



MISSION REPORT

Country mission Latvia: antimicrobial resistance

26–30 September 2011

ECDC MISSION REPORT

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

Contributing authors

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The following reports: Country mission Latvia: HIV, sexually transmitted infections and hepatitis B and C; Tuberculosis in Latvia; and Surveillance and early detection and response systems in Latvia, are also available at www.ecdc.europa.eu/en/publications

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Abbreviations

AMR	Antimicrobial resistance
ARD	Acute respiratory disease
CRP	C-reactive protein
EARS-Net	European Antimicrobial Resistance Surveillance Network
ESAC-Net	European Surveillance of Antimicrobial Consumption Network
ESBL	Extended-spectrum beta-lactamase
HAI	Healthcare-associated infections
ICM	Intersectoral Coordination Mechanism
MRSA	Methicillin-resistant <i>Staphylococcus aureus</i>
TESSy	The European Surveillance System

Executive summary

Rationale and purpose of the country visit

The Council Recommendation of 15 November 2001 on the prudent use of antimicrobial agents in human medicine (2002/77/EC)ⁱ outlines the threat that antimicrobial resistance (AMR) poses to human health and advocates for a range of actions to be taken for its prevention and control. Council conclusions on AMR of 10 June 2008 reiterated this call for action.

To assist Member States in implementing the Council Recommendation, ECDC developed a process for and is carrying out, upon invitation from national authorities, country visits to specifically discuss and assess the situation of the country regarding prevention and control of AMR through prudent use of antibiotics and infection control. These country visits also help document how Member States have approached this implementation and deployed national activities, and support the European Commission in evaluating this implementation.

This report, provided to the inviting national authority is the main output of the visit from the ECDC team. To help the ECDC team ensure consistency of the visits and follow-up of progress of countries, an assessment tool has been developed (see Annex 2). The assessment tool includes ten topics. These topics are regarded as core areas for successful prevention and control of AMR and are based on Council Recommendation 2002/77/EC and on Council Conclusions of 10 June 2008. The assessment tool is used as a guide for discussions during the visit.

Following an invitation by the Ministry of Health and as part of an ECDC country visit to Latvia on 26–30 September 2011, an ECDC team conducted visits and meetings to discuss AMR issues in Latvia.

Conclusions

Compared with many other EU countries, the present AMR situation of Latvia is favourable. In particular, Latvia has one of the lowest uses of antibiotics in the community (i.e. outside of hospitals) of all EU countries. There is an infection control legislation that is under implementation and the legislation is a good basis for improving infection control practices in Latvian healthcare.

However, looking at the trends of extended-spectrum beta-lactamase (ESBL)-producing *Enterobacteriaceae*, and of multidrug-resistant *Acinetobacter baumannii* in hospitals, as well as the high antibiotic use in hospitals, there should be a concern for more serious AMR problems in the future.

Latvia is now at a crossroads. If a good strategy to identify circulating AMR clones and a mechanism for their rapid containment is implemented, combined with reinforced infection control practices and a more prudent use of antibiotics in hospitals, Latvia could most probably postpone these problems.

Most of the knowledge of the Latvian situation on AMR derives from a few professionals and experts at Pauls Stradiņš University Hospital and is based on research projects and voluntary work. There are also dedicated professionals among the general practitioners that advocate for prudent use of antibiotics and proper treatment policies. These professionals and experts are valuable assets for Latvia. In Latvia, as observed in other EU Member States, dedicated professionals with a high level of expertise and experience are essential for surveillance, prevention and control in the specialised public health area of AMR.

The nature of AMR data as reported at EU level to The European Surveillance System/European Antimicrobial Resistance Surveillance Network (TESSy/EARS-Net) is different from that of other communicable diseases. Antimicrobial resistance data originate from routine clinical microbiology laboratories and include information on both antimicrobial-resistant and antimicrobial-susceptible isolates to determine the percentage of antimicrobial-resistant isolates for multiple antimicrobials and several bacterial species. While it is, in principle, possible to perform some type of AMR surveillance with VISUMS (the computerised system for national surveillance and monitoring of infectious diseases) (e.g. for MRSA), VISUMS is not the most suited tool for collection of the broad range of AMR data from clinical microbiology laboratories as required by TESSy/EARS-Net.

ⁱCouncil Recommendation of 15 November 2001 on the prudent use of antimicrobial agents in human medicine. Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:034:0013:0016:en:pdf>

Recommendations

The experience from other countries shows that the existence of an Intersectoral Coordination Mechanism (ICM) composed of representatives of all stakeholders is crucial for the success of combating AMR. Council Recommendation 2002/77/EC on the prudent use of antimicrobial agents in human medicine recommends that EU Member States implement such an ICM. Latvia should consider setting up an ICM supported by the Government.

A first task of the ICM in Latvia would be to agree on a national strategy on AMR and the prudent use of antimicrobial agents in the country.

Such a strategy could contain elements such as:

- A publicly funded, continuous surveillance system for collecting and typing strains of multidrug-resistant healthcare-associated bacteria such as but not limited to MRSA. Quality and representativeness of data are important for this type of surveillance, which requires laboratory expertise, specific expertise and an active network of hospital clinical microbiology laboratories. This type of surveillance may need to be subcontracted. A way to set up such a surveillance system would be to build on the present systems used in research projects and EARS-Net at Pauls Stradiņš University Hospital since these systems have been successful at providing data at EU level to the European Antimicrobial Resistance surveillance System (EARSS), and then TESSy/EARS-Net since 2004.
- A continuous mechanism for analysis of typing results with the intention to contain spread of resistant clones. Define the responsibility on national level for these tasks. All results from surveillance and investigations should be regularly fed back to laboratories and doctors. Experience shows that this is important to get compliance for data collection.
- Continued implementation and support of the infection control legislation which could include an educational programme for infection control nurses, as well as increase the number of infection control staff.
- Considering structure and process indicators for monitoring progress in the implementation of infection control programmes in hospitals and other healthcare settings.
- Initiating studies on antibiotic prescriptions in hospitals to explain the rationale for high antibiotic use in hospitals.
- Considering how incentives for prevention and control of healthcare-associated infections could be integrated as part of healthcare economy.

