Centers for Disease Control and Prevention

Tuberculosis Elimination and Laboratory Cooperative Agreement Final Report

Grant: CDC-RFA-PS20-2001
NU52PS910230

Reporting Period:
January 1, 2020 – December 31, 2024

Funding Cycle:
January 1, 2020 – December 31, 2024

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Executive Summary

The Tuberculosis Branch (TB Branch) of the San Francisco Department of Public Health is the lead agency for all tuberculosis (TB) prevention and control activities in the City and County of San Francisco (CCSF), California. Its mission is to control, prevent, and eliminate TB in San Francisco (SF) by providing compassionate, equitable, and supportive care of the highest quality to all persons affected by this disease. All patients suspected or confirmed to have TB disease are referred to the SF TB Clinic for clinical care, directly observed therapy, and case management. Patients with complicated latent TB infection and contacts to patients with TB disease are also evaluated and treated in the TB Clinic. The TB Branch surveillance and epidemiology unit ensures that all cases of TB diagnosed in San Francisco are reported, and that data from these cases and their investigation is used to inform policy development and to target outreach and other resources. The TB Branch ensures training for TB Branch staff to develop local expertise, and these experts provide outreach education and public health detailing to clinical providers

and community-based organizations serving populations at risk in SF jurisdiction as well as on a regional, state, and national level. The San Francisco Department of Public Health Public Health Lab (SFDPH PHL) provides timely, high-quality TB laboratory services to the SFDPH TB Clinic, and clinical providers throughout SF.

Table 1. National TB Program Objectives Performance Targets (NTPOPT) Outcomes 2020 – 2024

National TB Program Objectives	2020	2021	2022	2023	2024	SF 2024 Targets	Nat'l 2025 Targets
TB Incidence Rates (cases/100,000)	6.7	8.6	7.0	8.1	10.9	n/a	1.3
• U.S.-born Persons	1.02	0.9	1.1	0.9	2.0	n/a	0.4
• non U.S.-born Persons	17.9	24.1	18.4	22.4	27.1	n/a	8.8
• U.S.-born non-Hispanic Blacks	0	9.7	5.4	2.9	7.7	n/a	1.0
• Children Younger than 5 Years	0	0	0	3.0	3.0	n/a	0.1
• Known HIV Status	100	99	100	100	98.9*	99	99
• Timely Treatment Initiation	95.2	90.9	96.6	95.5*	96.8	99	96
• Recommended Initial Therapy	89.7	89.0	77.8	73.1*	70.1*	80	97
• Sputum Culture Result Reported	100	100	100	100	100	99	99
• Sputum Culture Conversion 60d	77.4	85.7	84.4	87.5	68§	83	83
• Timely Completion of Treatment	94.7	85.5	78.6	94.3	36§	85	95
• 21d culture turn-around-time	62	52	59	64	60	66	74
• 48h NAAT turn-around-time	38	33	46	64*	76	65	77
• Drug-Susceptibility Results	100	100	100	100	98.6§	99	100
• Universal Genotyping	100	100	100	100	78.6§	100	100
• Contact Elicitation	100	100	100	100	100	100	100
• Contact Examination	88	93	71.7	78.4*	77.1§	87	94
• LTBI Treatment Initiation	80	88	67.8	85.7	83.6§	84	92
• LTBI Treatment Completion	84	93	84	83.3*	33.3§	92	93
• I/R Examination Initiation	57	82.4	53.1	66.9*	45.2*	72	72
• I/R Examination Completion	89	83.5	59.4	71.4*	69.1§	85	78
• I/R LTBI Treatment Initiation	86	88.6	78.1	69.6*	58.8§	87	87
• I/R LTBI Treatment Completion	83	77.4	80	77.8*	57.5§	87	87
• RVCT	98.9	100	99.2	99.9*	93.7§	100	100
• ARPEs	100	100	100	100	77.8§	100	100
• EDN	87.2	95.0	88.3	88.2*	74.4§	100	93

**Program target unmet for 2023 or 2024; §Preliminary data*

Strategy 1 – Diagnosis and Treatment of Persons with TB Disease – Performance Measures

Objective	2020	2021	2022	2023	2024	2024 Goal
1.1 Timely Tx Initiation (%)	95.2	90.9	96.6	95.45*	96.8*	98
1.2 Initiation of 4 drugs (%)	89.7	89	77.8	73.13*	71.3*	80
1.3 12 month tx	94.7	80.6	78.6	94.33	*36§*	85

completion (%)						
1.4 Sputum Cx identification (%)	100	100	100	100	100	99
1.5 Sputum Cx Conversion (%)	77.4	85.7	84.4	87.5	*68§*	83
1.6 Drug Susceptibility Test (%)	100	100	100	100	*98.6§*	100
1.7 Documented HIV Status (%)	100	98.6	100%	100	*78.6§*	99
1.8 Linkage to Care for HIV+ (%)	n/a	100	100	100	100	100
1.9 Max patients on VDOT (%)	50	47	>50	63%	60%	60%
1.10 Inter-jurisdiction refer (%)	100	100	100	n/a	67%	100
1.11 Geriatric TB best practices	N/A	Initiated	Drafted	Imple-mented	Imple-mented	Imple-mented
1.12 MDR referred to CDPH (%)	N/A	100	N/A	67*	0*	100
1.13 MDR PSQ/MDDR (%)	N/A	100	N/A	100	100	100
1.14 Deaths reviewed (%)	54.5	33.3§	100	100	100	100
1.15 TB Elimination plan	No	Drafted	Initiated	Partially	Partially	Imple-mented

**Program target unmet for 2023 or 2024; §Preliminary data*

Objective 1.1: Timely Treatment Initiation

Goal: By 2024 reach the goal of 98% of sputum smear-positive TB cases initiating treatment within 7 days of specimen collection. **Outcome**: 2023 final: 95.45%, goal unmet but close; 2024 final: 96.7%, goal unmet but close. In 2023, of the 25 reported sputum smear-positive TB cases, one patient died before

treatment initiation and two were later confirmed to be smear-negative, leaving 22 cases. Of these, 21 patients (95%) began treatment within seven days of their first sputum specimen collection, while one began treatment on day twelve. In 2024, 33 smear-positive cases were reported. One patient died two days after specimen collection, and one was excluded due to initial negative smear results, resulting in 31 total smear positive cases. Of these, all but one patient initiated treatment within seven days; the remaining patient started on day eight. Despite limitations in conducting weekly electronic lab reporting (ELR) reviews due to staffing shortages, improvements in referral documentation and prioritization of high-risk patients supported timely clinic visits and treatment initiation.

Objective 1.2: Initiation of a Four-Drug Regimen

Goal: By 2024, meet the San Francisco target of 80% for the initiation of a standard four-drug regimen for all TB cases. **Outcome**: 2023 final: 73.13 %, goal unmet; 2024 final: 70.1%, goal unmet. In 2023, 67 patients received TB treatment; 49 started with the standard four-drug regimen, including cases using rifabutin as a substitute for rifampin. Eighteen patients did not start with the standard regimen due to clinical factors: eight received the four-month short-course regimen, one required a liver-sparing regimen using levofloxacin and linezolid, four were treated as suspected drug-resistant cases, two had contraindications or drug interactions, one was too young for pyrazinamide (PZA), one was pregnant, and one had low platelet levels precluding PZA use. In 2024, of the 87 patients who initiated TB treatment (excluding four who died before starting), 61 began with the standard four-drug regimen. Among the 26 who did not start with the four-drug regimen, ten received the four-month short-course regimen, nine had drug contraindications or interactions, one had a history of gout and did not receive PZA, one had chronic liver disease and was given levofloxacin instead of PZA, one had elevated liver function tests and received levofloxacin and linezolid, one received a liver-sparing regimen due to baseline liver concerns, one was undergoing immunosuppressive therapy for breast cancer and started moxifloxacin and linezolid, and one also on immunosuppressive therapy began levofloxacin and linezolid. Given the implementation of the newly recommended short-course 4-month TB treatment protocol, and the increasingly geriatric population served (median age 65 by 2024) with multiple comorbid conditions preluding the use of certain first-line medications, the target was adjusted downward for 2022 and subsequent years.

Objective 1.3: Treatment Completion within 12 Months

Goal: By 2024, achieve and maintain the national target of 85% for completion of therapy for all TB cases for which a regimen of ≤12 months is initially indicated (objective excludes cases that died or moved out of the U.S. within 366 days of initiating treatment, rifampin-resistant TB, meningeal /bone/skeletal TB, TB in the central nervous system, and children under 14 with disseminated TB). **Outcome**: 2023 final: 94.33%,

goal met; 2024 preliminary: 36%, goal unmet currently but it's on-track to meet the goal. In 2023, the median age at TB diagnosis in San Francisco was 65, reflecting an aging population with increasing medical complexity. Among the 53 patients eligible for 12-month treatment completion, 50 completed treatment within the target timeframe. Three patients completed treatment beyond 12 months due to extensive TB with uncontrolled diabetes and two adverse drug reactions. In 2024, the median age remained 65. Of the 75 patients eligible for 12-month treatment, 27 completed treatment within the timeframe. As many patients are still undergoing therapy, completion outcomes for the remaining 45 are pending.

Objective 1.4: Sputum Culture Identification – Cases >12 Years of Age

Goal: By 2024, maintain or exceed the NTPOPT target of 99% of laryngeal and pulmonary TB cases 12 years of age and older that have at least one sputum culture obtained at the time of diagnosis. **Outcome**: 2023 final: 100%, goal met; 2024 final: 100%, goal met. San Francisco consistently meets this objective. In both 2023 and 2024, 100% of laryngeal and pulmonary TB cases aged 12 and older had at least one sputum culture obtained at the time of diagnosis, exceeding the NTPOPT target.

Objective 1.5: Sputum Culture Conversion

By 2024, maintain the percentage of sputum culture conversion within 60 days of treatment initiation for all culture-positive TB cases to meet the target of 83% (objective excludes cases that died or moved out of the U.S. within 60 days of initiating treatment). **Outcome: 2023 final: 87.5%,** goal met; **2024 preliminary: 68%** goal unmet but we are on-track to meet the goal of 83%. In 2023, 28 of 32 patients with culture-positive TB converted sputum cultures within 60 days of treatment. Four experienced delayed conversion, occurring between 61 and 92 days, due to factors including cavitary disease, extensive disease burden, and persistent acid-fast bacilli positivity. In 2024, of 50 culture-positive patients, 34 achieved conversion within 60 days. Many patients are still undergoing treatment, so conversion outcomes for the remaining cases are pending.

