Co-Morbidities with Latent TB (cont.)

	Estimate	Lower CL	Upper CL
Age at diagnosis			
0-19	0.35	0.27	0.46
20-29	0.96	0.77	1.20
30-39*	1.54	1.26	1.90
40-49*	1.87	1.53	2.30
50-59*	1.79	1.45	2.22
60 and up (ref)			
Homeless			
Yes*	1.51	1.29	1.76
No (ref)			
History of incarceration			
Yes*	1.74	1.29	2.29
No (ref)			

Phase 1-Step 1: Surveillance Baseline Assessment (2011 HIV Prevention Conference abstract submitted)



- Overall, 3% (N=4,296) of people affected by one disease had one or more co-infections
- Highest syndemics within-disease rates: Syphilis, Gonorrhea, and Chlamydia
- Highest syndemics within-population rates for San Francisco: HIV, Hepatitis B, Hepatitis C, and Latent TB
- Demographic categories correlated with having co-infection: Male, African-American, Latino/a, Age 20-60

Summary of syndemic rates per 100,000 disease

	HIV	Active TB	Latent TB	Syphilis	Chlamydia	Gonorrhea	HBV	HCV
HIV	13,047	3,193	450	44,291	9,229	18,996	1,547	6,065
Active TB	774	5,796	N/A	197	51	239	215	392
Latent TB	1,960	N/A	2,111	2,559	1,620	1,195	2,003	4,870
Syphilis	1,340	25	18	61,614	2,262	4,540	19	168
Chlamydia	2,139	49	86	17,323	19,820	26,165	66	271
Gonorrhea	1,894	98	27	14,961	11,260	41,995	61	271
HBV	3,336	1,916	991	1,378	617	1,314	4,752	4,077
HCV	3,872	1,031	713	3,543	746	1,732	1,207	14,462

Summary of syndemic rates per 100,000 San Franciscans

	HIV	Active TB	Latent TB	Syphilis	Chlamydia	Gonorrhea	HBV	HCV
HIV	282	17	42	29	46	41	72	84
Active TB	17	30	N/A	0	0	1	10	5
Latent TB	42	N/A	199	2	8	3	93	67
Syphilis	29	0	2	40	11	10	1	2
Chlamydia	46	0	8	11	99	56	3	4
Gonorrhea	41	1	3	10	56	91	3	4
HBV	72	10	93	1	3	3	221	56
HCV	84	5	67	2	4	4	56	200

Correlates for Having Co-Morbidities

	Estimate	Lower CL	Upper CL
Sex			
Female	0.45	0.41	0.48
Transgender	0.32	0.12	0.65
Male* (ref)			
Race/ethnicity			
African-American*	1.53	1.41	1.67
Latino/a*	1.16	1.03	1.30
API	0.50	0.46	0.55
Other	0.51	0.46	0.57
White (ref)			

*significant factors for having co-morbidity

Correlates for Having Co-Morbidities (cont.)

	Estimate	Lower CL	Upper CL
Age at diagnosis			
0-19	0.43	0.35	0.53
20-29*	1.25	1.08	1.45
30-39*	1.72	1.50	1.99
40-49*	2.30	2.01	2.65
50-59*	1.97	1.70	2.28
60 and up (ref)			

*significant factors for having co-morbidity

Reference: syndemic match results

	N	HIV				Active TB				Latent TB			
		Match N	Match %	Rate per 100K HIV	Pop rate per 100K SF	Match N	Match %	Rate per 100K ATB	Pop rate per 100K SF	Match N	Match %	Rate per 100K LTB	Pop rate per 100K SF
HIV	16,786	2,190	13%	13,047	282	130	3%	3,193	17	329	<1%	450	42
Active TB	4,072	130	1%	774	17	236	6%	5,796	30	N/A	N/A	N/A	N/A
Latent TB	73,186	329	2%	1,960	42	N/A	N/A	N/A	N/A	1,545	2%	2,111	199
Syphilis	508	225	1%	1,340	29	1	<1%	25	0	13	<1%	18	2
Chlamydia	3,890	359	2%	2,139	46	2	<1%	49	0	63	<1%	86	8
Gonorrhea	1,674	318	2%	1,894	41	4	<1%	98	1	20	<1%	27	3
Chronic HBV	36,195	560	3%	3,336	72	78	2%	1,916	10	725	1%	991	93
HCV	10,718	650	4%	3,872	84	42	1%	1,031	5	522	1%	713	67

