CAPACITY/CAPABILITY ASSESSMENT

ECDC country visit to Türkiye to discuss surveillance of communicable diseases

ECDC Accession Support to Western Balkans and Türkiye

Background

Instrument of Pre-Accession Assistance (IPA)

ECDC cooperates with countries in the Western Balkans and Türkiye to improve their infectious disease prevention and control systems and public health workforce and to prepare for their future participation in the work of the Agency.

Technical cooperation with countries in the Western Balkans and Türkiye [1] aims to support their capacities in implementing EU legislation and procedures on communicable diseases; improve the 'One Health' response to antimicrobial resistance (AMR), and enhance surveillance of laboratory-confirmed severe acute respiratory infections (SARI). The project is funded by the European Commission's European Neighbourhood Policy and Enlargement Negotiations (DG NEAR) [2] under the Instrument of Pre-accession Assistance (IPA) [3].

The project is structured around three technical work streams. Work Stream 1 encompasses preparatory measures for IPA beneficiaries to enhance their communicable disease surveillance and control capacities, improve their health emergency preparedness and further develop their public health laboratory systems [1]. These elements will support national health authorities in fulfilling the minimum requirements for surveillance data submission at EU level. The expected results of this stream are:

- more comparable, timely and reliable EU-level communicable disease surveillance data;
- long-term expansion of ECDC's scientific and surveillance outputs, covering a broader geographical area within Europe that includes the Western Balkans and Türkiye;
- improved response to public health threats from infectious diseases at the national level, with early detection of, and response to, serious cross-border threats at the EU level.

National public health authorities in the Western Balkans and Türkiye are at various stages of establishing digitalised surveillance of notifiable diseases and implementing the lessons learned from the COVID-19 pandemic.

ECDC has incorporated capacity-building activities in the Western Balkans and Türkiye into its strategy 2021–2027 and long-term surveillance framework 2021–2027. The Centre's technical cooperation with the Western Balkans and Türkiye has enabled the participating countries to report mutually agreed diseases to The European Surveillance System (TESSy) since 2016 (2015 data), attend ECDC meetings, network with colleagues and participate in some ECDC surveillance activities.

In 2022, ECDC analysed the quality of surveillance data reported by the Western Balkans and Türkiye. Virtual bilateral meetings were arranged to discuss challenges and technical issues related to reporting, identify needs for future ECDC support in strengthening national surveillance and plan the next steps for joint surveillance activities. However, specific and detailed knowledge of the national surveillance systems in the Western Balkans and Türkiye is needed to develop tailored capacity-building activities, including the possible expansion of national routine reporting at EU level to additional diseases. To this end, ECDC stressed the need for technical country visits to the Western Balkans and Türkiye as an immediate priority and a meeting was arranged with national correspondents and observer National Focal Points (NFPs) for Surveillance in November 2022.

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Country visit to Türkiye

In the context of Work Stream 1, ECDC conducted a technical visit to Türkiye in April 2025 to obtain a comprehensive overview of the country's national surveillance system, including its operation and governance, its needs, vulnerabilities and strengths. The main purpose of the technical visit was to identify areas in the surveillance of communicable diseases that may require further work and potential support from ECDC.

The specific objectives were:

- to better understand the existing structures, systems, tools and processes involved in the national surveillance of communicable diseases, as well as any planned changes;
- to identify needs, vulnerabilities, strengths and areas for improvement related to the surveillance of communicable diseases, including aspects that might benefit from ECDC's technical support;
- to document the current situation and potential action plans;
- to agree upon next steps, as well as setting priorities for further action.

To help ensure consistency across technical visits and support the follow-up of progress, ECDC used its standard assessment tool for national communicable disease surveillance systems [4], which is applied for all technical visits to the Western Balkan countries and Türkiye. The tool includes eight topics regarded as core areas for successful communicable disease surveillance and control and is used to guide the discussions during the visit.

The offer for the technical visit was accepted, and the agenda was jointly developed with the Ministry of Health of the Republic of Türkiye. During the visit, findings related to all areas of surveillance were discussed, and the assessment tool was completed in collaboration with colleagues from the country. The insights gained during the visit were used to identify areas where surveillance operations could be further strengthened, and aspects that might benefit from ECDC's technical support or guidance.

