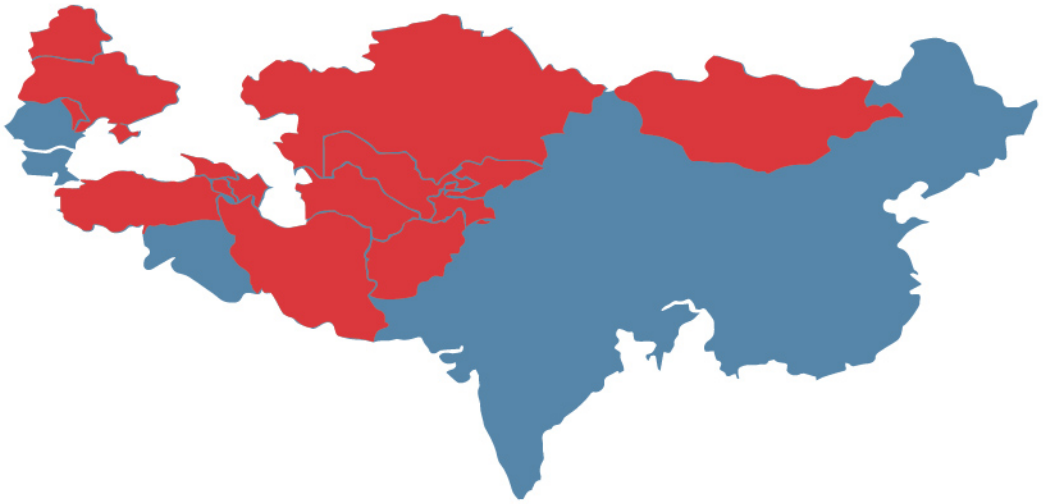
The Pan African Medical Journal

Evaluation of Tuberculosis Surveillance System in Afghanistan: A Teaching Case-Study

Khwaja Mir Islam SAEED, Shoaib NAEEMI, Mir Salamuddin HAKIM

Learning from Practice: Public Health Teaching Case Studies from Eastern Europe and Central Asia



ISSN: 1937 – 8688

An Open Access Journal published by **The PAMJ**

EMPHNET
The Eastern Mediterranean Public Health Network

PanAfrican Medical Journal

Evaluation of Tuberculosis Surveillance System in Afghanistan: A Teaching Case-Study

Authors: Khwaja Mir Islam SAEED[1], Shoaib NAEEMI[2], Mir Salamuddin HAKIM[3]

Affiliations:[1]Technical Advisor for Afghanistan Field Epidemiology Training Program (AFETP), Eastern Mediterranean Public Health Network (EMPHNET) Afghanistan National Public Health Institute, Ministry of Public Health, [2]Technical Officer, Eastern Mediterranean Public Health Network (EMPHNET), Afghanistan Country Office, [3]Technical Officer, for Afghanistan Field Epidemiology Training Program (AFETP), Eastern Mediterranean Public Health Network (EMPHNET), Afghanistan Country Office, Afghanistan National Public Health Institute, Ministry of Public Health

Corresponding author: Khwaja Mir Islam SAEED, MD, MSc and AFETP Alumni, AFETP, EMPHNET, ANPHI

Physical Address: Cinema Pamir, Central Blood Bank, 5th Floor, Kabul City, Afghanistan
Email: ksaeed@emphne.net; Call number: +93700290955

January 2025

Abstract

Afghanistan is suffering from double burden of health problems including communicable and noncommunicable diseases. Tuberculosis (TB) continues to be a major public health challenge in Afghanistan. Medicines and diagnostics are made available free of charge in the country. Almost 65,000 cases and 11,000 deaths were estimated to be caused by TB in Afghanistan in 2016. In 2017, more than 47,000 cases were detected and enrolled for treatment. Out of all health facilities, 71% are providing Directly Observed Treatment

(DOTS) services. There are two surveillance systems including the National Tuberculosis Control Programme [NTP] and the Health Management Information System [HMIS] for regular collection of TB data. An evaluation of these surveillance systems in January-February 2010 was done to identify their strengths and weaknesses and to formulate recommendations for improvement. Attributes of the programs were evaluated using US Centers for Disease Control and Prevention guidelines for evaluation of public health surveillance system.

