A Public Health Framework for Developing Local Preventive Services Guidelines

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ABSTRACT

In this article, we describe the San Francisco Department of Public Health's (SFDPH's) framework for developing evidence-based screening and vaccination recommendations. We first reviewed our local data using surveillance and syndemic data. We then compiled and compared existing federal, state, and local recommendations. Then we identified differences as compared with our local evidence; where more evidence was required to make a recommendation, we culled from additional data sources and conducted additional analyses. Lastly, we developed our guidelines by confirming existing recommendations or making new recommendations based on this process. In the end, we successfully developed evidence-based clinical screening and prevention guidelines that have been adopted by the SFDPH Health Commission. We encourage the use of this framework in other public health settings at the local level.

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The San Francisco Department of Public Health (SFDPH) is committed to addressing syndemics, which are defined as two or more afflictions that interact synergistically to contribute to increased transmission and/or worsened outcome of either or all diseases in a population.[1] We implemented a syndemic approach to the prevention of viral hepatitis, sexually transmitted diseases (STDs), tuberculosis (TB), and human immunodeficiency virus (HIV) through program collaboration and service integration.

The goal of the initiative was to strengthen and increase opportunities for collaboration to support integrated approaches to service delivery. The initiative aimed to maximize the health benefits that people receive from preventive services by improving the health among populations affected by multiple diseases; increasing service efficiency; maximizing opportunities to screen, test, treat, or vaccinate those in need of these services; improving operations through the use of shared data; and enabling service providers to adapt to and keep pace with changes in disease epidemiology and new technologies. The program is also intended to identify strategies for leveraging resources to maximize the yield and sustainability of integrating services.

As part of this initiative, SFDPH brought together subject-matter experts from various communicable disease sections of the health department to redesign the current guidelines for screening and/or vaccinations. This redesign would result in one comprehensive document outlining the integration of screening and/or vaccination for viral hepatitis, STDs, TB, and HIV in the jurisdiction.

SFDPH uses the U.S. Preventive Services Task Force (USPSTF) recommendations[2] as the foundation for our local guidelines. The USPSTF makes its recommendations based on comprehensive, systematic reviews and careful assessment of the available medical evidence. Despite these efforts, the USPSTF is not always able to provide recommendations on topics of critical importance due to a lack of available evidence. For instance, the USPSTF recommends that, when considering screening for sexually transmitted infections, physicians should consult with local public health officials if possible, and should use national, regional, state, and local epidemiologic data to tailor screening programs based on the community and populations served.[3]

With that in mind, SFDPH developed a framework for developing new recommendations for screening and/or vaccinations for viral hepatitis, STDs, TB, and HIV that incorporated local evidence. The framework included surveillance and syndemic data for each disease for which data were available. It also contained information from federal, state, and local guidelines such as the USPSTF, Advisory Committee on Immunization Practices, HIV Quality Indicators, and the Action Plan for Prevention, Care, and Treatment of Viral Hepatitis. When relevant, SFDPH used recommendations from local planning groups such as the HIV Prevention Planning Council and the Hepatitis C Task Force. We describe the SFDPH process for developing evidence-based screening and vaccination recommendations, lessons learned, and next steps.

METHODS

SFDPH formed a workgroup of subject-matter experts to develop integrated prevention guidelines. Specifically, the guidelines were to be developed for hepatitis A virus (HAV), hepatitis B virus (HBV), and hepatitis C virus (HCV); HIV; chlamydia; gonorrhea; syphilis; and TB. Throughout the process, the workgroup was charged with weighing the epidemiologic evidence, along with cost-effectiveness, feasibility, acceptability, and current resources. The workgroup also had to balance the following questions:

- What prevention activities are appropriate based on risk factors?
- When is it appropriate to recommend screening and/or vaccination for the general population?
- What frequency of testing among infected individuals, the general San Francisco population, and at-risk subpopula Figure 1 tions is necessary and appropriate?

The workgroup used an iterative process for developing screening and vaccination guidelines consisting of four steps, summarized as Review, Compare, Identify, and Develop (Figure 1).

