Table of Contents

1. Project Abstract 2
2. Project Narrative 3-

Project Abstract Summary (1 page max)

The purpose of this application is to support tuberculosis-related activities and programming specific to Prevention and Control (P & C), Human Resources Development (HRD), and Public Health Laboratory Services (PHLS) in the state of Colorado over a five-year cycle beginning in 2020. While the anticipated funds will support the provision of services and resources for all citizens impacted and infected with tuberculosis (TB) in Colorado, specific attention will be paid to key high-risk populations including:

• All persons diagnosed with TB disease and contacts to smear-positive cases.

• Foreign-born persons residing in Colorado—this demographic group had an incidence rate in 2018 37 times higher than U.S.-born persons (11.3 vs. 0.3 per 100,000 persons respectively)

• Racial and ethnic minority populations bearing a disproportionate burden of disease in the state (for example: incidence rate among blacks/African-Americans was 9.6 and Asian/Pacific Islanders 14.6 while white/Caucasians were only 0.2 per 100,000 persons )

• Persons living with HIV, viral hepatitis and/or diabetes mellitus along with key behavioral morbidities and disparities related to social determinants of health such as alcohol and substance abuse, tobacco smoking, food insecurity, and housing insecurity.

Performance measures will be developed including annual measures for all priority level activities supporting specific P & C strategies, planned activities, and desired outcomes. The comprehensive work plan with accompanying evaluation plan will be utilized throughout the life of the grant.

Key Long-term Outcomes: By the completion of this funding cycle, the Colorado will have documented declining rates of TB among racial and ethnic minorities and others at higher-risk for TB infection and disease; employed enhanced case management and integrated clinical support; improved screening, tracking, and treatment rates for latent infection, and improved lab turn-around times. Other key outcomes expected over the five-year cycle:

a. Baseline benchmarks for key indicators will be set and met or surpassed. Increased case detection and access to services documented among Tb cases and those with co-morbidity. :

b. Increased strategic partnerships and collaborations with FQHCs, homeless shelters, nursing homes, hospices serving HIV-infected persons, and correctional facilities will be utilized. Leveraged opportunities aimed at TB elimination efforts outside the normal public health milieu.

c. Maintained timely notification and domestic follow-up evaluations, established and met baselines for foreign-born persons at high-risk for TB infection increasing screening, diagnosis and treatment impacting the unquantified TB cascade.

d. Benchmarks will be met and surpassed for case detection and access to services, and COT per CDC guidelines, and increased targeted testing of high-risk groups.

e. Maintained monitoring of TB cases, increased monitoring of TB co-morbidity, and maintained surveillance infrastructure, system evaluation, and reporting of all TB cases.

f. Benchmarks will be set and met for TB infection case detection and access to treatment services, and there will be increased targeting of high-risk groups for TB infection screening, treatment and management.

g. Maintained use of EDN services and data-sharing. Benchmarks will be surpassed for increased TB infection/case detection among high-risk populations, and increased access to services and treatment among those most at-risk using an integrated health equity paradigm.

Project Narrative

* 1. Background

Colorado is a low-incidence, state that documented 64 cases of active Tuberculosis (TB) disease in 2018. As with much of the United States (U.S), in Colorado certain populations are disproportionately affected by TB, including persons with human immunodeficiency virus (HIV) infection, over the past 10 years, HIV/TB co-infection has fluctuated between seven patients in 2013 (10% of total) to zero patients in 2014 and 2018, or diabetes (DM) (12.5% of all 2018 cases), persons experiencing homelessness, persons who are incarcerated, and persons born outside the U.S. (78.0% of all 2018 patients were foreign-born.) The TB incidence rate among foreign-born persons in 2018 was approximately 16 times greater than that among U.S.-born persons and the percentage of TB cases occurring in foreign-born persons reached 78.0% of all cases in 2018. Since 2004 more than two-thirds (648 of 930) of the TB cases in the state have been found among foreign-born persons. Colorado has documented clusters of TB disease among the homeless, recent Class B arrivals, and incarcerated populations over the past several years indicating recent transmission. Clusters with suspected recent transmission are prioritized for intensified interventions to identify index cases and interrupt onward transmission. While the state’s racial and ethnic breakdown is approximately 70% white/Caucasian, racial and ethnic minorities bear a disproportionate burden of TB disease and infection, often related to health inequities, social determinants of health, and a lack of access to core healthcare services. This is a major concern to the state’s TB Program and its local public health agencies (LPHA) partners. Though comprising only 31% of the state’s population, 89% of new TB patients were racial and ethnic minorities. In 2018 patients self-identifying as Asian or Pacific Islander comprised roughly 3.2% of the total population of the state, yet represented 31.0% of all active TB cases. Persons self-identifying as of Hispanic origin made up roughly 22% of the total Colorado population, yet they represented over 34% of all active TB cases in 2018.

