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Summary of key publications

2009

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Introduction

In 2009 the European Centre for Disease Prevention and Control (ECDC) published a total of 43 scientific documents. Highlights comprise:

- *Annual epidemiological report on communicable diseases in Europe 2009*, third edition of ECDC's annual publication containing a comprehensive summary of surveillance data in 2007 and the threats monitored in 2008;
- *Tuberculosis surveillance in Europe 2007* and *HIV/AIDS surveillance in Europe 2008*, both produced jointly with the Regional Office for Europe of the World Health Organization (WHO EURO), covering the situation in the European Union (EU) and European Economic Area (EEA) countries, as well as that in additional 23 countries of the WHO EURO region;
- the launch of the *Migrant health series*, a collection of disease-specific publications presenting data analysis, evidence summary, interpretation and guidance on interventions in the field of migration and selected infectious diseases. The first two disease-specific documents published in 2009 were on HIV/AIDS;
- *The bacterial challenge: time to react*, a technical report about the gap between the burden of infections due to multidrug-resistant bacteria and the development of new antibiotics to tackle the problem, produced jointly with the European Medicines Agency; and
- *Mapping of HIV/STI behavioural surveillance in Europe*, an in-depth analysis of the current situation regarding behavioural surveillance programmes related to HIV and sexually transmitted infections (STI) in EU and European Free Trade Association (EFTA) countries.

Summaries of selected ECDC documents, like the ones above, have been compiled in order to make them available to policymakers in all EU languages plus Icelandic and Norwegian. They reflect the spirit of the original publications, but some important nuances may have been lost in the summarising process. Readers who wish to have a more detailed view should consult the full text of the documents, which are available online at: www.ecdc.europa.eu.

A list of all ECDC publications in 2009 is in Annex. All of them are available electronically from the link above, with a short description of the respective content. Selected reports are also available in print. To receive any of them in hard copy, please email publications@ecdc.europa.eu.

Technical reports

1. Risk assessment guidelines for infectious diseases transmitted on aircraft

(Published in June 2009)

National and international commercial air travel has seen a steady increase in passenger numbers over the last years. International airports welcome millions of passengers every day, allowing individuals to travel around the globe in hours. At the same time, changing travel habits may give rise to new threats: in the closed cabin environment of modern airplanes, passengers may be exposed to various infectious diseases that afflict their fellow passengers.

The emergence of severe acute respiratory syndrome (SARS) in 2003 demonstrated the potential of a new disease to suddenly appear and spread globally via air travel. The early detection of infectious diseases on board aircraft, in conjunction with timely risk assessment, is crucial when initiating a public health response. When a public health risk is detected, contact tracing passengers who were exposed during a flight is an essential step towards containment – and a major challenge to public health experts worldwide.

The RAGIDA ('risk assessment guidelines for infectious diseases transmitted on aircraft') project combines evidence retrieved from scientific literature with expert knowledge in order to provide viable options for decision makers. RAGIDA can provide valuable help when determining triggers and when faced with having to make a decision on whether to contact trace air travellers and crew that were exposed to infectious diseases during a flight.

For the RAGIDA project, experts from Robert Koch Institute and ECDC agreed on 12 diseases: tuberculosis (TB), influenza, SARS, meningococcal disease, measles, rubella, diphtheria, Ebola haemorrhagic fever, Marburg haemorrhagic fever, Lassa fever, smallpox, and anthrax. Over 3 700 peer-reviewed articles and grey literature sources were systematically reviewed in order to evaluate the exact circumstances that led to the transmission of these infectious diseases on board aircraft. In addition, a systematic search was conducted for guidelines on risk assessment and risk management of these infectious diseases from international aviation boards and national or international public health agencies. For additional input, 73 experts from 38 countries were contacted and asked for advice.

Results of the systematic literature search carried out suggest that TB, influenza, SARS, meningococcal disease and measles are relatively frequently transmitted on board aircraft. However, the number of articles reporting confirmed on-board transmission for any of these diseases was surprisingly low, especially when considering the large number of potential contacts. In the light of these results, the total number of events with on-board transmission is probably also quite low. Although it is difficult to draw any conclusions on the number of infections arising through on-board transmission, it seems likely that the potential for spreading infectious diseases on board is not higher than on the ground.

All in all, we remain convinced that risk assessment and the decision for contact tracing should be specific for each event and take into account factors such as the potential for epidemiological spread, infectivity and pathogenicity of index patients, functionality of on-board ventilation systems, intensity of contacts, and seating details – as suggested in this technical report.

2. Surveillance and studies in a pandemic in Europe

(Published in June 2009)

Surveillance and studies in a pandemic (SSiaP) is a complex topic including, as defined here, four distinct components:

1) early detection and investigation;
2) comprehensive early assessment;
3) monitoring; and
4) rapid investigation of the effectiveness and impact of countermeasures (including the safety of pharmaceutical countermeasures) in achieving mitigation.

A pandemic is unlikely to emerge in Europe, and so early detection and investigation will probably take place elsewhere, but Europe will need to undertake the other three processes. Laboratory-based (microbiological) surveillance will be essential to all components but usually will be integrated with epidemiological and clinical surveillance. Early assessment (component 2) is vital because of the number of important parameters of the next pandemic that cannot be anticipated. However, early assessment does not need to be undertaken in every country. Optimally, it will be best done by the earliest affected European countries, with support from the European Centre of Disease Prevention and Control (ECDC) and the World Health Organization (WHO), and confined to determining the 'strategic parameters'. The values for these parameters will determine which public health and clinical measures are most likely to be successful. The results from a few countries would then be immediately conveyed to all other countries.

An estimate of the severity of the pandemic will be part of the early assessment. It will be difficult but is essential as some national European plans envisage triggering more disruptive interventions in the event of a severe pandemic. WHO leadership is anticipated for this assessment. However, the detail will require a European view tied to a risk assessment because the complexity of the concept of severity makes it difficult to reduce to a single measure. All European countries will need to perform monitoring (component 3) for the proper management of their own healthcare systems and other services. The information that central authorities in countries might like to have for monitoring is legion but should be limited to what is essential for decisions and key communications. Monitoring should be tested for feasibility in influenza seasons, but how routine surveillance systems will change or cease to deliver during a pandemic will also need to be considered. International monitoring (reporting upwards to WHO and European authorities) should be kept simple, as many countries will find it difficult to provide routine information to international bodies as well as undertaking internal processes. Also, not every country will be able to supply the level of detail that European authorities might like to have.

Investigations of the impact of public health measures (and the safety of pharmaceutical countermeasures) (component 4) is another process that only needs to be undertaken in some countries. It is unlikely that it will become clear whether public health measures (and which ones) have been effective during the pandemic itself.

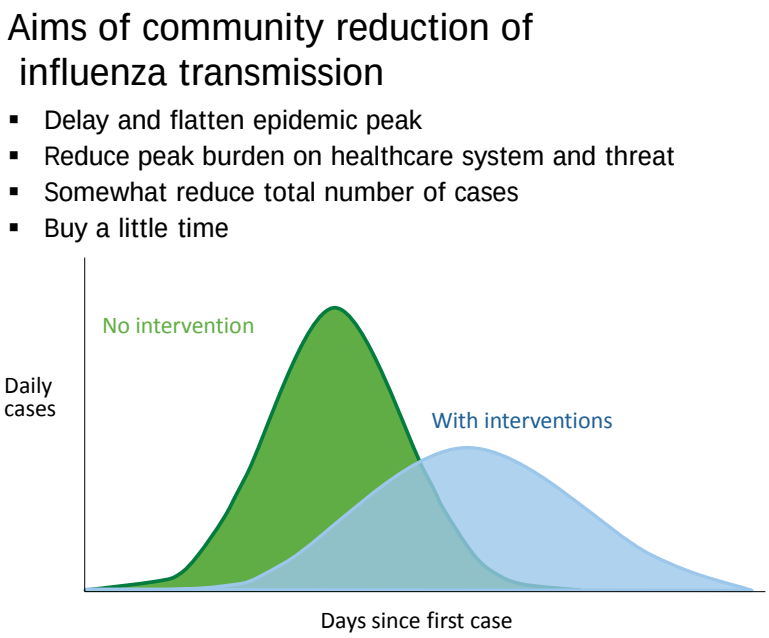
WHO and ECDC have been working with European Member States to develop procedures and 'mock-up protocols' for component 2, the early assessment process, and it was planned that these will be tested for acceptability in exercises and field tested in the 2009–2010 influenza season. The emergence of the novel influenza A(H1N1) means that these procedures and protocols will be tested against a real pandemic strain. Methods of estimating influenza vaccine effectiveness (part of component 4) in Europe are being piloted. At the national level, it is important that authorities plan how they will undertake components 2 to 4, including working with academic bodies and staff, and resource them realistically during the pandemic itself.

3. Guide to public health measures to reduce the impact of influenza pandemics in Europe: 'The ECDC Menu'

(Published in June 2009, updated in October 2009)

Application of public health measures (see Summary tables on page 6) will, to some extent, reduce the number of people who are infected, need medical care and die during an influenza pandemic. They will probably also reduce the numbers affected by severe epidemics of seasonal influenza. By lowering, and perhaps delaying, the peak of a pandemic curve (Figure 3.1) the measures could also mitigate the secondary consequences of pandemics that result when many people fall sick at once, i.e. the impact of mass absenteeism on key functions such as delivering healthcare and maintaining food supplies, fuel distribution and utilities, etc. Public health measures may even delay the peak of the epidemic curve of a pandemic until nearer the time when a pandemic vaccine becomes available, thereby possibly also reducing the total numbers affected. In addition, theoretically, they may delay the peak until influenza transmission declines naturally in the summer months.

Figure 3.1 Objectives of applying public health measures during a pandemic



A range of measures have been suggested (see Summary tables), including personal actions, like hand-washing and mask-wearing, and pharmaceutical interventions such as antivirals, human avian influenza vaccines (also called pre-pandemic vaccines) and, late in the pandemic, specific vaccines, as well as community social distancing measures. It is thought by many that combinations of measures will be even more effective than single measures, so called 'defence in depth' or 'layered interventions'. Both modelling work and common sense suggest that early interventions will be more effective than waiting until a pandemic is well advanced.

It is hard to imagine that measures like those within the category of social distancing would not have some positive impact by reducing transmission of a human respiratory infection spreading from human to human via droplets and indirect contact. However, the evidence base supporting each individual measure is often weak. It is also unclear how a number of them will interact. Specifically, will the effect of social distancing measures be cumulative? In some cases this lack of clarity is due to a lack of research. More often it is because the measures are hard to evaluate with any experimental approach and when measures have been implemented in real situations they have been used in combination. Hence the absolute positive effect and relative strengths of different measures are extremely hard to judge. Also, the strength of effect could quite reasonably vary with the characteristics of the pandemic. For example, interventions targeting children might have been quite effective during the 1957 pandemic where transmission in younger age groups seems to have been especially important, but they would have been less effective during the 1918–19 and 1968 pandemics. Hence it will not be possible to have fixed plans that fit every pandemic. Furthermore, the effectiveness, feasibility and costs of social distancing measures will presumably vary among European countries or even within countries (for example, dense urban areas compared with rural areas).

The experience of previous pandemics and related events like SARS shows that to some extent public health measures are applied according to local customs and practice. In the United States during the 1918–19 pandemic these were organised and often proactive, while in Europe during pandemics and during SARS they were more often reactive.

Hence there are good arguments for the existence of default plans (plans that have been tested during exercises to be implemented in the absence of other information). Indeed, there is WHO guidance to that effect and many European countries have been developing plans. However, given the above considerations, these plans should have considerable flexibility and command and control structures that will allow changes to be made quickly in the light of new data and experience.

All public health measures have costs and many also have secondary effects. The secondary effects of most measures can be considerable and many will require careful consideration. The more drastic societal measures that have been suggested (e.g. proactive school closures and travel restrictions) have significant costs and consequences that will themselves vary by their setting. These are also difficult to sustain. Hence, for ordinary seasonal influenza or a mild pandemic, their application, and especially their early application, could be more damaging than just allowing the infection to run its course and treating those with more severe illness.

Some of the measures are relatively straightforward to implement and are already recommended for even mild seasonal influenza (e.g. regular hand-washing and early self-isolation when developing a febrile illness). These also have the advantage of empowering individuals and giving them useful advice at a difficult and worrying time. Others are going to be difficult to implement or are too costly (e.g. timely mass use of antivirals by those becoming sick) and others are potentially highly disruptive to societal functions and difficult to sustain (e.g. border closures, internal transport restrictions). Therefore, all the measures require planning, preparation and practice.

The point about costly and disruptive measures is crucial. During a pandemic with lesser severe disease and of fewer falling sick, such as those seen in 1957 and 1968, some possible community measures (proactive school closures, home working, etc.), though probably reducing transmission, can be more costly and disruptive than the effects of the pandemic itself. Hence such measures may only have a net benefit if implemented during a severe pandemic, for example one that results in high hospitalisation rates or has a case fatality rate comparable to that of the 1918–19 ‘Spanish flu’.

For these reasons, early assessment of the clinical severity of a pandemic globally and in European settings will be crucial. Though early implementation of measures is logical, application of the more disruptive interventions too early will be costly and may make them hard to sustain.