Review

First, we reviewed the existing data based on the traditional disease-specific annual reports[4–7] to look at disease-specific trends. In addition, we conducted a syndemic analysis by matching across eight infectious diseases (HBV, HCV, active TB, latent TB, chlamydia, gonorrhea, syphilis, and HIV) in the four registries and looked at comorbid conditions.[8–11] Together, these two analyses painted a picture of populations in the local health jurisdiction that were impacted by an infectious disease or by comorbid conditions.

Compare

We then consolidated and compared the recommendations for the current federal, state, and local guidelines on who should receive preventive services. We conducted a comparative analysis by disease with

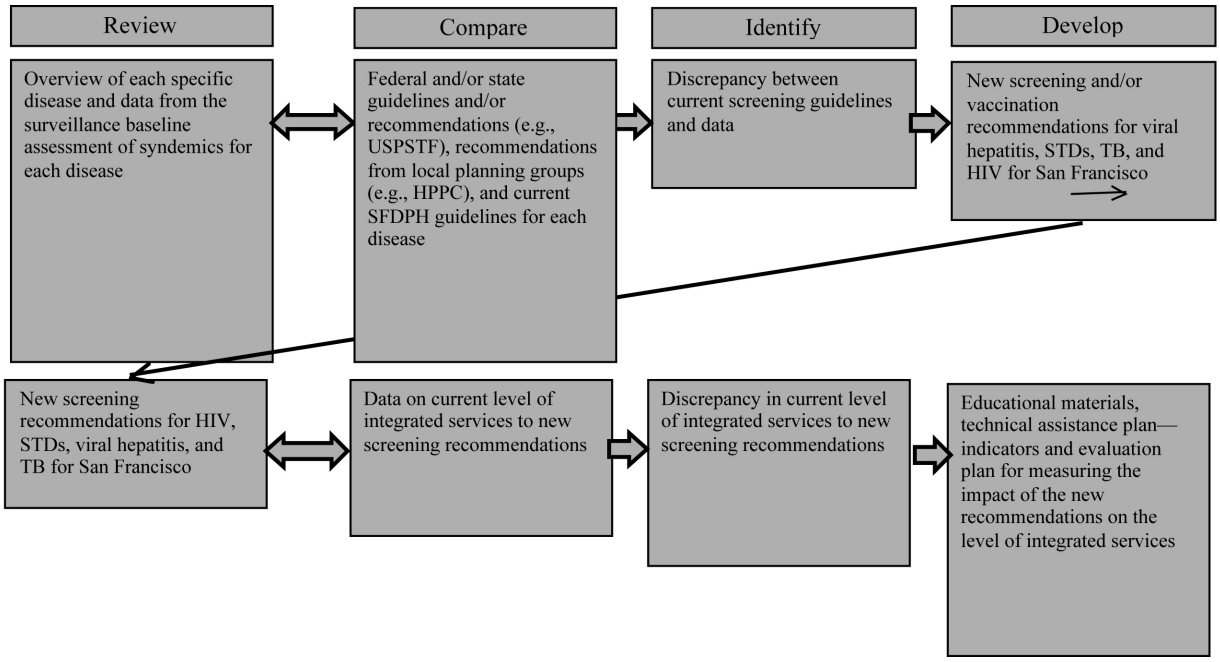
current federal, state, and local guidelines. Although the number of recommendations varied by disease, we reviewed 31 recommendations overall.[12–30]

During the review process, we found that guidance on screenings varied depending on the disease and that there were variations within disease. For example, in reviewing the guidelines, recommendations for HCV testing varied across six guidelines.[12,15,24,25,27,28] The USPSTF has a clear framework for developing screening recommendations;[31] however, there is a lack of guidance on what methods should be used to establish local guidelines for screening of diseases in the absence of published data. HIV is the exception to this rule. CDC indicated that health-care providers should initiate screening unless prevalence of undiagnosed HIV infection in their patients has been documented to be <0.1%. In the absence of existing data for HIV prevalence, health-care providers should initiate voluntary HIV screening until they establish that the diagnostic yield is <1 per 1,000 patients screened, at which point such screening is no longer warranted.[32] Similar guidance for other diseases has not been developed.