* 1. Approach

This application will enable the state TB Unit to direct passthrough funding where needed to reduce TB morbidity and mortality caused by transmission of *M. tuberculosis* from persons with infectious disease to uninfected persons, by preventing persons from progressing from latent TB infection (LTBI) to TB disease, and strengthening laboratory capacity to ensure that timely and reliable TB laboratory services are available.

C. Outcomes

Anticipated short term outcomes—

a. Create baseline benchmarks for key indicators and increased case detection and access to service documented.

b. Reporting and monitoring of TB cases via TB surveillance will be maintained along with maintaining surveillance capacity including genotyping as a result of increased collaboration with key labs in the region to ensure at least one specimen is sent automatically for genotyping.

c. Increased strategic partnerships and collaborations will be formed with agencies including Federally Qualified Health Centers (FQHCs), homeless shelters, nursing homes, hospices serving HIV-infected persons, and correctional facilities.

d. Timely notification and domestic follow-up evaluations will be monitored and baselines for foreign-born persons at high-risk for TB infection (to increase screening and diagnosis) will be established.

e. Increased shared opportunities for learning and collaboration based on program evaluation results, and adoption of programmatic improvements in alignment with needs/priorities will be established

f. Continued support for a well-trained TB workforce with increased availability and accessibility to TB continuing education/training (competency based).

g. Continued access to local lab data and practices to identify ways to improve turnaround times, efficiencies, algorithms, and communication with key internal and external stakeholders.

Anticipated intermediate term outcomes—

a. Benchmarks will be met for case detection and access to services as well as completion of treatment per CDC guidelines, and increase the targeted testing of high-risk groups.

b. Maintain on-going monitoring of TB cases, increase monitoring of TB co-morbidity, and maintain surveillance infrastructure, system evaluation, and reporting of all TB cases.

c. Benchmarks will be set and met for TB infection case detection and access to treatment services, and there will be increased targeting of high-risk groups for TB infection screening, treatment and management addressing the TB infection cascade.

d. Maintain the use of EDN services and data sharing by meeting benchmarks for increased TB infection/TB detection among high-risk populations, and increase access to services and treatment among those most at-risk.

e. Identify best practices and increase intent to act on newly-approved and sustainable TB control and prevention efforts by adoption of new knowledge/procedures as appropriate.

f. Benchmarks will be met for increased access to and awareness of available resources to increase knowledge and skills to implement and support TB services and treatments among TB Program staff and local health department (LHD) TB staff.

g. Improve laboratory turnaround times where possible, promote advancement in efficiencies based on implementation of evidence-based policies and procedures, and enrichment of collaborations.

Anticipated long term outcomes—

a. Improve the ability of the TB Program and its partners to be prepared and informed in order to translate knowledge and skills into practice. This will include the development and implementation of an enhanced distance (web-based) case management mechanism mirroring the University of New Mexico’s highly-acclaimed project “Extension for Community Healthcare Outcomes” (ECHO) activities to reach lower-capacity, low-burden regions of the state experiencing increased TB activity and/or complex case/s.

b. Develop collaborations with and referral mechanisms to coordinate care with DM, HIV/STI, viral hepatitis and behavioral health providers including, but not limited to the use of DM risk assessments in facilities/agencies offering TB services and TB risk assessment use in facilities/agencies providing DM, HIV/STI, and viral hepatitis care and treatment.

c. Maintain the proportion of completion of treatment rates in the high 90 percent range.

d. Improve the ability to adopt available state-of-the-art technologies effectively and efficiently, providing current data to local partners for greater transparency.

e. Maintain drug susceptibility result reporting at one-hundred percent.

Maintain prepared and informed TB Program staff and TB Program partners regarding recommended practices for TB diagnosis and treatment.

Strategies and Activities (Applicants must provide a clear and concise description of the strategies and activities they will use to achieve the period of performance outcomes. Applicants must select existing evidence-based strategies that meet their needs, or describe in the Applicant Evaluation and Performance Measurement Plan how these strategies will be evaluated over the course of the project period.)