1. Surveillance system description

In Türkiye, prevention and control of infectious diseases are primarily governed by the Law on the Principles of Surveillance and Control of Infectious Diseases [5]. This law has undergone several amendments over time to align with evolving public health priorities and international standards. In particular, amendment No. 30764, issued on 4 May 2019 [6], updated the national list of notifiable diseases to ensure consistency with Commission Implementing Decision (EU) 2018/945 of 22 June 2018 [7]. Similarly, amendment No. 31107, enacted on 22 April 2020 [8], officially included COVID-19 as a notifiable disease.

Annex 1 of the law lists 81 diseases, pathogens, and health conditions subject to surveillance. In addition to the overarching legislation, various regulations provide operational guidance for specific diseases. One such document, the Guide to Combatting Communicable Diseases, initially published in 2017 and revised in 2018 [9], defines required response activities for each disease under surveillance. These activities include case investigation, contact tracing, outbreak investigation, and field investigations. The guide also addresses unusual or unexpected health events not listed as notifiable, but considered potential threats to international health.

The Circular on the Notification and Reporting System of Communicable Diseases No. 2015/18 [10] stipulates the timeframes for disease notification and identifies a subset of diseases requiring immediate reporting via telephone to national public health authorities. These diseases fall under the 'early warning' category and are supported by response teams at central and local levels. Türkiye's International Health Regulations (IHR) focal point secretariat is available around the clock for the notification of internationally significant events.

At national level, surveillance is the responsibility of the General Directorate of Public Health (GDPH), under the Ministry of Health. The GDPH is structured around several specialised departments that cover a broad range of public health areas beyond communicable diseases. The primary departments tasked with communicable disease surveillance are the Department of Communicable Diseases and Early Warning, the Department of Zoonotic and Vector-Borne Diseases, the Department of Vaccine-Preventable Diseases and Immunisation and the Department of Tuberculosis. Additional departments, such as the Department of Microbiology, Reference Laboratories and Biological Products, and the Department of Public Health Reference Laboratories, also play essential roles in disease-specific surveillance activities. At the sub-national level, provincial health directorates are responsible for implementing surveillance activities.

Türkiye's communicable disease surveillance system is primarily indicator-based and relies on passive surveillance for most notifiable diseases. The system has nationwide coverage, with mandatory reporting requirements that apply to all healthcare providers—both public and private—across all levels of care. Notifications must be submitted at the point of diagnosis by the attending physician. The responsibility for reporting falls on all public institutions and organisations providing health services, as well as natural and legal persons. No geographical area is currently identified as having systematic under-reporting.

Routine clinical notifications form the basis of surveillance for most diseases under passive surveillance. However, certain pathogens are primarily monitored through laboratory-based surveillance. These include *Campylobacter* spp., *Clostridioides difficile*, *Cryptosporidium* spp., *Salmonella* spp., *Entamoeba histolytica*, *Escherichia coli* (VTEC/STEC/EHEC), *Shigella* spp., *Giardia intestinalis*, *Listeria monocytogenes*, *Yersinia* spp., norovirus and rotavirus.

Active surveillance is conducted for selected diseases such as measles, malaria, vaccine-preventable invasive bacterial diseases (in selected provinces), acute flaccid paralysis (through regular visits to selected hospitals and weekly telephone calls to all hospitals to confirm the presence or absence of cases), and healthcare-associated infections. Within the framework of the polio eradication programme, trained surveillance officers carry out bi-weekly visits to selected hospitals for acute flaccid paralysis (AFP) surveillance. During these visits, electronic health records are reviewed, and, in addition to potential AFP cases, possible cases of measles, rubella, congenital rubella syndrome, and maternal/neonatal tetanus are also discussed with medical staff as part of other activities integrated into AFP surveillance. Surveillance officers ensure the notification of suspected cases, initiate case investigations, support specimen collection for laboratory confirmation when required, and report their activities using standard forms. Within the scope of active surveillance, there is a monthly follow-up of people considered at risk –e.g. returning travellers, seasonal agricultural workers, etc. with testing for those presenting with fever.