	N	Syphilis				Chlamydia				Gonorrhea			
		Match N	Match %	Rate per 100K Syphilis	Pop rate per 100K SF	Match N	Match %	Rate per 100K Chlamydia	Pop rate per 100K SF	Match N	Match %	Rate per 100K Gonorrhea	Pop rate per 100K SF
HIV	16,786	225	44%	44,291	29	359	9%	9,229	46	318	19%	18,996	41
Active TB	4,072	1	<1%	197	0	2	<1%	51	0	4	<1%	239	1
Latent TB	73,186	13	3%	2,559	2	63	2%	1,620	8	20	1%	1,195	3
Syphilis	508	313	62%	61,614	40	88	2%	2,262	11	76	5%	4,540	10
Chlamydia	3,890	88	17%	17,323	11	771	20%	19,820	99	438	26%	26,165	56
Gonorrhea	1,674	76	15%	14,961	10	438	11%	11,260	56	703	42%	41,995	91
Chronic HBV	36,195	7	1%	1,378	1	24	1%	617	3	22	1%	1,314	3
HCV	10,718	18	4%	3,543	2	29	1%	746	4	29	2%	1,732	4

	N	Chronic Hepatitis B Virus				Hepatitis C Virus			
		Match N	Match %	Rate per 100K HBV	Pop rate per 100K SF	Match N	Match %	Rate per 100K HCV	Pop rate per 100K SF
HIV	16,786	560	2%	1,547	72	650	6%	6,065	84
Active TB	4,072	78	<1%	215	10	42	<1%	392	5
Latent TB	73,186	725	2%	2,003	93	522	5%	4,870	67
Syphilis	508	7	<1%	19	1	18	<1%	168	2
Chlamydia	3,890	24	<1%	66	3	29	<1%	271	4
Gonorrhea	1,674	22	<1%	61	3	29	<1%	271	4
Chronic HBV	36,195	1,720	5%	4,752	221	437	4%	4,077	56
HCV	10,718	437	1%	1,207	56	1,550	14%	14,462	200

Notes:
SF pop 2000 census = 776,733
all co-infections (N and rates)

Phase 1: Step 2 Feasibility of Assessing Integrated Services

Development of core questions: What screening, testing, treatment and/or vaccination activities are funded/supported by your section? Does your section collect prevention activities by client name? Does your section collect information on other prevention activities? If yes, what information? Do you fund/support specific community based organizations to conduct your prevention activities? If yes, what organization and what services? If yes, does your section collect the following information for Site? (fill out table, e.g. name, date of birth, race/ethnicity, sex/gender, date of service, address, social security number, medical record number)

Interview health department sections: Given the difference of nuance and verbiage by different programs, the questions were used to conduct an interview of key staff in order to ensure full understanding and completeness of information.

Analyze data: The staff reviewed the data by looking at eight key factors: primary services, integrated services provided, clinic based services, electronic medical record used, lab used, community based efforts supported, names reported to Section through community efforts, names collected by local organizations for community based efforts.

Recommendations: Proceed with identifying a baseline for integrated services in DPH primary cares settings, STD Clinic and Jail Health Services by gathering the data from their EMRs.

Data for Integrated services for community based efforts cannot be gathered from the Sections of the health department. Therefore we recommend that we do not attempt to gather a baseline for these efforts and that the Steering Committee recommends ways of improving the gathering of integrated services supported through our community efforts.