The goal of this case study is to develop competencies and consolidate understanding of participants to learn how the surveillance system works and why there is a need to evaluate the system and how to do that. This case study stimulates the students to conduct evaluation of public health surveillance system. The case study is designed for training of novice field epidemiology trainees. To be used as adjunct training material, the case study provides the trainees with competencies in evaluating the surveillance system and describing the system attributes.

Keywords: Case-study, Afghanistan, Tuberculosis, Evaluation, Surveillance

How to Use the Case Study

General instructions: The case study is developed from a real and published evaluation report with some modification and should be used as a supporting training material for residents of field epidemiology training program at intermediated and advance level. Moreover, the concept surveillance and its theory of evaluation should have been clarified by facilitators in classroom ahead of working on this cases study. The case study could be practiced individually or in group of about 4-6 participants each while the facilitator guides the discussion. The facilitator may make use of flip charts to illustrate certain points. Additional instructor's notes for facilitation are coupled with each question in the instructor's guide to aid facilitation.

Audience: This case study is developed for residents on first workshop of field epidemiology. However, other residents of same discipline could use it easily. These participants are commonly health care workers working in the country departments of health whose background may be as medical doctors, nurses, environmental health officers or

laboratory scientists who work in public health-related fields and at least biology discipline background.

Prerequisites: As mentioned earlier, before using this case study, participants should have received lectures on introduction to surveillance, operations of surveillance and surveillance evaluation. Being involved in diseases surveillance is suggested to lead the group work.

Materials needed: Calculators, paper sheets, flip charts, markers, computers with MS Excel and Epi info v.7

Level of training and associated public health activity: Newly enrolled residents – Disease Surveillance and Evaluation of Public Health Surveillance.

Time required: 2-3 hours.

Language: English and local languages

Goal of Case Study

The case study will build capacity of learners and residents/trainees in the in the processes of public health surveillance evaluation. Furthermore, it will strengthen trainee's competencies in in public health surveillance. It is designed to provide practical application of the concepts included in the evaluation of surveillance system presentation including mostly the attributes of the public health surveillance system.

Learning Objectives

By the end of the teaching session, participants will be able to:

- Define the surveillance system and discuss the types.
- Categorize steps followed for evaluating surveillance systems.
- Illustrate and list the quantitative and qualitative attributes for assessing surveillance system performance.
- Evaluate and interpret the results of evaluation process.
- Identify and describe each attribute for evaluation of surveillance system.
- Calculate the sensitivity and predictive value for a surveillance system.
- Outline recommendation following evaluation of public health surveillance.

Getting Preparation for Launching Case Study

The facilitator for this exercise should have a general background of surveillance, statistics, and applications to epidemiology. There are some points for facilitators to pay attention before practicing the case study.

- Read the article of profile of Updated Guidelines for Evaluating Public Health Surveillance Systems which is accessible from: https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5013a1.htm. In addition, the article on Evaluation of the national tuberculosis surveillance system in Afghanistan published in EMHJ and accessible: https://www.emro.who.int/emhj-volume-19-2013/volume-19-issue-2/16.html
- Review the surveillance operations and evaluation of surveillance system lectures prior to conducting the activity along with reading any applicable instructor notes included with the presentation.
- Read through the entire case study of instructor version and answer key to gain an understanding of the flow of the exercise and steps for evaluation.
- Ensure that there is a sufficient copies of student version, flip charts, and maker for groups (computer is preferrable).