Identify

We next identified discrepancies between the preventive services guidelines and our local data. The workgroup approached the development of new recommendations from two different perspectives. The first perspective was through the infected populations in San Francisco. For example, if an individual was diagnosed with a specific disease, for what other disease should the patient be screened? From a syndemic perspective, this question means, "Does exposure to another positive biological interaction exacerbate the negative health effects of any or all of the diseases?" The workgroup also looked at the data to develop new recommendations from the population-level perspective. This process was more complicated because the workgroup was charged with developing screening recommendations, whereby screening was defined as

Figure 1. Steps for developing new recommendations and educational materials, a technical assistance plan, and PCSI indicators: SFDPH, 2011



PCSI = program collaboration and service integration
SFDPH = San Francisco Department of Public Health
USPSTF = U.S. Preventive Services Task Force
HPPC = HIV Prevention Planning Council
STD = sexually transmitted disease
TB = tuberculosis
HIV = human immunodeficiency virus

testing regardless of risk factor or symptoms. Therefore, ensuring that the correct population received the appropriate services while balancing cost-effectiveness, feasibility, acceptability, and current resources was a complex issue.

We identified differences between the data and existing guidelines through an iterative process. In the case of gaps where there were no existing recommendations, we looked for other data sources that would help guide us in making a recommendation. For example, the recommendation for HCV testing remained unclear. As there are no incidence and prevalence estimates for HCV in San Francisco, however, we had to expand our analysis to local data sources that would help us determine the local prevalence of HCV. In the case of HCV and the subpopulation of men who have sex with men (MSM), we analyzed data from the National HIV Behavioral Surveillance (NHBS) MSM study conducted in 2011 in which MSM were sampled using time-location methodology and blood draws for HIV testing.[31] Using a small amount of money to test all the remnant blood samples for HCV, we calculated the first prevalence estimate of HCV for MSM in San Francisco.[32] Further, we used the data to make a recommendation to not screen MSM who had no other risk factors for HCV. We also expanded upon the recently released CDC recommendations to screen all baby boomers (i.e., those born from 1945 to 1965). By expanding the age group by nine years locally, SFDPH would capture approximately 80% of HCV cases based on our HCV surveillance data. Using this iterative process, we developed robust recommendations for HCV screening for MSM and baby boomers.

Develop

Lastly, we developed new recommendations by either validating current practice or developing new preventive services for screenings and/or vaccinations. The outcomes of this process are highlighted in this article.

OUTCOMES

The new guidelines (summarized in Figures 2 and 3) were approved by the SFDPH Health Commission in June 2012. SFDPH now has one comprehensive document outlining the integration of screening and/or vaccination for viral hepatitis, STDs, TB, and HIV for the jurisdiction. Overall, this process validated our current recommendations for syphilis, gonorrhea, chlamydia, and hepatitis A. Four recommendations for screening were developed or revised:

1. All people aged 13 years and older should have a documented HIV test in their medical record at least once in their lifetime.
2. All people aged 40–69 years should have a documented HCV test in their medical record at least once in their lifetime.
3. Testing for surface antigen for HBV (HBsAg) and for antibody should be conducted for pregnant women as required by law. If both HBsAg and antibody to HBsAg results are negative, the first vaccination should be provided before discharge from the hospital and follow-up on additional vaccinations should take place post-hospital discharge.
4. TB screening should be conducted for incarcerated and homeless/marginally housed individuals upon entry and then annually thereafter. Note that this recommendation was revised from screening upon entry and every six months thereafter given the current local epidemiology of TB.

LESSONS LEARNED

It is important to note that the process of developing new recommendations was not simple. To achieve the new screening and vaccination guidelines, we capitalized on the meaningful use of surveillance and other public health research data. Because San Francisco's infectious disease registries are separated by disease and categorical funding, everyone's cooperation and expertise were required to develop the best guidelines possible. It cannot be stressed enough the collaborative nature of developing the preventive screening and vaccination guidelines. Experts from each disease and representatives from jail health services and our community-oriented primary care clinics provided input during each step. In addition, we shared our data both for the syndemic match and for the additional analyses needed with NHBS data to develop the guidelines. We acknowledge and are grateful that SFDPH has a deep pool from which to draw both good data and expertise.

It is also important to note that the process took time to bring people to collectively understand the big picture. Each independent section already makes recommendations for its own programs. Bringing people together took more time, as valid questions were raised and time was needed to get more information. In addition, it took patience to achieve consensus within the group to get to the point where everyone felt comfortable with the data and the recommendations.

