

MISSION REPORT

Surveillance and early detection and response systems in Latvia

26–30 September 2011

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This report of the European Centre for Disease Prevention and Control (ECDC) was coordinated by Graham Fraser.

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Abbreviations

ESPHD	Epidemiological Safety and Public Health Division
GIS	Geographic information system
GP	General practitioner
ICL	Infectology Centre of Latvia (state agency)
FVS	Food Safety and Veterinary Service
MoH	Latvian Ministry of Health
RS	Regional epidemiologist
STI	Sexually transmitted infection/s
TESSy	The European Surveillance System
VISUMS	Latvian database for communicable diseases

Executive summary

A review of the general surveillance and early detection systems for communicable diseases in Latvia was conducted by ECDC at country request from 26 to 30 September 2011.

The objectives of the visit were to:

- review the functional effectiveness of the surveillance and early warning and response systems for communicable disease;
- review the communicable disease surveillance and early warning and response systems in relation to compliance with EU and WHO legislative and regulatory requirements and compatibility with functional requirements of ECDC-administered systems;
- facilitate a discussion of the potential strengths and weaknesses of the present and possible alternate system organisational structures, in relation to items 1 and 2 above;
- make recommendations for feasible improvements regarding items 1 and 2 above, where applicable, taking into account the general situation in Latvia in relation to comparable EU countries.

The country visit was conducted in the Riga and Zemgales regions over five days (26–30 September 2011) and consisted of meetings with representatives from a range of institutions and organisations. Information was requested before and clarified after the visit. A systematic approach was taken to reviewing system structure and function.

Recommendations are made relating to:

- incremental developments to the VISUMS system;
- the diagnostic laboratory and regulatory system in relation to a number of underdiagnosed diseases of public health importance;
- increasing the effectiveness and flexibility of outbreak response;
- developments to the communicable disease regulatory framework and priorities;
- succession planning, training and continuing professional education of the epidemiology workforce;
- feedback to data providers and stakeholders;
- streamlining the system for data handling to increase efficiency;
- data protection, patient confidentiality and deductive disclosure;
- development of the epidemic intelligence function;
- development of public health emergency training and an emergency operations facility.

The final draft report has been reviewed by national experts in Latvia, and this final report reflects this review. Any differences in perspective that persist remain the responsibility of the ECDC review team.

It is noted that on 13 December 2011 the Ministry announced its intention to restructure services including services for communicable disease surveillance and control, including the formation of a Centre for Communicable Disease Control, to be operative April 2012.

While the observations made here were made under the present (soon to be phased out) structure, it is considered that most will be transferable to the planning and operation of the new Latvian CDC and related organisations. ECDC hopes that this generic system review and recommendations may be particularly apposite at this time.

1 Introduction

1.1 Background

In May 2011, ECDC received an enquiry through the Latvian Management Board member regarding Latvia's wish to request an assessment review of the epidemiological surveillance system of communicable diseases in Latvia. This was confirmed 1 June in a teleconference between ECDC and Latvian Ministry representatives. On 9 June, Latvia confirmed they would prefer a general system evaluation in parallel with a previously scheduled HIV/STI country visit; this evaluation should also include parallel reviews of the TB and antimicrobial resistance surveillance prevention and control systems. It was also agreed that the general surveillance systems evaluation would include participation of experts from WHO Europe and another Member State.

It was subsequently agreed that the TB visit would take place early in 2012.

1.2 Scope and purpose

The following Terms of reference (ToR) for the ECDC country visit to Latvia in September 2011 were agreed upon, integrating the requirements of an independent assessment of surveillance system function with areas/questions raised by the Latvian Ministry of Health (see Annex). It was agreed to:

- review the functional effectiveness of the surveillance and early warning and response systems for communicable disease;
- review the communicable disease surveillance and early warning and response systems in relation to compliance with EU and WHO legislative and regulatory requirements and compatibility with functional requirements of ECDC administered systems;
- facilitate a discussion of the potential strengths and weaknesses of the present and possible alternate system organisational structures, in relation to items 1 and 2 above;
- make recommendations for feasible improvements regarding items 1 and 2 above, where applicable, taking into account the general situation in Latvia in relation to comparable EU countries.

The agreed deliverable of the ECDC country visit is this report, which describes the visit and its main findings and provides recommendations. This report was drafted by ECDC and then submitted to the Ministry of Health for review and comment. Following agreement on revisions, the report was submitted to the Ministry to be used as required.

1.3 Organisation

The country visit was conducted in Riga over five days (26–30 September 2011) and consisted of meetings with a range of institutions and organisations. Organisations visited and people met are set out in the Annexes.

The visit commenced with a meeting at the Ministry of Health (MoH), where the programme, scope and objectives of the visit were presented. At the end of the visit, a feedback session was held at MoH at which the main findings were presented by the ECDC team leader to MoH and representatives from the Infectology Centre of Latvia (ICL).

The ECDC team gratefully acknowledges the support of experts and officials in Latvia throughout the visit, and in answering enquiries before and after the visit. The ECDC team is grateful for the time that was generously offered by the many professionals met during the country visit.

In addition to the ECDC experts, the visiting team included experts from WHO Europe, Slovenia, and an EPIET alumnus (see Annex 1). ECDC is also grateful to WHO Europe and the Slovenian Public Health institute for making experts available to be part of the review team.

Outputs from the visit consist of summaries of findings from the presentations and discussions held during the visit, site visit experiences, and background documents collected through research prior to the visit, and enquiries made for clarification following the visit.

It should be noted that the scope of the review did not include systems for surveillance of immunisation or healthcare-associated infection. The parallel systems for surveillance of HIV is the subject of a companion report of the visiting HIV review team, and the TB surveillance and control system will be the subject of a separate visit in early 2012.

On 13 December 2011, the Ministry announced its intention to restructure services including services for communicable disease surveillance and control, including the formation of a Centre for Communicable Disease Control, to be operative April 2012. It should be noted that the observations made during this visit, and the information obtained before and after the visit, were made/obtained in the context of the health service and public health structures extant at the time (September–December 2011), particularly in relation to the then organisation of the Infectology Centre of Latvia (ICL).

However, the majority of observations and recommendations made here relate to generic system function, and it is considered that most will be transferable to the planning and operation of the new CDC and related organisations.

2 Background

2.1 Public health system overview

Latvia, population 2 248 000, is a republic administratively divided in nine cities and 109 municipalities.

At the central level, the main institution in the health sector is the Ministry of Health (MoH), responsible for public health, healthcare, pharmacy and legal circulation of drugs. The MoH has a leading role with responsibility for public health policy and strategies, health promotion, proposing legislation and monitoring its implementation, as well as overseeing the work of its subordinate institutions.

A key strategic objective of the Ministry is to develop and implement state policy by ensuring public health in a healthy environment, promoting prevention, popularising a healthy life style by creating conditions in which the inhabitants would benefit from cost-effective, physically accessible, and high-quality healthcare services.

The main institutions in the field of public health and communicable diseases in Latvia are:

- State agency 'Infectology Centre of Latvia'; and the
- State Emergency Medical Service (preparedness, response, training and communication).

The Infectology Centre of Latvia (ICL) is a state agency under the supervision of the MoH. After a reform in 2009, it has taken over the previous functions of the Public Health Agency in areas of infectious diseases and also integrated the State Agency for Tuberculosis and Lung Diseases and its branches. ICL is now responsible for threat detection, control, prevention and national surveillance of all communicable diseases, including STI, HIV/AIDS and tuberculosis, as well as overseeing the national immunisation programme. ICL gives scientific advice, prepares guidelines, provides training and conducts applied research. ICL also provides care for patients with infectious diseases, as well as diagnostic and reference laboratory functions.

The State Emergency Medical Service is responsible for the coordination of emergency management for public health threats, and acts as WHO liaison point for the International Health Regulations.

The Latvian communicable disease surveillance and control system is organised according to the Epidemiological Safety Law approved in 1997. The purpose of this law is to regulate epidemiological safety and specify the rights and duties of state authorities, local governments, and natural and legal persons in the field of epidemiological safety, in order to determine liability for the violation of this law. There are specific regulations – issued by the Cabinet – for surveillance, prevention and control of communicable diseases as well.

2.2 Restructuring under economic stringency

Latvia experienced an economic crisis during 2008, with major reductions made to public sector funding, including public health. The overall public health budget decreased by 25% between 2008 and 2010.

The epidemiological workforce has decreased in size by more than one half since 2008–09, under the tenure of the former Public Health Agency, due to major budget cuts for wider economic reasons. In 2008, there were 170–180 staff involved in the surveillance and control of communicable diseases; about two thirds of them epidemiological assistants, and one third epidemiologists or their equivalents, including heads of divisions. There were 72 staff nationwide in September 2011.

The number of surveillance points (offices within regions) was also reduced during this time (see below).

2.3 Communicable disease and control infrastructure

2.3.1 Structure

The organisation, legislative basis, and recent developments of the system are set out in a paper by the MoH, 2011 (Annex 5).

The communicable disease and control system is led by the Epidemiological Safety and Public Health Division (ESPHD) of the Infectology Centre of Latvia (ICL). The structure of the ICL is given in Annex 6. Surveillance and control of HIV and TB are undertaken by separate divisions within ICL. Receipt of notifiable disease reports, their follow up and control, and data entry into the national surveillance system, is undertaken at the lowest level by regional offices of ESPHD.

2.3.1 Staffing

Communicable disease surveillance and control functions are the primary responsibility of certified epidemiologists. These are medical graduates who have completed specialist training. The majority of epidemiologists in Latvia were trained in medical institutes of Moscow or Leningrad under the former Soviet system, due to the lack of the training capacity in Latvia.

Regional epidemiologists are supported by epidemiologist assistants, who have generally completed three years of training in a medical college. There are also some public health specialists, working at both regional and national levels, who hold a master of public health or similar qualifications.

At the regional level there are currently (as of September 2011) 33 epidemiologists and 20 epidemiology assistants working at regional offices of ESPHD in Latvia. This corresponds to one epidemiologist per population of 67 000 (or 1:42 000 if epidemiological assistants are included).

Figure: Epidemiologist deployment and surveillance sites by region, Latvia, September 2010



Region	Regional surveillance site(s)	Population	Epidemiologists/epidemiologist assistants
Kurzeme	2	299 506	4/2
Latgale	2	339 783	6/3
Riga	1	1 060 621	15/11
Vidzeme	2	268 655	3/2
Zemgale	1	279 809	4/2
Total	8	2 224 400	33/20

Correct as of September 2011

The national level of ESPHD comprises two units (Infectious Disease Surveillance and Immunisation Unit, and HIV/AIDS Surveillance and Prevention Unit) with 19 staff (as of September 2011), including nine epidemiologists (including department and unit heads), five public health specialists and five support staff (statisticians, assistant, nurse).

The surveillance, prevention and control of HIV and STI are considered in a companion report. If the ESPHD staff concerned with HIV and STI prevention and control are excluded (HIV and STI surveillance is administered by a separate unit of ESPHD), the national level for surveillance and control of communicable diseases generally comprises (September 2010) eleven staff, including eight epidemiologists (including the Department and Unit heads), and three support staff.

We understand that some increases in national and regional staffing are planned, and that, since our visit, some new posts have been appointed. Also, an additional surveillance centre was (re)established.

2.4 Diagnostic laboratory infrastructure

2.4.1 Primary diagnostic laboratories

Primary diagnosis for common infectious diseases is carried out through a network of primary laboratories associated with regional hospitals and supported by the major laboratory centre at the ICL in Riga. There are 16 microbiology laboratories and 33 serology laboratories throughout the country (Annex 5). Regional hospital laboratories undertake initial investigations for common infectious diseases, for both hospital patients and community patients (investigations requested by general practitioners, GPs). These cover primary identification of mostly common bacterial diseases. The primary diagnostic capacity of regional laboratories for a number of indicator diseases is given in Annex 6.

Further characterisations of positive results are mostly done at the National Reference Laboratory (NRL) at the ICL in Riga. Almost all virology analyses are undertaken at the NRL.

Samples are transported from regional hospitals and local collection centres to Riga. There are nationwide networks of collection centres for laboratory specimens, run by a number of private companies. These collect specimens either from general practitioners or directly from attendance by the patient, and arrange transport to appropriate laboratories for analysis. Regional hospitals may contract these companies or make their own arrangements for transport of samples to the NRL.

2.4.2 National Reference Laboratory

The NRL in Riga conducts the primary investigation and further characterisation for a wide range of pathogens. Capacity exists to identify and undertake at least initial characterisation for all 47 infections required to be reported to ECDC, together with (in most cases) supporting identification of nosocomial infections and antimicrobial resistance problems. Advanced (molecular) characterisation is available for most of these pathogens.

The laboratories were extended into a new building in about 2009, and appear equipped with modern instruments and facilities, supported by PHARE grant. The Centre has the only level 3 bio-safety laboratory in the Baltic countries.

The NRL carries out a high volume of bacteriological and virological investigations every year. The large majority of this work is primary diagnostic work, undertaken principally for hospitals in the Riga and Zemgale regions. Of all bacteriological and virological investigations undertaken in 2010, 29% were reference laboratory investigations (confirmation and further characterisation of isolates identified by other laboratories). Almost all virological investigations are conducted at ICL in Riga (Annex 5).

Laboratory support for outbreak investigations

Investigation of samples from individuals taken for outbreak investigation purposes is usually conducted by the NRL in Riga.

Public health function of laboratories

Public health microbiology functions are provided primarily by the NRL in Riga, supported principally by the regional hospital diagnostic laboratories. There are no protocols or agreements setting out the public health functions of these diagnostic laboratories.

3 Surveillance system

3.1 System objectives

The Epidemiological Safety Law of Latvia defines 'surveillance' as follows:

Epidemiological surveillance – uninterrupted, dynamic and complex observation of the infectious disease spread providing systematic collection, analysis, explanation and distribution of epidemiological data, also performance of epidemiological research specifically in such aspects which relate to the distribution of such diseases in time, territory, among the inhabitants, as well as analysis of the risk factor of infecting with the aim of exploring, forecasting and influencing epidemiological situation by performing relevant preventive and counter-epidemic measures, as well as evaluating the efficiency thereof.
(Paragraph 1, Article 8).