Introduction

Afghanistan is generally considered a poor and least developed country [1]. From 2001 to 2021, Afghanistan experienced improvements in health, with life expectancy increasing from 56 to 64 years [2]. The maternal mortality rate was estimated at 638 deaths/100,000 live births [3] and its infant mortality rate estimated at 106 per 1,000 live births in 2021 [4]. Afghanistan is one of the only two remaining countries that has not eradicated Polio. Around 15,000 people die annually from various forms of cancer [5] and 1,000 or more die in traffic collision each year [6]. Approximately 46% of the population is under 15 years of age, and 74% of all Afghans live in rural areas. Infant mortality rate is estimated to be 66.3 deaths/1,000 live births [7].

Furthermore, the country is suffering from a double burden of diseases including communicable and noncommunicable diseases. For instance, tuberculosis (TB) continues to

be a major public health challenge in Afghanistan. Medicines and diagnostics are made available free of charge in the country. Almost 65,000 cases and 11,000 deaths were estimated to be caused by TB in Afghanistan in 2016. In 2017, 47,406 cases were detected and enrolled on treatment. Out of all health facilities, 71% are providing Directly Observed Treatment (DOTS) services.

In 2017, a total of 392,272 presumptive cases were tested for TB. Among the new cases, 19,479 (41.1%) were bacteriologically confirmed, 13,029 (27.5%) clinically diagnosed, and 12,329 (26%) were extra pulmonary cases. Almost 9,732 (20.5%) of TB cases were children. Of all TB cases, 56% were women. Of all TB-diagnosed patients, 70.6% were in the productive age group (15-64 years), and 52.3% of women were in the reproductive age group (15-44 years). Contact tracing was conducted for 84% of respiratory symptomatic cases, and among them 22,939 (93% of children in contacts) were put on isoniazid preventive therapy (IPT). A total of 22,591 (47.6%) TB cases were screened for HIV and 7 cases (0.05%) reported TB/HIV co-infection, and 201 multidrug-resistant TB (MDR-TB) cases were diagnosed and enrolled for management. The treatment success rate for all cases in 2016 was 89.2%. Programme Risks and Challenges are cultural barriers and stigma around TB, disruption of donor financial support services, brain drain and inadequate human resources capacity at the health facility level and lack of quality assurance in laboratory services [8].

Recent data in 2021 reflects following indicators:

- Total TB Incidence 76000 and rate is 189/100000
- MDR TB incidence 4800 and rate is 12/100000
- TB mortality 12000 and rate is 31/100000
- TB case notifications 50234
- Treatment Success rate 95%
- TB case detection rate 66%
- TB case fatality ratio 17%

Tuberculosis Fact Sheet

Tuberculosis (TB) is an old and chronic disease that has affected humans for thousands of years. It is a contagious disease caused by Mycobacterium Tuberculosis and spreads like the

common cold. The disease spreads when people who are sick with TB expel bacteria into the air by coughing or other mediums. TB typically affects the lungs (pulmonary TB) but can also affect other sites (extrapulmonary TB). Cough, fatigue, fever, night sweats, weight loss and pleural pain are the common signs and symptoms associated with pulmonary disease. Most people who develop the disease (about 90%) are adults and there are more cases among men than women.

Diagnostic tests for TB disease have improved substantially in recent years.
There are now several rapid molecular tests that are recommended by WHO as the initial diagnostic test for TB, some of which can detect drug resistance simultaneously [9]. The older method of sputum smear microscopy (developed >100 years ago) is still widely used for TB diagnosis in low and middle-income countries but is increasingly being replaced with rapid tests. Culture testing remains the reference standard for TB diagnosis. Following diagnosis, smear or culture (as opposed to rapid molecular tests) are necessary to monitor an individual's response to treatment. Without treatment, the mortality rate from TB is high.
Studies of the natural history of TB disease in the absence of treatment with anti-TB drugs (conducted before drug treatments became available) found that about 70% of individuals with sputum smear-positive pulmonary TB died within 10 years of being diagnosed, as did about 20% of people with culture-positive (but smear-negative) pulmonary TB [10]. A global modelling study published in 2016 estimated that about a quarter of the world's population had been infected with M. tuberculosis [11]. An older modelling study published in 2000 estimated that about 5–10% of people infected with TB will go on to develop TB disease at some point during their lifetime [12]. The probability of developing TB disease is much higher among people living with HIV, and among people affected by risk factors such as undernutrition, diabetes, smoking and alcohol consumption. The only licensed vaccine for prevention of TB disease is the bacilli Calmette-Guérin (BCG) vaccine. The BCG vaccine was developed almost 100 years ago, prevents severe forms of TB in children and is widely used. There is currently no licensed vaccine that is effective in preventing TB disease in adults, either before or after exposure to TB infection.