In addition to the ICM and the strategy, Latvia should consider developing and adopting a legal framework for AMR surveillance, both for a broad range of AMR data from clinical microbiology laboratories (compatible with the EARS-Net protocol) and for a limited subset of specific multidrug-resistant bacteria, which similar to the current status for MRSA, could become mandatory reportable diseases and be reported to VISUMS.

Background

Rationale for country visits to discuss antimicrobial resistance (AMR) issues

After the introduction of antibiotics in the 1940s, it soon became clear that antibiotic usage promotes the rise of antibiotic-resistant bacterial strains in common bacteria such *Staphylococcus aureus* and *Mycobacterium tuberculosis* (TB). During the following decades, the increasing number of antibiotic-resistant strains could be handled with the continuous availability of new antibiotics that provided new means of treating patients infected with resistant bacteria. However, from the 1990s, development of new antibiotics decreased and at the same time, the emergence of bacteria resistant to multiple antibiotics became an ever-increasing problem in clinical medicine. Treatment guidelines had to be rewritten and the need to take bacteriological samples for antibiotic susceptibility testing became essential. Today, bacteria that are totally (or almost totally) resistant to antibiotics, i.e. not treatable with antibiotics, are emerging in Europe and worldwide.

In 1998, the Chief Medical Officers of EU Member States recognised this evolving problem and took the initiative to the first major conference on AMR which resulted in the Copenhagen Recommendations¹.

In November 2001, the EU Health Ministers adopted a Council Recommendation on the prudent use of antimicrobial agents in human medicine (2002/77/EC), which covers most topics of importance for prevention and control of AMR. In 2005, the Commission reported to the Council on progress in Member on the prudent use of antimicrobial agents in human medicine (COM (2005) 0684). In the report, it is stated that: 'The ECDC should be able to assist the Commission in the future preparation of implementation reports and of recommendation proposals.'

In June 2009, EU Health Ministers adopted a Council Recommendation on patient safety, including the prevention and control of healthcare associated infections (2009/C 151/01), which further stresses the importance of combating AMR as a patient safety issue.

ECDC has, upon invitations from governments, visited 16 countries (some member states more than once) to discuss issues related to AMR and to the Council Recommendations. The Ministry of Health of Latvia invited ECDC to perform a visit on 26–30 November 2011 as part of a general visit of ECDC to Latvia.

Purpose

The Council Recommendation of 15 November 2001 on the prudent use of antimicrobial agents in human medicine (2002/77/EC) outlines the threat that AMR poses to human health and advocates for a range of actions to be taken for its prevention and control. Council Conclusions on AMR of 10 June 2008 reiterated this call for action.

To assist Member States, candidate and potential candidate countries in implementing the Council Recommendation, ECDC has developed a process for and is carrying out, upon invitation from national authorities, country visits to specifically discuss and assess the situation of the country regarding prevention and control of AMR through prudent use of antibiotics and infection control. These country visits also help document how Member States have approached this implementation and deployed national activities, and support the European Commission in evaluating this implementation.

The main output of the visit is a report from the ECDC Team provided to the inviting national authority. To help the ECDC Team ensure consistency of the visits and follow-up of progress of countries, an assessment tool has been developed (see Annex 2). The assessment tool includes ten topics. These topics are regarded as core areas for successful prevention and control of AMR and are based on Council Recommendation 2002/77/EC and on Council Conclusions of 10 June 2008. The assessment tool is used as a guide for discussions during the visit.

¹ Rosdahl VT, Pedersen KB (editors). The Copenhagen Recommendations Report from the Invitational EU Conference on The Microbial Threat, Copenhagen Denmark, 9–10 September 1998. Copenhagen, Denmark: Danish Ministry of Health, and Danish Ministry of Food, Agriculture and Fisheries, 1998.

<http://www.reactgroup.org/uploads/resources/The%20Copenhagen%20Recommendations.en.504.pdf>

Overview of the situation in Latvia

Antimicrobial resistance (AMR)

Since 2004, data on AMR have been provided to EARSS (now EARS-Net) by the Clinical Microbiology Laboratory at Pauls Stradiņš University Hospital. In 2007–2009, about 10% of *Staphylococcus aureus* invasive isolates were resistant to meticillin (MRSA). In two of the reporting hospitals, there was a significantly higher percentage of MRSA. Still, in a European context, the level of MRSA in Latvia is fairly good and below average. On the other hand, resistance to third-generation cephalosporins in 2007–2009 was at around 10% in *Escherichia coli* isolates and over 50% in *Klebsiella pneumoniae* isolates which, for the latter, corresponds to a high percentage.

From 2004 to 2009, there was a significant decrease of MRSA from 26% to 9% of invasive *S. aureus* isolates. One explanation may be the small number of *S. aureus* isolates reported in 2004 at the start of the surveillance. Another explanation could be an increased awareness about MRSA and its control due to the introduction in 2006 of the 'Regulations Regarding the Basic Requirements for a Hygienic and Counter-Epidemic Regimen in a Medical Treatment Institution (574/2006)' in Latvia.

Healthcare-associated infections

Published data from 2002 show rates of nosocomial infections in some departments of Pauls Stradiņš University Hospital comparable to the rates observed in similar departments at Huddinge University Hospital in Sweden¹. We were not able to retrieve other published data on nosocomial infections/HAI in Latvia.

In the regulations, there are clear guidelines and procedures on how to handle patients with specified antimicrobial-resistant bacteria. These procedures cover MRSA and vancomycin-resistant *S. aureus* (VRSA), and also non-reportable strains of penicillin-non susceptible *Streptococcus pneumoniae*, vancomycin-resistant *Enterococcus* spp. (VRE), carbapenem-resistant *Acinetobacter baumannii*, and amikacin-resistant *Pseudomonas aeruginosa*.

Antimicrobial consumption

Data on antibiotic usage has been provided to ESAC by the Medicines Agency through Pauls Stradiņš University Hospital on a regular basis since 2004.