A number of European countries are now considering their policy options for these measures. Because of Europe’s diversity, no single combination of measures will suit every European setting: one size will not fit all. However, common discussions on the measures will be helpful and make for a more efficient decision-making process. Further, some countries have already undertaken considerable relevant scientific work, some of which this document draws upon, but which all European countries could benefit from along with thinking from other countries.

Purpose

In the light of the above considerations, and given that ECDC’s mandate is to give scientific advice rather than prescribe actions, the intention with this document is to present a menu of possible measures, giving public health and scientific information on what is known or can be said about their likely effectiveness, costs (direct and indirect), acceptability, public expectations and other more practical considerations. This is to help European Member States and EU institutions, individually or collectively, decide which measures they will apply. That said, there are some measures that are either so self-evident or so ineffective that simply laying out the evidence should make for easy policy decisions.

Audience

The primary intended audience is those who develop policy and decision-makers, though secondary audiences are all those concerned with influenza, the public and the media. The understanding by the media of the measures and their limitations will be crucial to their successful application in a pandemic.

Scope

This document applies when the pandemic is spreading in Europe in WHO phases 5 or 6 of a pandemic and also when there are epidemics of seasonal influenza. It does not address the different circumstances of phase 4, the unique needs of the first emergence of a putative pandemic strain (the WHO Rapid Containment Strategy), nor

the complex planning and policy issues that arise over how to sustain key services during a pandemic (so-called business continuity planning for a pandemic). The latter is, in any case, outside the remit of ECDC.

The document should be read along with previous guidance that ECDC has published on personal protective measures. This is summarised in the text and tables. Relevant scientific guidance concerning human avian influenza (pre-pandemic) H5N1 vaccines has been published and is referenced within the text. The guidance should be read with the 2005 WHO guidance and the new WHO Guidance on countermeasures (published in 2009).

Please note that this is an interim guidance as there will be further research findings and it is possible that new countermeasures will emerge. Therefore the menu will continue to be updated at intervals.

Summary tables Characteristics of potential interventions to reduce transmission during phase 6 of a pandemic/severe epidemic of seasonal influenza

International travel (border closures, entry restrictions, travel advice)

Intervention	Quality of evidence[1]	Effectiveness (benefits)	Direct costs	Indirect costs and risks[2]	Acceptability in Europe	Practicalities and other issues
1. Travel advice	B	Minimal	Small	Massive	Good	International travel will probably decline massively anyway
2. Entry screening	B, Bm	Minimal	Large	Large	May be expected by resident population	International travel will probably decline anyway
3. Border closures or severe travel restrictions	B, Bm	Minimal unless almost complete	Massive	Massive	Variable but may be expected by some in the resident populations	International travel will probably decline anyway

Personal protective measures

Intervention	Quality of evidence	Effectiveness (benefits)	Direct costs	Indirect costs and risks	Acceptability in Europe	Practicalities and other issues
4. Regular hand-washing	B	Probably reduces transmission	Small	Nil	Good, but compliance is unknown	Moderate[3]
5. Good respiratory hygiene (use & disposal of tissues)	B	Unknown but presumed	Small	Small	Good, but compliance is unknown	Small
6. General mask-wearing outside the home	C, Cm	Unknown	Massive	Small	Unknown but little culture of mask-wearing in most countries	Massive – difficulties of training, supply and types of masks, disposal and waste. May be perverse effects from misuse and re-use

[1] Evidence of effectiveness: A, B and C represent strongly, reasonably and poorly evidence-based recommendations, respectively.
Grade A: Systematic reviews where there are diverse primary studies to draw from (not primarily modelling), well-designed epidemiologic studies or especially experimental studies (randomised controlled trials).
Grade B: Represents evidence based on well-designed epidemiologic studies, substantial observational studies or experimental studies with 5 to 50 subjects, or experimental studies with other limitations (not having influenza as an endpoint, for example). The code Bm indicates modelling work, with emphasis on studies that have good quality primary data available. Hence quality can be both Bm & C.
Grade C: Represents evidence based on case reports, small poorly controlled observational studies, poorly substantiated larger studies, application of knowledge of mode of transmission, infectiousness period etc. Cm refers to modelling with few or poor quality primary data.

[2] Sometimes called second order and third order effects – e.g. closing borders resulting in disruption of trade and movement of essential supplies and workers.

[3] Need to make frequent hand-washing far more available in daily settings, e.g. in public places, fast-food outlets, etc.

Intervention	Quality of evidence	Effectiveness (benefits)	Direct costs	Indirect costs and risks	Acceptability in Europe	Practicalities and other issues
7. Mask-wearing in healthcare settings[4]	C	Unknown	Moderate	Small	Generally practiced extensively already	Moderate – difficulties of training, defining high risk situations, supply and types of mask, especially respirators
8. Mask-wearing in other high risk situations[5]	C	Unknown	Moderate	Small	Unknown but makes sense	Moderate – difficulties of training, defining high risk situations, supply and types of mask
9. Mask-wearing by those with respiratory infections	C	Unknown but presumed	Moderate	May permit those ill and infectious to still circulate and infect others	Unknown but makes sense. Extends current hospital advice into home and public settings.	Difficulties in defining those who should comply and supplying the masks. Also compliance for those with restricted breathing due to respiratory infection
10. Early self-isolation of ill people[6]	C	Unknown but presumed	Moderate	Moderate[7]. Increased risk to carers and they will be off work	Already standard advice in many countries	Need to train and equip home carers, who will be at risk. Issue of compensation for lost wages and agreement of employers
11. Quarantine[8]	C	Unknown	Massive	Massive, due to lost productivity	Unclear	Very hard to make work equitably and issue of compensation for lost wages

Social distancing measures

Intervention	Quality of evidence	Effectiveness (benefits)	Direct costs	Indirect costs and risks	Acceptability in Europe	Practicalities
12. Internal travel restrictions	Cm, C	Minor delaying effect suggested	Major	Massive, including social disruption[9]	Unknown	Key functions threatened. Issue of liability and legal basis[10]
13. Reactive school closures	Bm, C	May have greater effect than other social distancing	Moderate	Massive, because of children needing to be cared for at home[11]	Unknown, it does not happen often in Europe	Children out of school need to be kept away from other children. Issue of liability and legal basis [10, 12] Difficulties of timing, sustainability and re-opening

[4] Persons having face-to-face contact with many members of the public.

[5] Persons having face-to-face contact with many members of the public, in crowded travel settings.

[6] Usually in the home of a person who is starting to feel unwell and feverish.

[7] Person requires care at home and they and their carers are off work.

[8] Isolation at home for some days of apparently healthy people considered to have been exposed to infection.

[9] An advantage of this and some other interventions is that it brings forward in a planned way what will probably happen anyway with time.

[10] Issue of who provides compensation if there is economic loss because of public (government) action.

[11] Child requires care at home and their carers are off work.

[12] Interventions targeted at children often assume they play an especially significant role in transmission, which may not be the case in every pandemic.

Intervention	Quality of evidence	Effectiveness (benefits)	Direct costs	Indirect costs and risks	Acceptability in Europe	Practicalities
14. Proactive school closures	Bm, C	May have greater effect than other social distancing and be better than reactive	Moderate	As above[11]	As above	As above, but even more difficulties of timing (may close to early), sustainability and re-opening[10,12]
15. Reactive workplace closures	Cm	Unknown[9]	Major	Major	Unknown compensation issue crucial[10]	Issue of liability, compensation and legal basis, also sustainability & re-opening. Not possible for key functions[13]
16. Home working and reducing meetings	Cm,C	Unknown	Moderate	Moderate	Likely to be acceptable	Less possible for key functions[13]
17. Cancelling public gatherings, international events, etc.	C	Unknown	Massive[10]	Massive[10]	Probably depends on compensation issue and if insurance applies[9]. May be expected by the public	Issue of liability and legal backing. Difficult to define what is a public gathering or an international meeting, and when to lift bans

Use of antivirals: early treatment

Intervention	Quality of evidence	Effectiveness (benefits)	Direct costs	Indirect costs and risks	Acceptability in Europe	Practicalities
18. All those with symptoms	A (transmission and duration of illness only), Bm	Expected to be moderate but evidence on this is weak[14]	Massive	Moderate	Expected by the public in most of the countries	Considerable logistical costs and difficulties in deciding who has influenza, delivering to all those who might benefit in a timely manner (under 24 or 48 hours) and managing stocks equitably[15]
19. Health and social care or exposed key workers	A	Small[15]	Major	Small	Considered part of staff protection and important for staff staying at work	Difficulties in defining who are health workers or exposed key workers[15]

Use of antivirals: prophylaxis following a case

Intervention	Quality of evidence	Effectiveness (benefits)	Direct costs	Indirect costs and risks	Acceptability in Europe	Practicalities
20. Family	B, Bm	Moderate	Massive	Moderate	Probably acceptable	Difficulties about case finding, defining families, speed of delivery, security and handling of stockpiles[16]
21. Family and social contacts	B, Bm	Moderate	Massive+	Moderate	Unknown but problem of people seemingly denied treatment	As above, with problems of defining group boundaries

[13] There is a complex process of distinguishing what are and are not *key functions*, which is important but beyond the scope of this document.

[14] The evidence from trials is that, with seasonal influenza, early treatment reduces duration of illness by one or two days and also reduces transmission. Estimates of the positive effect on hospitalisation and mortality are observational, limited and far weaker.

[15] There are a series of major practical problems, deciding who has influenza, how to deliver the antivirals, etc.

[16] There is a need to consider how early reports of plausible side effects will be quickly and effectively investigated.

Intervention	Quality of evidence	Effectiveness (benefits)	Direct costs	Indirect costs and risks	Acceptability in Europe	Practicalities
22. Family and geographical contacts	B, Bm	Moderate	Massive+	Moderate	Unknown but problem of people seemingly denied treatment	As above, with even more problems of defining group boundaries

Use of antivirals: continuous prophylaxis

Intervention	Quality of evidence	Effectiveness (benefits)	Direct costs	Indirect costs and risks	Acceptability in Europe	Practicalities
23. Health or social care or key workers	C	Moderate	Massive	Moderate	Unclear – health workers may not use them at all, or not stay on them	Difficulties in defining who are health workers or key workers. Issue of how long can keep offering antivirals

Vaccines: human avian influenza vaccine[16]

Intervention	Quality of evidence	Effectiveness (benefits)	Direct costs	Indirect costs and risks	Acceptability in Europe	Practicalities
24. Whole population	B, Bm	Unclear depends on antigenic type of pandemic[17]	Massive	Major[16,18]	Unknown[19]	Issues over which groups should be prioritised
25. Health or social care workers or key workers	B, Bm	As above	Massive	As above	As above, plus unclear that these groups will accept	Difficulties in defining who are health workers or key workers
26. Children vaccinated first	B, Bm	As above	Massive	As above	Unclear whether parents will accept, especially if disease is milder in children and benefit is for others. Safety profile not well established[20].	Needs pre-planning

Vaccines: specific pandemic vaccine

Intervention	Quality of evidence	Effectiveness (benefits)	Direct costs	Indirect costs and risks	Acceptability in Europe	Practicalities
27. Pandemic vaccine	B, Bm	Minimal in first wave	Massive and requires prior investment	Small	Probably highly acceptable[20]	Difficulty of deciding on initial priority groups[16]

[17] Assumes that the next pandemic is based on an H5 antigen. Benefit can be inferred from experimental serological responses however observational data and trials against the pandemic strain cannot be done before transmission starts and Phase 3. Trials may then be considered unethical.

[18] Financial risk that the next pandemic involves an antigenic strain not the current highly pathogenic avian influenza (A/H5).

[19] No country has ever tried to offer vaccination with such a low expected efficacy vaccine to its population, hence major communication challenges.

[20] There is a need to consider how early reports of plausible side effects will be quickly and effectively investigated.

4. Migrant health series: Access to HIV prevention, treatment and care for migrant populations in EU/EEA countries

(Published in July 2009)

This report summarises the findings of a review of access to HIV prevention, treatment and care among migrants in the European Union (EU) conducted between May and September 2008. The review was commissioned by the European Centre for Disease Prevention and Control (ECDC) to be part of a wider series of reports on migration and infectious diseases in the EU.

Based on information gathered through a survey of respondents in the 27 EU Member States and three European Economic Area (EEA) countries and through a literature review, this report aims to provide an overview of the current situation and material for future policy, research and services aiming at improving access of migrant populations to HIV services. Approximately two thirds of the respondents represented non-government organisations (NGOs), and the remaining third were representatives from governmental organisations. Findings and suggested actions, therefore, do not necessarily represent the views of EU national governments.

Section 1 briefly describes the review background and methodology. Section 2 highlights the main findings about migrants and HIV, focusing on factors that increase their HIV vulnerability and that prevent them from accessing prevention, treatment and care services, and on the way in which the EU and Member States are responding to the HIV needs of migrants. Section 3 considers the way forward, summarising challenges and actions suggested by respondents to improve access to HIV services for migrants in the EU. The following summarises key findings, challenges and suggested actions.