* + - 1. Collaborations (Applicants must describe how they will collaborate with programs and organizations either internal or external to CDC. Applicants must address the Collaboration requirements as described in the CDC Project Description.)
			2. Target Populations and Health Disparities (Applicants must describe the specific target population(s) in their jurisdiction and explain how such a target will achieve the goals of the award and/or alleviate health disparities. The applicants must also address how they will include specific populations that can benefit from the program that is described in the Approach section. Applicants must address the Target Populations and Health Disparities requirements as described in the CDC Project Description).
	1. Applicant Evaluation & Performance Measurement Plan

Applicants must provide an evaluation and performance measurement plan that demonstrates how the recipient will fulfill the requirements described in the CDC Evaluation and Performance Measurement and Project Description sections of this NOFO. At a minimum, the plan must describe:

* + 1. How applicant will collect the performance measures, respond to the evaluation questions, and use evaluation findings for continuous program quality improvement. The Paperwork Reduction Act of 1995 (PRA): Applicants are advised that any activities involving information collections (e.g., surveys, questionnaires, applications, audits, data requests, reporting, recordkeeping and disclosure requirements) from 10 or more individuals or non-Federal entities, including State and local governmental agencies, and funded or sponsored by the Federal Government are subject to review and approval by the Office of Management and Budget. For further information about CDC’s requirements under PRA see https://www.cdc.gov/od/science/integrity/reducePublicBurden/.
		2. How key program partners will participate in the evaluation and performance measurement planning processes.
		3. Available data sources, feasibility of collecting appropriate evaluation and performance data, data management plan (DMP), and other relevant data information (e.g., performance measures proposed by the applicant).
		4. Where the applicant chooses to, or is expected to, take on specific evaluation studies, they should be directed to:
		5. Describe the type of evaluations (i.e., process, outcome, or both).
		6. Describe key evaluation questions to be addressed by these evaluations.
		7. Describe other information (e.g., measures, data sources).
		8. Applications involving data collection must include a Data Management Plan (DMP) as part of their evaluation and performance measurement plan. The DMP is the applicant’s assurance of the quality of the public health data through the data’s lifecycle and plans to deposit data in a repository to preserve and to make the data accessible in a timely manner. See web link for additional information: https://www.cdc.gov/grants/additionalrequirements/ar-25.html
	1. Organizational Capacity of Applicants to Implement the Approach
		1. Applicants must address the organizational capacity requirements as described in the CDC Project Description.
			1. Describe how the program is organized, the nature and scope of its work and/or the capabilities it possesses
			2. Describe experience and success in conducting TB prevention and control activities, including development and successful implementation of PE plan and especially aimed at targeted populations
			3. Provide laboratory organizational chart with designated laboratory contact and laboratory testing methods and algorithm
			4. Describe how applicant will assess staff competencies and develop a plan to address gaps through organizational and individual training and development opportunities.
			5. Demonstrates experience and capacity to coordinate with tribal governments and/or tribally designated organizations in their jurisdiction, if applicable
	2. Work Plan
		1. Applicants must prepare a work plan consistent with the CDC Project Description Work Plan section. The work plan integrates and delineates more specifically how the recipient plans to carry out achieving the period of performance outcomes, strategies and activities, evaluation and performance measurement.
			1. Work plans for P&C must at minimum address the following:
			2. Specify priority level to be used for period of performance and its alignment with the program strategies.
			3. Describe activities within selected priority level for the period of performance and related objectives, milestones, and intended outcomes with timelines, and they must be in alignment with chosen priority and program strategies, as well as the logic model.
			4. Discuss how information gathering, monitoring, analysis, and dissemination will be used to address program priority activities.
			5. Discuss how to support a health equity approach in program services and activities including whether a PCSI model is utilized.
			6. Describe plan for data gathering, analyzing, reporting of health equity that have greatest impact on reducing health disparities.
			7. Describe P&C efforts among target populations and settings documented to have a high risk for TB (e.g., non-U.S.--born persons, homeless shelters, correctional facilities, other congregate settings).
			8. Include monitoring and evaluation plan for milestones accomplishing during the period of performance.
			9. Describe administration and assessment process to ensure successful implementation and quality assurance.
			10. Describe staff and administrative roles and functions to support implementation of the NOFO.