In 2009, antibiotic consumption in the community (outside hospitals) in Latvia was 10.5 DDD (defined daily doses) per 1 000 inhabitants and per day, which is one of the lowest reported in the EU (ESAC data: average of 32 European countries: 19.9; country with the highest consumption: 38.6). In comparison, the average antibiotic consumption is 19.9 DDD per 1 000 inhabitants and per day and the highest consumption is 38.6 DDD per 1 000 inhabitants and per day. Similar low consumption of antibiotics is reported from nursing homes in Latvia.

In contrast, antibiotic consumption in the hospital sector tend to be on the higher level with 2.2 DDD per 1 000 inhabitants and per day (ESAC data: average of 23 European countries participating in ESAC: 1.8; country with the highest consumption: 3.3). Penicillins, cephalosporins and quinolones are the main classes of antibiotics used in Latvian hospitals.

¹Struwe J, et al. Healthcare associated infections in university hospitals in Latvia, Lithuania and Sweden: A simple protocol for quality assessment. Eurosurveillance 2006 Jul;11(7): 167–71

Observations

Development of an Intersectoral Coordinating Mechanism (ICM)

There is no Intersectoral Coordination Mechanism (ICM) in Latvia. Discussions were held with a multidisciplinary panel of experts and stakeholders about the rationale for having such a mechanism as described in Council Recommendation 2002/77/EC. Some of the stakeholders are already working together on some of the issues covered by the Council Recommendation. The benefits of having a national strategy and action plan on AMR issues were discussed.

The issue of AMR seems to be understood in most institutions. At the meeting, there was no representative for hospital doctors beside the AMR experts, nor was there a person representing hospital administration. For many actions that need to be taken to combat AMR the cooperation between professional groups is fundamental.

Organised multidisciplinary and multisectoral collaboration on local level

In the hospitals visited, the people we met had information on local AMR patterns, including the directors. However, there was no organised, formal, multidisciplinary collaboration on AMR in these hospitals. There is awareness about AMR. All hospitals visited had encountered problems with AMR.

At Pauls Stradiņš University Hospital, there has been a strategic and successful response to the spread of MRSA, with a decrease from 39% in 2004 to 10% in 2009. Similar decreases have been observed in some regional hospitals. This has been the result of the initiative of the infectious disease specialists and infection control staff rather than that of multidisciplinary action.

Laboratory capacity

The four laboratories that we visited were performing bacterial identification and antimicrobial susceptibility testing on bacteria from clinical microbiology samples. Results from these tests were usually provided to the wards in 48 hours or more, but could be provided more rapidly in case of emergency.

The Clinical Microbiology Laboratory at Pauls Stradiņš University Hospital provides reference services for other microbiological laboratories including regional laboratories. This covers AMR, including telephone consultation, confirmation of resistance mechanism and strain typing of healthcare-associated resistant bacteria, e.g. MRSA. The latter was only performed at this laboratory on a voluntary basis with funds from research projects. The typed resistant bacteria include MRSA, *Enterobacteriaceae* incl. *Klebsiella* spp., *Acinetobacter baumannii* and *Clostridium difficile*.

Through EARS-Net, the Clinical Microbiology Laboratory at Pauls Stradiņš University Hospital organises a yearly external quality assessment on antimicrobial susceptibility testing and 11 clinical microbiology laboratories, including all regional hospitals, participate. For EARS-Net surveillance and related research projects, there is a system for reporting back to participating laboratories.

Monitoring of antibiotic resistance

Meticillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin resistant *S. aureus* (VRSA) are reportable diseases according to Latvian regulations (Cabinet Regulation No. 7, adopted 5 January 1999). Cases of MRSA and VRSA must be reported to the Infectiology Centre of Latvia. A report on MRSA cases for the period September–December 2007 was published in April 2008 and is available from the LICS website. Findings are reported as total numbers. Data on MRSA cases in Latvia 2007–2010, incl. maps for 2009 and 2010, were presented during the visit. These data had not been forwarded to other health professionals.

When cases are reported, the reports first go to the regional epidemiologist. Actions around cases are taken in hospitals by the hospital staff in collaboration with the regional epidemiologist. For other occurrences, the regional epidemiologist is responsible for actions. There is no strain typing connected to reporting of MRSA cases. Spread of specific clones of MRSA cannot be followed on national level. There has so far been no report of VRSA in Latvia.

The microbiological laboratories in the visited hospitals presented local data on AMR, not only on MRSA but also on other multidrug-resistant bacteria of public health importance. Since 2004, the Clinical Microbiology Laboratory and the Infectious Disease Unit at Pauls Stradiņš University Hospital have created a voluntary network of Latvian

clinical microbiological laboratories and implemented AMR surveillance in Latvia. The Clinical Microbiological Laboratory collects data on isolates from blood and spinal fluid samples. Initially, only data on MRSA were collected. From 2006 onwards, data are collected on all indicator bacteria (*E. coli*, *E. faecalis*, *E. faecium*, *K. pneumoniae* and *P. aeruginosa*). In 2011, 70–75% of the Latvian population was covered by this surveillance. Eleven clinical microbiology laboratories, including all regional hospitals, participated. These data are validated and aggregated data are fed back to the participating clinical microbiology laboratories that can compare their data to national data. This AMR surveillance coordinated by the Clinical Microbiological Laboratory at Pauls Stradiņš University Hospital is the basis for reports sent at European level to the European Antimicrobial Resistance Surveillance Network (EARS-Net, formerly EARSS).

During the visit, it became clear that *Acinetobacter baumannii* is often recovered from clinical samples in many intensive care units in Latvia. This seems to be the same highly resistant strain of *Acinetobacter baumannii* over the country. There is no mechanism to analyse and contain clonal spread of resistant bacteria over the country. There are data from research projects in the Clinical Microbiological Laboratory at Pauls Stradiņš University Hospital on molecular typing of MRSA and other multidrug-resistant healthcare-associated bacteria like *Acinetobacter baumannii*. However, there currently is no system that could lead to coordinated, national interventions based on these data.

Monitoring of antibiotic usage

Data on antimicrobial consumption in the community (outside hospitals) and in the hospital sector are available from the Medicines Agency. The source of data is pharmaceutical wholesalers. These data are reported to ESAC (now ESAC-Net).