Key findings

- The EU has taken important steps to address migration and health in general and migration and HIV specifically. The *Dublin Declaration on Partnership to Fight HIV/AIDS in Europe and Central Asia* in 2004, and subsequent declarations, put HIV higher on the European agenda. The Lisbon Conference and follow-up meetings and reports in 2007 drew attention to the issue of migration, health and HIV. Both have influenced EU political commitment, which is reflected in policy and legal instruments intended to ensure that migrants have access to healthcare, including HIV prevention, treatment and care services. However, there is significant diversity within the EU Member States regarding policy and legal frameworks and HIV prevention, treatment and care services for migrants.
- The most relevant migrant populations in terms of HIV originate from Sub-Saharan Africa, Eastern Europe and Asia and, in some specific European countries, from Latin America and the Caribbean. Important sub-populations are asylum seekers and refugees, undocumented migrants, sex workers and men who have sex with men. Language barriers, marginalisation and social exclusion, and legal obstacles were reported as the most common factors contributing to the HIV vulnerability of migrants. Cultural attitudes, religion, fear of discrimination and low HIV knowledge in migrant communities were also cited.
- Factors that prevent migrants from accessing services relate to policies and laws, service delivery, migrant communities themselves and wider society. Policies to disperse migrants within countries were reported to limit access to prevention and treatment services. Legal status – lack of residence status and health insurance – was mentioned most often as a barrier to HIV treatment, in particular by respondents in new EU Member States. Lack of culturally sensitive information in relevant languages, suitably trained professionals and services tailored to the specific needs of migrants were barriers in all three areas of services. Within migrant communities, culture, religion, fear of discrimination and limited knowledge of available services prevent access to services. Within the wider society, stigma and discrimination towards migrants prevent access to prevention and care services in particular; the social circumstances of migrants were cited as a specific barrier to accessing treatment.
- Almost all countries report HIV interventions targeting migrant communities and sub-populations. Some countries, in particular those with a longer history of migration, provide a wide range of services through government agencies, NGOs and community organisations. In others, few if any services exist. Migrant communities are involved in the implementation of interventions in most countries but, with a few notable exceptions, their involvement in policy is limited. However, the issue of migration and HIV was reported by respondents as a low priority in a large proportion of the 30 participating countries. Higher priority is given in countries where HIV prevalence in migrant populations is relatively high.

Key challenges

- Policy and legal frameworks are a challenge to the provision of HIV services to migrants. Inconsistencies between health and immigration policies may be counterproductive to public health. The access to HIV treatment for undocumented and uninsured migrants is a key area of concern. A related challenge is the lack of a clear and consistent legal framework for migrants' rights with respect to healthcare.
- Information gaps are also a challenge. Lack of standardisation in data collection across countries makes it difficult to compare the situation of migrants within the EU. Despite the considerable amount of research that has been conducted, there are gaps in information, for example, about migration and HIV in the new EU Member States; about HIV risk behaviours, health and HIV needs of migrants; and the impact of culture and religion on health beliefs, attitudes and health-seeking behaviour within migrant communities.
- At service delivery level, legal, administrative and cultural barriers to access still need to be addressed in some countries. Ensuring that government agencies' and NGOs' community-based prevention and care interventions receive adequate and sustainable funding is also a challenge.
- Comprehensive action to tackle negative social attitudes towards migrants, exacerbated by unhelpful media reporting, and initiatives to meet the wider social, economic and legal needs of migrants, is a challenge, as this requires joint efforts between policymakers, health and social care professionals and civil society.

Key suggested actions

- For the collection of accurate and comparable surveillance data and the development of consistent and appropriate policies and interventions, a shared EU-wide definition of 'migrant' is needed. Respondents also suggested specific actions at both European and national levels in the areas of policy, funding, research, networking and services.
- Clear policy and legal frameworks to protect the rights of migrants, in particular undocumented and uninsured migrants, to HIV care were suggested as a priority at European and national levels. Other actions suggested included addressing policy inconsistencies, sensitising policymakers on issues related to HIV and migration, and increasing migrant community involvement in policy processes. Funding for European networks and projects working on migration and HIV issues and for NGOs providing HIV services for migrant populations was also highlighted as a priority action.
- Several areas of research were proposed. At the European level, studies to improve understanding of migration patterns, of the impact of European laws and policies on treatment access and evaluations of the costs and benefits of universal access to treatment, and of the impact of interventions were suggested among other actions. At the national level, improved epidemiological information, better understanding of migrant communities – including HIV-related knowledge, attitudes and behaviours and the role of culture and religion – and analysis of the impact of legal regulations and of the effectiveness of interventions for migrant populations were suggested.
- Priority networking actions proposed included EU support for a European-wide network of organisations working on migration and HIV and other mechanisms to share resources, experience and good practice, and stronger links and cooperation between associations of healthcare and social care professionals, migrant and human rights organisations at EU and national levels.
- With respect to service delivery, most respondents highlighted the need for culturally appropriate materials and interventions, related training for health and community workers, and greater involvement of migrant communities in service delivery. Community approaches to HIV testing, such as outreach, and comprehensive approaches to treatment and care, together with increased efforts to inform migrant communities about available services, were suggested to improve coverage and uptake of services.

5. Migrant health series: Epidemiology of HIV and AIDS in migrant communities and ethnic minorities in EU/EEA countries

(Published in July 2009)

Background, justification and objective

The global HIV/AIDS pandemic reflects the gross socio-economic and health inequalities between industrialised and non-industrialised countries. UNAIDS estimates that 33 million people were living with HIV/AIDS (PLWHA) in 2007; more than 96% of new HIV infections took place in low- and middle-income countries. Of all PLWHA, 22.5 million live in Sub-Saharan Africa (SSA), where adult HIV prevalence is 5%, considerably higher than the 0.8% world estimate. The Caribbean, with 1% prevalence, is the second most affected area and Eastern Europe, with 0.9% prevalence, ranks third.

According to International Organization for Migration (IOM), approximately 192 million people (3% of the world's population) were international migrants in 2006, of which 95 million were women. The United Nations defines as international migrant anyone who changes their country of usual residence. The most common reason to migrate is to seek economic improvement, thus the majority of migrants travel from developing to developed countries. The countries from where the largest numbers of migrants originated in 2006 were China, India and the Philippines, whereas USA, Russia, Germany, Ukraine and France were the top five countries receiving migrants. The EU, one of the wealthiest areas of the world, has received 64 million (8.8%) migrants, with substantial heterogeneity among countries. The EU is also proud of being one the regions of the world with the longest tradition of respect for human rights. However, as in many regions of the world, migrants living in the EU face severe integration problems. Migration and social exclusion make migrants highly vulnerable to HIV/AIDS and their related complications.

The HIV epidemic is a major public health problem in the EU; the number of HIV infections has not ceased to increase since HIV reporting mechanisms came in place around 1999. The predominant transmission route is heterosexual (53% of new HIV reports in 2006), followed by men who have sex with men (MSM) (37%) and by injecting drug users (IDU) (9%). It is worth highlighting 204 cases of HIV infection through mother-to-child transmission (MTCT) reported in 2006. Health inequalities, including those by migrant status, should be monitored to develop appropriate responses. Since 2000, former EuroHIV collects information about the geographical origin of reports. A substantial and increasing proportion of AIDS and HIV reports acquired through heterosexual intercourse are people with a different geographical origin from that of the country of report, largely from SSA. However, other groups of migrants may also be disproportionately affected by HIV/AIDS though data on these groups are lacking. The absolute and relative contribution of migrants to national HIV epidemics is heterogeneous across the EU and depends on migration patterns, colonial history, state of HIV epidemics in countries of origin and destination, and on health and social responses. Since early days in the epidemic it became clear that ensuring the rights of PLWHA was one of the main issues; it was unquestionable that science, human rights and a public health approach were keys elements for that.

In 2007, the Portuguese Presidency of the EU chose as its main theme the issue of migration and health. In the Council conclusions adopted in December 2007, ECDC was called upon to deliver a report on migration and infectious diseases. As a response to this call, ECDC initiated a series of reports that will form the ECDC Report on Migration and Infectious Diseases in the EU. The objectives of the current report, Epidemiology of HIV and AIDS in migrant communities and ethnic minorities, were to determine the burden of HIV infection in migrant populations and its contribution to the epidemiology of HIV in the period 1999–2006.

Methodology

Data from ECDC/former EuroHIV were used, globally and for each country, and absolute numbers and percentages of cases of AIDS and HIV were examined by geographical origin and year (1999–2006), stratified by sex and transmission categories. When information was not available at ECDC, key informants were contacted directly. The number of registered migrants by sex and year was obtained from public European databases, Eurostat, and National Statistics Offices in each of the participating countries, either consulting their web pages or writing to them directly.

Results

In 2006 6 746 AIDS cases were reported in the EU 27 countries plus Norway and Iceland. The largest number of migrants was observed among heterosexually transmitted cases; of those with known geographical origin, 1 373

(50%) were from a country different to that reporting the case, 77% from SSA. Of 57 AIDS cases due to MTCT with known geographical origin, 23% were from SSA. Also, close to 20% of AIDS cases in MSM were migrants; the commonest origins were Latin America (LA) (106) and other Western European (WE) countries (52). Among 1 545 cases in IDU, 7% were migrants, largely from WE and North Africa & Middle East. The number of AIDS cases in the region has experienced a 42% decline from 1999–2006 in natives and migrants from WE. Rising numbers of AIDS cases in 1999–2006 are observed in migrants from Eastern Europe (EE) (by 200%), SSA (by 89%) and LA (by 50%). AIDS cases are much more common in men than in women in the EU, though the male/female ratio is decreasing. Therefore, although the absolute numbers of men and women from SSA among AIDS cases reported in 2006 were 602 and 623 respectively, their proportions within the number of AIDS cases in males and females were 12% and 33%, respectively.

In 2006 26 712 HIV infections were reported in the EU27 plus Norway and Iceland, of which 29% did not record geographical origin. The largest number of migrants, both in absolute and relative terms, was observed among heterosexually transmitted cases. Of people with known geographical origin, 65% of the 8 354 HIV infections were from a country different to that reporting the case, of which the vast majority (5 046) were from SSA. Of 169 cases of HIV with known geographical origin due to MTCT, 41% were from SSA. Also, 18% of the 5 048 HIV infections with known geographical origin in MSM were migrants and the commonest regions were LA (215) and WE (247). Among 1 590 HIV infections in IDU with known geographical origin, 86% were native and 14% migrants, largely from WE (63) and EE (64). The number of HIV infections reported in Europe has experienced a marked increase in 1999–2006, both in natives and in migrants. This increase has to be interpreted in the context of the implementation of HIV reporting in the EU, which is not yet complete.

HIV infections in the EU are globally much more common in men than in women, though male/female ratio is going down. The absolute numbers of men and women from SSA among HIV infections reported in 2006 were 1 764 and 2 989, respectively. Given that the total numbers of HIV infections in native men and women were 7 891 and 2 028, respectively, the ratio between SSA and native men was 0.1 and SSA and native women was 1.5. The number of HIV reports in women from SSA exceeds by close to 1 000 infections that of native women, though 2 910 HIV infections in females have unknown geographical origin. The number of women from SSA exceeds by over 1 000 that of SSA men. After SSA, men from WE account for the largest group (539), followed by LA (456). The most common countries of origin of HIV infections in female migrants, excluding SSA, differed from that of the men's, as women from South-East Asia and Caribbean accounted for 179 and 161 infections, respectively, while women from WE and EE and LA accounted for 85 and 111 cases each.

There is a huge heterogeneity between countries with regard to the proportion of migrants among the HIV infection cases. Among countries with HIV incidence below 20 cases per million, largely Central Europe, the contribution of migrants to the epidemic is low. For countries with HIV incidence between 21–49 cases per million, except for Lithuania, the proportion of migrants among HIV reported cases from 2006 is over 40%. Given the different populations sizes, numbers vary from 24 cases of HIV infection diagnosed in migrants in Cyprus to 258 diagnosed in Sweden. For countries with HIV incidence of 50–99 cases per million, except for Greece, the proportion of migrants among HIV reported cases is 40% in the Netherlands and Germany, close to 60% in Norway, around 65% in Ireland and France, and 70% in Belgium. In countries with HIV incidence of 100–199 cases per million, the proportion of migrants among reported HIV infections is around 30% in Austria, 71% in the UK, and as high as 80% in Luxembourg. In Portugal, the country with the highest HIV incidence in the EU, the proportion of migrants among HIV reports is approximately 20%.

In the period 1999–2006 16 222 tuberculosis (TB) cases were reported as initial AIDS-defining condition (ADC), of which 8 028 were diagnosed in migrants, 3 883 from SSA and 2 684 of unknown origin. There was a wide heterogeneity in the proportion of TB as ADC by geographical origin. The lower proportions were seen in North Americans (8%) and native people (16%), and the highest in SSA (40%), EE (40%), South-East Asia (32%), and LA (30%).

Of the approximate 495 million people registered with the National Population Offices of the 27 EU countries plus Norway, Iceland and Liechtenstein, around 32.5 millions (6.5%) are registered as non-nationals. Information on the nationality of these people is available for the 30 countries of this study except for Bulgaria, Estonia, France and Luxembourg. Of these 32.5 million registered migrants, half are from Europe (6.5 million are from WE, 7.4 from Central Europe, 2.3 million from EE), followed by LA (2.31 million) and the Caribbean (261 000), South and South-East Asia (2.25 million), North-Africa and the Middle East (2.19 million), and SSA (1.32 million).