Sentinel surveillance systems are in place for influenza-like illness (ILI) and severe acute respiratory infection (SARI). ILI data are collected from 250 sentinel family physicians across 23 provinces, the latter representing roughly 40–60% of the population. For SARI, data are reported by multiple departments across 11 hospitals located in eight different provinces.

Syndromic surveillance is used for conditions such as acute gastrointestinal infections, influenza-like illnesses (ILI), maculopapular and vesicular rashes, acute jaundice, skin parasites, and acute flaccid paralysis. This form of surveillance relies on ICD-10 diagnostic codes recorded by physicians, and trends in these conditions are continuously monitored.

Specific surveillance objectives are defined within national programmes, such as the Healthcare-Associated Infections Programme, National Tuberculosis Control Programme, HIV/AIDS Control Programme, Viral Hepatitis Control Programme, and Legionnaires' Disease Control Programme.

Primary data sources for routine surveillance include family physicians, hospitals, laboratories, and provincial public health authorities. Additional data inputs may come from infection control professionals, press and social media, tuberculosis dispensaries, and other government ministries. Tuberculosis-related mortality surveillance is integrated into the national mortality surveillance system.

Intersectoral coordination mechanisms facilitate collaboration between various governmental bodies. For instance, water quality data are shared between public health and environmental health departments, while veterinary data are accessible through coordination with the Ministry of Agriculture and Forestry. Efforts are ongoing to integrate electronic health systems between the Ministry of Health and other ministries, with a protocol already signed to support two-way data exchange. There is also communication and data sharing between national and provincial department heads, as required. In addition, the National Zoonotic Diseases Committee of Türkiye operates with a One Health approach. The Committee works to develop national policies for the prevention, control and eradication of zoonotic diseases, ensures inter-institutional coordination, and provides scientific guidance. The Committee consists of approximately 25–30 members, including representatives from ministries, universities, professional organisations, and research institutions.

To assess system performance, some surveillance indicators, such as timeliness and completeness, are routinely monitored. User satisfaction and technical challenges are evaluated through questionnaires, and corrective actions are implemented as needed. These may include resolving software issues, offering training, or updating guidelines based on user feedback.

However, despite these mechanisms, there is currently no formal external or internal evaluation framework in place for the surveillance system as a whole.

2. Data collection

Since 2012, infectious disease surveillance data in Türkiye are collected electronically. In February 2019, the Communicable Disease Surveillance and Early Warning System (İZCİ) was launched, becoming the primary electronic platform to support surveillance activities.

In addition to İZCİ, several specialised electronic systems are used for disease-specific surveillance. These include:

- Influenza Surveillance System (ISS)
- National Tuberculosis System (UTS)
- HIV/AIDS Information System (HABS)
- Healthcare-Associated Infections Surveillance System (INFLINE)
- Crimean-Congo Haemorrhagic Fever (CCHF) Surveillance System (KKKA)
- Tularaemia Surveillance System
- Public Health Event Management System (OYS).

Some of these systems, specifically UTS, ISS, INFLINE, HABS, the vaccine-preventable invasive bacterial diseases surveillance and the COVID-19 tracking module, are integrated as modules within the broader Public Health Management System (HSYS).

All indicator-based surveillance data are case-based and centred around ICD-10 codes. For event-based surveillance, a distinct model is used where no identifiable information is recorded at the national level. Case definitions are published online, ensuring easy access for all health professionals responsible for reporting notifiable diseases.

The data collection process begins when a notifiable disease is reported. If a physician records an ICD-10 code associated with a notifiable disease in any of the electronic health record systems—Family Medicine Information System (AHBS), Hospital Information Management System (HBYS), or Examination Information System (MBYS), a pop-up alert is triggered. This reminds the physician of the obligation to report the disease, and the consultation cannot proceed until the relevant notification form (Form 014) has been completed. Some of the key data fields — such as demographic details, healthcare facility information, physician identity, and diagnostic codes — are automatically populated from the National Health Information System (e-Nabız). The physician must manually enter the case classification and symptom onset date. Once completed, the notification is transmitted instantly and automatically to e-Nabız.