Thus, we used every tool at our disposal to set comprehensive guidelines for San Francisco. We used

Figure 2. Summary of current screening[a] and HAV and HBV vaccination recommendations for infected populations with syndemics[b] in San Francisco, 2011

Infected population	*HIV screen*	*Chlamydia screen*	*Gonorrhea screen*	*Syphilis screen*	*HCV screen*	*HBV screen*	*HBV vaccination*	*HAV vaccination*	*TB screen*
PLWHA[c]	NA	On entry, then based on population recommendations				On entry	On entry or if not properly vaccinated	On entry	On entry, then annually
Chlamydia	All people at least once	NA	At time of treatment[c]	At time of treatment[c]	NR	NR[d]	Anyone >19 years of age	NR	NR
Gonorrhea	All people at least once	At time of treatment[c]	NA	At time of treatment[c]	NR	NR[d]	Anyone >19 years of age	NR	NR
Syphilis	All people at least once	At time of treatment[c]	At time of treatment[c]	NA	NR	NR[d]	Anyone >19 years of age	NR	NR
HCV	On entry	NR	NR	NR	NA	To diagnose past or present infection	On entry	On entry	On entry
Acute HBV	On entry	On entry	On entry	On entry	NR	NA	NA	On entry	NR
Chronic HBV	On entry	NR	NR	NR	On entry	NA	NA	On entry	On entry
Latent TB	On entry	NR	NR	NR	If clinically indicated	If clinically indicated	On entry	NR	NA
Active TB	On entry	NR	NR	NR	Consider screening on entry	Consider screening on entry	Screen for HBV, then vaccinate if HBV negative	NR	NA

[a]Screening means testing regardless of risk factor or symptoms. It does not preclude testing based on clinical symptoms, diagnostic testing based on signs or systems, exposure to a specific disease, and/or prior infection and retesting after treatment to assess for possible reinfection.

[b]Syndemics are defined as two or more afflictions (diseases), interacting synergistically, that contribute to increased transmission and/or worsened outcomes of either or all diseases in a population.

[c]If patient has chlamydia, gonorrhea, or syphilis, screen for all.

[d]Except if foreign-born in HBV-endemic area (except North America, Australia, Japan, and Western Europe)

HAV = hepatitis A virus

HBV = hepatitis B virus

HIV = human immunodeficiency virus

HCV = hepatitis C virus

TB = tuberculosis

PLWHA = people living with HIV/acquired immunodeficiency syndrome

NA = not applicable

NR = not recommended

Figure 3. Summary of screening[a] and HAV and HBV vaccination recommendations for specific populations in San Francisco, 2011

Population	*HIV screen*	*Chlamydia screen*	*Gonorrhea screen*	*Syphilis screen*	*HCV screen*	*HBV screen*	*HBV vaccination*	*HAV vaccination*	*TB screen*
General population	All people at least once, then based on specific recommendations	NR	NR	NR	All people aged 40–69 years at least once, then based on specific recommendations	NR	All children <18 years of age as well as anyone >19 years of age who is high risk or by request	All children <18 years of age as well as anyone >19 years of age who meets certain provisions (e.g., liver disease)	Not unless from high-risk pool
Homeless or marginally housed	All people at least once, then based on specific recommendations	NR	NR	NR	On entry and annually	NR	All children <18 years of age as well as anyone >19 years of age who is high risk or by request	All children <18 years of age as well as anyone >19 years of age who meets certain provisions (e.g., liver disease)	Screen on entry then annually if still in shelter or single-room occupancy
Foreign-born	All people at least once, then based on specific recommendations	NR	NR	NR	Foreign-born from HCV-endemic countries, particularly Southeast Asia, Japan, Egypt, and Pakistan	All except for Australia, Western Europe, and North America, with the exception of Alaska Natives and those in northern Canada	If from country with >2% prevalence, test, then vaccinate	All children <18 years of age as well as anyone >19 years of age who meets certain provisions (e.g., liver disease)	Foreign-born from TB-endemic countries (except for North America, Australia, Japan, and Western Europe)
Incarcerated individuals	At intake, risk targeted for substance use	All MSM <30 years of age, females <35 years of age, and PLWHA	All MSM <30 years of age, females <35 years of age, and PLWHA	PLWHA if positive for gonnorhea or chlamydia = directed testing	By request, IDUs, substance users, and annually for PLWHA	By request, PLWHA, IDUs, or those from a country with >2% prevalence	Any PLWHA >19 years of age, by request, or by medical indication	If HBV+ and/or HCV+ and HAV unknown, test, then vaccinate	On entry and then annually
Pregnant (any age)	First trimester, repeat third trimester, test at labor and delivery; if no result in record	First trimester, repeat third trimester if high risk	First trimester, repeat third trimester if high risk	First trimester, repeat third trimester if high risk	First trimester, repeat third trimester if high risk	To diagnose past or present infection	Test surface antigen (required by law) and test for antibody; if both HBsAg and antibody to HBsAg results are negative, vaccinate	NR	Screened during pregnancy if from high-risk demographic pool
IDUs	Every six months	NR	NR	NR	Annually for current IDUs and upon entry for history of injection drug use	To diagnose past or present infection	Anyone >19 years of age	On entry	Annually