Discussion and limitations

Migrant populations, largely people from SSA, represent a considerable and growing proportion of cases of both AIDS and HIV infection reported in the EU 27 countries plus Norway and Iceland during 1999–2006. Although the proportion of migrants from SSA among heterosexual and MTCT reported cases are very high, a significant percentage of diagnoses in MSM is also related to migrants, largely from WE and LA and the Caribbean,

highlighting the need to acknowledge the sexual diversity of migrants living with HIV/AIDS. The contribution of migrant populations to the AIDS and HIV epidemic is notably higher among female reports, highlighting the feminisation of the HIV/AIDS migrant epidemic in the EU. The reasons for female vulnerability to HIV infection have both social and biological bases. These figures call for action in gender-specific HIV prevention and treatment policies on national level. Closely linked to the high burden of HIV infection in women from SSA is the very high proportion of migrants from SSA among MTCT HIV reports in EU. While the decrease in perinatal HIV infections in the EU represent an important achievement in public health, substantial challenges remain, particularly among migrant mothers.

There is an enormous diversity in the proportion of migrants with HIV infection in the different countries. For countries in EE and for some from Central Europe, this proportion is below 10% while for most Northern countries it is over 40%. For most countries in Western Europe, the proportion of migrants among those infected by HIV is between 20% and 40%. This pattern is consistent with migratory trends as the countries where the proportion of migrants among HIV cases is higher are also the countries where the proportion of migrants in the general population is also higher, largely driven by past colonial history and recent socio-economic and demographic imbalances. There is also a substantial and worrying proportion of cases whose geographical origin is unknown, particularly in the UK, France, Belgium and Germany.

The present data does not allow distinguishing between HIV infections acquired in the EU or abroad. Other reports suggest that most HIV infections in people from SSA are likely to have occurred in the countries of origin, by comparing the average duration of stay in Europe with the value of the CD4 cell count at HIV diagnosis. However, there is also evidence that people of SSA origin are becoming infected by HIV in EU countries. For other geographical origins, little data are available on where the infection took place, though for migrant injecting drug users evidence would favour their acquiring HIV in Europe. While discussing the country of probable infection is extremely controversial – as it has, unfortunately, given rise to overtly racist reactions – understanding where the HIV infection and the development of AIDS took place has important implications from a public health perspective: it may represent failure in primary HIV prevention, secondary HIV prevention, or both.

Late HIV diagnosis is a big problem in the EU and USA and the data suggest that this problem is even greater for the HIV-positive migrant population of non-Western origin. The number of AIDS cases reported in most EU countries has experienced a marked decline from the mid-1990s onwards, which has been largely attributed to the population impact of including having access to highly active antiretroviral treatment (HAART). However, for most migrants this decline is not observed, reflecting late diagnosis of HIV infection and poorer access and uptake of HAART, and may have a negative impact on the mortality of HIV positive migrant people in the EU. Furthermore, adequate treatment of HIV is also a strategy to prevent HIV transmission, given that people on HAART are less infectious. The approach treatment and prevention is also applicable to TB as prompt HIV testing would certainly decrease HIV-associated TB. As it has been well established, treatment of TB is equivalent to prevention of TB transmission and thus, of secondary cases.

Interpreting the contribution of migrants to the epidemiology of HIV in the region has limitations given the heterogeneity in the implementation of the HIV reporting systems and the poor completion of the variable 'geographical origin' in EU Member States. In fact, the very high proportion of missing values in this category is a caveat in the interpretation of figures calling for a reinforced HIV surveillance in the EU to assure the required quality standards

To conclude, the figures presented in this report are no surprise for those working in the field, especially when one examines the global HIV epidemiology and the global migration trends, both largely driven by global inequity. Controlling the HIV/AIDS epidemic should break down barriers to HIV prevention and treatment for migrants in the EU. The data provided and analysed in this report does confirm that failure of both primary and secondary HIV prevention is taking place and that decisive action is needed.

6. Mapping of HIV/STI behavioural surveillance in Europe

(Published in September 2009)

Background

The epidemics attributable to the human immunodeficiency virus (HIV) and to other sexually transmitted infections (STI) remain a significant public health problem in Europe. The European Centre for Disease Prevention and Control (ECDC) was established in 2005 with the objective of strengthening the capacity of the European Union (EU) to prevent and control infectious diseases, with HIV and other STI being among the priority diseases. Surveillance is an important task in this respect, and ECDC has a strong mandate to maintain and coordinate the databases for EU-wide surveillance of communicable diseases. Second generation surveillance (SGS) refers to surveillance that combines both the monitoring of biological (new cases of HIV/AIDS and STI) and behavioural indicators (e.g. sexual behaviour, use of protection). This approach is of importance both in informing policy development and in evaluating its outcome.

In 2008 ECDC tasked an international team of experts to produce an in-depth analysis of the current state of the art regarding behavioural surveillance programmes related to HIV and STI in European countries and to develop a proposal for a framework for the implementation of a key set of behavioural indicators related to HIV and STI in Europe. This report presents a mapping of behavioural surveillance systems related to HIV and STI in the EU Member States and in the European Free Trade Association (EFTA) countries. Surveillance is examined in the following populations: general population, youth, injecting drug users (IDU), men who have sex with men (MSM), people living with HIV/AIDS (PLWHA), sex workers, STI clinic clients, migrant and ethnic minorities.

Methods

A questionnaire set was sent to all EU and EFTA countries. This consisted of nine separate questionnaires: one on the national behavioural and second generation surveillance system as a whole, and one questionnaire for each specific population. In the questionnaire regarding the surveillance system as a whole, information was requested on the existence and definition of:

- a national or regional behavioural surveillance system;
- the functioning of the second generation system at national or regional level; and
- potential or experienced barriers to establishing sustainable second generation surveillance systems.

In the questionnaires regarding specific populations, it was first asked whether a surveillance system was in place for this population and information was then requested on the existence of behavioural surveys (or other types of data collection) conducted in the different populations of interest since 1985, regarding:

- the methodology used in each survey or data collection system;
- the main indicators currently followed; and
- related publications.

The questionnaire was sent by email to the contact points for HIV surveillance in each country; these persons had the possibility of arranging to have each population specific questionnaire completed by the relevant specialists in that country. The responsible persons then collected the questionnaires and sent them back for analysis by the expert team. A draft report was discussed in the Behavioural Surveillance Expert Meeting in Montreux (Switzerland) in February 2009, and was also sent for validation to the contact points for HIV surveillance in each country, who had initially collated the questionnaires for their country.

Results

Twenty-eight of the 31 countries surveyed completed and returned the questionnaire set (non-respondents: Bulgaria, Romania and Portugal). The mapping of behavioural surveillance activities in EU/EFTA countries demonstrates considerable diversity across countries regarding the state of development of behavioural surveillance: 15 countries reported having an established HIV/STI behavioural surveillance system (Belgium, Cyprus, Denmark, Estonia, Finland, France, Germany, Latvia, Lithuania, Poland, Slovenia, Spain, Sweden, Switzerland and the United Kingdom), and one additional country (the Netherlands) reported established surveillance in several specific populations but no formal national overall behavioural surveillance system.

The degree of formalisation of behavioural surveillance in a 'system' is very unequal across the countries. Among the 16 countries reporting behavioural surveillance, only eight declared the existence of a document describing this system or formalising its existence. In many countries reporting a behavioural surveillance system, this system has been constructed progressively, with the addition of new populations surveyed over time, sometimes without a clear surveillance objective. In addition, in many countries, even in those with formalised behavioural

surveillance, there is often no established regularity or routine in the timing of behavioural surveillance in the diverse populations. The organisation of behavioural surveillance also shows diversity: in countries with formalised behavioural surveillance, organisation and coordination is based in the Ministry of Health, a national health agency, or a university. In countries with less formalised systems, informal coordination occurs through a network of institutions: government agencies, universities, non-governmental organisations (NGOs), etc. As regards adequacy of the system (i.e. the type of population included in the surveillance), in many cases the identification and surveillance of at risk populations have not been done or are incomplete. The most surveyed populations are the general population and youth, MSM and IDU. Behavioural surveillance in sex workers and their clients, migrants and ethnic minorities, PLWHA and STI clinic patients is done only in a few countries.

As regards second generation surveillance systems, among the 16 countries reporting behavioural surveillance, 13 also report the existence of SGS, two others report SGS in one population only. Formal organisation of this system, with a management or coordinating body, is present in six countries.

For each of the populations considered, the countries that provided information on their priority indicators are less numerous than those having mentioned collecting information on the corresponding topics. This is probably due to the fact that only countries operating within a surveillance paradigm have made specific choices on indicators to be collected regularly and are in a situation to define them clearly. In terms of the topics generally monitored, the level of agreement on the priority topics is quite high across the populations; this may guide the choice of indicators common to countries and to populations surveyed. As great diversity still exists, a process of harmonisation of indicators, specific to each population, should be continued at the European level. In populations where behavioural surveillance is, or could be, conducted using service- or cohort-based sampling, preliminary discussions should be conducted with stakeholders with respect to the establishment of behavioural surveillance in such settings.

Where European consensus already exists, indicators already agreed upon should be proposed, and those chosen should be ‘translatable’ into internationally agreed indicators. Resulting from the overall analysis, core indicators, common to all populations, are proposed. These relate to the number of sexual partners, use of a condom at last intercourse, having had an HIV test, having paid for sex, and HIV knowledge. Core indicators should also address systematically level of education, nationality/ethnic origin and sexual orientation.

7. The bacterial challenge: time to react (ECDC/EMEA joint technical report)

(Published in September 2009)

Main findings

There is a gap between the burden of infections due to multidrug-resistant bacteria and the development of new antibiotics to tackle the problem.

- Resistance to antibiotics is high among Gram-positive and Gram-negative bacteria that cause serious infections in humans and reaches 25% or more in several EU Member States.
- Resistance is increasing in the EU among certain Gram-negative bacteria such as recently observed for *Escherichia coli*.
- Each year, about 25 000 patients die in the EU from an infection with the selected multidrug-resistant bacteria.
- Infections due to these selected multidrug-resistant bacteria in the EU result in extra healthcare costs and productivity losses of at least EUR 1.5 billion each year.
- Fifteen systemically administered antibacterial agents with a new mechanism of action or directed against a new bacterial target were identified as being under development with a potential to meet the challenge of multidrug resistance. Most of these were in early phases of development and were primarily developed against bacteria for which treatment options are already available.
- There is a particular lack of new agents with new targets or mechanisms of action against multidrug-resistant Gram-negative bacteria. Two such agents with new or possibly new targets and documented activity were identified, both in early phases of development.
- A European and global strategy to address this gap is urgently needed.

In 2007, the European Centre for Disease Prevention and Control (ECDC), the European Medicines Agency (EMEA) and the international network Action on Antibiotic Resistance (ReAct) entered into a discussion on the need to document the gap between the frequency of multidrug-resistant bacterial infections in the EU and the development of new antibiotics. As a result, an ECDC/EMEA Joint Working Group was established in 2008 to give an account of facts and figures that would allow reasonable predictions of the extent of the gap in the coming years.

The following antibiotic-resistant bacteria were selected because they frequently are responsible for bloodstream infections and because the associated antibiotic resistance trait is, in most cases, a marker for multiple resistance to antibiotics:

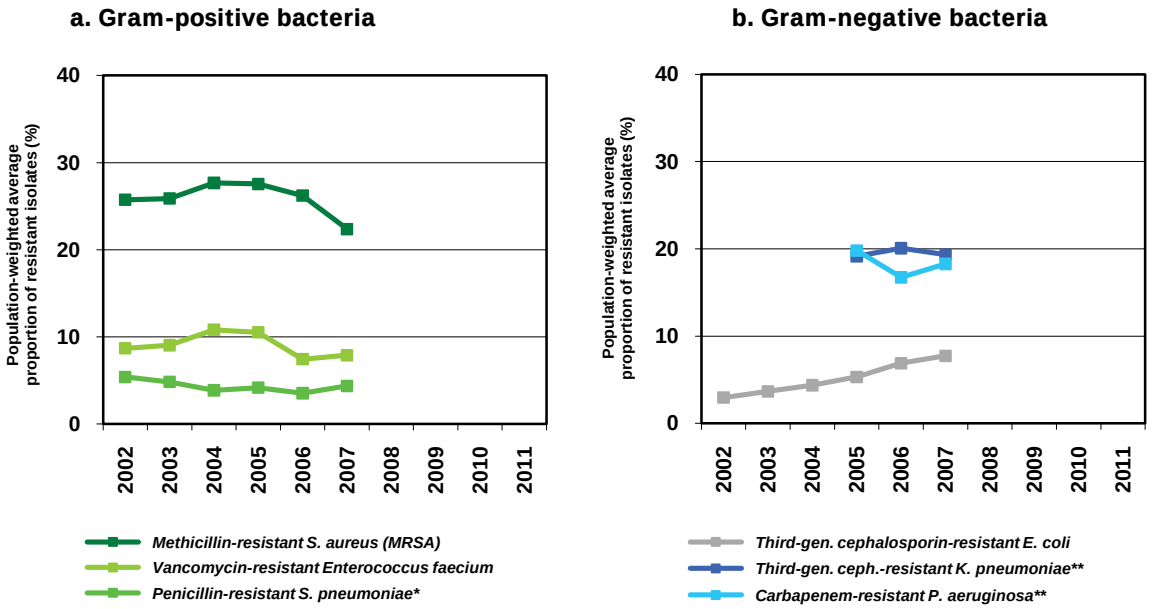
- *Staphylococcus aureus*, methicillin resistance (MRSA);
- *S. aureus*, vancomycin intermediate resistance and vancomycin resistance (VISA/VRSA);
- *Enterococcus* spp. (e.g. *Enterococcus faecium*), vancomycin resistance (VRE);
- *Streptococcus pneumoniae*, penicillin resistance (PRSP);
- Enterobacteriaceae (e.g. *Escherichia coli*, *Klebsiella pneumoniae*), third-generation cephalosporin resistance;
- Enterobacteriaceae (e.g. *K. pneumoniae*), carbapenem resistance; and
- Non-fermentative Gram-negative bacteria (e.g. *Pseudomonas aeruginosa*), carbapenem resistance.