The same law defines 'epidemiological safety' as including:

'the epidemiological surveillance of infectious diseases, including:

- a) the registration, enumeration and analysis of the morbidity rates for infectious diseases;
- b) the laboratory examination of human, animal and environmental materials for the observation of circulation of infectious disease-causing agents; and
- c) the study of the immunity of the population. '

3.2 Current basis: legislative, regulatory, administrative

Acts and regulations

Parliament and Cabinet have the competence and authority to define procedures for the detection, reporting, surveillance, prevention and control of communicable disease in Latvia. Where such provisions affect third parties, there is generally the intention to have these promulgated at least as Cabinet Regulations. The basic legal texts (Epidemiological Safety Law and Cabinet Regulations) are listed in Annex 5.

Guidelines, protocols, administrative communications

Instructions/protocols for healthcare workers and epidemiologists and others involved in the detection, reporting, prevention and control of communicable diseases, are mostly developed and promulgated through ministerial level (cabinet) regulations.

The Ministry or ICL/ESPHD issue few guidelines directly for healthcare workers. There is no national handbook or collection of guidelines for health and public health practitioners covering the recognition and management of communicable diseases of public health importance. There are some (five) guidelines for health practitioners on the ICL website, relating to the control of nosocomial infections. The ESPHD of the ICL has best-practice guidelines for its regional epidemiologists, covering many of the most common diseases and situations.

Epidemiology bulletins for health practitioners are issued as required and according to the needs of the situation.

3.3 System overview

3.3.1 Diseases under surveillance

Annex 2 of the Cabinet Regulation No. 7, adopted 5 January 1999, and entitled *Procedures for Registration of Infectious Diseases* (and updates) provides a list of diseases to be reported to public health authorities.

This list currently includes 70 diseases; some diseases of lesser importance regarding their potential public health effects have been removed from the list in recent years. Diseases are divided into three classes, depending on the speed with which they must be reported to public health authorities: (1) immediately, (2) within 24h, (3) within 72h.

3.3.2 Notifiable communicable disease cases

Any case of disease in the above list, that is either confirmed, or for which 'there is cause for suspicion' must be notified.

3.3.3 Reporting

The following persons are required to notify cases:

- the healthcare practitioner (who establishes or suspects the diagnosis);
- the head of the microbiological examination laboratory (or authorised person);
- the head of an educational, social care or other institution: reporting by telephone to the relevant branch of ICL, if he/she suspects a 'group illness' (two or more persons with one or more of a defined range of symptoms)

Source: Cabinet Regulation No. 7, adopted 5 January 1999

All reporters use a standard notification report form (phone reports are followed up by postal or other submission of a notification form). Doctors must notify a suspected case ('Notification 1') and again when the case is confirmed, or the diagnosis was changed or cancelled ('Notification 2'). The notification form provides for demographic details, dates of disease onset and reporting, and the basis and status of the notification.

'Notification 2' is usually made by the notifying doctor on the basis of a confirmatory laboratory report, although on occasion the basis of the confirmation of diagnosis is not indicated.

Notifying healthcare providers can include workers other than doctors, for example ambulance staff notify cases seen at home if the case is not sent to hospital. If the case is hospitalised, the hospital doctor (and/or laboratory) makes the notification.

Cases are reported according to the diagnoses listed in the notifiable disease list as either confirmed or suspected cases. No other formal case classification is required of the reporting healthcare practitioner. Laboratories are obliged to notify only those cases that meet standard criteria for confirmation according to EU case definitions.

Cases (suspected or confirmed) are notified by the healthcare practitioner or laboratory to their regional public health office (ICL), using various means depending on the disease and urgency: phone, fax, email, post. Emails are usually not encrypted.

Notifications can be made at any time, any day of the year. After office hours and on weekends, calls are routed to the national ESPHD in Riga. An epidemiologist or assistant takes the notification details, opens the case in VISUMS¹, and is supported by one of the epidemiologists from the Riga region, who is always on call and can be contacted after hours regarding an urgent case or suspected outbreak report.

3.3.4 Case confirmation (processes)

Cases are confirmed by GPs through laboratory investigation if considered appropriate on clinical grounds. Cases are admitted to hospital for clinical reasons; admission is not routinely used for establishing a diagnosis.

Depending on the diseases and specimen required, the specimen may be obtained in the doctor's surgery, or by the patient presenting him/herself, or the specimen, to one of the local collection points run by various networks of (mostly private) laboratories.

The Cabinet proscribes the laboratory tests that will be funded by the state; private laboratories can obtain state funds if they have an appropriate contract). Not all investigations for diseases on the notifiable disease list are state funded.

3.3.5 Databases and information systems

Regional level

On receipt of notification forms at the ESPHD regional office, data from the form are entered into a hardcopy log of sequential notifications and into the national electronic communicable disease database (VISUMS).

VISUMS is a module of the national patient information system (United Healthcare Governance Information System, VIS) and based on an Oracle database system. As such it has connectivity with the Latvia patient register (including national ID, address, GP; the register of healthcare providers; the Land register (supporting GIS mapping).

Once entered into the system, the full case data is available to the Regional Epidemiologists (and their assistants) who register the case, and in the region of domicile of the case (if different). Case information is also available in real time to the national level epidemiologists, but name and national ID fields are not visible to national staff.

The above procedure is repeated when 'Notification 2', is received. If the doctor does not submit 'Notification 2', he/she is usually contacted by the Regional Office.

¹ VISUMS is a module of the national patient information system, based on an Oracle database system.

At any point in time, the case has one of four status levels on VISUMS, three of which are used routinely:

- Under notification (before epidemiologist accepts notification data as a case for further work)
- Under investigation
- Accepted (confirmatory 'Notification 2' has been received)
- Rejected (diagnosis has been changed to a non-infectious or non-notifiable disease)

Some cases are held on a register for chronic diseases in VISUMS, e.g. hepatitis B and C. This register operates on the same basis and data protection arrangements as the overall system.

National level

At the national level, epidemiologists can see the cases and their status in real time, but without personal identifiers, as above.

3.3.6 Case definitions (for surveillance system)

Cases are classified by regional epidemiologists and their support staff at the regional surveillance office.

The surveillance system reports are based on 'accepted' cases. An 'accepted' case is usually based on 'Notifications 1 and 2' and a laboratory notification. 'Notifications 1 and 2' are sufficient to accept the case if additional information is collected which complies with the epidemiological investigation protocol.

Reporting to ECDC, according to the pertinent EC decisions, is provided for under cabinet Regulation No 7. There are data fields for case status: 'possible', 'probable' or 'confirmed' (*aizdomīgs, varbūtējs, apstiprināts*). A case is allocated to one of these categories by the regional epidemiologist, reviewing the available information to assign the case according to EU case definitions. Classification of accepted cases according to the EU case definitions is verified additionally by epidemiologists at the national level before data submission to ECDC (reporting to the TESSy database at ECDC).

3.3.7 Analysis

- Regional level: Regional epidemiologists (REs) review cases regularly and look for geographic patterns and other connections between cases on a weekly and monthly basis. This includes examining GIS outputs from VISUMS, and 'suspected outbreak flags' generated by the system (see Section 6. 1. 1). Otherwise, routine analysis at the regional level is limited. For the most part, regional epidemiologists receive and refer to descriptive analyses supplied by the national level of ESPHD, e.g. the incidence of *Salmonella* cases in their region. If the regional incidence is higher than the national incidence, or in the case of outbreaks, the REs alert their doctors to the situation and ask for their particular attention.
- National level: VISUMS provides an excellent platform for both routine reports and special ad hoc enquiries, particularly when combined with the use of the national personal ID number as the unique identifier. (This also raises data protection issues, see Sections 4. 7 and 5. 9):
 - Routine reports: A range of routine reports are produced on a regular (monthly, weekly, annual) basis, both for internal use and for reporting to stakeholders and data providers (see Section 4. 3. 8). These reports principally summarise 'accepted' notified cases by age, sex, and region. There is little interpretation or commentary.
 - Special reports: Detailed descriptive epidemiological analysis is undertaken by ESPHD national level epidemiologists into issues of particular topical relevance. These analyses can use all the available notifiable case information (descriptive epidemiological analysis). These reports generally are published as special bulletins on the ICL website. Analytical epidemiological methods are used several times a year to investigate communicable disease outbreaks. Both classic case-control and cohort studies are conducted.

3.3.8 Feedback

Regional level

Regional Offices give feedback to GPs primarily through participation in monthly GP conferences, where participants are routinely updated on current issues. REs also communicate with GPs and hospital doctors by email when necessary (outbreak or other unusual situations).

Otherwise, regional offices do not routinely send bulletins/newsletters to general practitioners or hospital doctors.

National level

Feedback to reporters and stakeholders

The current epidemiological situation is reviewed in weekly meetings with national epidemiologists, laboratory heads, and representatives of other key organisations. The meeting is chaired by the Head of the ESPHD of ICL or his substitute. The participants are representatives of the Infection Disease Surveillance and Immunisation Unit, the Head of the Infection Disease Prevention and Control Unit, representatives of the public relations service of ICL, ICL laboratory staff members (virologists and bacteriologists), the BIOR laboratory (ICL has a contract with BIOR for the analysis of food and environmental samples), and employees of the State Emergency Medical Service. The minutes are sent to all participants, regional epidemiologists, as well as the Director and her deputies.

The ESPHD frequently issues letters to doctors and others concerning current issues. GPs receive occasional ad hoc bulletins from ICL/ESPHD regarding matters of current interest, updates, advice, etc. These include recommendations for health practitioners and public health specialists for the management, control, and prevention of infectious diseases according to the epidemiological situation (SARS, legionellosis, influenza, EHEC, etc.).

These are delivered to GPs by the State Payments Service along with other mail. Bulletins are also sent to relevant professional associations and posted on the ICL website; GPs and hospital doctors are encouraged to visit the website.

There are no regular bulletins published or sent to GPs, hospital doctors, or other stakeholders, for example municipalities.

Monthly and annual reports on notifiable diseases are posted on the website. These are essentially tables with case numbers and little or no interpretation or comment. Special epidemiological reports are published (3–5 times per year) by ESPHD on particular issues; reports combine tables, graphs, and analysis with interpretative text and recommendations for doctors and others. These are only published on the website.

Reports to the Ministry and national organisations

The ESPHD at national level delivers regular reports to:

- The Ministry of Health
- The Food and Veterinary Service
- The Health Inspectorate
- The Health Economic Institute

These routine reports are basic summaries of numbers of accepted notifications, as described above.

International reporting

Reports are produced regularly and on an as needed basis (TESSy, EWRS, EPIS, and EIS). See Sections 5. 3. 6 and 6. 2. 3.

3.4 Major additional disease-specific surveillance systems

Most of the 70 notifiable diseases are entered into VISUMS, and all surveillance and public health follow-up and control measures are managed through this system. In recent years, some diseases/health events, which had previously been handled through separate systems, were integrated into the system. These include sexually transmitted diseases (STI) as a group, and the identification of isolates of methicillin-resistant *Staphylococcus aureus* (MRSA). The surveillance of these conditions is covered in another ECDC mission report.

Two major diseases/conditions of public health importance are managed through separate systems with respect to their reporting, confirmation, surveillance, prevention and control: tuberculosis (TB) and human immunosuppressive virus (HIV) infection:

HIV and STI surveillance, prevention and control are addressed in a separate ECDC mission report. The TB surveillance and control system is not covered here, as the system will be reviewed by an ECDC team in spring/summer of 2012.

3.5 Sentinel surveillance systems

There is a sentinel surveillance system for influenza. No other diseases are under surveillance through sentinel systems.

3.6 Syndromic surveillance systems

There are no specifically designed syndromic surveillance systems (e.g. syndromic surveillance of hospital emergency departments, surveillance of over-the-counter sales for anti-diarrhoeal medications, etc.).

The list of notifiable diseases includes several syndromes (e.g. meningitis, encephalitis, hepatitis, gastroenterocolitis, etc.). The EMS reports syndromic data for influenza surveillance purposes from ambulance services (Section 4. 2. 3).

3.7 Personal data protection

According to the Epidemiological Safety Law (Paragraph 13), information on cases of infectious diseases cannot be disclosed:

'Information concerning persons who have infectious diseases, persons in respect of whom there is professionally determined causes for suspicion that they have become infected with infectious diseases, as well as concerning decedents whose death was caused by infectious diseases shall be confidential and utilised only in relation to the performance of medical treatment, prophylaxis and counter-epidemic measures to the extent necessary to implement such measures. Health care practitioners, the epidemiologists of the Infectology Centre of Latvia (hereinafter also epidemiologists) and State Health Inspectorate inspectors, pursuant to the procedures prescribed by regulatory enactments, shall provide such information only to:

- 1) other health care practitioners and institutions;
- 2) authorities which register infectious diseases, perform epidemiological surveillance thereof and organise and control counter-epidemic measures; and
- 3) the courts, police or prosecutorial institutions pursuant to a written request from them.'

Personal data protection is also covered in Cabinet Regulation No. 7, adopted on 5 January 1999 and entitled 'Procedures for the Registration of Infectious Diseases', stipulating that notification in the register of infectious diseases has to be done in conformity with the regulations regarding the procedures for the recordkeeping of medical documentation.

Information regarding the spread of infectious diseases and epidemiological situation shall be available to all natural and legal persons, retaining the confidentiality of personal statistical data.

Personal Data Protection Law covers protection of the human rights and freedoms of natural persons with respect to the processing of data regarding natural persons. Specific procedures for data protection in the Infectology Centre of Latvia are described in the Internal Legislative Act (adopted on 19 August 2011).