Phase 2: Step 2 Obtain Input from Stakeholders

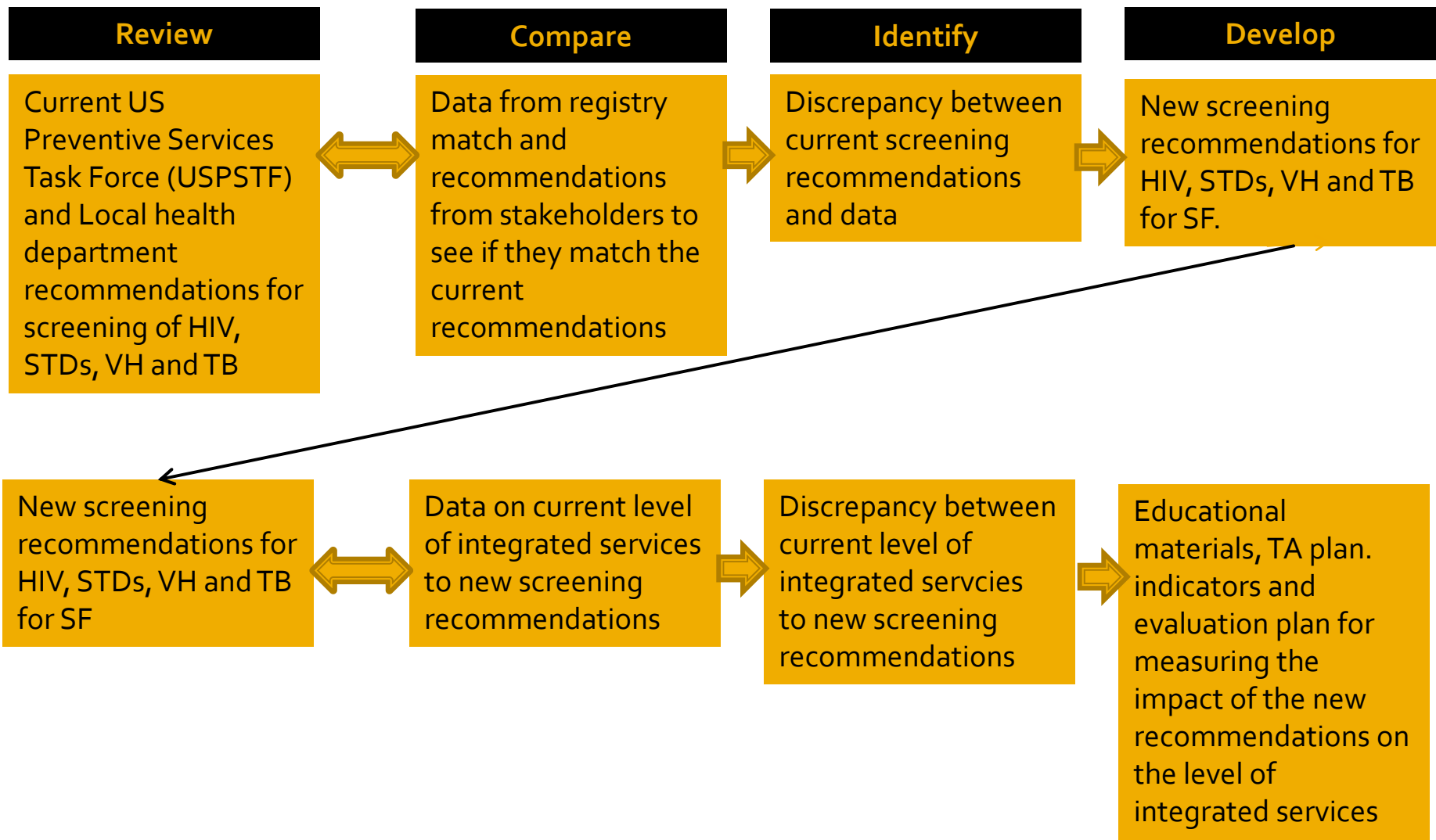
We are in the process of conducting presentations with the internal health department staff and community planning groups to inform them of the project and garner feedback on the process.