Part I: Description of TB surveillance System in Afghanistan

As a resident of field epidemiology training program, you are designing a group project with your fellows to evaluate the TB surveillance system in Afghanistan. After development of evaluation proposal and getting approval of IRB in MoPH your team develop a workplan to start the process. During a visit from national TB control Program in Kabul you realize that there are two separate surveillance system for TB in Afghanistan including HMIS (DHIS2) by MoPH and TBHIS collected by the TB program. Each one has its own data which is recorded in registries in health facilities and transferred to central MoPH and TB national control program quarterly.

Question 1:

Develop a diagram describing the system and showing the flow of information for frontline health facilities to highest level of health sector for both surveillance system of tuberculosis; then compare them and show pros and cons of each one.

Note: those who are working in HMIS, DHIS2 and TBSS should be part of each group while working in groups.

Answer to Q 1:

Part II: Evaluation of Surveillance System

Public health surveillance is the ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health. A perfect surveillance system would give us information that perfectly showed us the 'truth' about a disease in our underlying population. For example, it would only count people with the disease, and, equally importantly, not count anyone without the disease. It would be simple, cheap, and easy to operate. All forms in the surveillance system would be filled in completely and quickly. Not

only that, but they would all be submitted on time to each level. And it would only include the population it was meant to include. But surveillance systems, like any system, are not perfect. Because of this, we need to evaluate surveillance systems to see if they are doing what they are supposed to do.

Anyway, as a field epidemiologist you explain to the program authorities that you are evaluating the TB surveillance system using the CDC Updated Guidelines for Evaluating Public Health Surveillance Systems. Based on these guidelines there are some steps as well as attributes for such an evaluation.

Question 2:

During desk review and interview with surveillance officers in both programs you are explaining your project and provide justification for evaluation of TB surveillance system. Then, the health authorities in the program ask you to illustrate the purpose for evaluation and any surveillance system.

Question 3:

What are six task which are outline in CDC updated guidelines for evaluation of public health surveillance system?

Each surveillance system has certain characteristics, or attributes, that are related to how well it can determine the truth or meet its primary objective. In general, these attributes, are divided into two categories: qualitative (non-numerical qualities) and quantitative (numerical or statistics-driven qualities). Each attribute is an important consideration in describing how a surveillance system meets its objectives; however, it is not necessary for a surveillance system to have all the attributes to be a successful one.

Question 4:

In the following table please list the attributes which is needed to be evaluated in a surveillance system?

Answer to Q4:	
Quantitative Attributes	**Qualitative Attributes**

Part III: Performance of the Surveillance System

To know the status of public health surveillance and identify the level of performance there is a need to gather evidence regarding the performance of the system through attributes outlined in guidelines. Evidence of the system's performance must be viewed as credible. For example, the gathered evidence must be reliable, valid, and informative for its intended use. Many potential sources of evidence regarding the system's performance exist, including consultations with physicians, epidemiologists, statisticians, behavioral scientists, public health practitioners, laboratory directors, program managers, data providers, and data users.

After situation analysis your team developed a concise checklist to be used as clue. Basically, two separate systems were identified as bodies for surveillance of TB at the national level including National Tuberculosis Control Program (NTCP) and Health Management Information System (HMIS).