Objective 1.6: Drug Susceptibility Testing

Goal: In 2024, meet the target of 100% of culture-positive TB case isolates sent and tested for initial drug susceptibility. **Outcome**: 2023 final: 100%, goal met; 2024 preliminary: 98.6%, goal not met. In 2023, San Francisco met the target with 100% of culture-positive TB isolates tested for initial drug susceptibility.

In 2024, 74 of 75 sputum positive cases received DSTs or 98.66% of isolates were tested; one result remains pending due to the patient's death one month after culture collection.

Objective 1.7: Documented HIV Status

Goal: In 2024, achieve documented HIV status for 99% of cases alive at the time of diagnosis *(*objective excludes cases who died before a test could be offered, and cases with a negative test in the last 6 months*)*. **Outcome**: 2023 final 100%, goal met; 2024 preliminary: 98.86%, goal unmet but close. In 2023,

all 68 patients alive at diagnosis had documented HIV status, meeting the 100% target. In 2024, of the 88 patients alive at diagnosis, 98.86% had documented status; one patient declined testing. The San Francisco TB Program continues to maintain strong performance in this area.

Objective 1.8: Linkage to care for HIV+

Goal: By 2022, ensure that 100% of TB cases with HIV without linkage to primary care at the time of diagnosis are referred to Positive Health Access to Services and Treatment (PHAST) linkage-to-care program. **Outcome**: 2022 final 100%, goal met; 2023 YTD 100%, goal met. The TB Branch continues to maintain high achievement on this objective as all TB cases with HIV without linkage to primary care at the time of diagnosis were referred to the PHAST program.

Objective 1.9: Maximize VDOT utilization

Goal: Increase the VDOT roster capacity to allow 50% patients to be enrolled. **Outcome:** 2022 met >50% enrolled; 2023 in progress. A new contract was executed with Dimagi (formerly SureAdhere), the TB Branch's VDOT vendor allowing up to 50 program patients to be enrolled in VDOT at a time. With focused emphasis on VDOT enrollment as a priority in 2022 and 2023 YTD more than 50% of patients were enrolled in VDOT. This allowed the TB Branch to combine the two DOT routes into a single consolidated route, freeing up health worker time for other activities such as outreach to contacts in large investigations and helping arriving immigrants and refugees navigate the TB screening process.

Objective 1.10: Out of Jurisdiction Referred

Goal: By 2024, ensure that 100% of patients leaving the jurisdiction are referred for care in the receiving jurisdiction, including international sites. **Outcome:** This goal was met in 2020 – 2022; 2023 final n/a, (none moved); 2024 67% goal not met. The TB Branch continues to have robust communication with California TB Control Branch (TBCB), receiving local jurisdictions, and with CDC Division of Global Migration Health (DGMH) regarding patients who leave San Francisco prior to treatment completion and good preparation for referral including extensive locating information in the destination jurisdiction. For cases counted in 2020 – 2022 all patients who moved out of jurisdiction were referred to the receiving jurisdiction or to CureTB if relocating internationally. In 2023, there were no patients counted who moved out of jurisdiction, one of three patients in 2024 who moved out of jurisdiction was lost to follow-up and was thought to have moved out of jurisdiction but the TB Branch was unable to locate him.

Objective 1.11: Geriatric TB Best Practices

Goal: By 2024, develop a document outlining best practices for management of TB in the elderly addressing atypical presentations, multiple co-morbidities, increased risk of treatment-related adverse events, prolonged treatment durations and increased risk of death due to TB. **Outcome:** met for 2023 – 2024. In 2020 and 2021, efforts for geriatricians were focused on COVID-related prevention and care

efforts alongside the Medical Director, TB Controller and nursing staff from TB Control. The working relationships forged during this time constitute a source of potential collaborators for this project when time permits. This was suggested as an opportunity for collaboration to the Western Region Center of Excellence – the Curry International Tuberculosis Center (CITC) as well. In 2022, the document was expanded and the best practices shared during one of the core sessions at NTCA and incorporated into the standing delegation orders for TB Clinic, implemented in 2023 – 2024.

Objective 1.12: MDR Cases referred to California Department of Public Health (CDPH) /CITC

Goal: By 2022, refer 100% of multi-drug resistant (MDR) cases to MDR consultation service, either CITC or the CDPH TB Control Branch MDR TB consultation service. Continue through 2024.

Outcome: partially met in 2023 (67% referred) but not met in 2024 (0% referred). For 2020 – 2021, all MD cases were referred to CDPH, however since the advent of the simple and highly effective new MDR regimens - bedaquiline, pretomanid, and linezolid (BPaL) and bedaquiline, pretomanid, linezolid and moxifloxacin (BPaLM) – the TB Branch has not needed to consult these services for all MDR cases and instead are consulting CDPH regarding complex cases with challenging medication side effects including serious rifamycin-intolerance (critical thrombocytopenia, hepatitis, and severe rash) resulting in rifamycin-sparing regimens.

Objective 1.13: MDR specimens referred for PSQ and MDDR

Goal: By 2022, refer 100% of specimens from MDR cases for pyrosequencing (PSQ) and molecular detection of drug resistance (MDDR), and continue through 2024. **Outcome:** There were 3 MDR cases in 2023 and 1 MDR case in 2024 respectively. All were referred for advanced molecular testing (transitioned to whole genome sequencing from PSQ), and the goal was met. The TB Branch continues to utilize the CDPH Mycobacterial Disease Laboratory (MDL) for PSQ on both cases transitioning to therapy with fluoroquinolones (FQ) to confirm the absences of FQ resistance mutations (gyrA and gyrB genes). In addition, MDL also submitted one specimen to CDC for more PSQ testing and the MDDR report from CDC confirmed the absences of Bedaquiline (BDQ) resistance mutations (atpE, rv0678 and pepQ genes), Clofazimine (CFZ) resistance mutations (pepQ and rv0678 genes), LINZ resistance mutations (rpLC and rrl genes), PZA resistance mutations (pncA gene), and TB bridge regimens-Amikacin resistance mutations (rrs and eis genes).

Objective 1.14: TB Case Deaths Reviewed

Goal: Each year starting in 2020, review 100% of deaths with TB that occur in San Francisco residents undergo a standardized clinical case review to accurately identify TB-related deaths. **Outcome:** 2022 100%, goal met. 2023 100%, goal met. The goal was met in both 2023 and 2024. Standard work for death review, including obtaining death certificate was developed since 2020. The death certificates sometimes

take more than a month to arrive and sometimes have to be requested multiple times resulting in delays. The death review helps understand the mortality due to TB, and message to communities most heavily impacted by TB deaths.

Objective 1.15: TB Elimination Plan

Goal: By 2023, implement workplan including hiring Coalition Coordinator. In 2024, refine and implement plan with target partners and SFDPH Public Health Lab (PHL). **Outcome:** 2023 work on plan continued, but TB Branch did not fill coalition coordinator (Health Educator) vacancy; 2024 achieved greater success with clinic leadership engagement in Bay Area Regional TB Prevention Community of Practice, collaboration with CDPH on developing a tailored interferon gamma release assay (IGRA) report to identify both high-priority providers to engage and also high-priority individuals (such as children <5 years old) with TB infection.

Discussion: A TB Elimination plan was drafted based on the framework outlined by the California TB Elimination Action Committee focusing on the following 5 strategies:

1. Find and engage persons and populations at high risk for TB and their providers
2. Apply focused and effective strategies for TB testing and optimize treatment for LTBI
3. Develop and implement a surveillance system for reporting, tracking and evaluating LTBI
4. Secure sufficient resources for implementing the California TB Elimination Plan
5. Conduct research to evaluate TB prevention strategies

In 2022, the newly hired Coalition Coordinator (Heluna Health contract staff) coordinated joint efforts with community collaborators (housing-based CBO and community clinic partners) to host outreach events for TB risk awareness and testing in the most highly impacted neighborhoods in San Francisco: Chinatown and the Tenderloin. Through these collaborations, the TB Controller developed relationships with key clinical partners including Chinese Hospital the San Francisco Consortium of Community Clinics (SFCCC) Medical Directors group to initiate discussions of expanded access to IGRA and optimize care cascade. After the contract coalition coordinator departed, the TB Branch was not able to fill the new permanent Health Educator (2822) position and budget limitations in late 2023 and continuing through 2024 resulted in prioritizing existing positions. In 2024, collaborated with CDPH and local TB Controllers to form a regional Community of Practice to engage clinical leadership coalition and support the expansion of TB prevention work, and successfully competed for 5-year CDC Cooperative Agreement funding for TB Elimination 2025 – 2029 to assure continued resources for implementation.

Strategy 2 – Diagnosis and treatment of persons with latent TB infection (LTBI)

Strategy 2A – Contact Investigations (CI) for Infectious TB Cases – Performance Measures

Objective	2020	2021	2022	2023	2024	2024 Goal
2A.1 Contact Identification (%)	100	100	100	100	100	100
2A.2 Contact Eval Sm+ (%)	88	93	71.7	78.4*	77.1§	87
2A.3 LTBI Tx Initiation (%)	80	88	67.8	85.7	83.6§	84
2A.4 LTBI Tx Completion (%)	84	93	84	77.8*	33.3§	92
Additional CI objectives	**2020**	**2021**	**2022**	**2023**	**2024**	**2024 Goal**
2A.5 CITC train new DCI staff	N/A	N/A	N/A	100%	100%	100%
2A.6 Provide Consult services	Yes	Yes	Yes	Yes	Yes	yes
2A.7 Respond to GIMS Alerts in <30 d	N/A	100%	N/A	N/A	100%	100%

**Program target unmet in 2023 or 2024; §Preliminary data*

Objective 2A.1: Contact Identification

By 2024, maintain the percentage of smear-positive TB cases that have identified at least one contact to meet the program target of 100%. **Outcome**: 2023 100%, goal met. 2024 100%, goal met. The TB Branch has consistently met this target.

Objective 2A.2: Contact Evaluation – Smear-Positive Cases

Goal: By 2024, increase the percentage of contacts to smear-positive TB cases that are fully evaluated for TB infection and disease to meet the program target of 87%. **Outcome**: 2023 78.4%, goal unmet. 2024 YTD 77.1%, still preliminary pending completion of evaluation. Among the 269 contacts identified in 2023, 211 were evaluated for TB. Of the contacts that were not evaluated – 35 were lost-to-follow-up, 12 refused evaluation, and 9 were out-of-jurisdiction. Among the 323 contacts identified in 2024, 249 were evaluated for TB. Of those who were not evaluated, 38 were lost-to-follow-up, 14 refused evaluation, 16 are out-of-jurisdiction, and 6 contact evaluations are still ongoing.