None of the hospitals that we visited presented local surveillance data on antimicrobial consumption.

Antibiotic utilisation and treatment guidance

Antibiotics are rarely dispensed at pharmacies without a prescription. In the Eurobarometer survey from 2009, only 6% of Latvian respondents declared that they had obtained an antibiotic without a medical prescription during the past 12 months.

The observed low antibiotic use in the community in Latvia has been confirmed by studies on prescriptions by general practitioners. Discussions with a group of family physicians and with a general practitioner in his practice supported the findings of these studies. In many non-serious situations, Latvian family physicians/general practitioners often prefer to wait a few days before prescribing antibiotics. There is also, in Latvia, a long tradition of prudent use of antibiotics in outpatient settings. The family physicians/general practitioners that we met routinely use rapid diagnostic tests such as the Strep-test and C-reactive protein (CRP) test that are reimbursed to the practice. Bacteriological samples are also reimbursed but are often not taken because of difficulties for sending the sample and of delays for obtaining the results.

Since 2001, Latvian family physicians/general practitioners have had guidelines for the treatment of respiratory tract infections. Development of these guidelines was followed by a series of seminars family physicians/general practitioners specifically on the treatment of acute respiratory disease (ARD). The ARD guidelines are currently under revision. There is also a discussion about developing guidelines for treatment of children under 6 years of age.

Use of narrow-spectrum antibiotics such as penicillin V for Group A streptococci tonsillitis/sore throat has been discussed at family physician/general practitioner conferences and the family physicians/general practitioners that we met would like to use penicillin V more often. However, this antibiotic is no longer available in Latvia. One reason seems to be the high registration cost compared with the potential gain for the pharmaceutical company (generic manufacturer) selling penicillin V.

In the hospitals visited, there were local guidelines for antimicrobial treatment. In one hospital, there was a list of restricted antibiotics that could only be prescribed by either the infectious disease specialist, the head of internal medicine or the head of the intensive care unit.

In the intensive care units visited, all patients were receiving broad-spectrum antibiotics. There are some diseases that seem more prevalent in Latvia such as pancreatitis and other abdominal diseases, which would justify use of these broad-spectrum antibiotics. After discussions with medical staff, it seemed that broad-spectrum antibiotics are often continued even if the results of bacteriological samples show that it is possible to narrow down antimicrobial therapy. The discussions also indicated that peri-operative prophylaxis is often given much longer than recommended by scientific evidence.

The advice of infectious disease specialists is not always followed, particularly not by surgeons. The occurrence of multidrug-resistant *Acinetobacter baumannii* reported in the visited hospitals is the likely consequence of frequent and broad-spectrum antibiotic use in these hospitals. However, since the same strain seems to be recovered in many hospitals in Latvia, there must be a mechanism that allows this strain to be transmitted between hospitals.

Infection control

There is a comprehensive legislation (Cabinet Regulation No 574, adopted on 11 July 2006) that covers most areas of infection control.

In most visited wards, alcohol hand rub for hand hygiene was available at locations close to the patients. In one hospital, compliance with hand hygiene increased from 6% to 74% (intensive care unit) following a hand hygiene campaign, but this percentage decreased after the end of the campaign.

In the visited intensive care units, there were rooms that could be used for isolating or cohorting patients with specific multidrug-resistant bacteria such as *Acinetobacter baumannii*.

There was a practice for screening patients for MRSA, but not necessarily other multidrug-resistant bacteria such as ESBL-producing *Enterobacteriaceae*. Patients positive for these resistant bacteria were isolated and precautions were introduced according to the regulations.

There is a lack of personnel specifically trained in infection control and a limited number of infection control staff in hospitals. There is a turnover of staff in hospital wards. New staff often cannot be trained appropriately, for infection control procedures.

At Pauls Stradiņš University Hospital, there are some wards that follow occurrence of healthcare-associated infections (HAI). We were not shown any data on surveillance of HAI.

Educational programmes on AMR

Post-graduate courses on antibiotic prescribing for family physicians/general practitioners are regularly organised by the Association of Family Physicians of Latvia. Prof. Uga Dumpis participates as expert.

There are post-graduate courses on antibiotic prescribing organised by universities that are available for hospital doctors. These courses are independent from pharmaceutical industry, but the courses do not seem to attract much interest from hospital doctors.

Public information related to AMR

Activities have been organised by some dedicated family physicians/general practitioners to raise awareness of the public about medicines, including antibiotics.

At national level, Latvia has participated each year since 2008 in European Antibiotic Awareness Day. There were a number of activities organised with no budget and very little human resources, mainly from Pauls Stradiņš University Hospital with involvement of the Ministry of Health. The Minister of Health participated in person.

These activities included scientific conferences, press conferences, press releases, interviews in media including women's magazines, scientific coffee with students, educational activities in hospitals (focused on hand hygiene) and scientific articles. The perception of the people that we met during the visit is that these activities contributed to increase the overall awareness about AMR and prudent use of antibiotics in Latvia.

Marketing related issues

Pharmaceutical companies sometimes sponsor meetings of family physicians/general practitioners, but these companies do not take part in the organisation of these meetings.

Pharmaceutical representatives regularly visit family physicians/general practitioners to discuss a portfolio of medicines from the same company, including antibiotics. The family physicians/general practitioners that we met, however, did not feel that there was much pressure from pharmaceutical companies on their prescribing of antibiotics, probably because most of the antibiotics used in primary care are generics.

The team did not collect information on pharmaceutical industry involvement in hospitals.

Conclusions and recommendations

Conclusions

Compared with many other EU countries, the present AMR situation in Latvia is favourable. In particular, Latvia has one of the lowest uses of antibiotics in the community (i.e., outside of hospitals) of all EU countries. There is an infection control legislation that is under implementation and the legislation is a good basis for improving infection control practices in Latvian healthcare.

However, looking at the trends of extended-spectrum beta-lactamase (ESBL)-producing *Enterobacteriaceae* and of multidrug-resistant *Acinetobacter baumannii* in hospitals, as well as the high antibiotic use in hospitals, there should be a clear worry for more serious AMR problems in the future.