A similar process exists for notifiable infectious agents under laboratory surveillance. In these cases, laboratory staff use the Laboratory Information Management System (LBYS) to complete the laboratory notification form 014-D. The pathogen is recorded directly by the laboratory staff. For other diseases, laboratory results need to be manually entered by the attending physician, as no direct interface currently exists between laboratory systems and İZCİ.

There is some variation among the surveillance systems regarding data entry responsibilities and integration levels with laboratory results. For instance, the Tularaemia Surveillance System is fully integrated: physicians are responsible for clinical data, while laboratory staff at the reference laboratory input the confirmatory laboratory results directly for each case. Some of these systems are older and use diverse technologies which limits their seamless integration with İZCİ. In response, development of an upgraded İZCİ v2 is underway, with plans to consolidate the existing disease-specific systems as modules under a single, unified surveillance platform. The HABS system for HIV/AIDS surveillance is still in the testing phase and relies on manual, paper-based reporting, whereas the INFLINE system for healthcare-associated infections (HAI) incorporates a mobile application to support infection control nurses in their surveillance duties.

Within the national surveillance system, manual data entry is feasible at various levels, particularly for operational surveillance activities at local and regional levels. The flexibility of the İZCİ system proved to be critically important following the 2023 earthquakes when access to essential electronic health infrastructure was disrupted for an extended period.

For international reporting, in 2024 Türkiye submitted aggregated data (e.g. for tuberculosis, malaria, HIV/AIDS, syphilis, gonorrhoea, etc.). Case-based data were submitted for West Nile Virus infection and mpox.

3. Data quality

Türkiye has implemented a monitoring system known as Health Statistics and Causal Analyses (SİNA), which generates reports on the completeness and timeliness of infectious disease reporting. These reports are disaggregated by national, provincial, local, and healthcare provider levels, allowing for targeted performance evaluation.

Completeness is assessed by measuring the proportion of ICD-10 codes corresponding to notifiable diseases that result in notifications. In 2024, this proportion reached 97.2%, which was primarily attributed to the electronic system's design features. The small proportion of missing notifications (2–3%) is mainly attributed to healthcare providers using software that does not fully comply with Ministry of Health requirements and fails to enforce mandatory notification rules.

Although the proportion of physicians correctly entering ICD-10 codes is not formally calculated, it was reported to be high. This is due in part to indirect incentives, particularly those related to medication reimbursement. For example, a patient would not be able to obtain reimbursement for antibiotics unless the prescription is associated with an appropriate ICD-10 code justifying its use.

Timeliness of notification is assessed as the proportion of reports submitted within a predefined period, with the primary reference point set at six hours following diagnosis. In addition, within the scope of the İZCİ system, the completion rate of investigations for notifications that require further public health inquiry is also monitored.

Furthermore, for certain diseases such as Crimean-Congo Hemorrhagic Fever (CCHF) and West Nile Virus, specific indicators — such as the ratio of reported cases to laboratory-confirmed cases — are also tracked.

There are automated data validation procedures in place, including the cleaning of variable coding errors, deduplication processes such as merging multiple notifications for the same individual (e.g. suspected and confirmed notifications for the same episode), detection of logical connection errors between case data (e.g. entering a diagnosis of congenital syphilis in a 40 year-old person) and SMS-based confirmation of notifications for some diseases. These validation procedures occur at all levels of healthcare. With the updates made to INFLINE, algorithms are created to adapt to changing diagnostic criteria, and work rules and restrictions are introduced in terms of infection diagnosis, agent, sample type and microorganism control.

Regular feedback on data quality and reporting completeness is provided to healthcare providers through performance indicators incorporated into managerial scorecards. This feedback loop supports continuous quality improvement across the surveillance system.

However, it is important to note that formal estimations of under-ascertainment in Türkiye have not been conducted to date.

4. Data management

The provisions of the EU General Data Protection Regulation (GDPR) [11] are implemented in Türkiye through the Personal Data Protection Law (KVKK), which entered into force in 2016 [12]. İZCİ and HSYS system design was informed by the requirements of this legislation. All personal health data are securely stored without directly identifiable information, using 4096-bit RSA encryption to ensure privacy and data protection.