The VISUMS system is a part of the patient information system VIS maintained by the National Health Service of Latvia (NHS). VIS has been registered with, and supervised by, the Data Protection Inspectorate of Latvia (DVI) because of its personal data processing activities, which are centralised.

Personal data stored in VISUMS are only available to VISUMS users, and the availability of data is regulated by user roles. Currently, only epidemiologists, public health analysts and assistant epidemiologists of ICL, as well as two people in the Information Systems Department are registered as users of VISUMS (66 persons). The VIS/VISUMS system is accessible via the internet, but requires a VPN connection before users can log on.

Data of VIS and VISUMS are contained in a single database based on Oracle DBMS. Data are stored in a secure data centre operated by *Lattelecom*, the largest IT and telecommunication company in Latvia, and are backed up regularly according to government regulations on data protection standards for critical information systems. User activities are logged.

Data confidentiality at the regional office level. There are good physical arrangements for the security of notifications, log books, and manual records. Access to cases recorded in VISUMS is determined by the principal REs at the regional level, and restricted to REs and their assistants. REs can only see the personal data of registered cases, or cases who live in their region. Epidemiologists have only access to regional data and are not able to view the personal data of cases from other surveillance sites.

Data confidentiality at the national office level. Access to cases recorded in VISUMS for staff working at the ESPHD is determined by the Head of ESPHD. In general, the personal data of the cases are not visible for VISUMS users at the national level.

Risk of deductive disclosure. Epidemiologists can work with very detailed GIS maps where cases are displayed as dots in towns and streets, at a high level of detail. Where these are used externally, there is a certain risk of deductive disclosure, depending on the disease, period of observation, etc.

4 Surveillance system assessment

4.1 Evaluation and monitoring of the surveillance system

Since the pre-accession TAIEX review in 2002, no formal overall review of the surveillance system in Latvia has been conducted.

Evaluation of the surveillance system is understood as a continuous process, and improvements should be made according to the identified gaps and available resources, including development of, and amendments to, legislative acts. Also included are continuous improvements to VISUMS and epidemiological work practices.

4.2 System attributes

4.2.1 External completeness and validity

External completeness

The proportion of actual cases of a disease that are detected by the surveillance system (external completeness/underreporting) has not been evaluated in Latvia.

GPs who did not report any cases of infectious disease over a longer period were identified and contacted by letter in 2011. In the past, possible underdiagnosis and underreporting were checked by visits to GP practices. Recent clinical presentations and diagnoses of patients were evaluated by regional epidemiologists in order to determine if any cases should have been reported to the system. This method is currently not used, as inspectorate functions are no longer with the epidemiology services and resources are insufficient.

External validity

The external validity of data has not been evaluated for the Latvian surveillance system.

4.2.2 Internal completeness and validity

Internal completeness

Indicators of completeness, such as the proportion of completely documented disease cases (all required information is contained in the recorded dataset), are not monitored routinely. The database has no inbuilt system reports related to these indicators.

Internal validity

Evaluation of internal validity is ongoing and based on reports provided by VISUMS (such as reports on duplicates, coding errors, errors in logical links). Corrections of identified errors are implemented on a continual basis.

4.2.3 Timeliness

VISUMS automatically generates outbreak alerts. We were told that all outbreaks are verified within 48 hours.

Time intervals, for example, between date of onset and date of notification by GP/hospital (by disease, region, surveillance unit) are not monitored (except in outbreak situations) or subject to routine system-generated reports. At our request, data on time interval between date of onset and date of notification for *Salmonella* infection in 2011 (N=800 cases) were made available.

Time interval between diagnosis/laboratory diagnosis and time of notification is not monitored (except in outbreak situations), or subject to routine system-generated reports.

Regarding average time intervals between date of notification and date of first investigation (by disease, region, surveillance unit), investigations routinely start the same or next working day after receipt of notification. Serious public health events are also investigated after hours and on weekends.

4.2.4 Simplicity

Data are collected by phone, fax, e-mail, and a paper notification form. Phone reports are recorded by hand in a log book and then entered into VISUMS. Data from notification forms are entered into a handwritten log as well as directly into VISUMS.

There is considerable follow-up work load connected with a status ('accepted' or 'deleted'). The second notification has to be sent by the reporting doctor; if not received, regional epidemiologists have to phone the reporting doctor. When the second notification leads to change of the original diagnosis, sometimes a third notification is required to confirm the new diagnosis (if this is a notifiable disease).

Export of data for further analyses in Excel or statistics software is straightforward.

4.3 System coordination and integration

4.3.1 Integration of surveillance system with other national surveillance systems

Separate registers exist for TB and HIV/AIDS treatment and surveillance. The Health Economic Centre is the official supervisor and data owner of the TB register, but the Centre is not involved in data management and in surveillance. The Infectology Centre of Latvia operates the TB register and is responsible for all activities in TB surveillance and control (Annex 5).

A third register for AMR surveillance is administered from Pauls Stradins University Hospital. This register is also used for reporting data at EU level (EARS-Net and TESSy).

4.3.2 Integration with Health Inspectorate

There is reasonably effective regular liaison and collaboration (e.g. involving institutions) regarding particular outbreaks with the Health Inspectorate, at both the national and regional levels.

4.3.3 Integration with other national systems

(a) *Food Safety and Veterinary Service (FVS)*

There is regular liaison and information exchange between the ESPHD and the FVS at both national and regional level.

There is also regular data exchange regarding cases where zoonotic infection is suspected, as required by regulations (Annex 5).

There are written agreements and procedures about rapid information exchange between the ICL and Food and Veterinary Service in order to coordinate case/outbreak investigations.

(b) *Non-communicable diseases*

There is no linkage between the communicable disease surveillance network and cancer registers.

(c) *Mortality monitoring*

There is a written agreement about mortality data monitoring in HIV/AIDS patients between the ICL and the Health Economic Centre.

(d) *Surveillance of healthcare-associated infections*

Notifiable communicable diseases identified in hospitals and other healthcare institutions are reported meeting the same requirements as infections diagnosed in community settings. Reporting of healthcare-associated infections and of antimicrobial resistance (except for MRSA) is not regulated, and is carried out on a voluntary and collaborative basis.

4.3.4 Support between system tiers

Roles and responsibilities at regional and national levels are well documented, and there are specific duty responsibilities for all staff.

National staff supports regional staff with regular surveillance reports, information and consulting, especially in large or complex outbreak situations.

Minutes of the weekly interagency coordination meeting are made available to regional epidemiologists.

4.3.5 Professional infrastructure, training and development

(a) *Staff and qualifications*

Epidemiologists (medical graduates with postgraduate specialty training) form the core staff of the communicable disease surveillance and control function at the national and local (regional) levels. Epidemiologists carry out follow-ups, interview cases and contacts, identify epidemiologically linked cases, and organise prevention and control measures.

Epidemiologists are supported by epidemiological assistants, who typically have had three years of medical college training. In practice, they perform similar roles regarding interviews and case follow-ups, contacts, etc., but are also responsible for the sampling of contacts and environmental samples.

Increasing numbers of public health specialists are being employed at the national and regional levels. Typically, they are nonmedical graduates with an MPH or equivalent degree. Riga Stradins University has an MPH programme with 10 to 15 graduates yearly.

(b) Continuing professional development (with regard to surveillance functions)

Continuing professional development is well established for medical doctors (including medical epidemiologists and public health doctors) through the Medical Association. There is a credit system connected with certification valid for five years. For public health specialists, a similar continuing professional development programme does not exist in Latvia.

4.3.6 International reporting: reporting to the European surveillance system (TESSy)

Epidemiologists also classify notifications as to whether they are 'possible', probable, and 'confirmed' based on case information and EU case definitions. There are no national case definitions in use. Reporting to TESSy is based on confirmed cases. VISUMS identifies confirmed cases for reporting.

Verification of these cases (i. e. that confirmed status has been met), and conversion of the data according to the TESSy metadatset for reporting, is still essentially a manual and labour-intensive process, taking about two person-months.

The VISUMS software development was outsourced. Changes in TESSy metadata would require subsequent changes in the VISUMS code, requiring additional resources.

5 Early detection and response systems

The early detection of, and response to, public health risks posed by outbreaks and infectious disease is under the responsibility of the Epidemiological Safety and Public Health Division in the Infectology Centre of Latvia. The FVS has also a significant role in the investigation of foodborne disease outbreaks, as does the Health Inspectorate for Waterborne Outbreaks, and in relation to outbreaks in institutions.

5.1 Regional level

5.1.1 Outbreak detection

At the regional levels, detection of outbreaks is under the responsibility of epidemiologists of the regional offices of ESPHD.

Community outbreaks are most frequently detected by regional epidemiologists in the course of follow-up of notified cases and tracing of contacts. Relatively few outbreaks are notified by doctors, hospitals, members of the public, or institutions (e.g. schools).

VISUMS also has an inbuilt algorithm for flagging possible outbreaks, based on similarity of diagnosis, same address, or general location within a specified time period. Epidemiologists review these flags and make enquiries to determine whether there are any epidemiologically linked cases.

In parallel, the State Emergency Medicine Service, who coordinate ambulance services nationwide, also collect data on a daily basis, covering preliminary diagnostics before hospitalisation; they also record suspected clusters of patients with related illness. Data about possible clusters are transferred to LIC immediately, but other data are reported weekly (this includes numbers of respiratory infections and pneumonia for influenza surveillance purposes).

When outbreaks of particular importance are detected at the local level, they are immediately reported to the national level, according to internal procedures and algorithms.

5.1.2 Individual cases of particular importance to public health protection

At the local level, individual cases are reported by telephone directly to the regional offices of ESPHD. Frequently, these are reported by hospital doctors. The procedures for immediate notification are implemented at the local level. There is a 24/7 duty system in place; notifications after hours are received by duty staff in Riga.

When an individual case/outbreak of particular importance is detected at local level, it is immediately reported to the national level according to internal procedures and algorithms.

5.1.3 Response to outbreaks

Regional epidemiologists take the necessary steps to verify and characterise outbreaks. Usually, this is done by the epidemiologist working alone, or with an assistant, and in collaboration with counterparts from FVS and/or the Health Inspectorate (also organised regionally), depending on the nature and suspected cause of the outbreak.

Epidemiologists do not have powers to directly implement or directly manage outbreak control measures, such as antibiotic prophylaxis or immunisation. Instead, they work with health service doctors and nurses to achieve this. Similarly, actions such as closure of premises and environmental sanitation are arranged with counterparts from FVS and the Health Inspectorate as required.

Field resources are somewhat limited. Cars have to be requested from head office in Riga. Laptops for use in the field are limited. Staff have mobile phones.

Dedicated outbreak control teams are not usually formed. In most situations, it is not possible to release a sufficient number of staff to form such teams. Outbreaks are usually briefly described in descriptive terms using a two-page standard reporting form. More complex outbreaks are described in more extensive didactic reports. Analytical methods are used for investigations if required, and epidemiologist resources are available (this usually involves support from national-level epidemiologists).

5.2 National level

At the national level, early detection and response is the responsibility of the ESPHD. The State Emergency Medicine Service is responsible for the organisation of general public health preparedness and response.

5.2.1 Outbreak detection

(a) Indicator-based surveillance

The VISUMS system is the core of the indicator-based surveillance in Latvia. At the national level, VISUMS is monitored daily in order to detect an abnormal pattern that could indicate an outbreak.

The most information about outbreaks at the national level is received through reports from the regional offices. All outbreaks detected through VISUMS at regional level are reported to national level within 48 hours. More serious outbreaks or cases are reported immediately. The State Emergency Medicine Service also notifies suspected outbreaks to the regional offices of ESPHD, who in turn communicate with the national level.

For the detection of individual events of particular importance, the procedures are in place for immediate reporting to the national level through the Regional Offices of ESPHD, and through the State Emergency Medicine Service.

(b) Event-based surveillance

ESPHD operates an event-based surveillance unit with two experts at the central level, although this is a relatively recent development. This activity is conducted 24/7 in Riga by an assistant, supported by an epidemiologist on call. Standard operating procedures are in place.

Outbreaks and cases of public health significance are also reviewed at the weekly inter-sectoral meeting.

(c) Response to outbreaks and cases of particular public health importance

The response to national outbreaks and cases of particular public health importance is the responsibility of the ESPHD (national level). The national-level team also directly support regional teams in outbreak and urgent public health situations as required.

In national public health emergency situations, a State Operative Medical Commission can be implemented, which is led by the MoH.

5.2.2 National public health emergency preparedness

National emergency preparedness has two main pillars: national emergency response planning and training.

(a) Response plans

Response plans are developed conjointly by the State Emergency Medicine Service and the ICL, and approved by the MoH. A multi-hazard approach is implemented for detection and response. A national plan to meet IHR core capacity requirements has been developed. A pandemic influenza response plan is in place.

(b) Training

Some exercises (mainly table-top exercises) are performed to test the response capacity of competent bodies in case of an outbreak. Training programmes are delivered by the ICL and the State Emergency Medicine Service. Almost all epidemiologists in Latvia have received some post-qualification training in emergency response.

5.2.3 Event surveillance: reporting to international authorities

EWRS

A 24/7 system is in place, and EWRS requirements are well implemented. A review of recent EWRS posts from Latvia showed that all were warranted and met EWRS criteria.

The Infectology Centre (ESPHD) is the focal point for EWRS, but the State Emergency Medicine Service also has access to EWRS. Both entities are communicating efficiently.

The Competent Body for threat detection is in the central office of the ICL (ESPHD), which contributes actively to support ECDC activities for early warning and response at the EU level.

EPIS

The EPIS focal points are located in the ICL (ESPHD). Participation in all EPIS networks is active. Latvia routinely contributes to the outbreak investigation through timely reply to posts from other countries.

IHR

The IHR focal point is the State Emergency Medicine Service. However, ICL (ESPHD) also has access to IHR reports.

Overall

It should be noted that EWRS, IHR, EPIS focal points are not operating from the same offices. However, effective communication is implemented among all parties to support good exchange of information. The staff of the State Emergency Medicine Service participates in the weekly meetings led by ICL (ESPHD).