Objective 2A.3: LTBI Treatment Initiation – Contacts to Smear-Positive Cases

By 2024, increase the percentage of eligible contacts to smear-positive TB cases initiating LTBI treatment to meet the program target of 84%. **Outcome**: 2023 85.7%, goal met. 2024 83.6%, still preliminary pending follow-up visits. **Discussion:** Among the 21 newly diagnosed LTBI contacts in 2023, 18 initiated LTBI treatment. Of the 3 contacts that did not initiate LTBI treatment, 2 were lost-to-follow-up with their

primary care provider, and 1 refused treatment. In 2024, there were 61 newly diagnosed LTBI contacts, of which 51 initiated LTBI treatment. Of the 10 contacts that did not initiate treatment, 6 declined, 3 were out-of-jurisdiction (1 of which was lost-to-follow-up and 2 of which their primary care did not recommend treatment), and 1 was lost-to-follow-up before treatment could be started.

Objective 2A.4: LTBI Treatment Completion – Contacts to Smear-Positive Cases

Goal: By 2024, maintain the percentage of LTBI treatment completion among contacts to smear-positive TB cases to meet the target of 92%. **Outcome**: 2023 77.8%, goal unmet. 2024 33.3%, still preliminary pending treatment completion. In 2023, 14 of 18 contacts with LTBI completed treatment. Of the 4 who did not, 3 were lost-to-follow-up, and 1 discontinued due to adverse treatment effects. Among the 51 contacts who initiated LTBI treatment in 2024, 17 have completed their treatment and 18 are still in progress. Of the remaining 16 who have not completed treatment, 10 were lost-to-follow-up, 3 had treatment held due to clinical concerns, 2 refused to continue, and 1 discontinued due to adverse treatment effects.

Objective 2A.5: Completion of CITC trainings

Goal: Ensure completion of CITC trainings for each new staff member within 1 year of onboarding. **Outcome**: 2022 n/a (no new staff), 2023 three new staff members hired in 2023, another new staff member hired in 2024. No new Disease Control Investigation (DCI) staff were hired in 2022. In 2023 three DCI staff members were hired, one left after less than a year and another new DCI was hired in 2024. All three of the new DCI staff members who stayed for at least one year have completed CITC training for disease investigation.

Objective 2A.6: Provide Consultation Services

Goal: Provide consultation services and support to occupational health staff in hospitals, long term care facilities, hemodialysis centers, jail health services, homeless shelters and other institutions on contact investigation, contact prioritization, TB testing and diagnosis, LTBI treatment, and reporting. **Outcome**: 2023 and 2024 met. **Discussion:** TBPCP has provided extensive consultation to facilities and providers both when called upon to do so, and including within the context of contact investigations. Both the Medical Director and TB Controller serve as consultants for the CITC TB consultation warmline and all consult requests for the San Francisco jurisdiction are forwarded directly to them.

Objective 2A.7: Respond to Genotyping Information Management System (GIMS) alerts within 30 days

Goal: Respond to 100% of GIMS alerts within 30 days. **Outcome**: met in 2023 - 2024. **Discussion:** There was one alert in July 2022 among two cases in San Francisco and one in a neighboring county. Two of the cases shared an epi link that they worked for the same (large) employer in the neighboring county and

had been on the employer's private commuter busses during overlapping time periods (more than 2 years prior to the alert). Given that the potential epi link was more than 2 years prior (and pre-pandemic), the neighboring county opted not to pursue further investigation at that large employer's worksite. For the third case in this cluster TB Branch was not able to identify any epi links. There were no GIMS cluster alerts in 2023. In 2024 one cluster alert was received and the TB Branch responded the same day.

Strategy 2B – Evaluation of Immigrants and Refugees with TB or LTBI – Performance Measures

Objective	2020	2021	2022	2023	2024	2024 Goal
2B.1 Initiate Evaluation (30 Days), %	57	82.4	53.1	66.9*	45.2*	72
2B.2 Complete Evaluation (120 Days), %	89	83.5	59.4	71.4*	69.1§	85
2B.3 LTBI Tx Initiation, %	86	88.6	78.1	69.6*	58.8§	87
2B.4 LTBI Tx Completion, %	83	77.4	80	84.4*	57.5§	87

Objective	2020	2021	2022	2023	2024	2024 Goal
2B.5 Improve Accuracy of EDN Data, 0% misclassification	Yes	Yes	Yes	Yes	Yes	0%

** Program target unmet in 2023 or 2024; § Preliminary data*

Objective 2B.1: Evaluation of Class B1 Notifications – Initiate Evaluation

Goal: By 2024, reach the target of 72% for the initiation of evaluation for Class B1 (history or evidence of prior TB disease) notification immigrants entering San Francisco, within 30 days of notification. **Outcome:** 2023 final 66.9%, goal not met; 2024 45.2%, goal not met. In 2023, a total of 154 immigrants with abnormal chest radiographs read overseas as consistent with TB were referred to TB Clinic. Among them, 103 patients were screened within 30 days of notification, 13 were screened after 30 days, and 38 never showed up due to various reasons (e.g., unable to locate, moved out of jurisdiction, returned to country of origin, and refused evaluation). In 2024, 217 Class B1 immigrants were referred to TB Branch, and 98 were seen within 30 days of notification, 63 were seen between 31-87 days, and 56 were never seen. Compared to 2023, TB Clinic saw an increase in active TB cases and subsequent contact investigations that required priority over Class B1 immigrants within the appointments schedule. As a result, among those who initiated evaluation in 2024, 39% had their initial appointment after 30 days.

Objective 2B.2: Evaluation of Class B1 Notifications – Complete Evaluation

Goal: By 2024, reach the target of 85% of Class B1 notification immigrants completing a U.S. medical evaluation within 120 days of notification. **Outcome:** 2023 final 71.4%, goal not met; 2024 69.1%, *still preliminary*. In 2023, among 154 immigrants who had abnormal chest radiographs read overseas as consistent with TB, 110 patients completed evaluation within 120 days of notification, 4 patients completed but did not finish within 120 days, 2 patients initiated evaluation but did not complete due to moving or refusing further evaluation, and 38 never showed up due to various reasons (e.g., unable to locate, moved out of jurisdiction, returned to country of origin, and refused evaluation). As of 4/1/2025, 217 Class B1 immigrants were referred to the TB Branch, and 150 were able to complete evaluation within 120 days of Electronic Disease Notification (EDN) network notification. Of those who did not, 6 patients completed evaluation late (121-156 days), 8 were pending (e.g., need to come back and see the provider later for the final diagnosis), and 20 were never seen. In 2020 through the beginning of 2022 the TB Branch had a dedicated staff member who was responsible for patient outreach and care cascade retention. When this staff member left, another staff member (Licensed Vocational Nurse) was trained in this work, and it was added on to her usual duties. Ongoing staffing limitations have continued to present a challenge for prioritizing this work.

Objective 2B.3: LTBI Treatment Initiation Among Class B1 Notifications

Goal: By 2024, reach the target of 87% of eligible Class B1 immigrants started on LTBI treatment. **Outcome**: 2023 final 69.6%, goal not met; 2024 58.8%, *still preliminary.* In 2023, among 152 immigrants who had abnormal chest radiographs read overseas as consistent with TB, 46 patients were recommended to get LTBI treatment with 32 initiating treatment. Of the 14 patients who did not start, 9 refused treatment, 3 were lost-to-follow-up and 2 moved out of jurisdiction. Among 217 Class B1 immigrants referred to the TB Branch in 2024, LTBI treatment was offered to 80 patients as of 4/1/2025. Of those, 47 started treatment, 21 declined, 4 moved out-of-jurisdiction, 4 chose to consult their own providers, 2 deferred, and 2 were lost-to-follow-up.

Objective 2B.4: LTBI Treatment Completion Among Class B1 Notifications

Goal: By 2024, reach the target of 87% completion of therapy for all immigrants placed on LTBI treatment. **Outcome**: 2023 final 84.4%, goal not met; 2024 57.5%, *still preliminary*. Among 32 Class B1 immigrants referred to the TB Branch in 2023 who were eligible for and initiated LTBI treatment, 27 have completed treatment, 2 refused to continue (1 due to adverse treatment event), 2 were lost-to-follow-up and 1 died. In 2024, 27 of 47 Class B1 immigrants have completed LTBI treatment as of 4/1/2025. Of the remaining,

16 patients are still on treatment, 1 was lost-to-follow-up, 1 chose to stop, 1 had treatment held due to clinical concerns, and 1 deferred treatment for a later date.

Objective 2B.5: Improve Accuracy of EDN Data (0% misclassification)

Goal: In 2023 and 2024, maintain target of 0% misclassification of EDN data. **Outcome:** This target was met in 2022, 2023 and 2024. It was noted in prior years that there were a number of patients whose overseas CXRs which had been read as abnormal by panel physicians were subsequently re-read by local radiologist and TB provider as normal but due to existing workflows these patients had undergone repeat sputum induction unnecessarily. In 2018, a nurse was hired and assigned to manage the EDN program and ensure data completeness, in 2019 standard work was developed to support training and standardization for this role. Since that time, there have been no misclassifications of TB class among classified immigrants.

Strategy 2C – Targeted Testing and Treatment of LTBI – Performance Measures

Objective	2020	2021	2022	2023	2024	2024 goal
2C.1 (2020 – 2022) List at least 3 new Civil Surgeons/yr	3	3	0	Retired metric	Retired metric	100% of new
2C.1 (2023 – 2024) List of target Civil Surgeons				N/A	N/A	100% of new
2C.2 Review Civil Surgeon survey tool annually; plan education based on results (2020 - 2022)	Yes	No	CDPH survey	retired	retired	Orient all new
2C.2 Orient newly registered Civil Surgeons to the online toolkit (2023 -2024)	N/A	N/A	N/A	N/A (no new CS)	N/A (no new CS)	Orient all new
2C.3 List of providers serving high-risk populations	No	Yes	Yes	Yes	Yes	List
2C.4 Implement IGRA at sites serving high-risk	2 Sites	2	5	3	Sustain & Expand	Sustain and expand use
2C.5 Train primary care providers for high-risk in diagnosis and treatment of LTBI	2 Sites	3	7	4	3	2-3 sites
2C.6 List of target providers/facilities to expand IGRA testing	N/A	Initiated	Initiated	Yes	Yes	Ongoing Outreach

and results reporting – 10 by 2024	to sites on list

Objective 2C.1: List at least 3 new Civil Surgeons/yr

Goal: Annually 2020 - 2024 identify at least three Civil Surgeons and provide training on technical instructions, IGRA, reporting/referral, and LTBI treatment. **Outcomes:** 2022 - 2024 no additional Civil Surgeons identified because there are no more newly certified in San Francisco jurisdiction (current n=38). Outreach conducted annually, and the list is updated several times per year by canvassing the USCIS website. Additionally, an updated list of Civil Surgeons has been shared by CDPH. Currently the TB Branch is in contact with all Civil Surgeons in the SF jurisdiction (n=38) and receiving reports. This objective was modified for 2023/24 to reflect identifying contact information for 100% of new Civil Surgeons in jurisdiction (if there are any new ones). In 2023 – 2024 CDPH did not provide any updated list of Civil Surgeons, the TB Branch is not aware of any new Civil Surgeons registered during that time.