The main data source of İZCİ is e- Nabız. All automated health systems in the country are required by law to send the health data they produce to e-NABIZ. From there, information related to notifiable diseases is forwarded to İZCİ on a case-by-case basis. Different processes are used for handling data from case-based passive surveillance and syndromic surveillance streams. While İZCİ is fully integrated with e-Nabız, other disease-specific surveillance systems are stand-alone and operate independently.

Patient tracking across the e-Nabız platform is facilitated by a unique identifier known as the 'SYS Tracking Number'. Within İZCİ, handling of data differs, depending on the surveillance type: case-based data include personal identifiers such as the Turkish National ID number, while syndromic surveillance data are anonymised. Each notification within İZCİ is assigned a unique notification ID, which enables tracking and linkage of surveillance activities related to the same case.

Although laboratory data can be linked to notification records for all diseases under case-based surveillance thanks to integration with e-Nabız, complete interoperability has not yet been achieved. During epidemiological investigations, laboratory results must be entered manually by users via disease-specific forms. Except for COVID-19, the system currently lacks the functionality to aggregate or trace case progression across different levels of care.

In other disease-specific surveillance systems, the Turkish National ID number is typically used to track individuals. However, some systems employ alternative identifiers. For example, the Public Health Event Management System (OYS) generates a unique identifier for each reported event. The HIV/AIDS Information System (HABS) features a pseudonymisation process, creating an 8-character pseudonym derived from the patient's data to protect anonymity.

The surveillance systems rely on SQL-based database architectures hosted on centralised servers, with robust encryption and regular backups. Performance optimisation is achieved through data partitioning and indexing strategies.

İZCİ and HSYS are integrated with multiple systems, internal and external to the health sector, namely the Vaccine Tracking System (ATS), Death Notification System (ÖBS), Central Population Administration System (MERNİS), Identity Sharing System (KPS), Central Physician Appointment System (MHRS) and Ministry of National Education - School and Student Information System (MEB).

İZCİ was designed with flexibility in mind, allowing for the dynamic addition of new ICD-10 codes as needed. It also supports the customisation of epidemiological investigation forms to accommodate evolving surveillance requirements and public health priorities.

5. Data analysis

Surveillance data in Türkiye are routinely used to perform automated descriptive epidemiological analyses. They primarily include case counts and incidence rates disaggregated by age and gender, with population estimates serving as denominators. Time trends (e.g. tuberculosis, healthcare-associated infections, AIDS) and geographical analyses are performed as needed (e.g. CCHF, tuberculosis, poliomyelitis). During food-borne disease outbreaks, attack rates are calculated when appropriate, to better understand transmission dynamics.

Case-based data extraction from the İZCİ system is readily available, enabling customised and manual analyses to be carried out when required.

For healthcare-associated infections, a comprehensive set of indicators is calculated to monitor the effectiveness of infection surveillance and control measures. Hospitals receive feedback reports comparing their performance to national benchmarks, helping to guide local quality improvement initiatives.

International comparisons and benchmarking are performed with the Organisation for Economic Co-operation and Development (OECD), EU, the World Health Organization Regional Office for Europe, neighbouring countries and others, as necessary.

The level of data disaggregation varies by disease and surveillance objective. For example, acute gastroenteritis syndromic surveillance indicators are calculated at the local and institutional levels. Tuberculosis indicators are calculated at national, provincial and local levels. Zoonotic disease analyses are performed at national, provincial, and local levels. HIV/AIDS surveillance is primarily at the national level.

Risk factor analyses are also undertaken for various diseases and conditions including healthcare-associated infections, tuberculosis, HIV/AIDS, food-borne disease outbreaks, and brucellosis.

Under the syndromic surveillance system, automated signal detection is carried out in near real-time, allowing for rapid identification of unusual trends or outbreaks. For other conditions, analyses are typically conducted manually, their frequency depending on the disease. Influenza-like illness (ILI) data are analysed on a weekly basis, whereas most other diseases are reviewed annually, culminating in annual surveillance reports.

These surveillance outputs are used to inform public health policy. Reports are reviewed by the Infection Prevention and Control Advisory Board, which uses the data to develop evidence-based policies, targeted interventions, and disease-specific prevention strategies — for example, in the case of healthcare-associated infections.