Question 5:

You are at the initial steps for evaluation, what approaches you will used in order to collect data for evaluation of TB surveillance system?

After collection data using various approached, your team analyze the data and describe the status of each attribute as following:

Usefulness:

HMIS data are useful for planning and monitoring but are less useful for detecting TB outbreaks, whereas proper analysis of NTP data will detect and allow a response to outbreaks. TB data collected by HMIS are poorly linked to action, while NTP data are used by both national and international stakeholders. Based on research department statements at MoPH they have not used TB surveillance data for the development and conduct of studies; however, NTP surveillance data are used by the TB research department and WHO for various studies.

Simplicity:

Standard case definitions are well-utilized in both systems and facility registries (logbooks) are the source of data. HMIS collects few variables whereas NTP uses consistent, standard forms to collect more variables regarding morbidity and mortality of TB including age, sex,

and geography. The HMIS database is linked and fully integrated with other databases at MoPH, while the NTP database is to be linked. Prior to sending to the national level, data are edited, analyzed, and shared with stakeholders at provincial levels and submitted electronically to the MoPH quarterly. The HMIS is simple, quick, and easy to enter and analyze the data. The Microsoft Access database is familiar to staff and facilitated by a series of simple drop-down menus. However, data collection and flow of information is more complex. Considering the high turnover of staff the officers are well-trained at all levels. All implementers at primary health care facilities, including government, national and international NGOs are involved in the reporting of data and timely quarterly feedback is provided to them from the national level.

Using multiple forms for data collection makes the NTP system more complex both in its structure and mode of operation. Data are sent as hard copies to all levels, with delays at each level. Vital TB indicators such as case notification rate, case detection rate, TB conversion rate and treatment success rate are calculated using available data in NTP. With proper feedback mechanisms the main vehicle for communication is discussing the key issues using data in the quarterly review meetings at provincial, regional and national levels. Staff are well-trained regarding TB surveillance but there is still a need to conduct training at the grass-roots level in health facilities for effective TB case management. Outbreak detection and investigation throughout the country is not recorded either by HMIS or NTP. Some other issues include the complex data collection (many forms and ways of reporting), flow of information (delays) and laboratory algorithms (different categories, not just positive or negative). There are also issues with the NTP conducting crosschecks of the national reference laboratory data and random samples of slides from regions which use different indicators.

Flexibility:

HMIS seems to be less flexible for accommodating changes when there is a need for additional information or modes of operation, however, removing questions (variables) is easier than adding new questions to the forms. Being supported by the government and having staff in the government salary system, the HMIS is sustainable, unlike a project-based approach in which the funding is withdrawn when the project is finished. It also conforms with planned new software systems in which common files will link to other databases such as training, expenditure, pharmacy, human resources, and others. Variations in funding have had little effect on the functioning of the system.

In contrast, the NTP system is flexible and able to adapt and accommodate changes when there is need for additional information or reporting in TB forms. However, the system is considerably donor-dependent, and cessation of funding and support is a concern for its sustainability. For example, there was an interruption in funding for laboratory services and no reporting was done in late 2008.

Acceptability:

HMIS benefits from acceptability among all MoPH, NGOs and international agencies. Data are collected from registries and there is no need to interview and collect the data for routine cases. A high rate of data reporting is observed at all facilities and almost no refusals in participation are seen. Complete and timely data are available. However, HMIS is less acceptable by TB-related stakeholders due to problems with incomplete and duplicate data.

The NTP on the other hand is not fully acceptable at all levels of health workers due to the multitude of forms and high workload at primary level health facilities. The system even lacks acceptability within the TB Programme among those working at grass-roots levels, such as heads of health facilities. Additionally private sector acceptability is another issue. WHO, however, is more supportive of NTP and uses the data for its regional and global reports. A weak point is that quarterly data sent to the NTP for analysis are delayed and incomplete. On the other hand, quality control practices are good as laboratory slides are collected from facilities randomly for crosschecking.