Objective 2C.2: New Civil Surgeon orientation

Goal: During 2022, Develop a "welcome packet" for new Civil Surgeons in order to orient them to LTBI diagnosis/treatment practices. **Outcome:** For 2023 and 2024 this objective did not apply (n/a) because no new Civil Surgeons were registered in SF. Toolkit for Civil Surgeons is available on website and all Civil Surgeons in jurisdiction are now oriented to it and appropriately reporting LTBI. The TB Branch utilized CDPH survey results and relying on Curry COE to provide education. This objective was modified for 2023/24 to reflect the orientation of any new Civil Surgeons to the online toolkit. No new Civil Surgeons registered in San Francisco in 2022, 2023 or 2024 based on information provided by CDPH.

Objective 2C.3: List of providers serving high-risk populations

Develop and maintain a list of providers and facilities in SF jurisdiction that are serving high-risk populations. **Outcome:** 2023 met; 2024 met. **Discussion**: Methods for provider identification include use of provider lists in the SF Health Network[a], and SF Community Clinic Consortium, population estimates, number of non-U.S.-born patients seen by providers and facilities. Continuing to add to list based on reported cases and referrals. Needs assessments for LTBI testing/treatment conducted during initial outreach with the addition of each clinic site. List verified in 2024 as new pilot IGRA report was developed by CDPH with TB Branch feedback.

Objective 2C.4: Implement IGRA at sites serving high-risk populations

In collaboration with SFDPH PHL, expand access to IGRA testing to high-risk populations at 2 clinic sites per year **Outcome**: objective met for 2022 and 2023 **Discussion**: In 2022 hours of IGRA availability were expanded to include afternoon hours and weekend availability for all outpatient primary care, specialty

and urgent care clinics and inpatient units on the San Francisco General Hospital Campus. In 2023, access was further expanded to 2 additional sites of the Mission Neighborhood Health Center (MNHC) clinics. In 2024, activities focused on sustaining and further expanding the use of IGRA testing at sites where it was more recently made available, this included troubleshooting results access at MNHC and a TB Elimination Network quality improvement project at their site through which they increase QFT testing coverage of their clinic population by 20%. A California bill (AB2132) – passed in 2024 – that requires risk-based TB testing to be offered to patients being cared for in primary care settings became law in 2025 has increased awareness and interest among primary care providers in implementation or expansion in the use of IGRA. Starting at the time of its passage in October 2024, outreach efforts to primary care providers regarding TB testing have focused on implementation of this new mandate in primary care settings, including increasing utilization of IGRA.

Objective 2C.5: LTBI training for primary care providers

Annually provide trainings to primary care providers (e.g., Chinatown Public Health Center, North East Medical Center) and community providers serving high-risk populations (e.g., hemodialysis centers, HIV clinics, HSH Navigation Centers, long-term care facilities) to at least 2-3 sites. Trainings provided through on-site rotation through TB Clinic, webinars, or other on-site location**. Outcome:** objective met (and exceeded) for every year of the grant, including 2023 and 2024. **Discussion**: Met for both years. Trainings included best practices on screening, diagnosis, and treatment using short course therapy, see HRD section for details on trainings provided.

Objective 2C.6: List of target providers/facilities to expand IGRA

Develop, train, and implement LTBI reporting in sites serving high-risk populations. Explore electronic laboratory reporting of IGRA results in SF Health Network[a] and SF Community Clinic Consortium[b]. List of prioritized providers/facilities to expand IGRA testing and reporting of results to the TB Branch **Outcome:** 2023 met. **Discussion:** Reporting of electronic IGRA results has been implemented via electronic lab reporting at the state level. In 2021, a contact list of medical leadership in prioritized clinics serving neighborhoods most impacted by TB was initiated. In 2022, the TB Controller and medical staff conducted outreach to these clinics to provide in-service training on TB prevention, partnered on neighborhood outreach and testing events. Additionally, the TB Branch utilized +IGRA reports to identify providers serving high priority populations and support their capacity to diagnose and treat LTBI. In 2022: The TB Branch identified a rheumatology clinic serving a largely Cantonese-speaking population from which there were identified 4 cases of active TB disease in the past 3 years and provided training in LTBI treatment to the provider who is now treating LTBI consistently in his practice to prevent further cases. In 2023, IGRA

use was expanded to two primary care sites for the Mission Neighborhood Health Center (MNHC) where previously it's use had been limited to an HIV clinic and a clinic serving homeless residents. In 2024, CDPH developed an IGRA report based on ELR reports of both positive and negative IGRAs for all California residents and TB Branch partnered with CDPH to educate clinics whose data was missing or incomplete to make sure they implemented accurate and complete IGRA reporting, the TB Branch also provided training and support for expanded IGRA use through the newly developed San Francisco Bay Area Regional TB Prevention Community of Practice which was launched in 2024 along with other local TB programs in the region, and support from CDPH's TB Free California.

Strategy 3 - Program Planning, Evaluation, and Improvement

Overview: The TB Branch's performance is measured through National TB Program Objectives and Performance Targets (NTPOPT) measures, comparing year-over-year improvement as well as progress toward established program and national targets.

Overall progress toward NTPOPT goals is reviewed quarterly at cohort reviews and annually when the program report is prepared for both local review and for the CDC Cooperative Agreement (CoAg) Project report. Each cohort review provides opportunity for identification of gaps and areas for improvement and optimization of case management and contact investigation methods including workflows, data collection and secondary review and data sharing with team members and stakeholders.

Each fall, the annual data submitted for the CDC CoAg report is reviewed with all program staff during a daylong retreat, and specific NTPOPT targets and priorities for improvement for the next year are established (see Table 1). Proposals are incorporated into program manuals and standard work.

Objective 3.1 – Information Governance Charter Data Management Plan

Goal: Annually review a systematic plan to improve information governance across program staff to maximize the value of information while minimizing risks and cost. Revise the current Data Management Plan (DMP) to ensure clinical and surveillance data quality, including NTPOPT indicators. The plan addresses standard work, revising program policies and procedures, current workflow maps with a special focus on data collection and entry, quality assurance, data monitoring, documentation of data analyses, data reporting procedures, and data archival in a repository. **Outcome**: 2023 – met; 2024 – met.

Discussion: DMP reviewed in 2022, and a major area of weakness noted to be the large volume of manual data entry needed to maintain local data in PHNIX. In late 2022 and 2023, the TB Branch engaged with SFDPH information technology (IT) services to optimize collection of data in Epic for use in TB case and LTBI care cascade monitoring. In 2023 and 2024, import rosters were developed from the TB Branch's electronic health record (Epic) into the local public health database (PHNIX) to streamline data entry of variables present in Epic. Further optimization of Epic to be able to capture additional TB reporting variables, such as American Thoracic Society (ATS) classification, got underway in mid-2024 and continues. In late 2023, and continuing through 2024, the TB Controller co-facilitated a data modernization effort being led by Information Technology and the Population Health Divisions seeking a robust, unified surveillance and contact investigation data system for SFDPH including development of business requirements and a request for information (RFI), setting the stage for purchase or adoption of a unified public health surveillance solution for local use.

Objective 3.2 – Quarterly Cohort Reviews

Using quarterly cohort review protocol in 2021 and subsequently, perform quarterly review of smear-positive cases and CI data to identify gaps in data integrity, including focused review of active TB case medical and social risk factors and CI's with <3 contacts identified. **Outcome** In 2023, three reviews were held - partially met; 2024 three reviews were held - partially met. **Discussion:** Cohort reviews have been conducted quarterly, utilizing the process outlined below, however, in 2023 due to a severe DCI staffing shortages, case investigations done in the second half of 2022 were consolidated into the 2023 cohort review. In the first half of 2024, cohort reviews resumed their quarterly schedule, but due to resumed staffing shortages, only one cohort review was held in the second half of 2024.

Cohort Review Report

Element	Progress
Dates of Cohort Reviews	2/12/20, 5/13/20, 10/14/20, 12/09/20, 04/16/21, 07/14/21, 11/03/21, 02/09/2022, 04/13/2022, 03/01/2023, 05/31/2023, 11/01/2023*, 01/31/2024, 05/29/2024, 10/23/2024 *3rd and 4th Quarter, 2022 reviewed
Cases re-viewed	7, 8, 6, 3, 4, 7, 5, 7, 6, 3, 5, 5, 4, 6 and 4 respectively ** Sputum Smear Positive Cases were selected from Clinical and DCI teams
Summary of review process	The cohort consists of pulmonary/laryngeal smear positive cases reported 6-to-9 months prior and their associated contact investigations.

	7-8 weeks before the cohort review date, the Epidemiology team generates a list of cases in the cohort and provides this to the TB Controller, the Nurse Manger, and the Surveillance Chief. The nurse case manager and DCI assigned to each case review a summary of the index case and associated contacts prepared by the Epi team. There is an opportunity at this point to resolve missing data or inconsistencies in the public health data in Maven. On the day of the cohort review a summary of each case is presented in a slide deck with all RVCT and case investigation outcome data shared. Inconsistencies, successes, and best practices are shared and challenges and opportunities for improvement are identified. After each cohort review, the lead epidemiologist will conduct a debrief session with presenters in which ideas for how to address noted improvement opportunities can be implemented.
Key issues identified and resolved	Key issues identified and their respective resolutions were as follows: **1. Issue:** Expanding contact investigations in low-risk settings where contacts with high exposure hours were fully evaluated and found to be QFT negative. **Response:** Review/teaching of definition and guidelines on concentric circles issued by CDC. Development of program specific Contact Investigation policy and procedures manual. **2. Issue:** Improve communication during large contact investigations occurring in public settings while continuing to ensure privacy and confidentiality. **Response:** Develop standardized letter addressing TB exposure that ensures privacy and confidentiality for identified index cases, as well as a review of processes for large contact investigations. **3. Issue:** Completing TB evaluations for contacts residing out-of-jurisdiction. **Response:** Develop a process protocol that facilitates collaboration with surrounding jurisdictions during contact investigations. **4. Issue:** Appropriate documentation of prioritizing high-risk contacts based on exposure-hours, relationship type, and setting type during large contact investigations. **Response:** Review of high or low exposure guidelines in our program specific Contact Investigation policy and procedures manual, which are in-line with CDPH recommendations. Review and QC of adherence to documentation of exposure duration. **5. Issue:** Understaffing.