6. Dissemination of surveillance data

Reports and publications related to infectious disease surveillance in Türkiye are made publicly available through the official website of the GDPH. Dissemination is managed at the national level, but with limited sharing of detailed data; surveillance information is nevertheless disaggregated by region and district to highlight geographical variations in disease dynamics. The frequency of report production varies depending on the disease and surveillance objectives. ILI reports are prepared weekly [13]. Annual disease status reports are published for specific conditions (e.g. tularaemia [14], brucellosis [15], tuberculosis [16]). Ad hoc reports are produced as needed.

In addition to surveillance-specific reports, broader health plans and annual activity reports are also published [17] which often contain relevant information for infectious disease surveillance — for instance, details of vaccination coverage and campaigns.

A performance dashboard within the SİNA system provides real-time visualisations and performance metrics for all diseases monitored through the İZCİ platform.

Scientific dissemination is further supported by the GDPH's official peer-reviewed journal, the Turkish Bulletin of Hygiene and Experimental Biology [18], which serves as a platform for publishing research findings and technical analyses related to public health, including infectious disease surveillance.

7. Outbreak detection

Outbreak investigations in Türkiye are primarily driven by routine surveillance data and are initiated when there is a significant increase in case numbers above the expected baseline, the detection of case clusters, or the identification of diseases with potential international health implications. Specific trigger scenarios are outlined in the Guide to Combatting Communicable Diseases [9], which defines edge cases. For example, a single confirmed case of cholera warrants an outbreak investigation.

The guide provides a comprehensive framework for conducting outbreak investigations, specifying which diseases require case investigations, field investigations, or both. It offers detailed procedures applicable at both the national and subnational levels, guiding a standardised and coordinated response across jurisdictions.

The Public Health Emergency Operations Center (PHEOC) within the GDPH was actively used during the COVID-19 pandemic and following the earthquake that occurred on 6 February 2023. However, as of 2025, there is no operational PHEOC available.

In 2024, several large outbreaks were investigated, including:

- a food-borne outbreak in Beypazarı, Ankara, identified through the early warning system;
  a hepatitis A outbreak in the Kırıkhan District of Hatay Province, detected via syndromic surveillance;
- a tularaemia outbreak in Sivas Province, identified using routine surveillance data;
- several West Nile Virus cases in Istanbul Province, reported through the laboratory notification system;
- an unusual increase in fever-related symptoms in the Edremit District of Balıkesir Province, which was tracked and managed using the Public Health Event Management System (HOYS).

These examples underscore the multi-tiered surveillance and response capacity in Türkiye, which combines indicator-based, syndromic, and event-based systems to support timely detection and effective outbreak management.

8. Capacity

Türkiye has laboratory capacity to confirm suspected cases for all diseases under surveillance. There is laboratory capacity in place for molecular surveillance. Routine molecular surveillance is performed for SARS-CoV-2, influenza, measles, polio and non-polio enterovirus, and mpox virus. Molecular surveillance is only performed when necessary for *C. diphtheriae*, *Salmonella* spp., *N. gonorrhoeae*, *C. auris*, and *E. coli*. Genomic surveillance is performed as necessary in the context of antimicrobial resistance surveillance. Optimisation of genomic surveillance is ongoing for CCHF and *Bordetella pertussis*.

A comprehensive set of microbiology laboratory standards is publicly available via the Department of Microbiology Reference Laboratories and Biological Products [19]. Multiple national assessments — including LabKap 2019, LAT2021, and LAT2022 [20] — have evaluated laboratory capacity across the country. These assessments revealed that approximately 40% of laboratories were not adhering to the national guidelines, raising concerns about the potential for inaccurate or inconsistent diagnostic results.

Türkiye maintains disease-specific laboratory surveillance networks for various conditions, such as tuberculosis, influenza, Legionnaires' disease, measles and rubella, enteric pathogens, vaccine-preventable invasive bacterial diseases and antimicrobial resistance. The country also operates Biosafety Level 3 (BSL-3) laboratories within the Department of Microbiology Reference Laboratories and Biological Products, and these have been in place since 2006. In addition, a mobile Transit International Routier (TIR) laboratory is available and plays an active role in emergency response, which includes earthquakes and epidemics.