- Ambulatory Care Committee
- CASPER
- Community Oriented Primary Care Medical Director Meeting
- Communicable Disease Prevention and Control
- Hepatitis C Task Force
- HIV Health Services Planning Council
- HIV Prevention
- HIV Prevention Planning Council
- HIV Epidemiology
- HIV Health Services
- Jail Health Services: Providers, Nurse Managers, Forensic AIDS Project
- Public Health Laboratory
- San Francisco General Hospital Clinical and Micro-Biology Lab
- STD Prevention and Control
- TB Control

Phase 3: Work groups, Evaluation and Implementation Plan

Health Disparities and Clinical/Prevention Guidelines

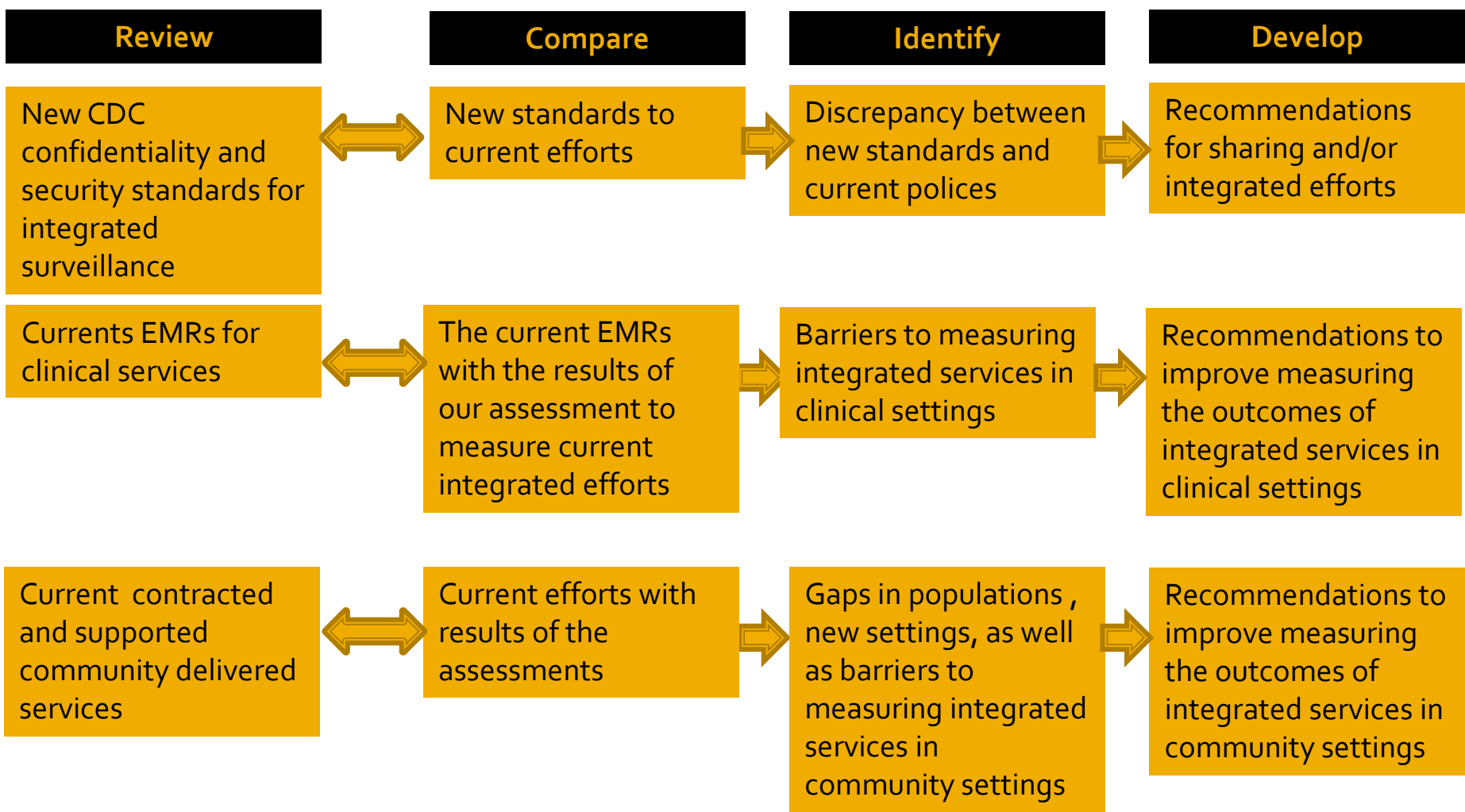
Using Data to Develop Action Plans for Integrated Efforts



Phase 3: Work groups, Evaluation and Implementation Plan

DPH Data Systems

Using Data to Develop Action Plans for Integrated Efforts



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