6 Summary and conclusions

6.1 The surveillance system (VISUMS)

The implementation of the VISUMS system (a subsystem of the VIS patient information system run by the National Health Service of Latvia) and the computerisation of surveillance records in VISUMS has been very successful. The system is user friendly, flexible, and reliable (with only little downtime). Once entered at the regional level, surveillance data are available in real time at both national and regional levels. The system generates both routine and ad hoc reports related to specific enquiries. Data are easily exported to Microsoft Excel or specialist statistical software for additional analysis. Initial problems with data entry appear to have been overcome.

The placement of VISUMS within the national patient information system (VIS) provides excellent links to relevant supporting databases (including healthcare providers, GIS, etc.). The use of national ID numbers as unique identifiers allows for the robust and efficient integration of data from different sources (e.g. doctor, laboratory, co-infection, etc.). A useful and adjustable algorithm automatically flags outbreaks for evaluation by regional epidemiologists.

There are few inbuilt report functions for the routine monitoring of the surveillance system. These reports should be available as integrated routine reports and not as ad hoc reports which require extra staff time and could be developed as part of the planned software developments for the VISUMS system; the scope of the automated reports can be gradually developed as experience is gained.

There are no periodic evaluations of surveillance system functions. Evaluations of the external completeness and validity of the surveillance system should be conducted periodically (e.g. every two to three years). Evaluation studies should be identified and developed depending on priorities at the time and could comprise, for example, capture–recapture studies or formal comparisons with hospital admission or laboratory records for selected diseases/disease groups. These could be conducted in association with academic or other external partners.

There are also a number of data protection issues that need to be attended to (Section 6. 9).

6.2 Wider system and primary diagnostic laboratory system issues resulting in apparent under-diagnosis of certain diseases of public health importance

Despite the success of the VISUMS system, an examination of surveillance outputs from Latvia, in comparison with comparable countries and with EU-reported communicable disease rates overall, suggests that there are a number of diseases of public health (and EU) importance that are insufficiently recognised by the health system.

The reported incidence from the surveillance system is consistent and at expected levels, or better, for diseases that might be described as 'traditional public health issues': salmonellosis, shigellosis, tuberculosis, HIV infection, TBE, and sexually transmitted infections (STI). However, the reported incidence rates of several diseases, a number of which have been recognised as important public health issues in recent decades, are much lower than would be expected. This seems to be the case for campylobacteriosis, giardiasis, cryptosporidiosis, and legionellosis (see Annex 7).

These issues appear not to be related to problems with the notification process or VISUMS itself, but result from a combination of factors which lead to the 'under-ascertainment' (failure to diagnose) of a number of key diseases. We are not aware that there are significant problems in reporting of diseases once they have been diagnosed (or suspected) by doctors or laboratories ('underreporting'); our understanding is that compliance with notification regulations has traditionally been good in Latvia. However, underreporting remains a possibility, and notification practices should be monitored continuously (Section 7. 1).

The factors contributing to under-diagnosis of certain diseases appear to include: regulatory and funding factors (several infectious diseases are not included in the list of funded diseases for laboratory investigations); physician consideration in differential diagnosis; laboratory diagnostic algorithms; healthcare and diagnostic laboratory organisational factors; logistics for the receipt of the samples; and storage and transportation.

In addition to selective under-diagnosis for certain diseases, there also appears to be variable reporting according to geographic location of residence in Latvia. These variations are even more extreme than for the apparently underdiagnosed diseases referred to above (Annex 8). These variations in reporting by region also add to the evidence that under-ascertainment of certain diseases (given above) may be a wider system issue.

This in turn suggests that there may be an issue with access to healthcare or to diagnostic tests, or both. We have received no evidence or advice that the former is a significant issue in Latvia (although this should be considered in a wider system review). Our preliminary enquiries suggest that there may, however, be a particular issue with effective access to diagnostic laboratory tests in some regions and for some diseases in particular. Latvia's system for the reporting of diseases of public health importance ('notifiable conditions') is based primarily on suspected cases in order to assure the prompt and appropriate control of the potential spread of infection. However, communicable disease surveillance, epidemiological analysis, reporting of trends, and development of policy advice are primarily based on laboratory-confirmed cases.

Access to laboratory investigation is a fundamental issue for any surveillance system (as well as for clinical care). Effective access problems can arise in a number of ways, even if there is a convenient collection centre for the laboratory network:

- Doctors may not order the test if the length of time before obtaining a result (positive or negative) is considered too long to be clinically useful; in practical terms this can often be anything longer than 'next day'.
- Doctors may not order the test if it will have to be paid by the patient, or, perhaps, by the doctor or healthcare provider.
- Doctors may not order the test if it is not considered as part of the differential diagnosis.
- The doctor may order the test, but specify investigation for a limited number of pathogens which do not include the cause of the infection.
- The doctor orders the test, but the patient does not comply.

These problems with reduced functional access to effective microbiological investigation and diagnosis appear to arise in a number of different ways:

(i) Arrangements for transport of clinical specimens to the laboratory

We understand the various networks of laboratory collection centres serve routine bacteriology well. However, it is less clear that current collection and testing arrangements from peripheral hospitals, primary care centres, and doctors, are sufficiently timely and frequent to meet clinical diagnostic needs in relation to virological tests generally, and tests for *Legionella*, *Campylobacter*, and parasitic diseases (giardiasis, campylobacteriosis).

The locations where the tests for these apparently underdiagnosed diseases are conducted are almost entirely in the Riga area. There appears to be an issue whether laboratory diagnostic capacity should be dispersed or consolidated, and where centralisation is inevitable (or preferred) the question remains whether transport arrangements are adequate.

(ii) Not all diagnostic tests for diseases on the notifiable disease list are funded by the state

The identification of *Campylobacter* spp. in clinical specimens is not funded. This is a significant disincentive for clinicians. This observation is supported by the relatively small number of tests completed at the NRL (Annex 6).

(iii) Doctors' differential diagnoses

This would appear to be both a continuing medical education issue and an issue for the surveillance system; if the latter continues to underreport diseases, these diseases are less likely to be considered by clinicians in differential diagnosis.

(iv) Laboratory investigation algorithms

It appears that there are no agreed laboratory investigation algorithms authorising the laboratory to look for other pathogens if the requested tests are negative. It appears to be customary for physicians to try and guess the likely pathogens according to the clinical features. Within any group of diseases, this is an uncertain process.

In many countries there are laboratory algorithms in place which permit the laboratory to look for alternative likely pathogens without a specific physician order. The physician may order a panel of tests for e.g. diarrhoeal disease or severe pneumonia, and the appropriate range of available tests will be done. Alternatively, if investigations for *Salmonella*/*Shigella*/*Yersinia* are ordered and prove negative, the laboratory may look automatically for likely alternatives, e.g. *Campylobacter*, giardiasis, etc.

These additional tests come at a small marginal cost for the laboratory, but the benefit for the patients, clinicians and health service are often substantial.

6.3 Outbreak detection and management

Outbreaks, defined as two linked cases, are promptly investigated, control measures are taken, and outbreak reports are written, even if there are only two cases in a household. VISUMS flags possible outbreaks for specific evaluation by regional epidemiologists. Case finding by regional epidemiologists (in the course of case and contacts follow-up) is the most frequent source of outbreak identification (defined as above). Overall case finding and outbreak identification compares more than favourably with most EU countries, largely due to the proactive follow-up of syndromic (e.g. 'enterocolitis') as well as laboratory-confirmed cases, combined with the useful local intelligence provided by the VISUMS mapping function.

Larger outbreaks are subject to appropriate descriptive epidemiological analysis, including preparation of epidemic curves. Analytical epidemiological investigations are only conducted for a few larger outbreaks because staff is limited and not all situations warrant such an investigation. Standard outbreak reports are completed for all outbreaks; for larger and complex outbreaks reports include detailed analyses and didactic descriptions. Occasionally, major outbreak reports are published in peer review journals. Large or complex outbreaks are actively managed and supported, or even led, by national-level epidemiologists.

Reasonably effective cooperation with the health inspectorate and FVS appears to exist at local level to ensure the appropriate investigation and management of each outbreak on a case-by-case basis. Coordination of outbreak response between the local and the national level is clear; coordination between the ICL and the State Emergency Medicine Service appears to be well organised. There is also regular interagency communication through weekly interagency meetings. National standard operating procedures for response to outbreaks/public health emergencies are in place; there are infrequent training activities on outbreak response.

We are not sure, however, that outbreaks are always rapidly identified and effectively responded to. This appears to be due to external factors such as infrequent notification from informal sources (e.g. doctors, schools, etc.) and insufficient or late laboratory confirmation of cases. Also, the demands of routine surveillance requirements appear to constrain the rapid deployment of sufficient epidemiologist resources to outbreaks and situations that present a more severe threat to public health (Section 7. 3).

Relatively few outbreaks are reported on suspicion from doctors, hospitals, schools and other community sources. In most countries, these ad hoc reports are usually the earliest evidence of an outbreak, and we are unsure why there are so few. Outbreak identification by regional epidemiologists through case finding in relation to a notified case is *per se* relatively slow, as it can only be done after one of the outbreak cases has been laboratory identified and reported. For many pathogens (e.g. a *Salmonella* point source) this leads to a late identification of the outbreak, reducing the chance of identifying the source and limiting the utility and scope of control activities. For some pathogens (e.g. STEC) such delay can be serious, as it limits the chances to prevent morbidity and mortality. Further, some pathogens are only infrequently looked for in laboratory testing (e.g. 32 tests in total for STEC at NRL in 2010) (Annex 7).

This potential system weakness may be at least in part compensated for by the reporting and high-level of follow-up of notifiable syndromes such as enterocolitis, together with the ability of VISUMS to flag syndromic cases that may be related in space and time. Compared to many other countries, there is also a higher level of case finding through systematic contact tracing.

Usually, an outbreak control team is formed immediately when a large or serious outbreak is detected or suspected; initial investigations are conducted by the usual epidemiologist-and-assistant team.

There appears to be no systematic process for the evaluation of outbreaks; such an evaluation should determine if any aspects of the outbreak could have been handled differently, if adverse health or other events were avoided, and if there were any lessons learned for the future.

We are uncertain as to whether there is a systematic approach to the reporting and evaluation of major national outbreaks. The Hepatitis A outbreak of 2008–2009 was nationwide and involved over 4 000 recognised cases. Reports covering aspects of the investigation and response have been published in peer review journals, but we are unaware of any evaluation report for the Ministry, or other national stakeholders (we recognise it would have been discussed at the interagency coordination meeting). Similar observations apply to the recent putative legionellosis outbreak centred in Riga.

We are concerned over the apparent limited mobility of regional epidemiological staff. Regional epidemiologists and their assistants are dependent on public transport, or need to request a car from Riga in order to investigate cases and outbreaks. Efficient and precise transport of staff is fundamental to outbreak management, and it is difficult to see how this can be achieved without the availability of cars at local level. Laptop computers are in short supply, which makes email communication difficult when in the field. Mobile telephones are supplied in sufficient numbers.

Epidemiologists depend on doctors and healthcare workers for therapeutic measures in order to prevent the transmission of communicable disease and/or control outbreaks of communicable disease. While this may work reasonably well in most cases, this is not universally so, and at times the direct administration of preventive therapeutics by epidemiological staff may be more effective and efficient. There is no provision for this in the regulatory framework.

Training and continuing professional education in outbreak investigation also appears limited. At present, there does not appear to be a professional education programme in modern epidemiological methods applied to surveillance, prevention and control (including outbreak investigation and management). It is not clear to us that all staff have been trained in, and are confident to use, analytical epidemiological methods in outbreak investigations.

6.4 Wider system issues

Local level system organisation

The epidemiological surveillance and control system is currently based on two tiers rather than the usual three (local, regional, national). The number of regional surveillance offices was also reduced as part of the retrenchment of the former Public Health Agency since 2008.

The two-tier system appears to work reasonably satisfactorily for a country the size of Latvia, and the number of epidemiologists in relation to the population and geographical area seems to be a reasonable compromise. However, the ability of the local level teams to work efficiently is critical to the surveillance and epidemiological control functions, and teams covering larger areas need adequate mobility and resources. Present teams seem somewhat stretched, and possibly with insufficient resources. We understand that one of the surveillance points (offices) has been reinstated since our visit, and this should be further reviewed.

Restructuring the ICL

The potential advantages and disadvantages of restructuring of the Infectology Centre of Latvia is outside the terms of reference for this review. We note that there has been some staff disquiet in relation to this, including a staff report to the Ministry. The integration of public health and treatment institutions inevitably raises concerns about the ongoing funding of prevention and control programmes; in most Member States, the public health institute is established as a separate body.

We note that Latvia has announced the intention to form a separate Centre for Disease Control (CDC) in April 2012.

Epidemiological workforce levels

The major and rapid reduction in workforce 2008–10 has been a challenge for epidemiological services in Latvia. This will require a major review as the planning for a Centre for Communicable Disease Control proceeds. Some of our recommendations that follow are resource neutral, and some should increase efficiency. However some are likely to require additional staff resources. The minimum amount of manpower required for a CDC to operate effectively should also be reviewed.

Potential integration of surveillance systems

Surveillance continues to be structured around four parallel systems; one system handles the majority of notifiable diseases (administered by ESPHD through VISUMS), while TB, HIV and STI, and antimicrobial resistance (AMR) are dealt with by three separate systems. STI surveillance was integrated into VISUMS in 2009, and MRSA surveillance around 2010. Surveillance for other AMR pathogens is not regulated by national legislation and not carried out by ESPHD, instead it is conducted on a voluntary basis, for both case reporting and surveillance. ESPHD proposes that AMR surveillance should be regulated and integrated into VISUMS, meeting EU reporting requirements.