Training opportunities are available for personnel involved in communicable disease surveillance. Training courses are primarily delivered through remote learning platforms and are designed for professionals at both national and sub-national levels. Training topics include basic and applied epidemiology, epidemiological investigations, early warning and response systems and basic statistics for surveillance and public health decision-making. The most recent epidemiology-related training courses took place in 2023. National and international specialised training programmes are also available for laboratory staff, covering disease-specific diagnostics and techniques. For infection control professionals, Türkiye offers certified training programmes for both nurses and physicians. These include hand hygiene cascade training programmes designed to facilitate cascade training at institutional levels. Targeted training initiatives are also in place for certain diseases, for example annual zoonotic and vector-borne disease training sessions or workshops on tuberculosis notification systems and procedures. Guidance documents and training materials for healthcare workers are accessible via the GDPH website [21].

No significant shortages have been reported in terms of infrastructure, including access to computers, high-speed internet, statistical software, and bioinformatics tools. While existing resources are sufficient, there is room for improvement in upgrading capacity, particularly at sub-national levels.

Similarly, no gaps have been identified in terms of human resources, including epidemiologists, data managers, administrative personnel, and other key staff to support national and provincial surveillance activities.

Conclusions and recommendations

This country visit involved several surveillance experts from the Ministry of Health, triggering a comprehensive discussion on national communicable disease surveillance in Türkiye and providing the ECDC team with a clear understanding of the current landscape. Communicable disease surveillance in Türkiye is a core public health function, governed by an overarching law on the prevention and control of communicable diseases.

Türkiye has experience in using digital platforms for disease reporting, with electronic data collection in place since 2012 and the İZCİ system serving as a central pillar for case-based surveillance since 2019. The surveillance system is comprehensive, covering a wide range of diseases and using multiple complementary approaches, including indicator-based, event-based, syndromic and sentinel surveillance. The integration of case definitions, digital notification workflows, and centralised reporting ensures consistency and high completeness of reporting across all healthcare levels and sectors.

Continuous improvement is ongoing through the development of İZCİ v2, efforts to integrate laboratory and epidemiological data, and the expansion of genomic surveillance capacities. There is some intersectoral coordination. Automated data validation mechanisms are in place. Despite these strengths, opportunities remain to streamline existing disease-specific systems, improve laboratory integration, and conduct a formal evaluation to guide long-term strategic development.

Based on this assessment, the ECDC team has put forward a set of recommendations to be viewed as practical steps toward strengthening disease surveillance in Türkiye.

Integrate laboratory and epidemiological data

Despite existing interfaces between İZCİ and e-Nabız, full integration of laboratory and epidemiological data remains limited. For many diseases, laboratory results still need to be manually entered into the system during epidemiological investigations, which can delay response efforts and increase the risk of data inconsistencies. Strengthening interoperability between the Laboratory Information Management System (LBYS) and İZCİ would allow for real-time linkage of laboratory-confirmed results with clinical case data. This integration could streamline the investigation workflow and enhance data accuracy, improve completeness, and support faster decision-making.

Integrate stand-alone systems into IZCI

Several disease-specific surveillance systems in Türkiye continue to operate independently. Integrating these stand-alone systems into the İZCİ platform would centralise data management and facilitate a more holistic understanding of disease trends. The ongoing development of İZCİ v2 presents a valuable opportunity to harmonise surveillance infrastructure, reduce duplication, and enhance the efficiency and responsiveness of the overall system.

Consider carrying out a formal evaluation

Although various mechanisms are in place to monitor aspects of the surveillance system—such as timeliness, completeness, and user satisfaction, Türkiye has yet to implement a formal internal or external evaluation of its communicable disease surveillance system. A comprehensive evaluation would provide a structured assessment of system performance, identify operational gaps, and guide future improvements. Using tools such as WHO's Joint External Evaluation (JEE) framework [22] could be particularly beneficial for benchmarking system effectiveness and strengthening national preparedness.