Representativeness:

HMIS covers public facilities including government and NGOs; however, 15% of the country is not covered by public health facilities and a considerable proportion of the population are utilizing the private sector, are not seeking medical care and/or are seeking care through other means. In addition, the system is not collecting sufficient information about the demographic and socioeconomic status of the population. It therefore cannot be said that the system is representative of the whole population. Nevertheless, HMIS covers fewer variables and is trying to cover the private sector and military health facilities as well in efforts towards improving the representativeness of the data.

NTP has expanded its DOTS coverage exponentially and is now collecting data from 1013 facilities, which are almost 90% of Basic Package of Health Services facilities. The system is collecting sufficient information regarding age and sex of cases along with their residential areas. There are 2 sources of information: basic management units (facilities) and laboratory

registries. Like the HMIS, the NTP misses data from private sector and military health facilities.

Stability:

The HMIS is able to collect, manage and provide data properly without failure from all its facilities and its fully operational with its monthly reporting at the provincial levels and quarterly reporting at the central level. All stakeholders are entitled to receive the HMIS analysis folder for their own analysis of data including TB. The Microsoft Access database is simple and user-friendly, is well developed and few resources, including human and non-human, are required for its maintenance. It takes very little time to enter, edit, transfer, analyses, store and retrieve the data. Problems in the extraction of information do occur, however, due to occasional breakdown in the electricity power supply.

Due to delays in the reporting of data, timely information is not available within the NTP. Data is collected at health facilities and laboratory facilities in hard copies for each quarter and are entered into a Microsoft Excel as well as a new Access database. These databases are very simple for data entry and analysis and few resources are needed for maintenance of the database. Corruption of databases due to viruses is always a concern. The system needs to be made electronic at all levels particularly at provincial and regional levels.

Data quality:

While the HMIS has progressed since it was set up in 2003 in terms of quality of data, some blank cells and illegal values are still observed in the forms; for instance, it is known that some facilities have reported that they are performing sputum smear examinations when in reality they do not have microscopes available. By and large the HMIS is collecting complete and valid data from registries by checking for missing and illegal values (out of a predetermined range) at different levels. Data management, including data collection, entry, editing, analysis and feedback, is good due to timely feedback and training.

The NTP has expanded rapidly but there are still blank and Illegal values in the forms despite checks on the quality of data at provincial, regional and national levels in quarterly review meetings. It covers more comprehensive data compared with the HMIS. However, there are difficulties in data management at NTP at all levels, including reporting, analysis and feedback.

Sensitivity of the surveillance system:

We defined sensitivity as the ability of the surveillance system to truly detect cases of TB in the country (sensitivity = cases detected/cases existing × 100). No survey has been conducted to establish the exact burden of TB in Afghanistan and the system is using WHO estimates for case detection and other indicators.

A. ***HMIS data:*** Based on HMIS case definitions for TB, the patient is recorded as suspect and he or she is sent for sputum examination, but the HMIS is not able to trace the contacts. The following is data from the HMIS database for 2008: total TB suspected cases reported: 146 98; total sputum smear-positive cases estimated: 17 885; total TB sputum smear-positive cases detected, 12 229. Now using these data that is possible to calculate the sensitivity.
B. ***NTP data:*** The NTP system collects epidemiological and laboratory data from all facilities covered by DOTS. Contact tracing is another problem which is not done by the system and reduces its sensitivity. We calculated sensitivity just at the routine reporting level in 2008. We can calculate sensitivity at the level of all TB cases or at the level of sputum smear-positive cases. Here is the data: total TB suspected cases (prevalence): 40 000; total TB suspected cases detected: 28 300; total TB sputum smear-positive cases estimated: 17 885; total TB sputum smear-positive cases detected: 13 136. So, the sensitivity at first and second level can be calculated.

Predictive value positive of the surveillance system:

We defined predictive value positive (PPV) as the proportion of acid-fast bacilli (AFB)-positive slides out all slides examined by laboratory facilities (PPV = true positives/all positives × 100).

