

THE WHO TB SUPRANATIONAL REFERENCE LABORATORY NETWORK

Background

The WHO TB Supranational Reference Laboratory Network (SRLN) was created in 1994 in order to support the WHO-IUATLD Global Project on TB drug resistance surveillance. The objectives of the Global Project are to estimate the magnitude of drug resistance globally, determine trends and provide data to inform WHO policy decisions. Core principles of the Global Project are to ensure accurate and representative sampling of the populations under study, allow for the differentiation of new and previously treated cases and ensure that laboratory results are quality assured. Originally, 14 laboratories volunteered to form the SRL Network based on institutional capacity and their own resources to support the Global Project. This resulted in a concentration of the SRLs in Europe.

The original terms of reference required that each of the SRLs had a permanent functional TB laboratory providing quality culture and drug susceptibility testing (DST), with a commitment to support at least two countries with DST proficiency testing (PT), to provide external quality assessment during drug resistance surveys, and to provide training on culture and DST as needed. Between 1994 and 2019, the SRLN was expanded to 32 laboratories, largely driven by regional initiatives and institutional interest in joining the network. Two additional laboratories are candidates to become SLRs in 2022.



The SRLN remains an important technical resource for laboratory scale-up and capacity development. Since 2010, new terms of reference for the SRLs and the network have been developed as well as eligibility and inclusion criteria for the SRLs. Formal collaboration agreements now need to be established between the SRLs and National TB Reference Laboratories. Improved co-ordination of technical assistance provided by the SRLs and the establishment of a repository of technical reports for sharing with partners remain a key priority for the network. A time-limited taskforce of the SRLN was established in 2012 to develop a business plan to facilitate global laboratory strengthening efforts for high TB burden settings

and low- and middle-income settings and to describe a sustainable funding model for the SRLs and SRLN.

Function of the SRLN

The SRLN is a structure which delivers co-ordination, identifies synergies among individual SRLs, and serves as a platform to:

1. Assist National Reference Laboratories (NRLs) and National TB Programmes (NTPs) implement WHO policy guidance on TB diagnostics, diagnostic algorithms, and laboratory norms and standards using endorsed recording and reporting systems and other laboratory tools;
2. Disseminate WHO guidance on biosafety requirements and quality management systems for national level TB reference laboratories and laboratory networks;
3. Facilitate sharing of standardized technical reports from all technical assistance missions to countries with in-country partners and among the SRLs;
4. Provide standardized quality assessments for microscopy, culture, drug susceptibility testing of *M. tuberculosis*, and molecular methods as needed;
5. Co-ordinate comparative evaluations of diagnostic tests among individual SRLs and define priorities for evaluation of different tests as needed;
6. Oversee the pathway for the development and implementation of standardized protocols to test susceptibility against new and existing anti-tuberculosis drugs;
7. Advocate with National TB Programmes to help ensure capacities for the diagnosis and treatment of TB and drug resistant TB are aligned.

TB Supranational Reference Laboratories (SRLs)

SRLs are expected to meet the following minimum criteria. An SRL must:

1. Be officially recognized by the National Health Authority or Ministry of Health as acting as National Level TB Reference Laboratory supporting a functional national or sub-national network of lower-level laboratories.
2. Demonstrate technical capacity to perform AFB microscopy, culture, identification, and drug susceptibility testing (DST) of *M. tuberculosis* using phenotypic and molecular methods according to current WHO policy guidance.
3. Be able to meet national laboratory regulations and conform to WHO biosafety and other international standards for performing TB testing
4. Demonstrate proven DST proficiency (i.e., participated successfully in at least 2 consecutive rounds of SRLN proficiency testing) with sufficient workload levels to maintain proficiency
5. Have the capacity (including human resources, infrastructure and equipment) to support laboratories in other countries (as per SRL TOR)
6. Have established or have the capacity to establish working relationships with the NRL in other countries through formal links including Collaboration Agreements



7. Commit to provide the minimum SRL service requirements which are to:
 - a. Establish formal links with at least two NRLs
 - b. Undertake at least three in-country technical assistance visits each two years
 - c. Provide reports to WHO on SRL services provided to countries
 - d. Report at least one activity per country per year

SRLN -Centre of Excellence (SRLN-CE)

Centre of Excellence for the TB Supranational TB Reference Laboratory Network is a new category of laboratory specifically designed to recognize well performing laboratories in large middle-income countries. A designated SRLN-CE has an equivalent status as a SRL within the network but primarily works to build in-country laboratory capacity. Countries with laboratories currently eligible to apply for designation as an SRL-CE include Brazil, Russia, China, India and South Africa. To be eligible for this designation, laboratories need to be nominated by their NTP to the WHO country office, establish a collaboration agreement with an existing SRL, undergo a laboratory assessment by WHO, and actively implement a quality management system towards accreditation. Four SRL-CE are currently designated – three laboratories in the Russian Federation and one in New Delhi, India. SRLN-CEs are expected to meet the following minimum criteria, which parallel the requirements for an SRL:

1. Be officially recognized by the National Health Authority or Ministry of Health acting as National or Regional Level TB Reference Laboratory supporting a functional national or sub-national network of lower-level laboratories.
2. Have technical capacity to perform AFB microscopy, culture, identification, and drug susceptibility testing (DST) of *M. tuberculosis* using phenotypic and molecular methods according to current WHO policy guidance.
3. Meet national laboratory regulations and conform to WHO bio-safety and other international standards for performing TB testing
4. Have proven DST accuracy (i.e., participated successfully in at least 2 consecutive rounds of SRLN proficiency testing) with sufficient workload levels to maintain proficiency
5. Be able (including human resources, infrastructure and equipment) to support lower-level laboratories in the network
6. Commit to provide the minimum Centre of Excellence- SRLN service requirements which are to:
 - a. Establish formal links with at least two in-country lower-level laboratories within the country
 - b. Undertake at least one annual technical assistance visit to each lower-level laboratory
 - c. Provide reports to the WHO, Global TB Programme

Candidate SRLs

Candidate SRLs are National level TB Reference Laboratories which have been identified as well performing laboratories with the potential to be mentored towards being a full member of the SRLN. To be eligible, laboratories need to be nominated by their partner SRL or the WHO country office, undergo a laboratory assessment by WHO, and actively implement a quality management system towards accreditation. The mentorship period for candidate SRL ranges from one to three years and helps these laboratories meet the eligibility and inclusion criteria for the SRLN. Following completion of successful mentorship and establishing links with other country partners, these laboratories will be designated as full SRL members of the network.

Candidate SRLs are expected to meet the following minimum criteria. A candidate SRL must:

1. Be officially recognized by the National Health Authority or Ministry of Health acting as National Level TB Reference Laboratory supporting a functional national or sub-national network of lower-level laboratories.
2. Demonstrate technical capacity to perform AFB microscopy, culture, identification, and drug susceptibility testing (DST) of *M. tuberculosis* using phenotypic and molecular methods according to current WHO policy guidance.
3. Be able to meet national laboratory regulations and conform to WHO biosafety and other international standards for performing TB testing
4. Demonstrate proven DST proficiency (participated successfully in at least 2 consecutive rounds of SRLN proficiency testing) with sufficient workload levels to maintain proficiency
5. Have the capacity (including human resources, infrastructure and equipment) to support laboratories in other countries (as per SRL TOR)