Trends and burden of infections due to multidrug-resistant bacteria in the EU

Data on these selected antibiotic-resistant bacteria in invasive infections (mainly bloodstream infections) were available from the European Antimicrobial Resistance Surveillance System (EARSS) for EU Member States, Iceland and Norway for each year during the period 2002–2007.

The trends in the proportion of antibiotic-resistant isolates among blood isolates of the selected bacteria frequently responsible for bloodstream infections in Europe are shown in Figure 7.1.

Figure 7.1 Population-weighted, average proportion of resistant isolates among blood isolates of bacteria frequently responsible for bloodstream infections, EU Member States, Iceland and Norway, 2002–2007.



*** S. pneumoniae*: excluding Greece, which did not report data on this bacterium to EARSS.*
**** K. pneumoniae *and* P. aeruginosa*: excluding Belgium and Slovakia, which did not report data on these bacteria to EARSS.*

In 2007, the average proportion of *Staphylococcus aureus* blood isolates that showed resistance to methicillin (% MRSA) was the highest proportion of antibiotic-resistant isolates among the selected bacteria frequently responsible for bloodstream infections in the European Union. However, this proportion has been decreasing in recent years (Figure 7.1). This is due to decreasing MRSA trends in several Member States, likely due to action plans at national level as documented for France, Slovenia and United Kingdom. The average proportion of MRSA has reached a level close to that of the selected antibiotic-resistant Gram-negative bacteria.

The proportion of *S. aureus* blood isolates that showed intermediate resistance to vancomycin (VISA) was very low (less than 0.1%) in EU Member States, Iceland and Norway. No vancomycin-resistant *S. aureus* isolates were reported to EARSS in 2007 (data not presented on Figure 7.1).

In contrast, the average proportion of *Escherichia coli* – the most common Gram-negative bacteria responsible for infections in humans – blood isolates showing resistance to third-generation cephalosporins has been rising steadily.

At the same time, there is no sign of decreasing resistance to third-generation cephalosporins in *Klebsiella pneumoniae* or to carbapenems in *Pseudomonas aeruginosa* (Figure 7.1).

In 2007, the proportion of *K. pneumoniae* blood isolates from EU Member States, Iceland and Norway that showed resistance to carbapenems was, in general, very low (median = 0%) with the exception of Greece, where it reached 42% (data not presented on Figure 7.1).

The human and economic burden of antibiotic-resistant bacteria could only be estimated for the following five antibiotic-resistant bacteria: MRSA, vancomycin-resistant *Enterococcus faecium*, third-generation cephalosporin-resistant *E. coli* and *K. pneumoniae* and carbapenem-resistant *P. aeruginosa*.

The study confirmed that MRSA was the most common, single, multidrug-resistant bacterium in the European Union. However, the sum of cases of common, antibiotic-resistant Gram-positive bacteria (mostly MRSA and vancomycin-resistant *Enterococcus faecium*) was comparable to that of common, antibiotic-resistant Gram-negative bacteria (third-generation cephalosporin-resistant *E. coli* and *K. pneumoniae*, and carbapenem-resistant *P. aeruginosa*).

Overall, it was estimated that in 2007 approximately 25 000 patients died from an infection due to any of the selected five antibiotic-resistant bacteria in the European Union, Iceland and Norway. In addition, infections due to

any of the selected antibiotic-resistant bacteria resulted in approximately 2.5 million extra hospital days and extra in-hospital costs of more than EUR 900 million.

Subsequently, an estimate was made of loss of productivity due to these infections. Based on 2007 data, outpatient care costs were estimated at about EUR 10 million and productivity losses due to absence from work of infected patients were estimated at more than EUR 150 million, each year. Productivity losses due to patients who died from their infection were estimated at about EUR 450 million each year. Overall, societal costs of infections due to the selected antibiotic-resistant bacteria were estimated at about EUR 1.5 billion each year.

There are many reasons (e.g. limited range of included bacteria, outpatient infections not being considered, average cost of hospital care which does not take into account special patient care such as intensive care) to support a conclusion that these figures correspond to an underestimate of the human and economic burden of infections due to antibiotic-resistant bacteria.

Research and development pipeline of antibacterial agents

In order to assess the state of the antibacterial drug development pipeline, two commercial databases (Adis Insight R&D and Pharmaprojects) were queried for antibacterial agents in clinical development worldwide. It was decided not to perform an in-depth exploration of agents that had not yet reached clinical trials due to the high attrition rate during preclinical testing and the scarcity of data available for review.

Whenever possible, agents identified by the search were assessed for their antibacterial activity against the selected bacteria based on actual data available in the databases or in the literature. In the absence of actual in vitro data, reviewers also took into account reasonable assumptions of the activity of some agents based on the properties of similar agents (i.e. of the same class or with a common mechanism of action) in order to construct a 'best-case scenario'.

Additionally, for each agent, reviewers were requested to indicate whether it was of a new class or belonged to an existing class of antibiotics and to indicate whether it:

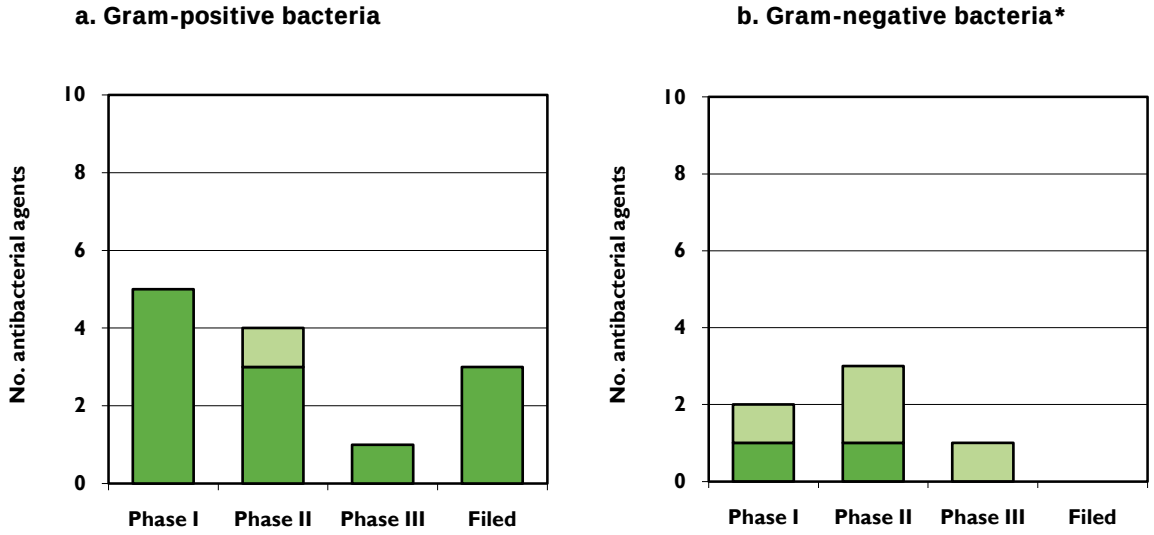
- acted on the same target and in the same way as that of at least one previously licensed antibacterial agent;
- acted through a known mechanism of action on a new target; or
- acted through a new mechanism of action.

The main results from this analysis were as follows:

- Of 167 agents identified by the searches, there were 90 antibacterial agents with in vitro activity in a best-case scenario (based on actual data or assumed based on class properties of mechanism of action) against at least one organism in the panel of bacteria selected for their public health importance.
- Of these 90 agents, 24 were new presentations of licensed antibacterial agents and 66 were new active substances.
- Of the 66 new active agents, only 27 were assessed as having either a new target or a new mechanism of action, thus potentially offering a benefit over existing antibiotics.
- Of these 27 agents, there were 15 that could be systemically administered.
- Of the 15 agents with systemic administration, eight were judged to have activity against at least one of the selected Gram-negative bacteria.
- Of the eight with activity against Gram-negative bacteria, four had activity based on actual data and four had assumed activity based on known class properties or mechanisms of action.
- Of the four with activity against Gram-negative bacteria based on actual data, two acted on new or possibly new targets and none via new mechanisms of action.

Figure 7.2 shows the information on these 15 antibacterial agents. Notably, only five of these agents had progressed to clinical trials to confirm clinical efficacy (Phase 3 or later of clinical development).

Figure 7.2 New systemic antibacterial agents with a new target or new mechanism of action and in vitro activity based on actual data (dark colour bars) or assumed in vitro activity based on class properties or mechanisms of action (light colour bars) against the selected bacteria (best-case scenario), by phase of development (n=15).



Note: In vitro activity based on actual data is depicted at the bottom of each column in darker colour. Assumed in vitro activity based on class properties or mechanisms of action (where applicable) is depicted in a lighter colour at the top of each column.

** Two carbapenems have been omitted from Figure 7.2b since they are no more active than earlier carbapenems against Gram-negative bacteria. The relative novelty of these agents was based on a better profile of activity against antibiotic-resistant Gram-positive bacteria and are therefore included in Figure 7.2a.*

The burden of bacterial resistance in the EU is already substantial and is likely to increase. Based on current data, it is expected that particular problems will arise in the coming years due to resistance among Gram-negative bacteria.

At the same time, there are very few antibacterial agents with new mechanisms of action under development to meet the challenge of multidrug resistance. There is a particular lack of new agents to treat infections due to multidrug-resistant Gram-negative bacteria.

This report has identified a gap between the burden of infections due to multidrug-resistant bacteria and the development of new antibacterial agents to tackle the problem. A European and global strategy to address the gap is urgently needed. Measures that spur drug development need to be put in place.

8. Effectiveness of behavioural and psychosocial HIV/STI prevention interventions for MSM in Europe

(Published in November 2009, amended in December 2009)

Background

In the absence of an effective and affordable vaccine and non-curative abilities of current antiretroviral therapies, behavioural and psychosocial prevention with the goal of limiting sexual risk behaviours remains central to the efforts to decrease sexual HIV/STI transmissions among men who have sex with men (MSM). Given programme planners' and policymakers' need for descriptions of specific interventions and quantitative estimates of intervention effects to make informed decisions concerning prevention funding and research, there is a need for a systematic review that updates the current knowledge base about HIV/STI preventive interventions targeted at MSM in Europe.

Objectives

The aims were to summarise and assess the effectiveness of HIV/STI prevention interventions for MSM living in Europe and to identify intervention characteristics associated with effectiveness, as well as potential gaps, in the evidence base.

Methods

A systematic search for relevant literature in eight international databases and in reference lists of relevant reviews and included studies was performed. Studies were selected according to pre-specified criteria and appraised for risk of bias. Results were summarised using tables and effect estimates for sexual behaviour outcomes were calculated.

Results

Results were drawn from data of six controlled studies, involving a total of 4 111 participants at entry from four different European countries. The results showed that there was 'high' or 'unclear' risk of bias in one or more of the assessed domains in all studies. The pooled effect estimate of the four interventions for which data were available suggested that MSM who participate in HIV/STI prevention initiatives may be somewhat less likely to report unprotected anal intercourse (UAI). The evidence base was insufficient to examine characteristics of interventions most closely associated with magnitude of effect. Very few study participants had a non-white background and only one study used biological measurement of STI as an index of change.

Discussion

Despite the maturity of the HIV epidemic, rigorous outcome evaluations of any form of behavioural HIV/STI intervention for MSM in Europe are far and few between. The results point to possible short-term effects of interventions in terms of reductions in the proportion of MSM who engage in UAI, but the paucity of controlled studies indicates the need for research in this area. The scientific community should deliberate the potential for intervention transferability and ideally conduct extensive formative research prior to launching a new programme.

Conclusion

There is an overall deficit in outcome evaluations of interventions aimed at reducing HIV/STI risk behaviour among MSM in Europe. Designing behavioural HIV/STI preventive strategies to avert new infections, and the evaluation of such prevention programmes for MSM is an important component of a comprehensive HIV/STI containment strategy across the continuum of prevention and care.