Latvia is now at a crossroads. If a good strategy to identify circulating AMR clones and a mechanism for their rapid containment is implemented, combined with reinforced infection control practices and a more prudent use of antibiotics in hospitals, Latvia could most probably postpone these problems.

Most of the knowledge of the Latvian situation on AMR derives from a few professionals and experts at Pauls Stradiņš University Hospital and is based on research projects and voluntary work. There are also dedicated professionals among the general practitioners that advocate for prudent use of antibiotics and proper treatment policies. These professionals and experts are valuable assets for Latvia. In Latvia, as observed in other EU Member States, dedicated professionals with a high level of expertise and experience are essential for surveillance, prevention and control in the specialised public health area of AMR.

The nature of AMR data as reported at EU level to TESSy/EARS-Net is different from that of other communicable diseases. AMR data originate from routine clinical microbiology laboratories and include information on both antimicrobial-resistant and antimicrobial-susceptible isolates to determine the percentage of antimicrobial-resistant isolates for multiple antimicrobials and several bacterial species. While it is, in principle, possible to perform some type of AMR surveillance with VISUMS (e.g. MRSA), VISUMS is not the most suited tool for collection of the broad range of AMR data from clinical microbiology laboratories as required by TESSy/EARS-Net.

Recommendations

The experience from other countries shows that the existence of an Intersectoral Coordination Mechanism (ICM) composed of representatives of all stakeholders is crucial for the success of combating AMR. Council Recommendation 2002/77/EC on the prudent use of antimicrobial agents in human medicine recommends that EU Member States implement such an ICM. Latvia should consider setting up an ICM supported by the Government.

A first task of the ICM in Latvia would be to agree on a national strategy on AMR and the prudent use of antimicrobial agents in the country.

Such a strategy could contain elements such as:

- A publicly funded, continuous surveillance system for collecting and typing strains of multidrug-resistant healthcare-associated bacteria such as but not limited to MRSA. Quality and representativeness of data are important for this type of surveillance, which requires laboratory expertise, specific expertise and an active network of hospital clinical microbiology laboratories. This type of surveillance may need to be subcontracted. A way to set up such a surveillance system would be to build on the present systems used in research projects and EARS-Net at Pauls Stradiņš University Hospital since these systems have been successful at providing data at EU level to EARSS, and then TESSy/EARS-Net since 2004.
- A continuous mechanism for analysis of typing results with the intention to contain spread of resistant clones. Define the responsibility on national level for these tasks. All results from surveillance and investigations should be regularly fed back to laboratories and doctors. Experience shows that this is important to get compliance for data collection.
- Continued implementation and support of the infection control legislation which could include an educational programme for infection control nurses, as well as increase the number of infection control staff;
- Considering structure and process indicators for monitoring progress in the implementation of infection control programmes in hospitals and other healthcare settings;
- Initiating studies on antibiotic prescriptions in hospitals to explain the rationale for high antibiotic use in hospitals;
- Considering how incentives for prevention and control of healthcare-associated infections could be integrated as part of healthcare economy.

In addition to the ICM and the strategy, Latvia should consider developing and adopting a legal framework for AMR surveillance, both for a broad range of AMR data from clinical microbiology laboratories (compatible with the EARS-Net protocol) and for a limited subset of specific multidrug-resistant bacteria, which similar to the current status for MRSA, could become mandatory reportable diseases and be reported to VISUMS.

Annex 1. ECDC team and visit agenda

ECDC team

- Dominique Monnet, ECDC, Stockholm, Sweden
- Peet Tüll, External consultant, Visby, Sweden
- Rolanda Valinteliënė, External expert, National AMR Focal Point, Vilnius, Lithuania

Visit agenda

Monday 26 September 2011

Technical meeting (addendum to the visit), Ministry of Health, Riga:

National campaigns on the prudent use of antibiotics in Latvia and European Antibiotic Awareness Day

- Biruta Kleina, Deputy Head, Health Care Department, Ministry of Health
- Guna Jermacane, Senior Officer, Division of Treatment Quality, Ministry of Health
- Egita Pole, Head, Communication Department, Ministry of Health
- Uga Dumpis, Stradiņš University Hospital
- Ines Skrastina, Public Relation Specialist, Infectiology Centre of Latvia
- Sarah Earnshaw, ECDC
- Giovanni Mancarella, ECDC

Introduction to the country visit, Ministry of Health, Riga

- Juris Bārzdiņš, Minister of Health
- Rinalds Mucins, Secretary for Health, Ministry of Health
- Inga Šmate, Ministry of Health
- Baiba Rozentāle, Director, Infectiology Centre of Latvia
- Jurijs Perevoščikovs, Infectiology Centre of Latvia
- Aiga Rūrāne, WHO Country Office

Meeting with group of experts, Ministry of Health, Riga:

Discussion on the inter-sectoral mechanism (ICM) for the coordinated implementation of strategies targeted towards the prudent use of antimicrobial agents

- Biruta Kleina, Deputy Head, Health Care Department, Ministry of Health
- Antra Valdmāne, Head, Division of Treatment Quality, Ministry of Health
- Uga Dumpis, Stradiņš University Hospital
- Elina Dimiņa, representative, Infection Control and Sterilisation Association
- Valentina Berga, Health Inspectorate
- Arta Balode, Head, Microbiology Department, Stradiņš University Hospital
- Inta Krauja, Ministry of Agriculture
- Dace Kikute, Deputy Director, State Agency of Medicines of Latvia
- Andis Seilis, expert, State Agency of Medicines of Latvia
- Edgars Tirans, general practitioner, Latvian Association of Family Physicians

Meeting at the Latvian Association of Family Physicians, Riga

- Īlze Aizsilniece, general practitioner
- Jevgenijs Bondins, general practitioner
- Sarmite Veich, general practitioner
- Edgars Tirans, general practitioner

Also present: Uga Dumpis, Stradiņš University Hospital

Tuesday 27 September 2011

Meetings and visit of Infectiology Centre of Latvia, Riga

- Introductory meeting with the management of Latvian Infectiology Centre: Baiba Rozentāle, Director, Infectiology Centre of Latvia
- Short introduction to the public health capacity issues, including approaches to workforce/manpower planning, training and continuing professional development of public health staff (including laboratory staff): Anita Villeruša, Dean of Public Health Faculty, Riga Stradiņš University
- Short introduction to the National Reference Laboratory: Tatjana Kolupajeva

Also present: L. Vīksna, Jurijs Perevoščikovs, Irina Lucenko, Anita Brila, I. Janušķēviča, G. Stūre, Inga Upmace, Dace Viļuma, Gunta Grīse, Biruta Kleina, Elina Dimiņa, I. Cīrule, Eva A. Labant, Z. M. Vincze.