	Response: Develop an on-boarding process that facilitates quick response to understaffing issues including implementation of DCI training curriculum. Train other staff in contact investigation protocols. 6. **Issue**: Missed opportunities when identifying potential contact due to regular communication among teams. **Response**: Incorporate discussion of the status of new contact investigations at weekly clinical meeting to share information across teams. 7. **Issue**: Appropriate documentation of exposure site assessments. **Response**: Revision of evaluation site summary tool found in public health database to align with CDC exposure site assessments.
New tools or trainings	1. Cohort reviews are scheduled quarterly, reviewing the cohort of smear-positive cases from 6-to-9 months prior and their associated contact investigations. 2. Standardized data entry process for contact data has been developed and documented in a data entry manual. 3. Contact Investigation Manual 2020 (last revised 2023) 4. Congregate Group Setting Investigation Manual 2022 5. Surveillance Duty Manual 2021 (last revised 2024)

Objective 3.3 – LTBI Care Cascade Review

Goal: Develop an action plan to address identified gaps, including protocols for LTBI follow-up. Regularly track LTBI treatment completion rates. **Outcome:** objective partially met in 2023 and 2024 **Discussion:** The TB Branch produces annual reports of LTBI care cascade for high-priority groups (contacts to cases, immigrants and refugees, and humanitarian parolees after the start of Uniting for Ukraine). However, there have not yet been resources to expand this monitoring to individuals with LTBI and evidence of prior disease on chest imaging (American Thoracic Society class 4 tuberculosis) and others with medical risks for progression to active disease. This analysis is used to identify specific gaps to be addressed by program leadership. The outreach and re-engagement-in-care strategies outlined in the TB Branch Contact Investigation Manual are being utilized to improve LTBI care cascade outcomes among contacts to cases and will be expanded to other high-risk groups with LTBI as capacity permits.

Objective 3.4 – Participation in TB Program Evaluation Network (PEN) and Education and Training Network (ETN) activities

Goal: Each year, designated epidemiology leads will participate in TB PEN conference calls and attend TB PE/TB ETN conferences; and share the TB Branch's evaluation models with local programs, state and national meetings (CTCA, NTCA, TB PEN). **Outcome:** 2023 met, 2024 met. PEN/TEN meetings

cancelled/postponed in 2022 year due to COVID-19 pandemic; 2023 and 2024 meetings were attended by HRD and Program Evaluation leads.

Objective 3.5 –Evaluation and Performance Measurement Plan

Review Evaluation and Performance Measurement Plan (including DMP) describing barriers, facilitators, and lessons learned. **Outcome:** 2023 met, 2024 met. Program Data review was conducted at each All-Staff annual retreat 2021 - 2024, along with surveys to engage continuous improvement champions in developing continuous improvement engagement activities for all staff. Strategic planning activities were initiated in Spring 2023 and were revisited in follow-up meetings once or twice per year. A summary of evaluation results is below including focus areas, along with activities implemented, difficulties and modifications/changes:

	Focus Area	Goal	Activities Implemented	Challenges	Modifications
2020	HIV testing of TB cases	100% of TB cases tested	Case manager training; mandatory checklist in case conferences	COVID-19 disruptions; patient stigma	standardized HIV documentation for case managers, included it in weekly case-conference report-out
	Contact elicitation for smear-positive TB cases	100% elicitation	Standardized contact tracing protocols with program-specific Contact-investigation (CI) manual	Shelter-in-place limits on field operations	Maintained in-person field interviews during COVID; Assured patients of robust safety protocols implemented at SF TB Clinic.
2021	Evaluation of contacts to TB cases	≥90.9% of contacts evaluated	Utilized standardized patient outreach tools developed in the CI manual	Vacancies among DCI staff positions	Introduced standardized report-out in Cohort-review meetings; high-priority focus on contact evaluation for smear-positive cases
	Increase LTBI treatment initiation among contacts with newly diagnosed LTBI	≥84.3% of contacts	Utilized and refined standardized provider outreach tools developed in the CI manual; cohort review follow-up	Competing health priorities for patients and their providers	Tailored education; community provider engagement
2022	Increase NAAT confirmation of MTBC in direct specimens	≥74% NAAT confirmation	Lab ordering and specimen-processing optimization	Providers did not think to order PCR	Standardized orderset that includes combined NAAT and AFB teseting for initial sputum specimens

2023	Contact evaluation	86% evaluated	Reinvigorated cohort review process	Increased mobility post-pandemic	Partnered with community organizations
	Increase LTBI treatment initiation among contacts with newly diagnosed LTBI	83% of contacts initiated on treatment	Streamlined treatment start workflows	Acceptance barriers among newcomers	Language access services; partnered with community clinics and orgs for patient-centered outreach and education
	Increase NAAT confirmation of MTBC in direct specimens	75% NAAT confirmation	Quarterly PHL-TB Branch meetings, continued lab improvements; further standardization of ordersets; Standing delegation orders for TB clinic nurse use	Reliance on provider choice	Addition of reflex lab orders to add on NAAT to initiial specimen and initial smear-positive specimen (to implement during Epic-Beaker transition)
2024	Increase NAAT confirmation of MTBC in direct specimens	≥65% NAAT confirmation	Sustained workflow enhancements, analysis and presentation of data on NAAT to TB program staff	Lab transition from Apollo to Epic Beaker, and planning campus move	Addition of reflex lab orders to add on NAAT to initiial specimen and initial smear-positive specimen (to implement during Epic-Beaker transition)
	Sustain gains and closeout activities	Success-ful closeout	Final audits; comprehensive data cleaning	Staff vacancies	Implementation of prioritized continuity of operations plan to sustain key objectives

Evaluation Focal Point:

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Strategy 4 – Epidemiologic Surveillance and Response – Performance Measures

Objective	2020	2021	2022	2023	2024	2024 Goal
4.1 Internal NTPOPT Report checklist	No	No	No	Yes	Yes	Checklist for sm+
4.2 Surveillance QA Protocol	Not Yet	Not Yet	Manual developed	Partially <weekly	Partially <weekly	Weekly review

4.3 RVCT Reporting	98.9	100	99.2	99.9	93.7§	100
4.4 ARPE Reporting	100	100	100	100	77.8§	100
4.5 EDN Reporting	87.2	95.0	88.3	88.2	74.4§	100
4.6 TB GIMS genotype cluster response protocol	No	No	No	No	No	Complete

§Preliminary pending treatment completion data entry

Objective 4.1: NTPOPT Checklist

Goal: Annually, produce a quarterly report summarizing TB Branch NTPOPT indicator data for program review. In 2024, this objective will be retired and incorporated in cohort review. **Outcome**: In 2023, a NTPOPT checklist was developed (met); in 2024, it was consistently utilized by case managers in case management and reviewed by all team members during Cohort Review (met). **Discussion**: The internal program report was not developed, partly because of the heavy workload associated would not be feasible with other prioritized tasks. Instead, the TB Branch developed a NTPOPT - Epi checklist that was reviewed on a quarterly basis by case management and contact investigation teams together with program leadership during quarterly cohort review. This checklist supported QA efforts and improved NTPOPT indicators. The TB Branch's plan for a report format will be retired and replaced with NTPOPT checklist quarterly for smear positive cases as part of the cohort review.

Objective 4.2: Surveillance QA Protocol

Goal: Produce a regular annual surveillance quality assurance (QA) protocol. **Outcome**: 2023 partially met; 2024 partially met **Discussion**: In 2020, the TB Branch determined that surveillance practices were non-standard, and no manual existed in the program. With support from assigned Public Health Associate Program (PHAP) staff, the TB Branch developed a standard work for case reports in 2021 and built on this to make a comprehensive surveillance duty manual in 2022 that includes standards for reviewing incoming faxed and electronic laboratory reports, and a group site manual that includes a data summary to be used for outside-of-household investigations that include >10 people. Incorporation of a report-out on this data-summary table for larger investigations during weekly CI meetings and upload into PHNIX was implemented in the second half of 2023 and is still undergoing optimization. In 2024, this QA was prioritized to interdisciplinary or interjurisdictional meetings regarding the largest CIs (>20 contacts or involving multiple jurisdictions). A Contact Investigation data quality assurance (QA) training was

developed and conducted by Disease Intervention Specialist (DIS) Fellow from the Reserve Accelerated Disease Response (RADR) unit, assigned to detail in the TB Program.

Objective 4.3: RVCT Reporting

Goal: Conduct standardized data collection methods for the collection of HIV status and other risk factor information on all TB cases; continue complete and timely reporting of RVCT variables %. **Outcome**: These are finalized 12-18 months after case reported - For 2021 98.9% almost met; For 2022 88.2% (in progress); 2023 n/a. **Discussion:** In 2020, variables in the "treatment completion" section of the RVCT were missing. Staff trained in data completion in 2022 and reporting data completion and nearly met at 99.2 and 99.9 respectively, for 2022 and 2023. 2024 is expected to be met at 100%.

Objective 4.4: ARPE Reporting

Goal: Ensure the completeness of reporting core ARPE variables to the CDC and CDPH of 100%. **Outcome**: 100% target was met in 2020, 2021 and 2023. 2024: n/a too early for report. **Discussion:** SF has consistently met this target.

Objective 4.5: EDN Reporting

Goal: Ensure the completeness of reporting core EDN variables to the CDC and CDPH of 100% **Outcome**: For years 2020 to 2023 progress improved at an average of 89.7%; 2024 - in progress. **Discussion**: Part-way through 2018, a nurse was assigned to manage the EDN program and ensure data completeness, in 2019 standard work was developed to support training and standardization for this role. It is anticipated that the TB Branch will continue to improve and meet the SF 2024 target of (100%) by Q4 of 2025. Data entry into EDN is not done in real time but submitted at the time of evaluation completion. This is done in support of staff time efficiency and may not always reflect final numbers when submitting this report.