A. ***HMIS data:*** After a review of data and interviews with HMIS staff at the central level in 2008 data at HMIS we calculated the PPV in 2 ways. First, it was based on the proportion of AFB slides that were positive out of all slides examined for AFB (Acid Fast Bacilli): total AFB slides examined: 283831; total AFB slides positive: 28951; secondly, we can calculate the proportion of TB cases starting treatment (i.e., true positives) out of those identified as suspected TB: total TB cases suspected: 146 981; total TB cases started treatment: 21487. Now you can calculate them at both levels.
B. ***NTP data;*** There are possibilities of laboratory examination for AFB at facilities but that is not possible to do culture except at the NTP reference laboratory in Kabul. For each TB suspect a sputum sample is collected and 2 to 3 AFB slides are examined

both for diagnosis and follow up. The following 2008 data from the NTP were identified: Total AFB slides examined: 268614; Total AFB slides positive: 30447. Now you can calculate the PPV using the mentioned data.

Representativeness:

HMIS covers public facilities including government and NGOs; however, 15% of the country is not covered by public health facilities and a considerable proportion of the population are utilizing the private sector, are not seeking medical care and/or are seeking care through other means. In addition, the system is not collecting sufficient information about the demographic and socioeconomic status of the population. It therefore cannot be said that the system is representative of the whole population. Nevertheless, HMIS covers fewer variables and is trying to cover the private sector and military health facilities as well in efforts towards improving the representativeness of the data.

NTP has expanded its DOTS coverage exponentially and is now collecting data from 1013 facilities, which are almost 90% of Basic Package of Health Services facilities. The system is collecting sufficient information regarding age and sex of cases along with their residential areas. There are 2 sources of information: basic management units (facilities) and laboratory registries. Like the HMIS, the NTP misses data from private sector and military health facilities.

Timeliness:

Timeliness was quantified as delays of more than 3 months. At the community level the amount of time it takes for clients in the community to seek medical care is very difficult to determine. In HMIS data are taken from health facilities and sent to the provinces monthly. At the provincial level data are analyzed and shared with all stakeholders and after cleaning data are forwarded as soft copies to the national level at the end of each quarter without delays. More than 95% of facilities send their reports regularly. Collection and examination of sputum is also timely at facilities. Feedback is provided after the quarterly data collection from central HMIS to those facilities in which problems are identified in analysis.

NTP is collecting information quarterly using laboratory and facility quarterly formats. It is also reporting treatment outcome and conversion of sputum-smear positive cases. However, the quarterly reports are not sent on time from facilities to the provincial level or from the province to the regions or from the regions to the national level. Delay in reporting is therefore a concern. Furthermore, feedback is not provided in a timely manner and properly.

All data are sent as hard copies from the lower level to the central NTP, which is not acceptable in the current challenging conditions of Afghanistan. Timeliness therefore is a concern for the NTP.

Question 6:

Considering the results mentioned in the above attributes now you can develop a table containing all 10 attributes for **HMIS.** In the table you should list the attributes with short definitions, identify the status/level (good, average, poor) and provide justification for each status.

Answer for HMIS		
Attributes Definition	**Level**	**Justification**

Question 7:

Considering the results mentioned in the above attributes now you can develop a table containing all 10 attributes for **TBSS**. In the table you should list the attributes with short

definitions, identify the status/level (good, average, poor) and provide justification for each status.

Answer to Q 5: 2. For NTP		
Attributes Definition	**Level**	**Justification**

Part IV: Conclusion and Recommendations

Both surveillance systems for TB are functional and work separately. The HMIS is a very good system which provides timely information through daily recording and monthly and quarterly reporting and feedback. NTP collects comprehensive information but with delays in reporting and feedback. So, timeliness, as a key surveillance system metric, is better in the HMIS than the TB surveillance system under the NTP. Moreover, the information is only occasionally linked to action in HMIS while annual data is mostly used for planning at the

national and international level at NTP. The HMIS system has a high degree of acceptability among stakeholders because it has been developed with the involvement and participation of various HMIS taskforces. The NTP surveillance system is less acceptable due to its complexity and multitude of forms.