Guidance reports

9. Chlamydia control in Europe

(Published in June 2009)

Why chlamydia is a public health problem

Chlamydia trachomatis is one of the most common bacterial sexually transmitted infections in Europe. Rates in sexually active young people are commonly between 5% and 10%. The number of diagnosed cases is increasing in many European countries, in part due to increased testing and the use of more sensitive tests. People with genital chlamydia may experience symptoms of genital tract inflammation including urethritis and cervicitis, but the majority remains asymptomatic. Chlamydia is a significant public health problem because untreated chlamydia may lead to pelvic inflammatory disease, subfertility and poor reproductive outcomes in some women. Chlamydia also facilitates the transmission of HIV. The cost of treating subfertility due to chlamydia is high, as it requires tubal surgery and in-vitro fertilisation. Although inexpensive and effective treatment is available, control of chlamydia is challenging since most people are asymptomatic.

Chlamydia control activities in Europe

A systematic survey of chlamydia control activities in 29 European countries found wide variation in the organisation of chlamydia control. Almost half of the countries reported no organised activity, and national control programmes were only identified in two countries.

Implementing chlamydia control

The first step to a comprehensive and effective control programme is the adoption of a chlamydia control strategy based on wide consultation with key stakeholders. The strategy should take into account the specific national opportunities and limitations together with a review of the evidence for the interventions and measures comprised. The strategy can be based on the step-by-step approach outlined in this guidance.

The step-by-step approach is recommended to ensure that accurate STI prevention and patient management are in place before complex interventions such as screening are to be considered.

Four levels for chlamydia control programmes are outlined:

- Level A, primary prevention: this includes health promotion and education, school programmes and condom distribution.
- Level B, case management: this builds on Level A with the addition of routine case surveillance, accurate chlamydia diagnostic services, clinical services, and patient and partner management services. Each of these requires clear evidence-based guidance and regular audit.
- Level C, opportunistic testing: this builds on Level B with the addition of testing which is routinely offered to one or more specified group of people attending other clinical services, with the aim of case finding, e.g. identifying asymptomatic cases.
- Level D, screening programme: this builds on Level C with the addition of the organised provision of regular chlamydia testing to cover a substantial proportion of a defined population, with the aim of reducing chlamydia prevalence in the population.

The evidence for the impact of level C and D programmes is limited and therefore, where implemented, they need to be carefully evaluated to guide future policies. In particular, the impact of such programmes on the control of chlamydia in the population needs to be monitored and evaluated. Introducing a screening programme for chlamydia should be considered with the same care as any other screening programme, with an assessment of all the potential benefits, harms and costs.

Effective resourcing and implementation of national chlamydia control strategies requires leadership and commitment from healthcare policymakers. The most appropriate national strategies are likely to vary across countries, and national strategies should be developed in consultation with professional medical organisations, funders and providers of healthcare and diagnostic services.

Evaluation of chlamydia control programmes

Control programmes aim to reduce the prevalence of chlamydia, but this is difficult to monitor as it requires periodic population surveys. However, there are many other indicators of effectiveness that should be built into any programme from the outset.

At the national level, programmes should monitor indicators relating to the policies and guidelines of the programme, the implementation and processes, and the outcome of the programme. These must be based on the specific objectives appropriate to the level of implementation.

If countries move from one level of control to the next, they will need to make decisions based on a rigorous appraisal of the evidence for effectiveness, cost-effectiveness and harms. This will be assisted if countries ensure that all activities are fully evaluated and results shared with others in Europe. This way investments in programmes made now will strengthen the evidence base for chlamydia control and facilitate future decision making and improve population health.

At the European level, the target should be to reduce the proportion of countries reporting no organised activity.

Purpose of this document

This document provides guidance to health policymakers in the European Union about national strategies for chlamydia control. It does not provide specific clinical or diagnostic guidelines but rather a framework for developing, implementing or improving national strategies to prevent and control chlamydia. Recent systematic reviews should be consulted as the basis for such detailed guidelines.

Health policies, like clinical guidelines, should be based on the best available evidence. However, there is generally less evidence on which to base these policy decisions. In this guidance document we aim to facilitate the development of local, evidence-based guidelines within the context of sound national chlamydia strategies. Such strategies need to take account not only of clinical and epidemiological factors (such as the prevalence of chlamydia in the population) but also of local systems of healthcare delivery, infrastructure and resourcing.

The guidance has been developed by a technical expert group using the evidence gathered in the ECDC report ‘Review of chlamydia control activities in EU countries’, a survey of chlamydia control activities which was considered alongside recent systematic reviews of chlamydia screening and control.

This guidance covers the common sexually transmitted form of *Chlamydia trachomatis* (serovars D to K) and does not cover *Lymphogranuloma venereum* or trachoma.

10. Public health use of influenza antivirals during influenza pandemics

(Published in June 2009, updated in August 2009)

This background paper is intended as a resource for those in the European Union and EEA/EFTA area who are developing policies and practices concerning the use of influenza antivirals, especially in relation to influenza pandemics. The paper is based on scientific evidence, WHO guidance, expert opinions (including those from ECDC's Advisory Forum) and recommendations contained in European national pandemic preparedness plans. It focuses on options for the use of antiviral drugs in the context of an influenza pandemic.

The available evidence on antiviral effectiveness for either treatment or prophylaxis and consequent public health use during a pandemic derives from studies conducted during seasonal influenza seasons among healthy adults and, to a lesser extent, in one of the higher-risk groups (older people) and some older children.

This evidence indicates that certain antiviral drugs, particularly the neuraminidase inhibitors (oseltamivir and zanamivir), offer some treatment benefits by reducing the duration of illness from influenza usually by 1–2 days and also reducing complications and the need for antibiotics in infected individuals. This effect is limited by the need for the drugs to be given early (within 48 hours of the start of symptoms). There is also some weak evidence from observational studies that the drugs might reduce morbidity and even mortality in sicker patients even if given later than 48 hours. Minor side effects are frequently reported, especially nausea and even sometimes vomiting, with the oral preparation (oseltamivir), which is why the manufacturer recommends taking the medication with a meal.

Trials in healthy adults suggest that infection can be prevented with prophylaxis treatment with a 70% to 90% effectiveness rate provided the drug is taken as prescribed. The evidence for the public health benefits for higher-risk groups and settings is less strong but there does seem to be some reduction of infection, for example, in outbreaks of seasonal influenza in closed setting such as nursing homes. This suggests that such drugs can have an impact on the level of viral transmission and help to prevent infection.

Very occasionally, influenza viruses that have primary resistance to one or more antiviral drugs can arise naturally as result of genetic mutation and natural viral reassortment. This happened during the 2007–08 season in Europe, when an influenza virus that was resistant to oseltamivir emerged. This was not related to antiviral use and this possibility should not influence default policies on the use of antivirals during a pandemic. However, the possibility of a fit novel virus that is resistant to antiviral treatment is a real concern and it may require rapid changes of antiviral policies, especially for prophylaxis, should such a virus appear during a pandemic. This must not be confused with secondary antiviral resistance, which emerges much more commonly when using antivirals. It usually results in a virus that is unable to transmit from person to person and is therefore not an issue of public health concern.

There is a range of different strategies for use of antivirals and these depend on the overall public health goals that authorities wish to attain, the availability of antivirals and other practical considerations. These goals can include treatment of sicker people, treatment or protection of people at higher risk, treatment of all cases, reducing the level of transmission or protecting healthcare and other essential workers. ECDC has suggested a hierarchy of priorities.

During pandemics, because of the high numbers and potential severity of infection, there are substantial practical challenges to meet the potential need for antiviral drugs, both for treatment of infected people and prevention of infection (prophylaxis). Many countries have developed stockpiles of antiviral drugs specifically for use during a pandemic. Currently the antiviral stockpiles in European countries seem to vary from coverage of a few per cent of the population to more than 50% of the population. However, even with stockpiles in place, it is almost inevitable that demand for antiviral drugs will outweigh supply in a pandemic. Because of this, it is important that advanced strategic and logistical planning is carried out to optimise the usefulness of existing stockpiles. An important general principle is that having stockpiles is of limited use without the agreed objectives, protocols, administration and delivery systems to go with them.

Thus clear objective setting as part of pandemic planning activities will be crucial to maximise the benefit from antiviral stockpiles. This planning should take into account the total volume and availability of antivirals, the underlying epidemiology (predicted attack rates, etc.), size and duration of the outbreak and size of population groups. Modelling can also provide an important tool to extrapolate the effects of various antiviral strategies in a pandemic but such modelling is not straightforward. Based on the available evidence, ECDC suggests the following prioritisation strategy for antiviral use:

1. **People with more severe disease.** The first priority is to treat people with more severe influenza illness even if they are beyond the 48-hour 'window' following the start of symptoms, when it is considered that antivirals are effective. However, for these patients it is even more important that there are adequate supplies of appropriate antibiotics available to treat secondary infections, and other essential drugs.
2. **People most at risk of severe disease.** Among these, priority could be given to those most at risk of developing severe disease. For seasonal influenza these are those for whom seasonal influenza vaccination is recommended: older people, those with pre-existing chronic conditions and healthcare workers with direct patient contact. However, this may need to be modified during a pandemic to reflect those most at risk from the pandemic strain. When both pandemic and seasonal viruses are circulating, the seasonal and pandemic higher-risk groups will need to be combined. Some countries may want to consider giving prophylaxis in households containing people at higher risk, though this would be a complicated policy to implement.
3. **All people just starting an illness.** After the more severe cases, antivirals could be prioritised for people just starting their illness (within 48 hours of the first symptoms) because that is when these drugs are most effective.
4. **Use for prophylaxis.** Countries with larger stocks of antivirals can consider giving them also for prophylaxis. Candidate groups are: close contacts of cases, family contacts and key workers for business continuity purposes. Home stockpiles are not recommended, as supplies are limited, though inevitably some people can be expected to request these from their doctors as they did with avian influenza.
5. **Healthcare workers** with direct patient contact are a special case. They need to have reasonable protection with personal protective equipment. Should they become sick, they need to receive antivirals promptly and to stay home from work. Countries with larger stocks may consider prophylaxis for certain groups of these workers.

Even greater challenges are posed by the organisational aspects of antiviral delivery. Namely, the evidence indicating that antiviral treatment may only deliver its limited benefits if it is given within the first 48 hours following the start of symptoms. This will be particularly critical during a pandemic. Hence, for antivirals to be effective in treating infection, resources should also be put in place to develop protocols and systems to ensure their rapid delivery and administration.

The work that ECDC and the WHO Regional Office for Europe have done with Member States indicates that the following operational issues in the delivery and management of national antiviral and other strategic stockpiles need careful consideration ahead of a pandemic:

1. In the initiation phase of a pandemic a decision needs to be made as to whether the severity of infection at the individual patient level is sufficient to offer antivirals to all those with symptoms or even to attempt delaying or containment.
2. Ensuring that there are always antivirals available for clinicians to treat those who are most ill.
3. Being able to deliver antiviral agents to people who need them most in a timely manner, because they have to be given within 48 hours of symptoms beginning to be effective.
4. Identifying the key groups that should receive antivirals as a priority, based on pre-agreed criteria (a default position).
5. Being able to change priorities if it seems those most at risk are not those predicted from the experience with seasonal influenza.
6. Ensuring that the areas first affected do not exhaust national supplies and being able to move resources around the country.
7. Having a position on citizens seeking to have individual stockpiles and companies seeking to protect their staff.
8. Monitoring for antiviral resistance, especially primary resistance and being able to change national treatment strategies if it looks like supplies will be exhausted or antiviral resistance emerges (especially if the drugs are being used for prophylaxis).
9. Not burdening stressed primary care services by making them distribute antivirals to mildly or moderately unwell people when they are hard pressed dealing with sicker people. This also avoids possibly infected persons crowding together for antivirals (e.g. in queues or waiting rooms) and so further spreading infection.
10. Ensuring that other key pharmaceuticals are in good supply, especially, but not only, appropriate antibiotics.

11. Being able to monitor compliance, especially among the mildly unwell and those receiving prophylaxis.
12. Anticipating milder common side effects of oseltamivir, notably some nausea, and being aware that there may be reports of less frequent but more severe side effects.
13. Having training materials and approaches to facilitate the use of zanamivir inhalers, especially among those who may find them difficult to use.
14. Considering approaches for special groups such as pregnant women and young children.
15. Having robust, reliable, tested communication strategies for professionals and the public concerning all the above as part of more general communications during a pandemic.

In addition, ECDC suggests that there are some practical systems that can operate at EU level:

16. Member States reporting through the EWRS on their default policy positions and then on significant changes.
17. Having systems that are able to pick up reports and rumours of adverse events and having a mechanism with EMEA and ECDC for responding to these when they inevitably emerge.
18. With ECDC, the Community Network Reference Laboratory and WHO monitoring for the emergence of resistance to antivirals.
19. Anticipating the inevitable appearance of direct internet selling of antivirals and other medication from unregulated sources.

The work indicates a number of research and development priorities, including a need to determine whether or not antivirals are of benefit when given outside the 48-hour 'window', especially in treating the more severely ill. An additional priority is having systems in place in the Member States that can determine in real time whether antivirals are actually effective against any pandemic virus; and systems for the early detection of true treatment and prophylaxis failures, which may be an indication of the emergence of resistance.