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Figure 3 (continued). Summary of screening[a] and HAV and HBV vaccination recommendations for specific populations in San Francisco, 2011

Population	*HIV screen*	*Chlamydia screen*	*Gonorrhea screen*	*Syphilis screen*	*HCV screen*	*HBV screen*	*HBV vaccination*	*HAV vaccination*	*TB screen*
Gay, transmale, or other MSM	Every six months	Every 3–6 months	Every 3–6 months	Every 3–6 months	Annually for HIV+ if clinically indicated	To diagnose past or present infection	Anyone >19 years of age	On entry	Not unless from high-risk pool
Transfemale	Every six months	Every 3–6 months	Every 3–6 months	Every 3–6 months	Annually for HIV+ if clinically indicated	To diagnose past or present infection	Anyone >19 years of age	On entry	Not unless from high-risk pool
Male (non-MSM/non-PLWHA/ non-FTM)	All people at least once	NR	NR	NR	NR	From country with >2% prevalence	Anyone >19 years of age	NR	Not unless from high-risk pool
Female	All people at least once	<25 years of age: every 12 months; women receiving IUDs: at time of IUD insertion	<25 years of age: every 12 months; women receiving IUDs: at time of IUD insertion	NR	NR	From country with >2% prevalence	Anyone >19 years of age	NR	Not unless from high-risk pool

[a]Screening means testing regardless of risk factor or symptoms. It does not preclude testing based on clinical symptoms, diagnostic testing based on signs or systems, exposure to a specific disease, and/or prior infection and retesting after treatment to assess for possible reinfection.

HAV = hepatitis A virus

HBV = hepatitis B virus

HIV = human immunodeficiency virus

HCV = hepatitis C virus

TB = tuberculosis

NR = not recommended

MSM = men who have sex with men

PLWHA = people living with HIV/acquired immunodeficiency syndrome

IDU = injection drug user

HBsAg = test surface antigen for HBV

FTM = female to male

IUD = intrauterine device

evidence along with a thorough review of all federal, state, and local guidelines. We matched local data to see if they met federal guidelines or to see if the epidemiology indicated something different. We developed a grid of screening recommendations by disease for each population. Our final recommendations are evidence-based.

CONCLUSIONS

We have now completed the first phase of our initiative of increasing preventive services for viral hepatitis, HIV, STDs, and TB. The next phase is to gather the data from our electronic medical records to devise continuous quality improvement (CQI) measures for increased adherence to new guidelines. Figure 1 provides the next steps in developing the educational materials, technical assistance plan, and CQI measures for San Francisco.

The process validated a majority of the current recommendations made at the federal, state, and local levels. It also allowed us to make new recommendations based on local epidemiology. This process demonstrates the importance of reviewing and knowing local data. In another important shift, great care was taken to make actionable recommendations; screens and vaccinations will now need to be documented in the electronic medical record. This documentation will play an important role for future measurements of guideline implementation.

Through this experience and given the passage of the Patient Protection and Affordable Care Act, we heartily encourage other health departments to use a similar framework to develop local recommendations that are pertinent to their jurisdictions for the betterment of public health and the communities they serve. This framework will contribute to CQI and the meaningful use of local public health data. Ultimately, these guidelines can help populations impacted by communicable diseases achieve optimal health outcomes.

The process of developing these recommendations did not involve the use of protected health information; therefore, institutional review board approval was not necessary.

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