Some Member States have integrated their general, TB and HIV surveillance systems, while separate systems, particularly for the surveillance and registration of HIV cases, continue in many countries. The integration of systems has significant potential advantages (e.g. surveillance of co-infection; increased collaboration in prevention and control efforts by the regional epidemiology workforce, particularly for TB.)

We understand Latvia is assessing the strategic value of such restructuring. Integration of separate surveillance systems has significant benefits, and any proposal to integrate the above systems should be carefully evaluated. There may also be significant benefits for prevention and control programmes, for example through the closer involvement of regional epidemiologists in TB control in their districts.

Increased levels of data protection – particularly for HIV records – should be a prerequisite for the integration in VISUMS. These criteria are developed further in section 6.9. Paramount considerations are the preservation of patient confidentiality, the avoidance of deductive disclosure, and the need to maintain confidence of the doctors and microbiologists notifying these conditions in order to maintain surveillance of these diseases at existing levels. To a significant degree, these recommendations also apply to other chronic diseases associated with social stigma, which are already incorporated into VISUMS, e.g. hepatitis C, gonorrhoea, and syphilis. In principle, there is no reason why recommendations for increased data protection should not apply to all notifiable diseases.

Regulatory framework

The present regulatory framework (cumulative government ordinances) assigns no priorities to the management of notifiable diseases, yet the epidemiological workforce available for follow-up and investigation has been reduced by more than one half.

The regulations are the main repository of detailed operational guidelines, but they are unwieldy and difficult to alter. There are few provisions for the delegation of decision-making about communicable disease case/outbreak management priorities to the Ministry and its subordinate organisations, in particular the Infectology Centre (and its Epidemiology Safety and Public Health Division).

The cumulative requirements of the present framework result in an epidemiology service constrained by heavy routine workload, which is less able to respond in a rapid, sustained and comprehensive manner to public health threats from communicable diseases and outbreaks. Heads of the ESPHD units at the regional and national levels are given very little leeway when it comes to the prioritisation of cases and outbreaks.

In a number of Member States, detailed operational guidelines are promulgated by the Ministry or the national public health institute; the regulatory framework underpins the authority of these organisations. Regulations are retained for a number of specific situations, some of them forcing individuals to undergo compulsory measures, for example the testing of food handlers in outbreak situations. This ensures flexible guideline updates, swift guideline development, and also allows directors of epidemiology to prioritise services in order to meet the demands of the actual public health threat.

Notifiable disease reporting

The present list of notifiable diseases includes 70 diseases, including a number of syndromes. This is not excessive compared with comparable Member States, but a number of Member States operate with somewhat shorter lists. A number of diseases have been removed from the list in recent years. The list should be reviewed in the near future, making sure that each disease on the list still poses a risk to public health that justifies its continued presence on the list.

The present notification requirements appear unnecessarily complex. It requires doctors to report twice for every case reported, even though microbiologists independently notify the same cases. This is a complex system, which generates unnecessary work for epidemiologists and their staff. The requirement for a second notification from the doctor should be dropped. Confirmation of cases should be concluded routinely by epidemiologists on the basis of a single doctor notification and a laboratory confirmation.

'National handbook' – guidelines for doctors and other healthcare workers

Guidelines for doctors and other healthcare workers describing the epidemiology, reporting, prevention, and public health control of communicable diseases should be developed. These could be developed sequentially, with priority diseases considered first, drawing on currently available international guidelines which would be adapted to the specific situation in Latvia.

Prioritisation of communicable disease issues

Beyond the three classifications for notifiable diseases, there is no formal system for assigning priority levels to diseases with regard to their potential threat to public health, the disease burden, disease surveillance, epidemiological control, or policy advice. From the legislative point of view, all cases of notifiable infectious disease require a similar response defined in the Epidemiological Safety Law or Cabinet Regulations, even though the public health risk posed by various diseases differs.

6.5 Epidemiologist workforce: accession planning, training, continuing professional education

There appears to be a developing crisis in the maintenance of an adequate specialist epidemiologist workforce. Almost all of the qualified medical epidemiologists were trained in the Soviet Union and are now between 40 and 65 years of age. There are very few fully qualified medical epidemiologists below the age of 40; a number of younger MPH graduates fill epidemiologist roles at regional and national levels.

There is as yet no agreed plan on how staff members who will retire over the next few years will be replaced. Such a plan needs to consider how medical epidemiologists will be trained and recruited. The plan also needs to address the employment of nonmedical epidemiologists and the contributions of MPH, EPIET (including the Member States track programme), and similar training programmes to the specialist workforce. This includes the question of how nonmedical epidemiologists will be accredited/licensed.

MPH graduates (mostly nonclinical) graduate from Riga Stradins University, but their roles and contributions to the epidemiologist workforce are not clearly definable.

Continuing certification of medical epidemiologists is carried out under the auspices of the Medical Association. At present, resources for a continuing education programme for epidemiologists and their assistants are limited. The last major programme was funded by a PHARE grant in association with the introduction of VISUMS.

6.6 Feedback to data providers and stakeholders

Feedback to data providers and stakeholders is a priority function of the surveillance system and generally well executed. However, it is unlikely that doctors and others will visit web sites on their own if not specifically asked to do so. There is evidence that targeted messages through more active means (e.g. e-mail) are more effective. There is also a need to improve the presentation of reports, so busy doctors and healthcare workers will not have to sift through the very technical format that is in use today.

6.7 Workload and efficiencies in workflow

Most aspects of the routine workflow appear to be well designed and managed. VISUMS is an efficient platform for both the daily management of the workflow by regional epidemiologist and their assistants, and for the overall management of staff deployment by the principal regional epidemiologists and the heads of the national units at ESPHD. Regional epidemiologists say they wonder how they could have managed without VISUMS.

The overall routine workload appears substantial and appears mostly dictated by the requirements of cumulative legal ordinances (personal follow-up of notifications, review of contacts, search for related cases, prevention and control measures at locations affected by infection, etc.). Around two thirds of all notifications are personally contacted in a follow-up.

The workforce of qualified epidemiologists has been reduced by about 60% and another 25% since 2008/09. Also, there were substantial pay cuts. Epidemiologist assistant positions were drastically reduced, reducing efficiency in the epidemiological workflow.

Some aspects of the system appear unnecessarily complex. Double notification by doctors has already been noted above. Duplicate entries for notifications seem unnecessary: notifications received during office hours should be entered directly into VISUMS, without the necessity to enter them into the handwritten summary log (except for phone notifications).

Managing logistics (routine vaccine ordering) for the national vaccination programme is a time-consuming administrative task that does not require the expertise of an epidemiologist.

6.8 Surveillance system case classification – from notifications to surveillance cases to ECDC reporting

There is no national case classification system in use internally within Latvia. Cases are reported nationally as accepted notifications. Case classification is used primarily for detailed *ad hoc* analytical reports on current issues and for reporting to ECDC.

6.9 Data protection

There is a strong legislative framework for data protection. The VISUMS system is a part of the wider information system VIS (a patient information system) maintained by the National Health Service of Latvia (NHS), which is supervised as a critical state information system with the Data Protection Inspectorate of Latvia (DVI). Data of VIS and VISUMS are contained in a single database based on Oracle DBMS. Data are stored in a secure data centre operated by Latt telecom, the largest IT and telecom company in Latvia, and are backed up regularly according to government regulations setting data protection standards for critical information systems. All activities are logged (audited).

Personal data contained in VISUMS are only available to VISUMS users, and the availability of data is regulated by user roles and protected by passwords. Currently, only ICL epidemiologists, public health analysts, assistant epidemiologists, as well as two people in the Information Systems Department are registered VISUMS users (66 people total).

Regional epidemiologists can only see the personal data of registered cases, or cases who live in their region. Epidemiologists have only access to regional data and are not able to view the personal data of cases from other surveillance sites. Names and ID numbers are suppressed for staff at national level, but otherwise all case information is visible. Epidemiologists can work with very detailed GIS maps where cases are displayed as dots in towns and streets at a high level of detail.

Although the fundamental security and access restrictions appear sound, two aspects are of concern and warrant further attention. This relates particularly to chronic diseases and/or diseases with stigmatic associations (e.g. HIV,

hepatitis C, gonorrhoea, etc.). First, the number of epidemiologists and staff who potentially have access to these cases appears larger than strictly necessary. Only staff involved in the management of the case should see these reports, and eligibility to view certain reports should be even more restricted.

Second, the risk of deductive disclosure is significant. This risk is associated with the use of high-definition street maps in connection with cases, and the use of national ID numbers as unique case identifiers in VISUMS. The use of national ID numbers also means that different diseases over time are routinely matched. This should be suppressed by the system, unless the matched diseases are clinically significant co-infections.

7 Recommendations

7.1 Incremental development of the VISUMS surveillance system

- *Routine monitoring:* reports on the surveillance system function should be incorporated into the system. These reports should be available as routine reports, generated by the system, and not as ad hoc reports which are time-consuming to create. Routine reports should be developed as part of planned software upgrades for the VISUMS system; the scope of the automated reports can be gradually developed as experience is gained (WHO 2006). These reports should cover internal completeness and validity, timeliness, proxies for external completeness (e.g. annual notifications by doctors, laboratories; proportion of cases notified by both doctors and laboratories/doctors only/laboratories only).
- *Evaluations of system function:* evaluations of the external completeness and validity of the surveillance system should be conducted periodically (e.g. every two-three years). Evaluation studies on a number of diseases should be developed, depending on priorities, and could comprise, for example, capture–recapture studies or formal comparisons with hospital admission or laboratory records. These may be conducted in association with academic or other external partners. The possibility of implementing two record system comparisons on an ongoing basis should be investigated for priority diseases (TB, salmonella, etc.). The MYCOBNET system for TB surveillance in England could serve as a model.

7.2 Regulatory/laboratory primary diagnostic system issues for the underdiagnosis of certain diseases of public health importance

- *State funding of laboratory tests for the identification of notifiable communicable diseases:* the cost of diagnostic laboratory tests for all diseases on the notifiable disease list should be funded by the State.
- *Increased detection of diseases in submitted laboratory specimens:* laboratory procedures and protocols for the analysis of laboratory specimens for common syndromes should be reviewed; algorithms and procedures should be developed by the National Reference Laboratory and approved for primary laboratories with the goal to test for likely pathogens that are not requested by the doctor ordering the test. International recommendations should be considered where available, and the practices in the laboratory services of a number of Member States should be taken into account.
- *Understanding regional variations in notification rates and rates of laboratory identification of pathogens:* an investigation should be conducted into the underlying causes of the present variation (30%) in the reported disease rates (from both physicians and laboratories. Particular attention should be given to system factors that may be contributing to this (e.g. differences in effective access to and utilisation of laboratory tests, physician and laboratory reporting, etc.) and factors such as a physician's reluctance to test because of inadequate transport arrangements for laboratory specimens.
- *Optimum balance between centralisation and regionalisation of primary laboratory diagnostic services:* the present distribution of primary laboratory diagnostic services between NRL and laboratories in the regions should be reviewed for all communicable diseases of public health importance, considering speed of access to tests, laboratory quality assurance and efficiency, and adequacy of transport arrangements for specimens.
- *Public health functions of primary diagnostic laboratories:* the role of primary diagnostic laboratories in supporting the communicable disease surveillance system should be reviewed. Guidelines should be developed and consideration given to incorporating these into contract arrangements where appropriate. Guidelines extant in other Member States, as well as ECDC guidelines, should be considered in this review.

7.3 Increasing the effectiveness of outbreak response and evaluation

- A review of measures necessary to enable ESPHD to set priorities for the work of epidemiologists should be conducted. This would enable better responses to outbreaks of communicable diseases, aid the rapid implementation of control measures, including the formation of outbreak control teams. This review should include a retrospective analysis of the sensitivity and timeliness of the present systems for outbreak recognition. It should also identify potential areas for system improvement (including potential reporters beyond ESPHD). The review should include system support and resource aspects, including the use of cars by staff members to reach outbreak sites and the provision of phones and laptop computers

with database and statistical software, and e-mail. There should be a cost comparison between cars requested from Riga and cars bought/hired locally.

- *Formation of outbreak control teams:* guidelines for circumstances under which these should be formed should be developed.
- *Outbreak reports, evaluation of outbreak management:* the present outbreak reporting system should be revised to provide for detailed narrative reporting by the lead epidemiologist on major or complex outbreaks, including an evaluation of the effectiveness of all measures. Problems encountered in the control of the outbreak also should be mentioned. A systematic multi-regional/national review process for such reports should be developed in a peer review environment in order to determine learning points for increased effectiveness and efficiency of control actions in future.
- *Requirements to report to the Ministry in major outbreaks:* the exact criteria for reports to the Ministry should be specified.
- Recommendations in 7.4 refer to prerequisites for enabling increased prioritisation of epidemiologist work load in relation to public health risk of cases.