Visit of laboratories (D. Monnet, R. Valinteliene)

- Solvita Selderina, Head, Bacteriology Laboratory, Infectiology Centre of Latvia
- Tatjana Kolupajeva, head of HIV lab
- Amanda Broduza

Also present: Biruta Kleina, Deputy Head, Health Care Department, Ministry of Health

Visit of infectious disease department (P. Tüll)

- Velga Kūse, Deputy Director for Medicine, Infectiology Centre of Latvia

Visit of Eastern Clinical University Hospital (Gailezers Hospital), Riga

- Maris Liepins, Head, Clinical Epidemiology Department
- Tatjana Nikonova, Epidemiologist
- Inna Bickova, Infection Control Nurse
- Silvija Bunovna, Infection Control Nurse
- Dace Rudzite, Microbiologist
- Viesturs Liguts, Head, Anaesthesiology and Reanimation Department

Also present: Elina Dimiņa, Infection Control and Sterilisation Association

Meeting at Health Inspectorate, Riga

- Valentina Berga, Head, Control Unit
- Livija Langenfelde, Head, Division for Healthcare Service Supervision
- Konstantija Reinfelde, Head, Division for Control of Healthcare Institutions
- Daina Biseniece, Head, Division of Medical Products, Supervision Planning and Development Department
- Dina Lazdina, Head, Division of Healthcare
- Ainars Čivčs, Director, Healthcare Control and Service Supervision Department
- Ilona Liskova, Director, Supervision Planning and Development Department
- Alla Nogotkova, Head, Public Health Division, Supervision Planning and Development Department
- Linda Kalnina, Head, Division for Drug Control, Control Unit

Also present: Guna Jermacane, senior officer, Division of Treatment Quality, Ministry of Health; Elina Dimiņa, Infection Control and Sterilisation Association

Wednesday 28 September 2011

Visit of Liepāja Regional Hospital, Liepāja

- Edvins Strigs, Director
- Janis Ceika, Internist, Quality control
- Ivars Krastiņš, Anesthesiologist, Head of intensive care unit
- Marite Kūla, Epidemiologist

Also present:

- Antra Valdmāne, Ministry of Health
- I. Lanks, Ministry of Health
- Uga Dumpis, Stradiņš University Hospital;

Visit of family doctor practice "Dakteris Imants", Aizupe

Imants Lanka, Family doctor (specialised in children)

Also present

- Antra Valdmāne, Ministry of Health;
- I. Lanks, Ministry of Health;
- Uga Dumpis, Stradiņš University Hospital;

Thursday 29 September 2011

Meeting and visit of Pauls Stradiņš University Hospital, Riga

- Modris Dzenītis, Director
- Raimonds Bricis, Department of Neurosurgery
- Uga Dumpis, Infectiology and infection control
- Arta Balode, Clinical Microbiology
- Girts Freijs, Head, Intensive care unit
- Valdis Pirags, Head, Internal Medicine Clinic

Also present: Antra Valdmāne, Ministry of Health; Elina Dimiņa, Infection Control and Sterilisation Association

Meeting at Health Economics Center, Riga

- Maris Taube, Acting Director, Head of Public Health Department

Also present: Guna Jermacane, Ministry of Health; Uga Dumpis, Stradiņš University Hospital

Friday 30 September 2011

Preliminary report from the ECDC Team, Ministry of Health, Riga

- Juris Bārzdiņš, Minister of Health
- Rinalds Mucins, Secretary for Health, Ministry of Health
- Inga Šmate, Ministry of Health
- Baiba Rozentāle, Director, Infectiology Centre of Latvia
- Jurijs Perevoščikovs, Infectiology Centre of Latvia
- Aiga Rūrāne, WHO Country Office

Annex 2. Assessment tool for ECDC country visits to discuss antimicrobial resistance (AMR) issues

The mechanisms behind emerging AMR are complex. However, two main issues that stand out offering opportunity for control efforts are: the use of antibiotics and the epidemiological spread of resistant microbes.

The complexity of the problem makes it difficult to grade which interventions are most successful. Where interventions have been introduced few of them have been evaluated. This may partly be because few systematic interventions have been used.

Council Recommendation on the prudent use of antimicrobial agents in human medicine (2002/77/EC) lists a number of areas that have an impact on controlling AMR. Most of the following tentative indicators are based on the Council Recommendations. Some are based on experience from different countries. These indicators are either structure- or process-related. Outcome indicators are collected by dedicated surveillance networks.

1. Development of an Intersectoral Coordinating Mechanism (ICM)

Due to the complexity of the issue there is a need for coordination to make an interventional strategy work. There is need for close cooperation from fields such as epidemiology, microbiology clinical medicine, infection control, veterinary medicine, pharmacology, behavioural sciences, practitioners from different medical specialities as well as government departments and health care providers.

In the Council Recommendation on the prudent use of antimicrobial agents in human medicine (2002/77/EC) and in the WHO Global Strategy for Containment of Antimicrobial Resistance (WHO/CDS/CSR/DRS/2001.2) the establishment of a coordinating group is regarded as essential.

Member States have different administrative organizations. There should be a group on the highest administrative level where representatives from regulatory bodies and professionals from the different sectors coordinate.