Objective 4.6: TB GIMS genotype cluster response protocol

Develop standardized protocol for timely identification and investigation of TB GIMS genotype clusters. **Outcome:** not met for 2023 or 2024 **Discussion**: Discussion initiated with CDPH and CDC colleagues with some input from large jurisdictions in California (LA, San Diego) regarding protocol and best practices was initiated in 2022 as a first step in drafting a protocol. However, this was not completed in 2022 due to multiple large/complex investigations in the second half of 2022 requiring the focus of all available surveillance resources for response. Existing response protocol is to review new genotypes for any matches in San Francisco from the prior 2 years and review their cases and re-interview patients in order to try to identify any potential epidemiologic links to indicate actions to interrupt ongoing transmission. For alerted clusters of 3 or more linked genotypes (including those that are in other California jurisdictions) the TB Branch convenes with CDPH and the relevant jurisdictions (see description of most recent cluster

eval in objective 2A.7 discussion). Due to short-staffing and competing priorities the TB Branch was not able to reconvene subject matter experts (SMEs) in 2024 to outline a genotype match response protocol beyond the basic protocol described above.

Strategy 5 – Human Resources Development – Program Status

Objective	2020	2021	2022	2023	2024	2024 Goal
5.1 Monthly in-service trainings	Yes, for 9 months	Yes	Yes	Yes	yes	Monthly
5.2 HRD and ETN meeting participation	100%	100%	100%	100%	100%	100%
5.3 Improved CI best practices	Yes	Yes	Yes	Yes	Yes	At least monthly
5.4 Community Partner Education talks (4-5)	4	8	7	8	5	At least 5
5.5 On-site clinical trainees (>40). Teaching conferences per year (4-5)	Yes	Yes	Yes	Yes	Yes	At least 40 and 5
5.6 Five staff trained at COE, state, national and regional conferences	Yes	Yes	Yes	Yes	Yes	At least 5 staff trained

Trainings, January 1, 2020 – December 31, 2024

	TB Clinic Internal Trainings	External Partner Trainings
2020 - 2024	Weekly interspecialty TB medical case conference (J Louie); Weekly CI review – Surveillance and CI units (F Crespin, L Romo, S Graves); Unit Quarterly Meetings (Supervisors)	Weekly interspecialty TB medical case conference (J Louie)
2020	Shelter system overview, syphilis trends, Microsoft Teams training, N-95 respirator use training, schizophrenia, LEAN process improvement training, NP role in TB control, COVID Grand Rounds, geriatrics, addiction, mental health first aid. (A Phillips, R Agraz-Lara)	LTBI updates for ZSFGH Family Health Center (S Graves)

2021	EPIC rollout and feedback sessions; behavioral health safety; TB & HIV; Diabetes in TB; TB Clinic Staff Retreat: geriatric TB care, NTPOPT program review, TB trivia; TB 101 Q&A sessions; Self-care workshops (Jennifer Stella, Gabe Chamie, R Agraz-Lara, J Louie, Vanessa Li, S Graves, L Romo)	LTBI updates for (1) HR360 and (2) One Medical (3) SF Health Network Primary Care; TB 101 for Mission Mental Health; CITC courses: LTBI and TB Clinical Intensive; PITCA Conference; Hep B United/AAPCHO Summit; CTCA conference: Study 31 implementation. (Jennifer Stella, S Graves, J Louie, R Agraz-Lara, Sheila Davis-Jackson)
2022	TB Clinic COOP/adverse weather protocols; All Staff Retreat: humanitarian parolee TB screening, Cultural norms, NTPOPT review; World TB Day symposium and internal prep sessions; Use of Narcan training. (S Graves, L Romo, R Agraz-Lara, J Louie)	LTBI updates for (1) Support Health, NEMS, (2) UCSF OB clinicians, (3) SF Consortium of Community Clinics, (4) SF Community Health Center; USDOS panel physician training; CITC courses: LTBI and TB Clinical Intensive; CTCA fall conference presentations; NTCA/CTCA spring Conference presentations. (S Graves, J Louie, R Agraz-Lara, A Phillips)
2023	The Black Angels TB Nursing History; Policy Review; APHL TB lab training; TB and stigma; NTCA conference highlights; Legal Issues in TB; TB Clinic Staff Retreat: NTPOPT review, communication skill building, TB Elimination in Chuuk; (S Graves, J Louie, A Phillips, Sheila Davis-Jackson)	TB 101 for Behavioral Health and Tenderloin CLR; LTBI updates for (1) NEMS, (2) South of Market Health Center, (3) Richard Fine People's Clinic; CTCA conference: QT drugs, humanitarian parolees, program innovations, radiology image review; IDSA conference: Study 31 implementation; World TB Day Symposium; TB ECHO. CITC courses: LTBI, TB Clinical Intensive (S Graves, J Louie, R Agraz-Lara, A Phillips, L Romo, H Ramirez Batlle)
2024	TB Clinic policy review; TB Continuity of Operations training; TB Workforce spotlight; TB Clinic Staff Retreat: DiSC communication, Community Isolation, NTPOPT review, NTCA conference poster presentations; Staff engagement survey results; TB Case Management overview (S Graves, J Louie, A Phillips, H Ramirez Batlle, R Agraz-Lara, Maria Martiz-Hernandez)	TB 101 for Head Start and SF Primary Care; LTBI updates for AITC, Progress Foundation; Study 31 presentation for Los Angeles Department of Health TB clinicians; CTCA Conference - new community isolation release guidelines; World TB Day Symposium; CITC course presentation: LTBI, TB Clinical Intensive, Program Manager's course, Sputum Induction training (S Graves, J Louie, A Phillips, L Romo, R Agraz-Lara H Ramirez Batlle)

Over the course of the 2020–2024, the TB Branch sustained a strong commitment to workforce development through continuous staff training, onboarding support, and leadership engagement with regional and national partners. Early in the project period (2020–2021), the TB Branch adapted training methods in response to COVID-19 restrictions, transitioning to remote and hybrid formats while maintaining monthly in-service training schedules. A strong foundation was built through the development of a TB Contact Investigation (CI) Manual (2020) and a Surveillance Duty Manual (2022),

both of which became essential reference and training tools. Regular staff competency assessments and mini-trainings were initiated based on evolving clinical and epidemiologic needs. Staff also demonstrated leadership on a broader scale throughout 2020–2024, with TB Branch clinicians serving as warmline consultants and faculty for the Curry International Tuberculosis Center (CITC) intensives, contributing to the development of resources such as the TB Provider Educational Flipbook, and leading weekly interdisciplinary TB medical case conferences across the Bay Area. Adaptation to hybrid and remote training formats ensured continuity of training despite pandemic-era challenges. Starting in 2023, a competency-based onboarding program for Disease Control Investigators (DCIs) was developed to standardize practices and support new staff onboarding during a major expansion of the DCI team.

Objective 5.1: Monthly In-Service Trainings

Goal: Monthly trainings addressing identified needs. **Outcomes:** The objective was met each year from 2020 through 2024. Training topics evolved over the project period, reflecting staff-identified priorities. Early trainings emphasized infection control and remote patient management during the pandemic. In 2022, content shifted toward laboratory techniques, communication strategies, and operational planning for continuity of operations (COOP). In 2023 and 2024, trainings addressed ethical and legal issues in TB control, new community TB isolation guidelines, and TB Branch unit roles and procedures related to surge operations.

Objective 5.2: HRD and ETN Meeting Participation

Goal: 100% participation by the TB Education Focal Point. **Outcomes:** This objective was consistently met from 2020 through 2024. The Focal Point and HRD representatives actively participated in regional Education and Training Network (ETN) and Human Resources Development (HRD) meetings, contributing to national resource development efforts and promoting local training innovations.

Objective 5.3: Internal Contact Investigation Training

Goal: Improved CI practices through regular training. **Outcomes:** This objective was met across the project period. The CI and Surveillance Duty Manuals were incorporated into weekly meetings, and beginning in 2023, a formal competency-based training curriculum was launched for onboarding new DCIs. Training sessions integrated real-time case examples to reinforce best practices and strengthen case management skills.

Objective 5.4: Community Partner Education

Goal: Provide 4–5 trainings annually and expand engagement with community partners. **Outcomes:** This objective was exceeded. In 2023, eight trainings were delivered to a range of partners, including behavioral health providers, emergency departments, and community health clinics. In 2024, five

additional trainings were conducted, maintaining momentum in expanding LTBI screening and treatment capacity across the network of providers serving non–U.S.-born and high-risk populations.

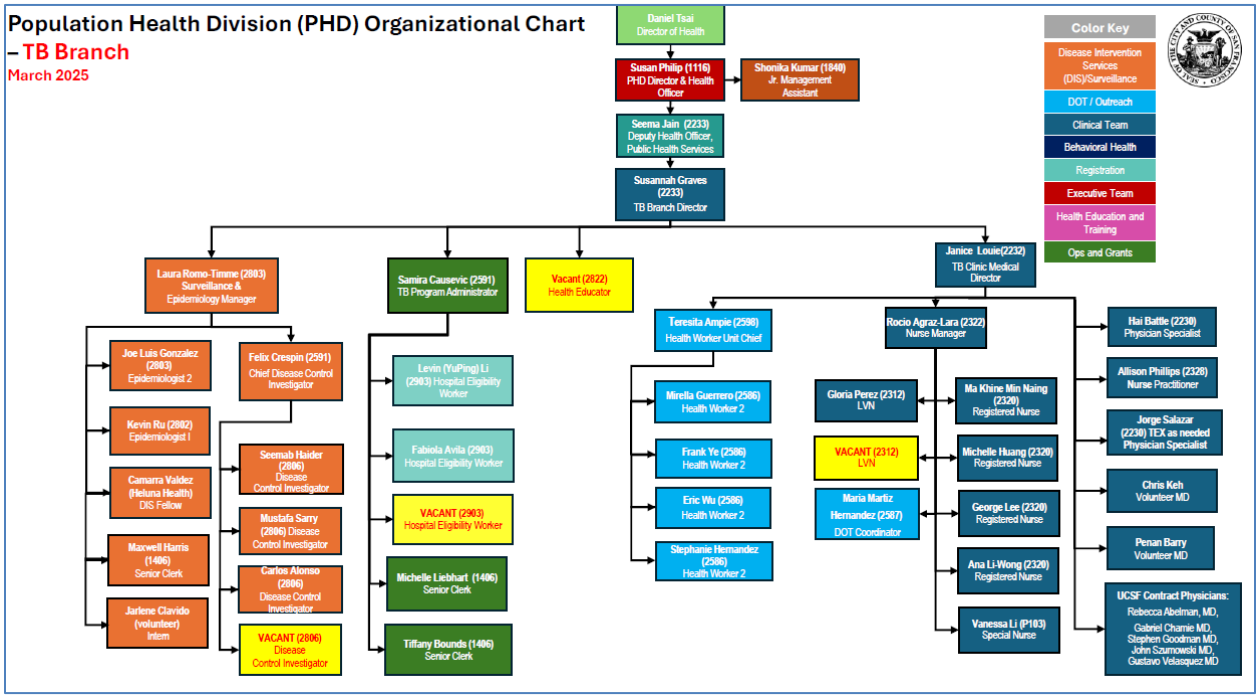
Objective 5.5: Training of Local Medical Trainees and Regional Partners (CITC)

Goal: Train more than 40 UCSF/ZSFGH fellows and residents annually and deliver at least 4 conference presentations per year. **Outcomes:** This objective was consistently met. Throughout the grant period, the TB Clinic hosted medical trainees onsite and remotely, and expanded participation in interdisciplinary TB medical case conferences that included faculty from pulmonary, infectious diseases, radiology, and state TB control programs. TB Clinic faculty regularly contributed to regional and national teaching efforts through CITC.