Linkage of OYS with other data sources

The Public Health Event Management System (OYS) plays a key role in capturing data on unusual events and potential outbreaks. However, it is currently isolated from other surveillance and health data systems. Linking OYS with platforms such as İZCİ, e-Nabız, and relevant laboratory databases would facilitate a more comprehensive event response. This integration would support faster verification of alerts, provide contextual epidemiological information, and improve coordination across departments during public health emergencies.

Improve automation of surveillance outputs

Surveillance data analysis and report generation remain largely manual (e.g. annual disease reports), taking up time and human resources that could be allocated to higher-level analytical or response tasks. Automating key steps in data analysis and report preparation (e.g. data exportation from İZCİ, calculation of tables and charts for routine indicators) would facilitate more timely dissemination of critical surveillance outputs.

Continue assessment of laboratory capacity to ensure reliable testing for routine surveillance and care

National assessments such as LabKap and LAT have provided valuable insights into laboratory performance across Türkiye, revealing variability in adherence to national microbiology standards. Continued and regular assessment of laboratory capacity is essential to ensuring diagnostic quality and reliability, particularly for diseases requiring timely confirmation. Emphasis should be placed on improving compliance with national guidelines, expanding external quality assurance programmes, and ensuring equitable distribution of diagnostic resources across regions to support both routine surveillance and clinical care.

Continue extension of whole genome sequencing to other pathogens, beyond SARS-CoV-2

Türkiye has made improvements in genomic surveillance, particularly in response to SARS-CoV-2. Continuing to expand whole genome sequencing (WGS) to other priority pathogens, such as *Salmonella* spp., *Bordetella pertussis*, and *Neisseria gonorrhoeae,* would enhance outbreak investigations, support antimicrobial resistance surveillance, and contribute to global pathogen genomics databases. Continued investment in laboratory infrastructure, training, and standardised bioinformatics pipelines are critical to scale up and integrate WGS as a routine tool in the national surveillance system.

Improve data sharing, especially sequencing data, e.g. during outbreak investigation

Effective outbreak response requires timely access to high-resolution data, including genomic sequences. Enhancing data sharing protocols — both within national systems and with international platforms — will improve collaboration, support early warning efforts, and facilitate joint risk assessments. Clear governance structures, legal frameworks, and data-sharing agreements should be established to encourage secure and responsible exchange of sequencing data, particularly during cross-border health threats or outbreaks of international concern.

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Annex 1. Practical arrangements for the assessment process

This annex describes the main practical arrangements of the country visit to Türkiye that took place in Ankara from 7 to 8 April 2025.

Country visit agenda

Day 0, 6 April 2025		
Time	**Topic**	**Participants**
19:10	Arrival of ECDC team at Ankara	
Day 1, 7 April 2025		
10:00 – 10:15	Welcome and introduction to the meeting	GDPH, ECDC
10:15 – 10:45	Surveillance of infectious diseases at EU/EEA level and strengthening surveillance in Western Balkans	GDPH, ECDC
10:45 – 11:15	Presentation: 'Description of infectious disease surveillance system in Türkiye'	GDPH, ECDC
11:15 – 11:30	Coffee Break	GDPH, ECDC
11:30 – 12:30	System description	GDPH, ECDC
12:30 – 13:30	Lunch Break	GDPH, ECDC
13:30 – 14:15	System description	GDPH, ECDC
14:15 – 14:45	Data collection	GDPH, ECDC
14:45- 15:15	Data quality	GDPH, ECDC
15:15-15:30	Coffee Break	GDPH, ECDC
15:30 – 16:45	Data management	GDPH, ECDC
Day 2, 8 April 2025		
10:00 - 10:30	Wrap-up of the first day	GDPH, ECDC
10:30 – 11:00	Data analysis	GDPH, ECDC
11:00 – 11:15	*Coffee Break*	GDPH, ECDC
11:15 – 12:00	Dissemination of the communicable disease surveillance data	GDPH, ECDC
12:00 – 12:30	Outbreak Detection	GDPH, ECDC
12:30 – 13:30	*Lunch Break*	GDPH, ECDC
13:30 – 14:00	Capacity	GDPH, ECDC
14:00 – 15:00	Discussion on selected diseases reported to ECDC. Debriefing session	GDPH, ECDC
Day 3, 9 April 2025		
	Departure of ECDC team	

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