Tentative indicators for 1

Structures

- Multidisciplinary composition
- Regular meetings
- Minutes from meetings
- National strategy plan available
- Defined governmental mandate
- Financially supported by government

Functions

- Coordinates analysis of consumption and, plans and supports interventions
- Proposes national objectives and policies
- Proposes, plans and supports interventions
- Provides policymakers, media and public with continues updated and structured data
- Provides support to local working groups

2. Organised multidisciplinary and multisectoral collaboration on local level

One of the main elements for control strategies is to lower the selective pressure of antibiotics by restricting usage to appropriate indications. There is much evidence showing that antibiotics are overused. Prescribers need to be well acquainted with the AMR-problem and with the rationale of using antibiotics appropriately.

A non-regulatory intervention that has indicated some influence on prescribing habits are local activities where practicing physicians discuss local data on consumption and bacterial resistance patterns, supported by epidemiologists, pharmacists and infection control. This proves to be an appropriate opportunity to revise local usage patterns, develop local guidelines (based on national guidelines) and organise local meetings with prescribers to promote rational use of antibiotics. In addition, topical issues can be discussed like problems related to MRSA or *Clostridium difficile* 027.

Time for practicing doctors is limited. It is essential that there is a good collaboration with and support from the national/regional group to provide background data and help with scientific updates.

Tentative indicators for 2

General

Structures

- Are there local activities in some places?
- Are there nationally disseminated local activities?
- Are activities in hospitals and primary health care coordinated at the local level?

Primary health care

Structures

- Are there local activities in primary health care?
If yes:
 - Mostly multidisciplinary
 - Private practitioners are taking part
 - Have access to local surveillance data on AMR
 - Have access to local antibiotic consumption data
 - Have public funding
 - Meet regularly

Functions

Primary areas of work are:

- Infection control
- Diagnostic practices/habits
- Analysis of local consumption and resistance data
- Educational activities
- Coordination of interventions
- Provide local guidelines
- Convene local meetings with prescribers at least yearly

Hospitals

Structures

- Are there local activities in hospital health care?
If yes:
 - Mostly multidisciplinary
 - Have access to local surveillance data on AMR
 - Have access to local antibiotic consumption data
 - Have public funding
 - Meet regularly

Functions

Primary areas of work are:

- Infection control
- Diagnostic practices/habits
- Analysis of local consumption and resistance data
- Educational activities
- Coordination of interventions
- Provide local guidelines
- Convene local meetings with prescribers at least yearly

3. Laboratory capacity

Laboratory capacity is essential for many reasons:

- To be able to follow trends in antimicrobial resistance;
- To discover newly emergent resistant strains;
- To enable prescribers to make informed antibiotic choices. For this there is a need for timely feedback to clinicians.

It is important to characterise isolates that may have clinical importance. This can often not be done in all laboratories so a referral system to specialised laboratories should exist.

All laboratory work should regularly be quality assessed.

Tentative indicators for 3

General

Structures

- How many diagnostic laboratories are appropriately equipped for microbiological diagnostic work (minimum requirement: performance of gram-stain, aerobic culture and antimicrobial susceptibility testing).
- What proportion of microbiological laboratories have at least one specialist clinical/medical microbiologist?
- Is there a formal referral structure to reference laboratories supported by public (alternatively through insurance system or equivalent) funding?
- Does a national external quality assessment scheme exist?
- Does an accreditation system exist for microbiological laboratories that requires regular QC and EQA?

Hospitals

Functions

- What proportion of microbiological laboratories provide preliminary and individual feedback (gram stain, rapid tests, culture results) via telephone or clinical rounds to the submitting clinician within the first 12 h of receipt of diagnostic specimen?
- What proportion of microbiological laboratories provide preliminary and individual feedback (gram stain, rapid tests, culture results) via telephone or clinical rounds to the submitting clinician within the first 24 h of receipt of diagnostic specimen?
- What proportion of microbiological laboratories provides susceptibility test results to the submitting clinician within 48 h of receipt of diagnostic specimen?
- What proportion of microbiological laboratories provides species identification of blood culture isolates to the submitting clinician?
- Who pays for sent in sample analysis?

Out patients

Functions

- What proportion of general practitioners can submit clinical specimen for microbiological investigation to an appropriately equipped microbiological laboratory within 12 hours?
- What proportion of microbiological laboratories provide preliminary and individual feedback (Gram stain, rapid tests, culture results) to the submitting clinician within the first 24 h of receipt of diagnostic specimen?
- What proportion of microbiological laboratories provides susceptibility test results to the submitting clinician within 48 h of receipt of diagnostic specimen?
- Who pays for sent in sample analysis?

4. Monitoring of antibiotic resistance

Resistance patterns should regularly be followed. This should be done with a standardized method. The method should regularly be quality assessed.

To be able to guide prescribers in prudent usage of antibiotics surveys of different clinical conditions should be done to define which pathogens and their susceptibility profiles for antibiotics. The resistance pattern may vary from area to area so local monitoring may be needed.

Data should be gathered nationally and internationally to follow long term trends.

Tentative indicators for 4

- Local, time limited studies have been performed
- Local continuous, monitoring is done in a few laboratories
- Are duplicates excluded?
- National monitoring with standardized methodology on clinically and epidemiologically relevant bacterial pathogens is on-going
- Country wide local monitoring with standardized methodology in communities and hospital unites is on-going
- Data from hospitals and out-patient settings are treated separately
- Data collection is financially supported by government
- Regular surveys of resistance patterns for pathogens in population based syndromes are performed
- Regular feedback of resistance patterns to prescribers and local groups is given

5. Monitoring of antibiotic usage

As antibiotic usage is the driving force for emerging resistance it is important to monitor usage. Therefore, reliable surveillance systems of antibiotic consumption are essential to complement antibiotic resistance data and to develop instruments for assessing effective strategies to foster appropriate antibiotic use in all European countries.

Current antibiotic use surveillance systems are mostly monitoring trends and shifts in usage patterns. However, to deepen our understanding of antibiotic prescribing, more detailed information is needed on patients' age and gender, the prescriber, the indication and pathogen. Although prescriber data are felt as sensitive, this kind of data can be used for the self assessment. Aggregated data may be used for local group discussions.