11. Use of specific pandemic influenza vaccines during the H1N1 2009 pandemic

(Published in August 2009)

In April 2009, a new strain of human influenza A(H1N1) was identified and characterised. The attack rates for this A(H1N1) pandemic strain are expected to be higher than for seasonal strains because of the lower levels of pre-existing immunity in the population (except for older people, many of whom do seem to have a degree of immunity). Therefore the actual numbers of cases of influenza presenting to health services in a short period of time is likely to be higher than those of seasonal influenza.

Vaccination with a strain-specific pandemic vaccine is considered one of the most effective countermeasures for protecting individuals in the event of a pandemic. However, specific pandemic vaccines will not become available all at once, delivery from the manufacturers will necessarily be staggered, and there will also be difficulties in distribution. Ensuring vaccine supply will be difficult within a reasonable timeframe. Strategic use of vaccines, after careful prioritisation between different population groups, will be important to maximise the benefit of the available doses.

Overall objectives of vaccination should be specified before deciding who should be offered the vaccine and how to prioritise target populations. These may legitimately differ by country and/or region. They will particularly differ according to the resources, amounts of vaccine, numbers of syringes, etc. that are available and practical issues relating to distribution and delivery. These differences between countries will pose communication problems when they become apparent and these should be prepared for.

The objectives of a pandemic vaccination strategy can be considered in two broad categories that are by no means mutually exclusive: a) mitigation, to protect the individuals that may be at greatest risk of severe disease; and b) protecting essential services.

Influenza A(H1N1)v is a novel virus and pandemics in modern times have all differed one from another and from the current seasonal influenza. Hence, risk groups (those at higher risk of severe disease) may differ from those for seasonal influenza strains. Also, different strategies come into play with greater emphasis on the need to maintain essential services by immunisation. Hence target groups (groups that are offered vaccine who may or may not be in the risk groups) may also be different.

According to the current evidence on the A(H1N1) 2009 pandemic, the following population groups can be identified as risk groups:

- people aged less than 65 years with chronic underlying conditions, namely:
  - chronic respiratory diseases;
  - chronic cardiovascular diseases;
  - chronic metabolic disorders (notably diabetes);
  - chronic renal and hepatic diseases;
  - persons with deficient immunity (congenital or acquired);
  - chronic neurological or neuromuscular conditions;
  - any other condition that impairs a person's immunity or prejudices their respiratory function;
- young children (especially under the age of two years);
- pregnant women.

This list differs somewhat from the groups for whom many countries recommend seasonal influenza immunisation, especially with regard to people aged 65 years and over. Older people seem generally to be at lower risk of infection – possibly due to existing immunity – but there are indications that if they do become infected they suffer more severe disease than younger adults.

In addition, there are other groups to whom immunisation may be offered even though they are not at higher risk of severe disease (target groups). There are arguments for offering vaccination to children since they are experiencing high attack rates (albeit of mild disease) and may be particularly important in amplifying local outbreaks. There are also arguments for offering immunisation to all healthcare workers. This is both to prevent people in risk groups becoming infected from healthcare workers and to protect the healthcare worker from infected patients, thereby sustaining healthcare services. There are advantages to offering immunisation to people who care for those for whom immunisation may not be effective (e.g. people under treatment with immunosuppressive therapy). Babies under six months of age cannot at this stage be immunised because of lack of data on immunogenicity and safety and there are therefore arguments for offering vaccination to those that are in closest contact with them. Other potential target groups are workers essential for the response to the pandemic.

This guidance is based on the current scenario of the A(H1N1) 2009 pandemic. Particular areas of uncertainty are noted and discussed. As more data, evidence and opinions become available, this document will be updated along with the ECDC risk assessment to which it is linked.

Based on the experience from previous pandemics, during which the pathogenicity and transmissibility of the virus increased over time, three other scenarios are presented. There are also annexes summarising the evidence for vaccination of particular risk groups for seasonal influenza and the current pandemic influenza and giving broad estimates of the size of the risk and target groups. The basis for the calculation is given in sufficient detail that people in the Member States can apply the methodology to their own population or compare the methods already used.

Surveillance reports

12. Tuberculosis surveillance in Europe 2007

(Published in March 2009)

Since 1 January 2008, the European Centre for Disease Prevention and Control (ECDC) and the WHO Regional Office for Europe jointly coordinate the tuberculosis (TB) surveillance in Europe. Their aim is to ensure a high quality of TB standardised data covering all 53 countries in the WHO European Region.

In 2007, 477 327 cases of TB were reported by the 51[1] countries of the WHO European Region plus Liechtenstein[2]. The overall notification rate averaged 54 cases per 100 000, with a wide variability between countries and an incremental west-to-east gradient evident in recent years. This represents an increase of 54 497 cases from 2006 and an overall notification rate increase of 13% (from 48/100 000 to 54/100 000), mainly attributable to the registration by the Russian Federation of previously unreported re-treated cases, following the expansion of its notification system coverage and improved patient access to care. The notification rate of previously untreated cases in the entire Region decreased by 2.5% (from 36.6 to 35.7 per 100 000). In general, TB mortality rates in recent years mirrored overall notification rates in their geographical distribution across the Region (median overall rate: 0.6/100 000, country range: 0.0–22.3). The median level of primary multidrug-resistant tuberculosis (MDR TB) was 1.5% in the 22 countries reporting MDR TB data. The average treatment success rate was 73%, with 11% of cases lost to follow-up, 8% death and 7% failures of treatment.

European Union (EU) and European Economic Area (EEA)/European Free Trade Association (EFTA) countries (30 countries)

The 27 countries of the EU and three EEA/EFTA countries (Iceland, Norway and Liechtenstein), reported 84 917 TB cases in 2007. TB notification rates (17/100 000 overall) were highest in Romania (118), Bulgaria (40) and in the Baltic States (36–71). Between 2003 and 2007, overall notification rates decreased by 4% annually, reflecting a decline in previously untreated TB cases. However, substantial increases were observed in Malta (+61%) and Iceland (+37%), some increase in Sweden (+5%), and in the United Kingdom and Cyprus (both +3%), mostly in foreign origin cases. In 2007, 21% of cases (country range: 0–78%) were in persons of foreign origin, almost two-thirds of whom were from Asia or Africa and 6% from non-EU eastern European and central Asian countries. HIV prevalence among TB cases increased between 2001 and 2007 in Estonia and Latvia (from < 1% to 11% and 4%, respectively) and doubled in the United Kingdom in 2000–2003 (from 4% to 8%). In the rest of the countries that submitted data, the HIV prevalence among TB cases was 1% or less in five countries, 2–5% in seven others, and 14% in Portugal. Multidrug resistance (MDR) remained more frequent in the Baltic States (combined MDR: 10–21%) than in the other countries (0–4%), where it was generally more common in cases of foreign origin. Twenty-one countries reported treatment outcome monitoring (TOM) data for definite pulmonary TB cases in 2006. For the cases included in the TOM cohorts, among previously untreated cases, 80% had a successful outcome. Loss to follow-up was more frequent among pulmonary cases in persons of foreign origin than among nationals (35% vs. 16%, respectively), while death was less frequently reported (8% vs. 4%). TB mortality rates ranged from 0.0–10.9/100 000 (29 countries, latest available data 2001–2006).

West (non-EU) (5 countries)

In 2007, 881 TB cases were reported by three countries – Andorra, Israel and Switzerland – with rates ranging from 5.6 to 7.3/100 000. Rates were generally low and the majority of notified TB cases were of foreign origin. Data on drug resistance surveillance were reported by Switzerland and Israel, with their MDR TB prevalence for all tested cases at 2.3% and 6.7%, respectively. Treatment outcomes for cases registered in 2006 were reported by Israel, with a success rate of 74% for new definite pulmonary cases.

[1] No data from Monaco and San Marino.

[2] Liechtenstein is included in the report, but is only presented as EEA/EFTA country – it does not belong to WHO European Region.

Balkans (7 countries)

The Balkan countries notified 26 296 cases in 2007, of which 75% were reported by Turkey alone (an additional 930 cases were reported by the UN Administered Province of Kosovo). The overall TB notification rate in 2007 was 29/100 000, and was higher in Bosnia and Herzegovina (62) than in Albania, Croatia, the former Yugoslav Republic of Macedonia, Montenegro, Serbia and Turkey (range: 14–28). The HIV prevalence among TB cases was 0.0–0.4% in the countries with data (Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Montenegro and Serbia). Combined primary and acquired MDR was 0–0.6% and 9.7–34.6%, respectively, in the four countries with MDR data reported (Albania, Montenegro, the former Yugoslav Republic of Macedonia and Serbia). The success rate among new definite pulmonary cases in 2006 was 80–97% in five countries, and lower in two others providing data (35–70%). TB mortality rates ranged between 0.25 and 21/100 000 (five countries, latest available complete data 2001–2006).

East (12 non-EU eastern European and central Asian countries)

In 2007, 365 233 TB cases were reported in the East, 59% of them by the Russian Federation. TB notification rates in 2007 (131/100 000 overall) were highest in Kazakhstan (258), the Republic of Moldova (178), the Russian Federation (151), Georgia (135), and Kyrgyzstan (125), followed by Armenia, Azerbaijan, Belarus, Tajikistan, Turkmenistan, Ukraine and Uzbekistan (59–119). The mean annual increase between 2002 and 2007 was the same as observed over the years 1998–2002 (+6%). The number of new cases decreased between 2006 and 2007 in six countries. The HIV prevalence among TB cases was 1% or lower in five countries in recent years, but was higher in the Russian Federation and Ukraine (7% and 6%, respectively, among new cases in 2007). National and regional drug resistance data from a number of countries suggest a widespread, high prevalence of MDR. Combined MDR TB prevalence ranged from 14% to 57%, although the representativeness of the data varied among countries. In countries reporting outcomes of new smear-positive pulmonary TB cases (2006), the average success rate was 64% (range: 58–86%). Low success, associated with high failures (mean: 12%, range: 3–16%) were mainly due to the prevalence of primary MDR and loss to follow-up (mean: 13%, range: 4–35%). TB mortality rates ranged from 3.0 to 22.3/100 000 (all countries, except Turkmenistan, with complete data, latest available for any year between 2003 and 2006).

Conclusions

The non-EU eastern European and central Asian countries remain the regional priority for TB control. In these countries the situation is often complicated by low specificity or poor quality of information and persistent lack of resources necessary to mount a best-suited response and/or inadequate use of existing ones. Further west, a diversity of TB patterns persists. Industrialised countries aiming at TB elimination are increasingly recognising the aggregation of cases among particular vulnerable populations. Among intermediate burden countries, such as the Baltic States, prevalence of MDR TB remains high. A number of surveillance recommendations in support of strengthening TB control can be drawn from the analysis of the data including:

- standardising the case definition used throughout the Region and the tools for data management;
- integrating TB into overall communicable disease surveillance;
- emphasising the use of cohort analysis for treatment outcome monitoring;
- developing a better insight into the TB/HIV co-epidemic; and
- conducting careful assessments of prevalence and trends of MDR TB at country and regional level.

13. Annual epidemiological report on communicable diseases in Europe 2009

(Published in October 2009)

Background

In 2007 ECDC proposed that the frequency of a comprehensive Annual Epidemiological Report (AER) covering, in depth, all areas under ECDC surveillance would be every three to five years. This was supported by the ECDC Advisory Forum. The current edition is thus a broad compilation of the situation as regards communicable diseases in the European Union, but only gives an in-depth analysis of one area: the vaccine-preventable diseases. It provides data on incidence of diseases for 2007 in standard tables and graphs with limited commentary, and assesses health threats during 2008.

Major public health burden from infectious diseases

The major threats related to communicable diseases in the EU have not changed substantially from the previous edition of this report and include the following:

- antimicrobial resistance;
- healthcare-associated infections;
- vaccine-preventable diseases, with particular emphasis on pneumococcal infections;
- respiratory tract infections, with particular focus on influenza (pandemic potential as well as annual seasonal epidemics) and tuberculosis;
- HIV infection.

Summary of communicable disease surveillance 2007

Chapter 3 collects and presents all cases reported for 2007 from the 27 EU Member States plus the three EEA/EFTA countries Iceland, Liechtenstein and Norway. As many of the individual disease sections of that chapter point out, comparisons of incidence between countries should be made cautiously. Surveillance systems differ, and the relationship between reported and actual incidence varies from country to country for many diseases. In most instances, it is more relevant to focus comparisons on trends over time, since this is a more stable feature of a surveillance system.

With this in mind, some of the main findings from EU-wide surveillance of infectious diseases are summarised below for the main disease groups and/or conditions of concern.

Antimicrobial resistance and healthcare-associated infections (AMR/HCAI)

In 2007, methicillin-resistant *Staphylococcus aureus* (MRSA) remained a significant problem all over Europe. Nevertheless, in some of the high endemic countries, MRSA proportions seemed to be stabilising, and decreasing trends were actually observed in a few countries.