7.4 Communicable disease regulatory framework and priorities

- *Schedule of notifiable diseases:* previous reviews of this list have removed a number of diseases from the list of notifiable diseases. Diseases on the list should be again critically reviewed as to whether the positive public health effects of their inclusion are justified.
- *Prioritisation of diseases:* a review should be conducted to identify diseases which should be recognised as priorities for surveillance, prevention and control, according to WHO or equivalent methodology.
- *Regulatory framework:* the present regulatory framework (cumulative government ordinances) should be systematically reviewed. Of particular interest: Can decision-making on the investigation of notifiable diseases be delegated to relevant subordinate organisations (ICL-ESPHD)? Also relevant: Which subordinate administrative levels can set priorities when planning response activities?
- *'National handbook' – Guidelines for doctors and other healthcare workers:* guidelines for doctors and other healthcare workers and public health staff describing the epidemiology, reporting, and prevention and public health control of communicable diseases should be developed. These could be developed sequentially, with priority diseases considered first, drawing on currently available international guidelines which would be adapted to the specific situation in Latvia.
- *Annual epidemiological report:* an annual epidemiological report should be developed at the national level. It should summarise surveillance information, principal outbreaks, other events of importance, and current public health priority issues. This should be delivered in a user-friendly format, readily accessible to healthcare workers, partner organisations, other stakeholders, and the general public. Examples from other Member States may be considered.
- *Contingent authority for epidemiologists and staff under their direction to administer therapeutic measures to control disease transmission and outbreaks:* primary responsibility for the administration of therapeutic measures to individuals in order to prevent transmission of communicable disease and/or control outbreaks of communicable disease should remain with doctors and healthcare workers, under the epidemiologists direction. However, the regulatory framework could be amended to allow epidemiologists and public health staff under their direction the contingent authority to directly administer such therapeutic measures if this increases the timeliness and completeness of actions to prevent transmission and/or control outbreaks of communicable disease. This amendment could also include authority to collect non-invasive samples from patients as well as contacts if this is important for surveillance and control purposes.
- *Requirement for doctors for confirmatory notifications:* the current notification requirements for doctors should be reviewed. The requirement for a second notification from the doctor should be dropped. Instead, cases could be confirmed by epidemiologists on the basis of a single doctor notification and a laboratory notification, supported – if necessary – by information obtained during the epidemiological investigation.
- *Integration of general surveillance, TB and HIV surveillance systems:* the proposal to integrate the above systems for reporting and surveillance should be carefully evaluated. However, increased levels of data protection for HIV records in particular would be a prerequisite for integration into VISUMS.
- *Integration of general surveillance and AMR surveillance systems:* this is addressed in the companion report by the AMR review team.

7.5 The epidemiologist workforce

- *Succession planning:* a plan should be developed for the training and recruitment of specialist epidemiologists who replace those in the later stages of their careers.
- *Role of nonmedical specialists:* the roles graduates from MPH and equivalent programmes in the epidemiology workforce at national and regional levels should be reviewed, with a view to expanding their contribution to the workforce.

- *EPIET (Member States track) programme:* Latvia should consider participation in the EPIET (Member States track) programme, in addition to supporting applicants for the traditional EPIERT programme.
- *Continuing professional development:* a continuing professional development programme for the epidemiologist workforce should be implemented, including modern approaches to outbreak investigation, surveillance, the use of analytical epidemiological methods, etc.

7.6 Feedback to data providers and stakeholders

- *Present means of feedback:* A review of feedback methods would be helpful, particularly feedback to doctors; national, regional, and local partners; municipalities; and other stakeholders. Consideration should be given to supplementing present ad hoc communications with regular monthly bulletins which are written in user-friendly, non-technical language. Research on the most effective ways of communicating with the target groups should be researched. The usage ('hits') of current web pages should be reviewed and monitored.
- *Continuing medical education programmes* for doctors in primary and secondary care, microbiologists, and laboratory staff should include the epidemiology and diagnosis of presently under-recognised diseases in Latvia, as well as the way they are reported. Programmes should include the limitations involved in predicting pathogens based on clinical features, the range of pathogens likely to be present (based on EU epidemiology), and the appropriate use of broader requests for identification of pathogens in common syndromes (e.g. diarrhoeal disease, severe pneumonia, etc.).

7.7 Workload, work routines

- *Duplicate entries:* During office hours, notifications should be entered directly into VISUMS; the requirement to make an entry to the handwritten summary log should be dropped, except for phone notifications.
- *Managing logistics of the national vaccination programme:* management of routine reordering of vaccine supplies for medical practices is a time-consuming administrative task that does not require epidemiological expertise and distracts from more important activities. The organisation of this function should be reviewed.
- Refer also to relevant recommendations in 7.4 and 7.8.

7.8 National EU-compatible case classifications for surveillance

- A national system for the classification of cases for surveillance purposes should be developed. This system should facilitate the translation of individual notified diseases to a surveillance disease classification and should be compatible with EU case classifications. Case classifications compatible with national and EU case classifications should be implemented as data fields, together with procedures for automated reporting to TESSy. Case classifications at national and EU level should be completed on a case-by-case basis when a case is closed by the reporting epidemiologist.

7.9 Data protection, patient confidentiality, deductive disclosure

- *Overall expert security review:* While the operation of VISUMS within the context of the national VIS system provides a good general level of data protection, an external expert data protection consultant should review all data protection arrangements pertaining to the security and confidentiality of patient data held in VISUMS. This review should cover the complete system, ranging from data location, security, maintenance and development, data access (by staff designation and level within the system), to staff procedures and training. The benchmark for such a review should be the level of systematic data protection required for holding HIV patient data (chronic disease register data for diseases with stigma associated).
- *Deductive disclosure:* guidelines should be developed for the external use (beyond internal confidential assessment within ESPHD) of dotpoint map outputs from VISUMS, with specific reference to the reduction of deductive disclosure risks.

7.10 Epidemic intelligence

- *Continuing professional development:* Epidemic intelligence techniques should be incorporated into continuing professional development programmes for epidemiologists.
- *Epidemic intelligence function at national level:* The event-based surveillance programme at the national level of ESPHD should be reviewed after one year of activity.

7.11 Emergency preparedness (public health emergencies)

- *Public health emergency plan:* The multi-hazard public health emergency plan should be tested at least annually, using a realistic training scenario.
- *Emergency operations centre:* A facility that can be used as (or converted into) a dedicated emergency operations centre for public health emergencies should be developed at the national level. This centre should have dedicated communication facilities and standard operating procedures for all persons involved in emergency management.

Annex 1. Members of review team

General surveillance and early detection systems review team

Dr Graham Fraser, senior expert, surveillance, ECDC (team leader)

Dr Sandra Dudareva, EPIET alumnus, Latvia

Dr Frantiska Hrubá, expert, surveillance, ECDC

Dr David Mercer, area coordinator, Surveillance Division of Communicable Diseases, Health Security, and the Environment, World Health Organization, Regional Office for Europe

Dr Thomas Mollet, expert, epidemic intelligence, ECDC

Dr Maja Socan, epidemiologist, National Institute of Public Health, Ljubljana, Slovenia

Annex 2. Respondents in Latvia

Ministry of Health of Latvia	
Mr Juris Bārzdīņš	Minister of Health
Mr Rinalds Mucins	Secretary for Health
Ms Dace Viļuma	Head of Epidemiological Surveillance Division, Public Health Department
Ms Inga Šmate	Director of Public Health Department, Ministry of Health of Latvia
Ms Gunta Grīse	Senior Expert of Epidemiological Surveillance Division, Public Health Department, Ministry of Health of Latvia
Ms Eva A. Labant	Internship student from Hungary
State Agency 'Infectology Centre of Latvia'	
	www.gov.lv
Professor Baiba Rozentāle, MD, PhD, MBA	Director of State Agency 'Infectology Centre of Latvia'
Dr Jurijs Perevoščikovs	Director of Epidemiological Safety and Public Health Department
Dr Irina Lucenko	Head of infectious diseases surveillance and immunisation unit, Epidemiological Safety and Public Health Department
Dr Anita Brila	Head of Infectious disease surveillance and anti-epidemic unit
Dr Jelena Storoženko	Deputy Director, laboratory issues
Dr Elvīra Brūvere	Senior Epidemiologist of Zemgale Region
Dr Sergejs Ņikišins	National Microbiology Reference Laboratory Head of Dangerous Infectious Diseases Diagnostic Division Laboratory biosafety officer WHO Biorisk Management Advanced Trainer Programme graduate
Dr biol. Natālija Zamjatina	National Microbiology Reference Laboratory, Head of Virology Unit, WHO National Influenza Centre of Latvia, WHO National Polio Laboratory, ECDC Influenza Programme – laboratory expert (Infectology Centre of Latvia)
State Emergency Medical Service	
Ms Olīta Kravčenko	Head of Planning and coordination division
Riga Stradins University	
	www.rsu.lv
Assoc. Prof. Anita Villeruša	Dean of Public Health Faculty
GP practice	
Dr Māriete Rinkēviča	Jelgava, Pulkveža Oskara Kalpaka Street 16-202

Annex 3. Draft itinerary

Sunday, 25 September

Afternoon Travel to Riga

Monday, 26 September

10 00 – 11 00 Team meeting (hotel)
 13 00 – 15 00 Meeting with Ministry and national experts – all teams
 15 30 – 17 00 Meeting with Ministry and national experts – general surveillance system
 Tuesday – Thursday morning Visits to relevant organisations and stakeholders in Riga and in one district

Tuesday, 27 September

09 00 – 10 00 **Latvian Infectology Centre** (3 Linezera Street)
 Introductory meeting with the management of the Latvian Infectology Centre at Riga Stradins University Hospital:
 General introduction to the system of treatment, diagnostic and surveillance of infectious diseases in Latvia
 10 30 – 12 00 **Latvian Infectology Centre** (3 Linezera Street)
 Clinical service and National Reference laboratory
 Lunch
 13 30 – 17 00 **Infectology Centre of Latvia** (7 Klijānu Street)
 Principles of the surveillance and early warning and response system for communicable disease
 15 30 – 17 00 State surveillance and monitoring system for infectious diseases
Infectology Centre of Latvia (7 Klijānu Street)

Wednesday, 28 September

08 00 Travel to Jelgava
 09 00 – 10 30 **Infectology Centre of Latvia** (3 Zemgales Prosp. , Jelgava)
 Working place of Epidemiologist of the Division of Infectious Diseases Prophylaxis and Measures in case of epidemics
 11 30 – 13 00 **Dobele hospital** (2 Adama Street, Dobele)
 Infection department and laboratory
 15 00 – 16 00 Visit to GP practice

Thursday, 29 September

09 00 – 10 30 **State Emergency Medical Service** (118 Kr. Valdemāra Street, Riga)
 11 00 – 12 30 **Health Inspectorate** (7 Klijānu Street, Riga)
 Lunch
 14 00 – 16 00 Seminar/discussion with Ministry and national experts
 Strengths and weaknesses of present general surveillance structure
 Possible EU country models which Latvia could consider, while restructuring its own surveillance system
 17 00 – 18 00 Review meeting with other assessment teams (hotel)

Friday, 30 September

10 00 ECDC country visit team debrief (main findings and preliminary recommendations) with representation from:
 Ministry of Health, Infectology Centre of Latvia, other organisations
 13 00 On-site review ends: review team departs for airport

Annex 4. Specific questions from the ministry to be addressed in the course of the review

- Does the infectious diseases and epidemiological surveillance system (structure) ensure the implementation of functions and tasks imposed by EU and national legislation?
- Is it a 'good practice' to combine (unify) the infectious diseases epidemiological surveillance function and infectious diseases medical treatment function in one institution (Infectology Centre of Latvia);
- What is the most optimal model for infectious diseases epidemiological surveillance system (structure) in Latvia, compared with to other EU countries?

Annex 5. System description from the Latvian Ministry of Health, August 2011

This document was supplied by the Latvian Ministry of Health².

1. EU and national legislation in the field of epidemiological surveillance

State Agency 'Infectology Centre of Latvia' is a state institution under the supervision of the Ministry of Health of the Republic of Latvia. In the result of implemented reforms carried out by Ministry of Health, since 1st September 2009 Infectology Centre of Latvia is the official body responsible for:

- epidemiological surveillance of infectious diseases, as well as specific prophylaxis and analysis of infectious diseases;
- implementing the function of WHO Collaborating Centre for Research and Training in Management of Multidrug-Resistant Tuberculosis in Latvia as well as work in the field of tuberculosis and lung diseases;
- implementing National Microbiology Reference Laboratory functions;
- providing government authorities with informative, methodical and organised support for the development and implementation of infectology politics;
- ensuring the patients suffering with infectious diseases (including those with HIV/AIDS, tuberculosis, sexually transmissible and parasitic and lung diseases) with highly qualified specialised outpatient and inpatient assistance.

The competence of Infectology Centre of Latvia is regulated by the National legislation and European Union legislation. There are several National Laws and Regulations by Cabinet of Ministers regarding the responsibility and main tasks of the Centre, particularly in the field of epidemiological surveillance. Also at the moment there are three Regulations' drafts in progress referring epidemiological surveillance.

Infectology Centre of Latvia functions determined by acting regulations and laws in force are as follows.

National Legislation:

- Epidemiological Safety Law

Regulations by Cabinet of Ministers:

- Regulation No. 7 adopted 05. 01. 1999 'Procedure for registration of infectious diseases';
- Regulation No. 330 adopted 26. 09. 2000 'Vaccination rules';
- Regulation No. 774 adopted 19. 09. 2006 'Liaison persons determination, the primary medical examination, laboratory testing and medical surveillance procedures';
- Regulation No. 618 adopted 06. 07. 2010 'Disinfection, disinsection and deratization rules';
- Regulation No. 948 adopted 21. 11. 2006. 'Terms of influenza anti-epidemic measures';
- Regulation No. 413 adopted 14. 06. 2005 'Procedures for the person's mandatory medical and laboratory examination performance, mandatory and forced isolation and treatment of infectious diseases';
- [Regulation No. 1046 adopted 19. 12. 2006 'Health Care Administration and Financing Order'](#);
- Regulation No. 1050 adopted 16. 11. 2010. 'Public health protection measures performance order';
- Regulation No. 628 adopted 04. 11. 2003 'The organizational arrangements for Human immunodeficiency virus (HIV) and AIDS expansion restriction and HIV-infected persons and AIDS-infected persons treatment';
- Regulation No. 378 adopted 17. 05. 2011 'Medicines advertising procedures and procedures for the medicine manufacturer delivering doctors free medicine samples';
- Regulation No. 8 adopted 04. 01. 2005. 'State Agency's 'Infectology Centre of Latvia' statute';
- Regulation No. 1115 adopted 14. 12. 2010. 'Rules of the National Statistical Information Programme 2011 ';
- Regulation No. 277 adopted 23. 03. 2010 'Procedure for Providing students preventative health care and first aid in schools';
- Regulation No. 178 adopted 23. 02. 2010 'Rabies prevention and control procedures';
- Regulation No. 864 adopted 04. 08. 2009 'Terms of reference laboratories for the designation and accreditation procedures, functions and duties as well as facilities and equipment requirements for food, feed and veterinary field';
- Regulation No. 10 adopted 06. 01. 2009 'Regulations on state statistical surveys of health care' ;
- Regulation No. 746 adopted 15. 09. 2008 'The Register of patients suffering with certain diseases creation, replenishment and maintenance procedure' ;
- Regulation No. 328 adopted 13. 05. 2008 'Terms of poliomyelitis anti-epidemic measures';

² This document was supplied by the Latvian authorities; it has been formatted but not edited.