Tentative indicators for 5

- Are valid national data on outpatient antibiotic use available?
- Are valid national (or at least representative sample) data on hospital antibiotic use available?
- Is collection of data on antibiotic use legally supported?
- Is data collection financially supported by the government?
- Are data available per prescriber/ clinical diagnosis/micro-organism?
- Is there regular feedback of prescription patterns to prescribers?
- Are anonymous data fed back to local groups?

6. Antibiotic utilisation and treatment guidance

Antibiotics should be used properly. "Proper use" is a difficult term both in human and veterinary medicine. Still there is a need to find some common view on what is "proper". Guidelines are a way on agreeing locally or nationally.

Antibiotics allow treatment of serious bacterial infections. The largest volume of antibiotics is prescribed in ambulatory care. This use is increasingly recognized as the major selective pressure driving resistance, which in turn makes them ineffective. Therefore antibiotics should be used appropriately, i.e. (no) antibiotics for those who will (not) benefit from the treatment. In addition, unnecessary use of antibiotics requires more resources, motivates patients to re-consult and exposes them to the additional risk of side effects, whereas under-prescribing could be associated with higher risk of complications of untreated infections.

A “proper” level of usage is difficult to define. The levels are mostly for following trends and shifts in usage patterns. With these data related to other data there might be a way of defining a “proper” range of usage. One benchmark value on European level cannot be given, because for different countries the demographical characteristics and epidemiological situation can influence this indicator. Individual countries should position themselves and define their own benchmark, This should be based on the epidemiology of infectious diseases and national guidelines. A range of acceptable antibiotic use should be defined rather than one threshold value. If the use is outside the limits of the range, more detailed assessment is recommended in order to define the action required. For any action planned explicit targets should be set.

Most guidelines define treatment for specific diagnosis. This means that the diagnosis have to be made correctly before guidelines are applicable.

That also means that antibiotic usage must be directed by medical diagnosis and decisions. That is why systemic antibiotics are prescription-only medicines in EC.

Tentative indicators for 6

- Availability of OTC (over-the-counter) antibiotics
- Availability of national treatment guidelines
- Availability of locally adapted treatment guidelines
- Has the compliance to guidelines been assessed?
- Defined standardised criteria for clinical diagnosis
- What is the rate of laboratory diagnostics use before deciding on use of antibiotics for sore throat (% of patients)?
- What is the rate of blood cultures before use of antibiotics for perceived bacteremia with sepsis (% of patients)?

7. Infection control

Health care and especially hospitals have historically been a main source of spread of epidemics. This has been shown for a wide variety of microbes. This was true with smallpox and early outbreaks of Lassa fever. A recent well known example is SARS. Another very well known bacterium that spreads in health care settings is MRSA.

All hospitals have defined procedures and hygienic principles although these may not always be based on the latest scientific knowledge. Implementation of guidelines and adherence to procedures is another problem. Surveys have shown that adherence to infection control guidelines many times is poor.

More and more persons with complicated medical conditions are given home-based care. Many of them are elderly. Such patients may have indwelling catheters, have a lower immunity and often use antibiotics. Infection control guidelines are difficult to follow in a home like setting and many of the caring staff has little or no training in infection control. Increasingly MRSA is reported to be a problem also in these settings.

Tentative indicators for 7

General

- Is there a national committee on issues related to infection control?

Hospitals

- Alcohol based hand disinfection recommended for non-diarreal disease
- Guidelines for hygienic procedures including standardized barrier precautions in >90% of hospitals
- Specific guidelines for MRSA in >90% of hospitals
- At least one infection control nurse/doctor per hospital
- Time allocated for infection control?
- What numbers of hospitals do surveillance of healthcare acquired infections (HAI) regularly in ICUs? (% of hospitals)
- What numbers of hospitals do surveillance of healthcare acquired infections (HAI) regularly in surgical wards? (% of hospitals)
- What numbers of hospitals do surveillance of healthcare acquired infections (HAI) regularly in internal medicine wards? (% of hospitals)
- Are there legal requirements for infection control system in hospitals?
- Is implementation of infection control practice regularly evaluated?

Health care settings outside hospitals

- Alcohol based hand disinfection recommended for non-diarrhoeal disease
- Alcohol based hand disinfection available in >90% of outpatient clinics
- Alcohol based hand disinfection available in >90% of health care settings for elderly
- Guidelines for infection control are available for elderly and long term care staff
- Implementation of infection control practice in elderly and long term care is regularly evaluated

8. Educational programmes on AMR

The understanding of the problem with AMR is the basis for having an impact with interventional programmes. This can partially be achieved with educational programmes. Educational programmes should be an integrated part of undergraduate studies. All healthcare related professionals need to have an understanding of the AMR problem.

“Education” in the context of AMR is more than just pharmacology of antibiotics or resistance patterns in microbes. It encompasses the relation between microbes, antibiotics and the epidemiology of resistant strains. It describes the complex interrelation between all aspects brought up in this document.

Regular, repetitive, independent educational material best provided by locally based colleagues in discussion groups seems to be one of the better success factors.

Tentative indicators for 8

- Doctors have in their curriculum AMR as undergraduate course
- Hospital health care workers have some education on AMR
- Community health care workers have some education on AMR
- Specific post graduate courses for doctors in antibiotic resistance are provided
- Regular educational programmes in antibiotic resistance are provided for health staff
- It is compulsory for all prescribers to take part regularly in a session on AMR
- <60% of information on AMR is industry sponsored

9. Public information related to AMR

Many prescribers blame patients for demanding antibiotics irrespective of their condition. This can only be changed if the public is well informed about what antibiotics can and can not do. Hence, educational activities of the wider public are important.

Tentative indicators for 9

- No information provided
- Topic sometimes covered in media
- Some material for media and/or internet from official sources
- Occasional national campaigns
- Repeated, structured national campaigns
- Regular, structured information provided by professional bodies
- Public perception assessed

10. Marketing related issues

Economics do have an impact on prescribing habits irrespective of diagnosis or best practice. This should be discouraged.

Tentative indicators for 10

- Independent (not industry supported) drug information is available
- Ethical guidelines for interrelation between physicians and industry are in place
- Physician’s prescriptions do not influence on physician’s salary
- Personal gifts from industry to physicians are illegal