Objective 5.6: Staff Participation in COE, State, National, and Regional Conferences

Goal: At least five staff members participate annually in TB education events at the COE, state, national, or regional level. **Outcomes:** This objective was met each year. Staff submitted abstracts, participated as panelists, and served on planning committees for major conferences such as the National Tuberculosis Controllers Association (NTCA) meetings. Staff visibility and leadership roles steadily increased over the course of the grant. Throughout the 2020–2024 period, TB Branch maintained a consistent focus on internal capacity-building, external engagement, and leadership development, laying a strong foundation for continued excellence in TB prevention and control activities.

TB Branch Organizational Chart



Grant funded salary for training and education personnel: HRD Focal Point – 5% FTE
HRD Focal Point:
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Strategy 6 – Public Health Laboratory Strengthening
Strategy 6 - Outcomes. Laboratory Turnaround Time (TAT) Performance Indicators, 2020-2024

Description of TAT for initial diagnostic specimens	Indicator	2020	2021	2022	2023	2024	2024 program target	2025 Nat'l Target
Cumulative percent of specimens received within 1, 2, and 3 calendar days of specimen collection.	1	94%	94%*	87%*	93%	89%*	95%	≥67%
	1a	97%	97%	96%	98%	97%	n/a	n/a
	1b	99%	99%	99%	99%	99%		
Cumulative percent of fluorescent acid-fast staining results transmitted by phone, fax, or electronically within 1, 2, and 3 days.	2	82%	79%*	82%	89%	83%	82%	≥92%
	2a	82%	81%	84%	90%	87%	n/a	n/a
	2b	100%	96%	97%	97%	97%		
Of MTBC by culture, **the percent of individual patients** % reported as MTBC within 48 hours of clinical specimen receipt (ie NAAT+)	3	38%	77%	46%*	64%*	76%	65%	≥77%
Percent of MTBC isolates identified reported within 21 calendar days.	4	62%	52%*	59%*	64%*	60%*	66%	≥76%
Percent DST results reported for initial diagnostic specimens within 17 days of identification of MTBC from culture.	5	63%	82%	75%	70%	52%*	66%	≥69%
6 and 6a – N/A (PHL does not perform in-house molecular DST, report the mean and range TAT in days for clinical specimens/processed sediments from specimen receipt until final report								
Mean number of days between specimen collection and test result for IGRA results reported	7	3	3	3	3	3	n/a	4

*Program targets not met for the year

Laboratory Volume of IGRA tests, 2020-2024

	2020	2021	2022	2023	2024
Total number of IGRAs performed in-house	7137	9230	10479	12639	15076

Laboratory Element 1: Ensure availability of high-quality and prompt core laboratory services for tuberculosis (TB)					
What are your laboratory objectives for Element 1 during this five-year Cooperative Agreement period? All laboratories, regardless of volume, should provide objectives related to improving each of the national benchmark turnaround time recommendations.			**How will your laboratory measure success related to these objectives?**		
Short-term: Evaluate lab data/practices to address needed improvement; ensure availability of high-quality prompt services; Intermediate: Meet national benchmark turn-around times (TAT)			TAT measures: (1) Percentage of specimens received within 1 day, (2) Percent of AFB smear results reported within 1 day, (3) NAAT confirmation of MTBC in direct specimen within 48 hours, (4) ID of growing MTBC isolate within 21 days, (5) rifampin DST within 17 days, (5) submit 100% of isolates for genotyping at least monthly		
Activities	**Measures of success**	**Anticipated obstacles**	**Responsible Staff**	**Target Date**	**Progress**
PHL will work on identification of more efficient in- house workflows to address gaps, including: 1) Full implementation of rapid heat-fixation protocol to reduce the time required to prepare and report results of smears	**6.1** Increase percentage of specimens received within 1 day of collection to >= 95%	unable to perform testing on weekends due to staffing challenges. PH Laboratory and TB Clinic operates 5 days per week.	PHL Lab Director	2024	Although there was a slight decrease from the previous year, 89% of specimens in 2024 were still received within one day of collection, meeting the national benchmark. Testing is only conducted on weekdays, as the Public Health Laboratory and TB Clinic are open five days a week. Additionally, PHL has welcomed a few more submitters.
2) Piloting of on-site WGS to rapidly identify species as well as conduct molecular epidemiology in real time and identify mutations loci associated with resistance by end of 2024	**6.2** Increase to TAT for reporting AFB smear results (1 day) to 82% (national target is 92%)	PHL plans for moving the lab facility to a new site in 2024 without anticipated disruption of services. However, this will take up staff time to focus on the move and may make it challenging for	PHL Lab Director	2024	In 2024, 83% of smear results were reported within one day of receiving the specimen, showing a slight improvement from the previous year, though still falling short of the national benchmark. A key challenge is that testing is limited to weekdays, as both the Public Health Laboratory and TB Clinic operate only five days a week. To mitigate this, we've implemented additional specimen pickups for the clinic and ramped up processing on Fridays to better handle specimens collected that day. Significant improvement in turnaround times is

		PHL to achieve its goals in TAT.			anticipated once PHL moves to a new laboratory facility in 2026
	6.3 Increase NAAT confirmation of MTBC in direct specimen (48 hours) to 65% (national target is 77%)		PHL Lab Director	2024	In 2024, 76% of smear test results were reported within 48 hours of receiving the specimen, falling just 1% short of the national benchmark. A key challenge contributing to this is that testing is only conducted on weekdays, as both the Public Health Laboratory and TB Clinic are open five days a week. Additionally, there are cases where PCR test requests are submitted later than the specimen's receipt date. As a result, even if the test is completed within 48 hours of the request, the turnaround time (TAT) exceeds 48 hours. This affects overall TAT percentage, as the calculation is based solely on positive results
	6.4 Increase identification/reporting of growth and confirm as MTBC within 21 days to 66% (national target is 74%)		PHL Lab Director	2024	In 2024, 60% of ID results were reported within 21 days. One of the main reasons for this delay is that smear-negative, culture-positive specimens often begin to show AFB growth after the 21-day mark, sometimes taking up to 42 days before being discarded as negative. Additionally, the closure of PHL on weekends contributes to further delays in diagnosis. However, in 2024, PHL successfully validated GeneXpert for MTBC culture identification from MGIT cultures. This will help reduce the time required to identify cultures, and

					improvements in turnaround times are anticipated in next year's data.
	6.5 Increase reporting of rifampin DST from culture within 17 days in >=66% specimens (national target is >=69%)		PHL Lab Director	2024	The percentage for 2024 was 52%, reflecting a decline from the previous year. The primary factors contributing to this decrease are staffing challenges and reagent supply issues from the lab supplier, BD, particularly regarding MGIT tubes and PZA drug testing. While PZA testing has resumed in PHL, any irregular results must be confirmed by WGS-DST results before they can be reported. It is anticipated that this percentage will remain low until BD resolves reagent supply issues
Submit all isolates for genotyping monthly with additional submissions as requested by program for urgently needed genotyping.	**6.6** Increase/maintain proportion submitted to/at 100% submitted	none anticipated	PHL Lab Director	2024	All isolates are submitted for Genotyping and WGS-DST successfully and reasonable time

Laboratory Element 2: Promote continual advancement of laboratory efficiency and quality assurance through the use of local data (i.e., your laboratory-specific data)

What are your laboratory objectives for Element 2 during this five-year Cooperative Agreement period?	**How will your laboratory measure success related to these objectives?**
Utilize existing assessment Association of Public Health Laboratories (APHL) tool to assess current status and identify areas for improvement; integrate LIMS with TB database (Maven), and perform regular QA reviews with TB program.	Completion of APHL self-assessment tool annually, preparation for transition from Apollo LIMS to EpicBEAKER

Activities	Measures of success	Anticipated obstacles	Responsible Staff	Target Date	Progress
Perform APHL Self-Assessment Tool for TB laboratories	**6.7** Complete APHL Self-Assessment Tool for TB annually	None anticipated	PHL Lab Director	2020 – 2024 annually	Competed

In order to support better integration of lab and clinical systems, San Francisco Department of Public Health is planning to transition the public health lab to EpicBEAKER system by 2025. Data flow optimization efforts will be realigned with moving forward with this implementation project, to assure laboratory data is easily accessed for both clinical use and also transferred electronically in into the local public health database (PHNIX).	**6.8** Prepare for transition from Apollo LIMS into EpicBEAKER laboratory data system	SME resources focused on PHL site move	PHL Lab Director	Data transition plan outlined by 2024	In progress and on track. Anticipated completion date is October, 2025
Perform annual QA review of laboratory data and TATs with TB Branch, considering workload and staffing.	**6.9** Annual formal review of PHL results and TAT with TB Branch, review NTPOPT/APHL objectives. Complete integration by Dec 2020, then annual assessment of data reporting/ integrity over 5-year period	None anticipated	PHL Lab Director; TB Controller	July/Aug Annually 2020 - 2024	Completed annually
Add additional AM specimen pick-up from the clinic and deliver it to PHL to capture all the specimens collected the night before.	**6.9A**	None anticipated	PHL lab director		completed
Validate MGIT culture on the GeneXpert.	**6.9B**	None anticipated	PHD Lab Director; Senior Micro		Validation completed in December of 2024.
Optimize electronic ordering of multiple tests per specimen (for example, AFB smear+culture AND MTB PCR performed on the same direct sputum specimen) using a bundled order.	**6.10** Implement bundled order in EPIC	None anticipated	PHL Lab Director, Nurse Manager (HRD)	2023	Fully met by mid-2023; (retired this objective in 2024). bundled orders for multiple tests now fully optimized.
Laboratory Element 3: Collaborate with partners (e.g., healthcare providers, TB programs, and other laboratories) to ensure optimal use of laboratory services and timely flow of information.					