- Regulation No. 405 adopted 19. 06. 2007 'Outbreak of avian influenza prevention and threat prevention procedures';
- Regulation No. 744 adopted 05. 09. 2006 'Procedures for the monitoring and exchange of information on infectious diseases that affect both animals and humans, the disease agents, as well as the antimicrobial agent resistance';
- Regulation No. 298 adopted 18. 04. 2006 'Procedures for the communicable diseases prevention and control, that affect both animals and people';
- Regulation No. 1040 adopted 27. 12. 2005 'Procedures for the medical practitioner shall report on the complications caused by vaccination';
- Regulation No. 461 adopted 28. 06. 2005 'Regulations for emergency medical assistance and anti-epidemic measures, medication reserve system preparation procedure in case of threat to the State'.

Instruction by Cabinet of Ministers of Latvia:

- Instruction No. 264 adopted 22. 06. 2011 'The division of responsibilities of Latvian Republic Authorities in the North Atlantic Treaty Organization committees, working groups and in the North Atlantic Treaty Organization subordinate organizations'.

EU legislation and international laws and regulations:

- European Parliament and Council decision of September 24, 1998 [2119/98/EK](#) about the epidemiological surveillance and communicable disease surveillance and control network establishment in European Community;
- European Commission decision of December 22, 1999 [2000/57/EK](#) about early warning and response system for infectious disease prevention and control in accordance with European Parliament and Council decision [2119/98/EK](#) (announced by document C(1999) 4016);
- European Commission decision of December 22, [2000/96/EK](#) about communicable diseases, which will be gradually included in the Community network in accordance with European Parliament and Council decision [2119/98/EK](#) (announced by document C(1999) 4015);
- European Commission decision of March 19, 2002 [2002/253/EK](#), determining case definitions for reporting communicable diseases in the Community network in accordance with European Parliament and Council decision [2119/98/EK](#) (announced by document C(2002) 1043) ([2002/253/EK](#));
- European Commission decision of July 17, 2003 [2003/534/EK](#), altering European Parliament and Council decision [2119/98/EK](#) and [2000/96/EK](#) regarding listed infectious diseases and amending Decision [2002/253/EK](#) referring communicable disease case definitions (announced by document C(2003) 2301) (document refers to European Economical Area) ([2003/534/EK](#));
- European Commission decision of April 17, 2003 [2003/542/EK](#) amending Decision [2000/96/EK](#) regarding dedicated surveillance networks (announced by document C(2003) 2522) (document refers to European Economical Area) ([2003/542/EK](#));
- European Commission decision of December 18, 2007 [2007/875/EK](#), amending European Parliament and Council decision [2119/98/EK](#) and decision [2000/96/EK](#) regarding mentioned infectious diseases ((announced by document number K(2007) 6355);
- European Commission decision of April 28, 2008 [2008/351/EK](#), amending Decision [2000/57/EK](#) regarding cases to be reported within the early warning and response system for infectious disease prevention and control (announced by document number K(2008) 1574);
- European Commission decision of April 28, 2008 [2008/426/EK](#), amending Decision [2002/253/EK](#), which determines definition for warning about infectious diseases in the Community network in accordance with European Parliament and Council decision [2119/98/EK](#) (announced by document number C(2008) 1589);
- European Commission decision of April 2, 2009 [2009/312/EK](#), amending Decision [2000/96/EK](#) regarding infectious diseases specialised monitoring networks (announced by document number C(2009) 2351);
- European Commission decision of April 30, 2009 [2009/363/EK](#), amending Decision [2002/253/EK](#), determining case definitions for reporting communicable diseases in the Community network in accordance with European Parliament and Council decision (announced by document number C(2009) 3517).

At the moment there are three Regulations' drafts in progress referring epidemiological surveillance in Latvia.

- Amendment of Instruction of Cabinet of Ministers adopted August 5, 2008 No. 12 'Instruction on the institutions responsible for actions of unknown substance or object of finding if there is a suspicion that it contained an explosive, radioactive, hazardous chemical or biological agents as well if they have certain characteristics of a terrorist act (29. ,30. , 31.)';
- Draft Regulation by Cabinet of Ministers adopted July 18, 2011 'State Civil Protection Plan'
- Regulation by Cabinet of Ministers 'Disaster Medical System organizing rules'

2. About accomplished reforms in the field of epidemiological surveillance

Due to the effects of the economic crisis in 2009 the consolidation of institutions was the only way to preserve medical branches in Latvia (including Surveillance and PHM activities). The consolidation was reasonable especially in Latvia's situation, because Latvia is a relatively small country with territory of about 65 000 km² and with population of about 2 000 000 inhabitants.

During years 2009, 2010 the Health Care System has been fundamentally structurally reformed. Due to these reforms Infectology Centre of Latvia (under the supervision of Ministry of Health) is consolidated main national body for infectology and infection diseases epidemiological policy development and implementation, as well as diagnostics, treatment and epidemiological surveillance of infectious diseases, including rare, emergent and dangerous, HIV/AIDS, tuberculosis, sexually transmitted and parasitic diseases.

The significant economy of state budget finance equal with 6 million LVL (8. 50 million EUR) is outcome of these structural reforms.

During the implementation of reforms carried out by Ministry of Health of Latvia four organizations have been consolidated:

- State Agency 'Infectology Centre of Latvia'
- Latvian Public Health Agency
- State Agency for Tuberculosis and Lung Diseases of Latvia, and
- Riga Stradini Clinic University Sexually Transmitted and Skin Diseases Centre

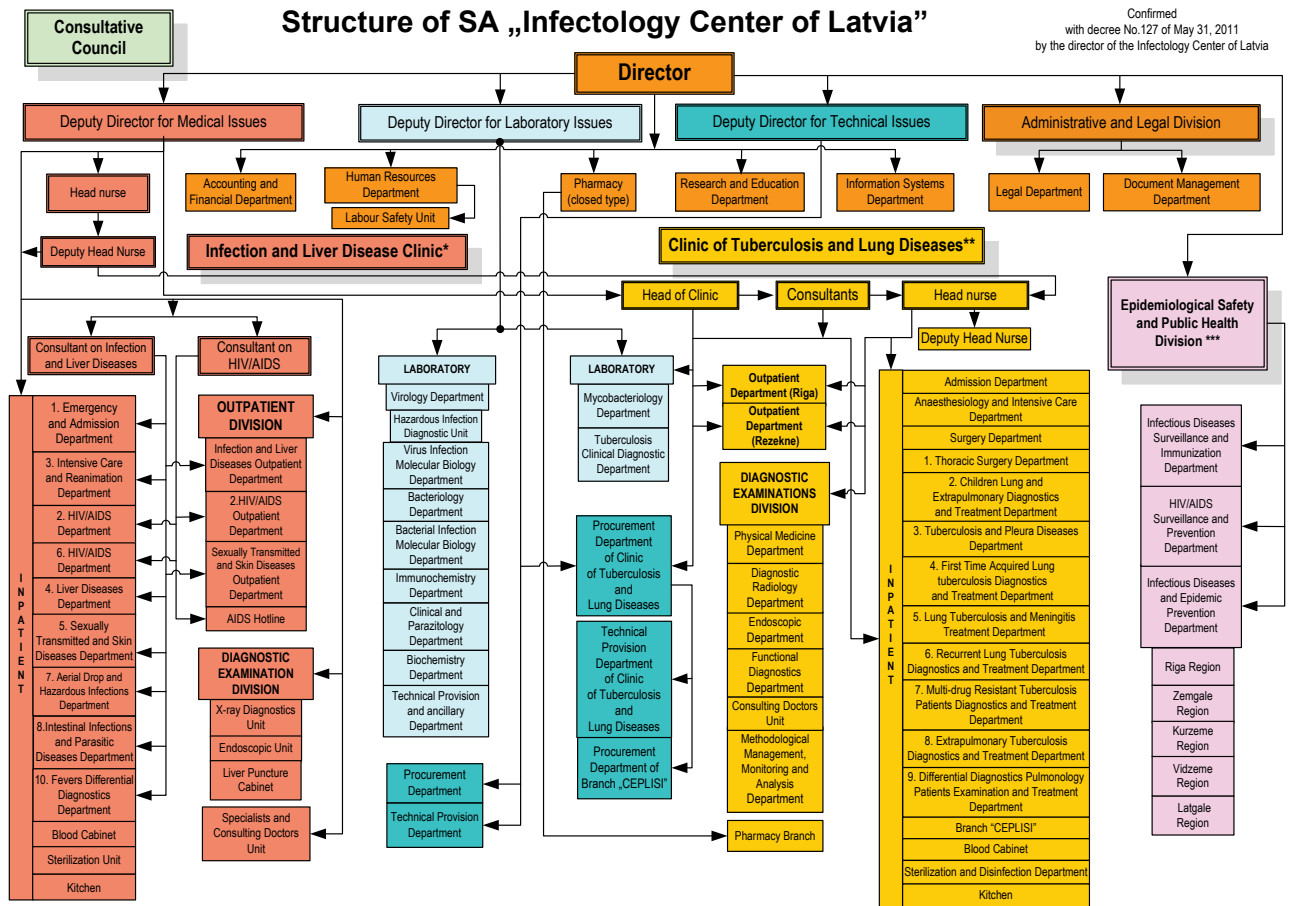
As the result, the consolidated national body responsible for implementation of medical assistance to patients with infectious diseases, isolation and treatment of epidemiologically unsafe infected patients; epidemiological surveillance and specific prevention from infectious diseases, National Microbiology Reference Laboratory functions, methodological activities in infectology and epidemiology area (including training, participation in diseases specific networks) is established. At this moment all these functions' costs are covered by state budget financing.

In April 2010 the Ministry of Health of the Republic of Latvia has established the Working group. The main task of this Working group was defining the Report on assessing the transfer necessity of Infectology Centre of Latvia public administration functions and tasks and in case of this transfer necessity – develop the Plan of public administration functions and tasks transfer.

The conclusions of the Working group states that the restructuring of Infectology Centre's just consolidated new structure is not reasonable, this restructuring could cause organizational difficulties, economic losses and this could decrease dramatically the effectiveness of epidemiological surveillance of infection diseases and quality of medical diagnostic work, also this restructuring could cause social tension in society.

Since May 2011 the Ministry of Health of the Republic of Latvia has nominated State Agency 'Infectology Centre of Latvia' as ECDC Coordinating Competent Body.

Structure of State Agency 'Infectology Centre of Latvia'



Unit located: * Linezera street 3, Riga; ** p/o „Cekule”, Stopiņu district; *** Kļījānu street 7, Riga

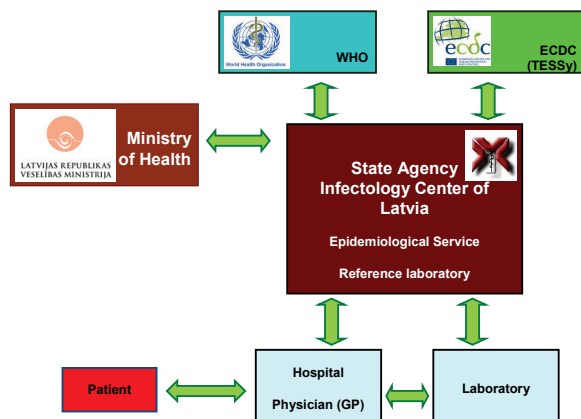
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Since 1st September 2009 Infectology Centre has taken over the functions of the Public Health Agency in areas of infectious diseases monitoring, epidemiological surveillance and specific prophylaxis of infectious diseases. Today the goal of Infectology Centre is providing government authorities with informative, methodical and organised support for the development and implementation of infectology politics, providing the patients who suffer from infectious diseases with highly qualified specialised outpatient and inpatient assistance, providing epidemiological surveillance of infectious diseases, as well as carrying out specific prophylaxis and analysis of infectious diseases.

Due to these reforms close collaboration between epidemiologists and microbiologists is established. This is extremely important for implementation of the efficient surveillance system and improvement of communicable diseases threat detection capacity.

3. Description of the system of epidemiological surveillance and involved institutions

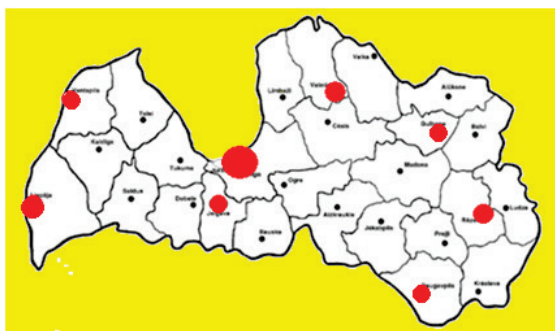
Epidemiological surveillance in Latvia (general)



Infectology Centre Department of Epidemiological Safety and Public Health (DESPH) is responsible for epidemiological surveillance and infections control measures for all notifiable diseases. There are three units within DESPH:

- Unit of the Prevention and Control of Infectious Diseases
- Unit of the Epidemiological Surveillance of Infectious Diseases and Immunisation
- Unit of HIV/AIDS Epidemiological Surveillance and Prevention (2 epidemiologists, 3 public health specialists)

Staff of the Unit of Prevention and Control of Infectious Diseases works in the whole country: in 8 cities, including capital Riga (see the map below), there are offices of epidemiologists and assistants. Epidemiologists and their assistants are responsible for epidemiological investigation of infectious diseases cases (incl. microbiological investigation of environmental samples and samples from the contacts) and adverse effects following immunization (AEFI) in the region they are supervising, implementation of infection control and prevention measures as well as for the coordination of the national immunization programme (incl. collection, error checking, collation and generalization of the GP's monthly reports on vaccinations provided and monthly requests for vaccines). Staff of the Unit of Prevention and Control of Infectious Diseases is not involved in the epidemiological surveillance of HIV/AIDS and tuberculosis.