HMIS is collecting fewer variables regarding TB compared with the NTP. There is poor coordination or sharing of information between the 2 surveillance systems regarding TB and this causes duplication of effort, wastage of resources and incomplete information. Both systems collect data from all public health facilities, and both are missing data from the private sector facilities where many cases come and are managed. Both systems have approximately equal sensitivity and PPVs. The low prevalence of smear-positive cases in the population has affected the PPV, lowering it to 10%. Both systems can show the seasonal and secular trend of TB cases, which generate hypotheses and trigger research questions.

Question 8:

Now that the evaluation is complete, and information is available at your hand, what specific recommendation can you provide for improvement of both surveillance systems?

Acknowledgements

The original study was conducted from January to March 2010 and supported by CDC, Atlanta and Field Epidemiology and Laboratory Programme, National Institute of Health, Islamabad, Pakistan as well as Afghanistan National Public Health Institute. In addition, the National TB Control Programme and Health Management Information System at Ministry of Public Health were supportive in the evaluation. So, the data belongs to a program in 2010 and used here just for teaching purposes.

References:

1. World Bank Survey: Living Conditions Remain Dire for the Afghan People. World Bank. November 22, 2022. https://www.worldbank.org/en/news/press-release/2022/11/22/world-bank-survey-living-conditions-remain-dire-for-the-afghan-people
2. World Health Organization. Afghanistan. https://www.who.int/countries/afg/en/
3. Counting the costs of America's 20-year war in Afghanistan". AP NEWS. 30 April 2021. https://apnews.com/article/asia-pacific-afghanistan-middle-east-business-5e850e5149ea0a3907cac2f282878dd5
4. Afghanistan: Human Development Indicators. United Nations Development Programme (UNDP). http://hdr.undp.org/en/countries/profiles/AFG
5. 15,000 cancer patients annually die in Afghanistan. Pajhwok Afghan News. May 20, 2021. https://pajhwok.com/2021/05/20/15000-cancer-patients-annually-die-in-afghanistan/
6. Officials: Traffic Incidents Decreased in Afghanistan Compared to Last Year. TOLOnews. November 21, 2022. https://tolonews.com/afghanistan-180853
7. Afghanistan. UNESCO. 27 November 2016. Archived from the original on 10 May 2017. https://uis.unesco.org/country/af
8. Word Health Organization (WHO). Afghanistan. Program Areas. Tuberculosis. Situation Update. (https://www.emro.who.int/afg/programmes/stop-tuberculosis-stb.html#:~:text=Tuberculosis%20(TB)%20continues%20to%20be,detected%20and%20enrolled%20on%20treatment.)

9. WHO consolidated guidelines on tuberculosis. Module 3: Diagnosis – rapid diagnostics for tuberculosis detection 2021 update. Geneva: World Health Organization; 2021 (https://www.who.int/publications/i/item/9789240029415).
10. Tiemersma EW, van der Werf MJ, Borgdorff MW, Williams BG, Nagelkerke NJ. Natural history of tuberculosis: duration and fatality of untreated pulmonary tuberculosis in HIV negative patients: a systematic review. PLoS One. 2011;6(4):e17601 (https://www.ncbi.nlm.nih.gov/pubmed/21483732.
11. Houben RMGJ, Dodd PJ. The Global Burden of Latent Tuberculosis Infection: A Re-estimation Using Mathematical Modelling. PloS Medicine 2016 (https://doi.org/10.1371/journal.pmed.1002152.
12. Vynnycky E, Fine PE. Lifetime risks, incubation period, and serial interval of tuberculosis. American journal of epidemiology. 2000;152(3):247–63