What are your laboratory objectives for Element 3 during this five-year Cooperative Agreement period?			**How will your laboratory measure success related to these objectives?**		
Strengthen relationships with other laboratories within the state and state-wide to evaluate optimal use of TB laboratory services.					
Activities	**Measures of success**	**Anticipated obstacles**	**Responsible Staff**	**Target Date**	**Progress**
Support staff education and training by participating in teleconferences sponsored by APHL, CTCA, and MDL; Meet with local CCSF laboratorians and CDPH MDL to exchange information about techniques, discuss improvements in TB diagnostic testing, facilitate access to new diagnostics	**6.11** Improved competency of PHL and laboratory staff throughout CCSF;	None	PHL Director	Annually through 2024	Fully met. Staff participated in meetings and teleconferences sponsored by APHL, CTCA, and MDL.
Using target list of clinics and programs provided by the TB Branch, offer access to IGRA testing (included providing training on specimen collection and transport) and incorporate increased volume of testing into workflows Add 2 additional clinics in 2024	**6.12** Increased awareness of TB diagnostic services offered by PHL. Increased use of IGRA by community clinics and programs treating high-risk populations	None	PHL Director, TB Controller	2024	Not met. The increase in newcomer arrivals in 2023 continued through 2024, and IGRA expansion efforts were focused on stabilizing and expanding use of IGRA within existing submitting clinic sites rather than expanding to new sites. IGRA volume increased to 15,076, up from 12639 in 2023, following a steady trend of increases from 2020 when there were only 7137.
Work with MDL to improve utilization and TAT for recently implemented WGS and future implementation of tNGS. Work with local laboratories to streamline and optimize the submission of culture to the state lab for WGS.	**6.13** Improved TAT for WGS and tNGS for those specimens on which it is requested.	Capacity may be limited by PHL staffing available to package specimens for shipping to state MDL. TAT will also be affected by MDL's implementation	PHL Director	2024	TB WGS genotyping is available at the state MDL starting in 2024, and TB molecular DST by (tNGS) was expected to be available starting mid-February 2024 but now delayed and still not available on direct specimens. Once tNGS is available, specimens for these requests will be submitted to state MDL same-day by PHL

		of these new assays.			

Summary of Laboratory activity outcomes, accomplishments and challenges

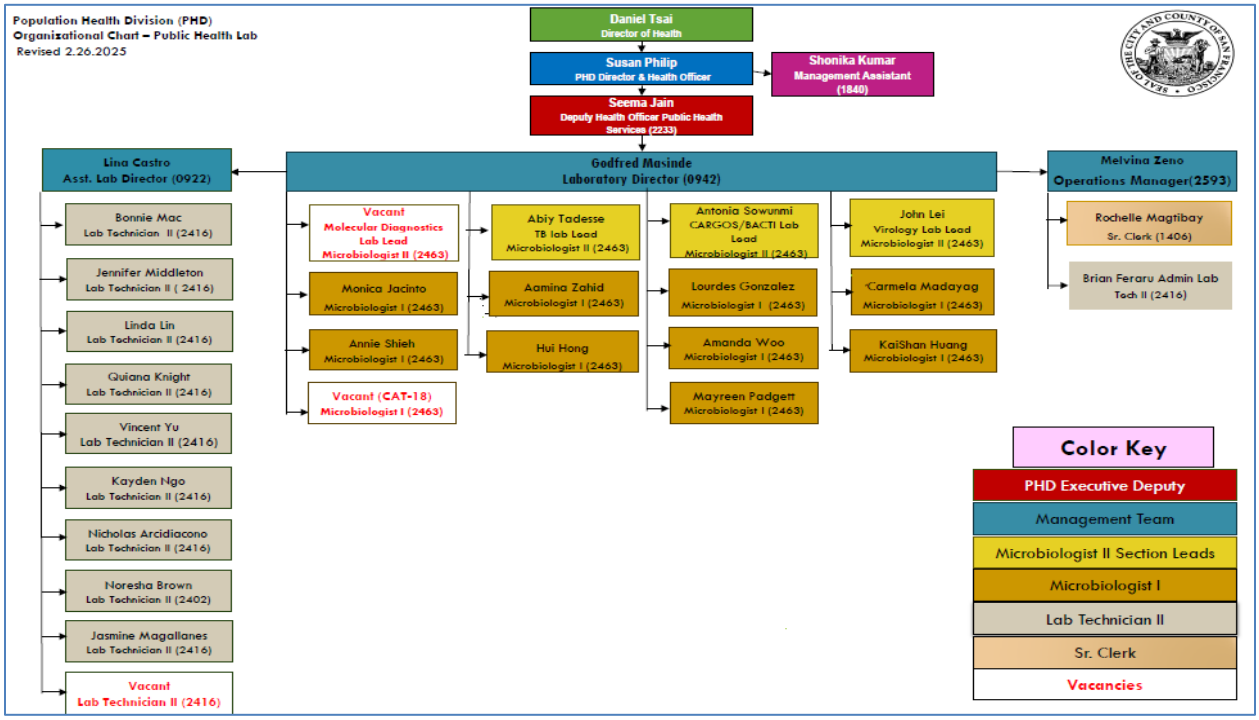
Between 2020 and 2024, the SFDPH PHL introduced several initiatives to optimize its tuberculosis diagnostic processes and improve turnaround time. New extraction kits were validated, significantly enhancing the efficiency and reliability of sample processing. Furthermore, the Auramine Rhodamine staining kit, featuring a shorter heat-fixing time, was adopted to reduce staining time. This advancement allowed the laboratory to increase its daily staining capacity from one to two batches. In addition, the validation of GeneXpert culture identification (ID) for MGIT cultures expedited the identification process. Collectively, these improvements have resulted in faster and more accurate TB diagnostics.

The specimen collection and submission workflow were also improved with the introduction of an additional pickup form for the TB clinic, ensuring more consistent and efficient specimen delivery. Additionally, the frequency of isolate submissions to the California Department of Public Health's Microbial Diseases Laboratory (CDPH MDL) for genotyping and whole-genome sequencing with drug susceptibility testing (WGS-DST) was increased to meet the growing demand for WGS-DST results.

Over the course of the 5-year period, the volume of IGRAs steadily increased through outreach to San Francisco Health Network and community partner clinics to encourage adoption and resolve logistical barriers to IGRA ordering and collection in partner clinics and an expansion of processing and automated equipment in the lab.

However, operational efficiency continues to be challenged by staffing limitations. To address this, an additional microbiologist was added to TB section to meet the increased demand. Supply chain issues have also posed significant challenges, particularly with BD reagents, which were frequently unavailable or failed to perform as expected. These shortages affected test reliability and led to delays in diagnosis – particularly with respect to drug susceptibility testing.

San Francisco Public Health Laboratory Organizational Chart



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Overall Impact, Results and Success Stories

Throughout the 2020–2024 project period, the San Francisco Tuberculosis Prevention and Control Program demonstrated resilience, innovation, and measurable progress in the fight to eliminate tuberculosis (TB) locally, while contributing valuable insights to the broader public health field.

Key Program Impacts

- **HIV Testing:** Sustained 100% documentation of HIV testing among TB cases in multiple reporting years, ensuring appropriate clinical management and linkage to care.
- **Laboratory Excellence:** Maintained universal genotyping of TB isolates and achieved high NAAT confirmation rates despite pandemic-era supply chain challenges.
- **Contact Investigations:** Improved evaluation and treatment initiation rates for contacts to infectious TB cases, especially during the later project years.
- **Latent TB Infection (LTBI) Management:** Integrated short-course LTBI treatment regimens and maintained high standards for treatment initiation among targeted populations.
- **Equitable Care Delivery:** Expanded services for non–U.S.-born communities, strengthening TB prevention and control in high-risk immigrant and refugee populations.

Results and Success Stories

- **Strengthened Newcomer TB Screening Partnership:** The program collaborated with the San Francisco Newcomers Health Program to establish TB screening for newly arriving Ukrainian parolees in 2022, later expanding to broader humanitarian parolee populations. Screening of 299 newcomers identified a 7.4% IGRA positivity rate and one case of laboratory-confirmed TB. Results were published in *Emerging Infectious Diseases* (CDC, August 2023), elevating San Francisco's approach to a national audience.
- **Streamlining External Radiograph Integration:** Standardized workflows were developed to obtain and import outside radiographic images into SFDPH's PACS system, improving clinicians' ability to monitor TB disease progression and treatment response over time.
- **Competency-Based Training for Disease Investigators:** A new onboarding curriculum and skills checklist for disease investigation staff was developed in collaboration with the SFDPH Reserve for Accelerated Disease Response (RADR) team. This tool will ensure high-quality workforce practices during an anticipated team expansion in late 2023.
- **Expansion of Video Directly Observed Therapy (VDOT):** Amid pandemic disruptions, the program successfully expanded VDOT capacity to support up to 50 patients simultaneously, enhancing adherence monitoring through remote technology.
- **Sustained Laboratory Resilience:** Throughout the COVID-19 pandemic, the PHL maintained a 100% culture reporting rate and sustained universal genotyping without interruption, ensuring critical diagnostic continuity.
- **Enhanced Screening of Immigrants and Refugees:** Improved protocols for Class B immigrant and refugee TB evaluations helped maintain service quality during increased humanitarian migration surges, with special focus on EDN reporting accuracy and care linkage.
- **Successful Transition to Epic Electronic Health Record:** The program successfully transitioned to Epic EHR, improving documentation, patient tracking, and referral workflows, which notably improved time to treatment initiation for TB cases.
- **Implementation of Short-Course TB Treatment Regimens:** CDC-recommended four-month short-course TB regimens were successfully introduced for appropriate patients starting in mid-2021, offering an important alternative for those with comorbidities or medication intolerance.
- **Development of Geriatric TB Best Practices Collaborations:** The program maintained and strengthened partnerships with geriatric specialists and the Western Region COE during COVID-19, laying the groundwork for future improvements in TB care for older adults.

- **Standardization of TB Death Review Processes:** A new workflow was developed to ensure standardized review and classification of all TB-related deaths among San Francisco residents, strengthening surveillance and quality improvement activities.
- **Sharing of best practices through publications and trainings for local partners:**
    - Uniting for Ukraine Tuberculosis Screening Experience, San Francisco, California, USA - Volume 29, Number 8—August 2023 - Emerging Infectious Diseases journal - CDC
    - Experience with Four-Month Rifapentine and Moxifloxacin-Based Tuberculosis Treatment in San Francisco. Open Forum Infectious Diseases March 2024
    - "Think, Test. Treat TB" in Action: An Innovative Primary Care and Public Health Partnership to Improve Tuberculosis Prevention and Care. NEJM Catalyst. VOL. S NO 8, July 17, 2024
    - More publications, posters and abstracts linked on our website: https://www.sf.gov/resource--2024--tb-reports-and-publications