State Agency 'Infectology Centre of Latvia' is the main responsible national body for the epidemiological surveillance in Latvia according to the national and international legislation. Epidemiological investigation of infectious disease case starts with notification from physician (GP or hospital), laboratory or responsible person from other institution in accordance with Cabinet Regulation No. 7 (Adopted 5 January 1999) 'Procedures for Registration of Infectious Diseases' (http://www.vvc.gov.lv/export/sites/default/docs/LRTA/MK_Noteikumi/Cab_Reg_No_7-Procedures_for_Registration_of_Infectious_Diseases.doc) Interview of the patient (or his representative) is being done in all cases (except cases of sexually transmitted diseases), additionally interview of physician and epidemiological investigation at the patient's residence/work place, children's institution, possible place of infection is being conducted, if necessary. Data collected during epidemiological investigation are processed through internet – based computerised system VISUMS (State Infectious Diseases Surveillance and Monitoring System), which was developed using resources of EU PHARE programme project Nr. 2003/004-979-04-03 'Institutional Strengthening of Public Health Agency'. VISUMS immediately ensures availability of epidemiological data on the national level. Infectology Centre staff has no rights to give penalties, in case of necessity Health Inspectorate or State Food and Veterinary Service are involved in control of outbreaks.

the residence place of the patient. Pneumologists informs TR on the progress and outcome of the treatment. For the multiresistant tuberculosis patients there is special registration documentation, and TR receives from pneumologists the summary data forms on treatment, summary information of drug resistance tests, analysis information, information for side effects and allergy monitoring. TR is responsible for providing of epidemiological information to the TESSy system of ECDC, as well WHO and other institutions.

Other institutions closely involved in epidemiological safety issues:

- The State Emergency Medical Service is involved in early warning system, coordination of control of infectious diseases outbreaks, as well as is nominated contact point of WHO and DG SANCO Health Security Committee;
- The Food and Veterinary Service under Ministry of Agriculture controls food safety as well as provides the laboratory service for many health institutions and public health activities;
- The State Health Inspectorate aims to control of legislative acts in the field of epidemiological safety; it is responsible for assessment and control of environmental factors that affect health, incl. safety of drinking water, marketing and utilization of chemical substances and chemical products and safety in the utilization of cosmetic products. The State Health Inspectorate regulate the professional quality of health care and handles patient complaints, it is also responsible for the supervision and control of pharmaceutical enterprises in production, purchase and distribution of medicines; for evaluation of premises, equipment, personnel and documentation with regards to compliance with regulations; and for regulation of drug advertising;
- The State Agency of Medicines maintains a Register of Human Medicines, in which all pharmaceutical products circulating in Latvia are listed. It is responsible for assessment of quality, safety and effectiveness of pharmaceuticals.

At the moment Latvia's epidemiological surveillance system is implemented and based on the European Union legislation and National legislation. The capacity and competence of Infectology Centre of Latvia ensures the implementation of acting legislation and therefore the epidemiological surveillance of infectious diseases is provided. In the future the administrative and professional capacity of Infectology Centre allows to strengthen the epidemiological surveillance system in Latvia.

Annex 6. National reference laboratory and regional laboratories

Information was supplied on request by the ICL national reference laboratory, Riga.

Table 1. Laboratory investigations undertaken at ICL national reference laboratory, Riga, by category of investigation, 2010

Category of investigation	Most frequently identified pathogen	Primary diagnostic laboratory investigations: Investigations undertaken where NRL is the primary (and only) diagnostic laboratory	Reference laboratory investigations: Investigations undertaken by referral (primary diagnosis made by the referring hospital or practitioner)	Total investigations
Bacteriology examinations	Salmonella	17872	2891	20 763
Mycobacteriology examinations MF	AFB	17726		17 726
Mycobacteriology examinations	<i>M. tuberculosis</i>	48 379	503	48 882
Molecular biological examinations	Hepatitis C virus HCV	12570	5156	17726
Virology examinations	Norovirus	52053	2315	54368
Hazardous infections	Dengue virus	684	-	684
Diagnostic of HIV	HIV1	11273	3295	14568
Immunological examinations	-	3135	-	3135
Viral opportunistic diseases	EBV	17654	1583	19237
STI examinations	Mycoplasma	33611	3590	37201
Diagnostic of viral hepatitis	HBV	21423	3785	25208
Parasitology examinations	Toxocara	6262	382	6644
Total				273 606

Table 2. Laboratory examinations undertaken at ICL Riga (total number, all examinations), for selected diseases and by region of residence of the case, 2010

	Riga region	Kurzeme region	Zemgale region	Vidzeme region	Latgale region
<i>Salmonella</i>	3372*	51	13	2	5
<i>Yersinia</i>	34*	-	3	-	-
<i>Campylobacter</i>	94*	-	-	-	-
<i>Cryptosporidium</i>	101*	-	-	-	-
Giardiasis	208*	-	-	-	-
Brucellosis	339*	21	-	3	3
VTEC/STEC	34*	-	11	-	-
Tuberculosis (Bacterial infections molecular biology unit)	630*	-	-	-	-
Tuberculosis (Microbacteriology unit)	38 592*	1250	4418	3458	1164
Legionella	34*	4	-	2	-
Influenza A	11485*	118	14	15	23
Hepatitis B	2160*	198	47	228	1267
HIV	8071*	228	395	709	127
Gonorrhoea	2834*	-	5	80	-
Chlamydia	289*	0	485	791	-
Measles	612*	56	13	10	15
Rubella	579 *	47	5	8	8
Meningococcal disease	815*	2	3	-	-
Pertussis	180*	28	5	28	33
MRSA	150*	-	4	23	10
<i>Clostridium difficile</i>	411*	1	4	-	-
ESBL-producing bacteria	33*	-	-	-	2

* Investigations come from 'Hospitals of Republican Significance' (PSCUS 'Stradini', Riga Eastern Clinical University Hospital, and two children hospitals), all located in Riga. These hospitals have patients from all parts of Latvia, therefore it's not possible to identify the region of residence.

Information on positive cases, including distribution according to regions, is available in the ICL Epidemiology Department.

Table 3. Primary diagnostic laboratory capacity: laboratories in regions (excluding national reference laboratory in Riga)

Please complete the following table regarding the availability of primary diagnostic tests at regional laboratories (statistics of tests performed are not required).

Complete with Yes/No.

If Yes: name laboratory(s)

	Other laboratories Riga region	Kurzeme region	Zemgale region	Vidzeme region	Latgale region
Salmonella	Yes*	Yes*	No	Yes*	Yes*
Shigella	Yes*	Yes*	No	Yes*	Yes*
Yersinia	Yes*	Yes*	No	Yes*	Yes*
Campylobacter	Yes*	Yes*	No	Yes*	Yes*
Cryptosporidium	No	No	No	No	No
Giardiasis	Yes**	No	No	No	No
Brucellosis	No	No	No	No	No
VTEC/STEC	No	No	No	No	No
Tuberculosis	No	Yes; Liepaja 1 Laboratory	No	No	Yes; Daugavpils 1, Jēkabpils 1 Laboratory
Legionella	Yes	No data	No data	No data	No data
Influenza A	No	No	No	No	No
Hepatitis B	Yes; Riga 10 laboratories	Yes; Liepaja 1, Tukums 1, Saldus 1, Liepaja 2, Priekule 1 laboratories	Yes; Jēkabpils 1 laboratory	Yes; Valmiera 2, Madona 1 Laboratories	Yes; Daugavpils 1 Laboratory
HIV	Yes; Riga 8 laboratories	Yes; Tukums 1, Kuldīga 1, Ventspils 1, Liepaja 2 Laboratories	Yes; Jēkabpils 1 Laboratory	Yes; Ogre 1, Valmiera 1 Laboratories	Yes; Daugavpils 1, Rēzekne 2 Laboratories
Gonorrhoea	Yes*	Yes*		Yes*	Yes*
<i>Chlamydia</i>	Yes; Riga 4 laboratories	Yes; Kuldīga 1 laboratory	No data	No data	Yes
Measles	No	No	No	No	No
Rubella	Yes; Riga 4 laboratories	No	No	No	No
Meningococcal disease	Yes*	Yes*		Yes*	Yes*
Pertussis	No	No		No	No
MRSA	Yes*	Yes*		Yes*	Yes*
<i>Clostridium difficile</i>	Yes*	Yes*		Yes*	Yes*
ESBL producing bacteria	Yes*	Yes*		Yes*	Yes*

* All laboratories listed in Table 4.

** In other laboratories, only point-of-care tests are available.

Table 4. Current bacteriology laboratories in Latvia, by region

Laboratory name	Location (town, city)	Region
Ltd 'E. Gulbis Laboratory'	Riga	Riga region
Ltd 'Central laboratory'		
Ltd 'National medicine service laboratory'		
'Riga 1st hospital'		
State Ltd 'Pauls Stradins Clinical University Hospital' (PSCUS)		
State Ltd 'Riga Eastern Clinical University Hospital'		
State Ltd 'Children's Clinical University Hospital'		
Hospital of Traumatology and Orthopaedics		
Ltd 'Ziemeļkurzeme regional hospital'	Ventspils	Kurzeme region
Ltd 'Liepaja regional hospital'	Liepāja*	
Ltd 'Jēkabpils regional hospital'	Jēkabpils*	Zemgale region
Ltd 'Vidzeme hospital'	Valmiera	Vidzeme region
Ltd 'Daugavpils regional hospital'	Daugavpils*	Latgales region
Ltd 'Kraslava hospital'	Krāslava	
Ltd 'Rēzekne hospital'	Rēzekne	

* Also conducts cultural and microscopy testing for TB.

Annex 7. Confirmed disease cases reported to ECDC, Latvia, 2009

Disease	2009		Total cases	Confirmed cases and notification Rate	
	National coverage	Report type		Cases	Rate
AIDS	Y	C	96	96	4.25
AMR	N	U	2549	2549	-
ANTH	Y	C	0	0	0.00
ARENA	Y	C	0	0	0.00
BOTU	Y	C	0	0	0.00
BRUC	Y	C	0	0	0.00
CAMP	Y	C	0	0	0.00
CCHF	Y	C	0	0	0.00
CHIK	Y	C	0	0	0.00
CHLAM	Y	C	1127	1127	49.84
CHOL	Y	C	0	0	0.00
CONSYPH	Y	C	2	2	0.09
CRYP	Y	A	9	9	0.40
DENGUE	Y	A	1	1	0.04
DIPH	Y	A	6	5	0.22
ECHI	Y	C	15	15	0.66
FILO	Y	C	0	0	0.00
GIAR	Y	A	18	18	0.80
GONO	Y	C	433	433	19.15
HAEINF	Y	C	1	1	0.04
HANTA	Y	A	1	1	0.04
HEPA	Y	A	2291	2276	100.65
HEPB	Y	A	123	123	5.44
HEPC	Y	A	91	89	3.94
HIV	Y	C	275	275	12.16
LEGI	Y	C	3	3	0.13
LEPT	Y	A	5	5	0.22
LGV	Y	C	0	0	0.00
LIST	Y	C	4	4	0.18
MALA	Y	A	6	6	0.27
MEAS	Y	C	0	0	0.00
MENI	Y	C	9	5	0.22
MUMP	Y	D	1	1	0.04
PERT	Y	C	9	1	0.04
PLAG	Y	C	0	0	0.00
PNEU	Y	A	7	7	0.31
POLI	Y	C	0	0	0.00
QFEV	Y	C	0	0	0.00
RABI	Y	C	0	0	0.00
RIFT	Y	C	0	0	0.00
RUBE	Y	D	7	1	0.04
SALM	Y	C	816	798	35.29
SARS	Y	C	0	0	0.00
SHIG	Y	C	37	36	1.59
SPOX	Y	C	0	0	0.00
SYPH	Y	C	171	171	7.56
TETA	Y	C	0	0	0.00

Disease	2009					
TOXO	Y		C	0	0	0.00
TRIC	Y		C	9	9	0.40
TUBE	Y		C	978	774	34.23
TULA	Y		C	0	0	0.00
TYPH	Y		C	0	0	0.00
VHFOTH	Y		C	0	0	0.00
VTEC	Y		C	0	0	0.00
WNF	Y		C	0	0	0.00
YELF	Y		C	0	0	0.00
YERS	Y		C	47	45	1.99

Annex 8. Selected disease incidence by region, Latvia, 2010

Disease	Rigas		Kurzemes		Zemgales		Vidzemes		Latgales	
	No	rate	No	rate	No	rate	No	rate	No	rate
Salmonellosis	476	44.88	98	32.72	56	20.01	20	7.44	301	88.59
Yersiniosis	8	0.75	2	0.67	1	0.36	1	0.37	11	3.24
Giardiasis	15	1.41	3	1.00	0	0.00	2	0.74	1	0.29
Cryptosporidium	17	1.60	3	1.00	2	0.71	0	0.00	1	0.29
Hepatitis A	122	11.50	11	3.67	101	36.10	47	17.49	16	4.71
Legionellosis	4	0.38	1	0.33	0	0.00	1	0.37	0	0.00
Hepatitis B	49	4.62	11	3.67	8	2.86	6	2.23	11	3.24
Gonorrhoea	216	20.37	42	14.02	37	13.22	21	7.82	41	12.07
Chlamydia	670	63.17	82	27.38	95	33.95	108	40.20	87	25.60
Pertussis	2	0.19	1	0.33	3	1.07	0	0.00	3	0.88
Tuberculosis	416	39.22	110	36.73	99	35.38	71	26.43	129	37.97

Source: ESPHD, ICL