Penicillin non-susceptibility in *Streptococcus pneumoniae* (PNSP) showed a heterogeneous picture in Europe with most northern European countries reporting low levels, and relatively high levels reported by southern European and Mediterranean countries. However, overall, the levels for penicillin non-susceptibility and erythromycin resistance remained stable in most countries.

With the spread of clonal complex 17, outbreaks of vancomycin-resistant *Enterococcus faecium* continued to affect more hospitals in various countries.

Resistance to fluoroquinolones, aminopenicillin, aminoglycoside and third generation cephalosporins in *Escherichia coli* has increased significantly in nearly all reporting countries in recent years. This is an important observation because it signals a development towards increasingly multidrug-resistant Gram-negative bacteria, and even towards totally resistant strains.

The decreasing trend of surgical site infections after hip prosthesis was confirmed in 2007, illustrating the important role of surveillance, including inter-hospital risk-adjusted comparisons, in HCAI prevention and control.

Vaccine-preventable diseases

In 2007, the rate of notification of invasive *Haemophilus influenzae* disease remained stable in Europe, and well below one per 100 000. The Hib vaccine continued to have a significant effect on the incidence of this disease in all countries where it has been introduced.

The overall notification rate of invasive meningococcal disease in 2007 was one per 100 000, similar to that in 2006, and serogroups B (77%) and C (16%) remained the major cause of invasive meningococcal disease in Europe. The vaccine commonly in use covers only the serogroup C.

Compared with the previous year, in 2007 there were significant increases in the numbers of confirmed cases of invasive pneumococcal diseases (IPD) reported by Austria and Slovenia, most likely due to recent improvements in their surveillance systems. Overall, the notification rates were difficult to compare across Member States due to the wide heterogeneity in the IPD surveillance systems in the EU. The heptavalent pneumococcal conjugate vaccine (PCV7) was licensed in the EU in 2001, but use of this vaccine varies across countries.

In 2007, a lower number of measles cases were reported in the EU and EEA/EFTA countries than during 2006, but measles remained a public health priority with 2 795 confirmed cases, including one fatal case and two cases of encephalitis. Only four countries have been measles-free during the last three years.

In 2007 mumps remained a vaccine-preventable disease with one of the highest notification rates in Europe but the overall decreasing trend continued and in fact the mumps notification rate in 2007 was the lowest reported since 1995.

Similar to the situation in 2006, the reported rates of confirmed rubella cases in 2007 were low.

Respiratory tract infections

The 2007–08 influenza season in Europe was characterised by moderate clinical activity with an influenza A(H1N1) circulation peak followed by an influenza B peak. There were only a few A(H3N2) strains isolated.

An important new phenomenon was the occurrence of the first seasonal influenza virus strain resistant to the antiviral drug oseltamivir: A(H1N1-H247Y). This strain was fully able to transmit from human to human, but its distribution varied greatly across the region – from well over half of all isolated strains in some countries to just a few per cent in others. The appearance and spread of this resistant virus could not be explained by previous use of antivirals.

As in 2006, there were a series of outbreaks of highly pathogenic avian influenza reported in birds in Europe, predominately in domestic poultry, but no associated human cases were reported. One outbreak of low pathogenic animal avian influenza A(H7N2) occurred in the United Kingdom in May 2007 with several associated cases of influenza-like illness and/or conjunctivitis in humans.

The notification rate of Legionnaires' disease in the EU and EEA/EFTA countries in 2007 remained stable at 1.1 per 100 000 population. The number of reported cases of travel-associated Legionnaires' disease was increasing compared with 2006, probably attributable to better surveillance and reporting; whereas the number of travel-associated clusters was decreasing, which may reflect the impact of the European Working Group for Legionella Infections (EWGLINET) guidelines for the control of Legionnaires' disease.

For tuberculosis (TB), steady downward trends of notification rates have been reported in 25 countries since 2003. Twenty per cent of the total cases were in persons of foreign origin, as in 2006, predominantly from Asia or Africa. Multi-drug resistance (MDR) remained more frequent in the Baltic States than in the other countries; and generally more common in cases of foreign origin. Data continue to reflect the heterogeneity of the TB situation, with low-incidence countries where cases are increasingly diagnosed in foreign-born populations, other countries with moderate-to-high notification rates but where MDR TB is as yet uncommon, and countries with relatively high notification rates and a high proportion of MDR TB cases. Overall, in 2007, the EU and EEA/EFTA countries reported 41 205 confirmed cases of TB (8.2 per 100 000).

HIV, sexually transmitted infections, hepatitis B and C, and HIV

In 2007 HIV infection remained of major public health importance in Europe with no signs of a decrease in the number of reported newly diagnosed cases. However, the number of AIDS cases diagnosed continued to decline, except in some eastern and central European countries. Predominant transmission mode varied by country and geographical region, illustrating the wide diversity of the epidemiology of HIV in Europe.

In 2007, *Chlamydia trachomatis* infection continued to be the most frequently reported STI (and the most common reportable disease in Europe in general). Over a quarter of a million confirmed cases of *C. trachomatis* infection were reported by 22 of the EU and EEA/EFTA countries, which translated into an overall rate of 122.6 per

100 000 population. Chlamydia continued to mainly affect young persons between 15 and 24 years of age. The true incidence of *C. trachomatis* infection was likely to be higher and the notification rates were more likely to reflect screening practices and testing volume rather than true incidence.

Remarkably, Sweden reported a 45% increase in the number of cases from 2006, probably due to new testing methods to detect the new variant of *C. trachomatis* first reported in Sweden in November 2006. An EU-wide survey revealed that the spread of this variant was restricted to Sweden or to sexual partners of Swedes in other countries.

Most European countries have surveillance systems for hepatitis B and C, but due to their differences, particularly in system structures, reporting practices, data collection methods and case definitions used, the surveillance data are difficult to compare across countries.

Food- and waterborne diseases and zoonoses

Campylobacteriosis remained the most commonly reported cause of gastrointestinal disease in the EU and EEA/EFTA and in 2007 the notification rate increased by over 15% compared with 2006. The wide variability in reporting systems between countries combined with a high degree of underreporting known to occur in some countries makes direct comparisons between them very difficult.

In 2007, the notification rate of salmonellosis remained high in the EU and EEA/EFTA countries but the decreasing trend observed since 2004 continued.

A total of 13 952 confirmed cases of hepatitis A were reported by 29 of the EU and EEA/EFTA countries in 2007, and the epidemiological picture of hepatitis A varied greatly across the region. An outbreak of hepatitis A in Latvia started in November 2007.

Environmental and vector-borne diseases

In August 2007, an outbreak of chikungunya fever was reported from Italy with 217 laboratory-confirmed cases. Local transmission of chikungunya virus followed its introduction by a single returning visitor to India and indicated that the *Aedes albopictus* mosquito is indeed a vector capable of transmitting the virus efficiently at EU latitudes.

In 2007 a total of 637 confirmed Q fever infections were reported from 22 of the EU and EEA/EFTA countries, a figure similar to that from 2006 (583). Outbreaks of Q fever were reported in the Netherlands and Slovenia, involving 168 and 86 cases, respectively.

A total of 40 confirmed viral haemorrhagic fever cases, mostly Hantavirus infections, were reported from seven Member States.

Summary of threats 2007

Since the start of the epidemic intelligence activities in July 2005, ECDC has monitored 696 threats up to the end of 2008. In 2008, ECDC monitored 250 threats, of which 227 (91%) were opened in 2008, 14 (6%) were carried over from 2007, and nine (4%) represent recurrent threats. Recurrent threats were related to avian influenza worldwide and in the European region, the worldwide situation of chikungunya fever, poliomyelitis, dengue fever, cholera and measles, as well as new variant Creutzfeldt-Jakob disease and extensively drug-resistant tuberculosis.

In more detail, some of the monitored threats included:

- oseltamivir-resistant influenza A(H1N1) viruses among 21 Member States, with proportions ranging from less than 1% in Italy up to 68% in Norway;
- five hepatitis A outbreaks of international concern were monitored in 2008, which represented a significant increase on previous years;
- an outbreak of *Shigella sonnei* affecting more than 140 employees exposed at their office cafeteria in Sweden;
- eighty-five clusters of legionellosis recorded in 2008;
- eleven measles outbreaks reported in 2008 in the EU and EEA/EFTA, resulting in secondary cases in other Member States despite the decrease in incidence of measles in Europe since 2006. This represented an increase of reported outbreaks compared with 2007 (seven) and 2006 (two);
- eleven tuberculosis-related threats evaluated in 2008. The events were all linked to movement of patients suffering from tuberculosis: seven through air travel and three related to maritime travel;
- lethal Marburg virus infection in a tourist returning from Uganda to the Netherlands in July 2008;
- the first case of Crimean-Congo haemorrhagic fever (CCHF) confirmed in northern Greece in July 2008.

Conclusions

Based on the summary of key figures and trends we can conclude that the priorities for communicable disease prevention and control in the EU and EEA/EFTA have not changed substantially since the previous edition of the AER, but several points need to be emphasised.

The data from 2007 show that antimicrobial resistance constitutes an increasingly important public health hazard in Europe. International travel and trade facilitate the spread of antimicrobial resistance. The problem calls for international cooperation – as well as concerted efforts at the national level – in order to contain and prevent the occurrence of antimicrobial resistance.

In the area of healthcare-associated infections, an EU-wide point prevalence survey is needed to assess the burden of all types of infections in healthcare settings in Europe. The elaboration of a European standardised protocol for this prevalence survey is now in the ECDC work programme and will offer an opportunity for different national HCAI prevalence protocols to be adapted so as to allow international comparisons.

In the area of vaccine-preventable diseases, concerns continue to be raised over the possibility that, after introduction of the vaccine, serotypes covered by the pneumococcal conjugated vaccine may be replaced by serotypes not covered, as has already been observed in the United States. For this purpose, more enhanced surveillance, also involving laboratory surveillance, may be necessary in the EU.

As expected, almost 90% of measles cases reported in EU and EEA/EFTA were unvaccinated; a sign that measles is still a problem for population groups with low vaccine coverage. Moreover, all fatal or complicated cases occurred in unvaccinated subjects. Therefore, raising the coverage level in Europe remains a public health priority, even though elimination may not be attained in 2010.

Breakthrough mumps infections sometimes occur in individuals that have received two doses of the MMR vaccine, and this needs to be further explored.

Greater effort has been made by Member States to confirm all the rubella cases they notified, with few exceptions. Improving the sensitivity and specificity of rubella surveillance is paramount in view of the WHO 2010 elimination goal.

The unusual feature of the 2007–08 influenza season was the emergence of the oseltamivir-resistant influenza A(H1N1) virus. This was the first ever observation of a human seasonal influenza virus resistant to a neuraminidase inhibitor which was fully able to transmit from human to human. Surveillance of antiviral resistance among seasonal influenza viruses should continue to monitor the possible re-emergence of resistant strains.

In the area of TB control – within the heterogeneous epidemiological setting in the EU and EEA/EFTA countries – the number of countries with high/intermediate TB incidence remained the same and despite their progress in curbing the epidemic, serious attention from a control point of view is required, including optimisation of surveillance. In some low incidence countries the data showed a continued decline in domestic cases and a clear shift of the epidemic to more vulnerable populations such as migrant populations. The reporting of TB/HIV co-morbidity remained incomplete, coverage of drug susceptibility testing needs to be further expanded, as well as reporting and analysis of resistance to second-line drugs.

The development and implementation of enhanced surveillance of hepatitis B and C are ECDC priorities. Better surveillance data are essential to provide the necessary information for monitoring the trends, to understand the differences in epidemiology and to evaluate prevention programmes in the EU. However, the chronic nature of both these diseases makes it difficult to disentangle incidence from prevalence – just as for HIV infection – and there is no easy solution to this problem.

Finally, in the area of food- and waterborne diseases, future reports will attempt to more clearly separate the data on vero/shiga toxin-producing *Escherichia coli* (VTEC) serogroup O157 and non-O157, as these have very different priorities in the countries' systems and therefore have different coverage – with O157 clearly better covered than the other serogroups.

Table A. Overview of the general trend, EU notification rate and main age groups affected for communicable diseases reported in the EU and EEA/EFTA in 2007. Number of reporting countries (n=30)

Disease	General 10-year trend	EU notification rate per 100 000 (2007)	Main age groups affected (2007)
Respiratory tract infections			
Influenza	↔	No data	Insufficient data
Avian influenza	↑	0	No cases
Legionnaires' disease (legionellosis)	↑	1.1	65+
Tuberculosis	↓	8.2	25–44
HIV, sexually transmitted infections and blood-borne viral infections			
Chlamydia infection	↑	122.6	15–24
Gonorrhoea	↔	9.5	15–24
Hepatitis B	↓	1.5	25–44
Hepatitis C	↑	6.9	25–44
HIV	↑	6.0	25–44
AIDS	↓	1.2	25–44
Syphilis	↑	4.4	25–44
Food- and waterborne diseases and zoonoses			
Anthrax	↔	<0.01	Insufficient data
Botulism	↔	<0.1	25–44
Brucellosis	↓	0.1	25–64
Campylobacteriosis	↑	46.7	0–4
Cholera	↓	<0.01	25–44
Cryptosporidiosis	↓	2.4	0–4
Echinocccosis	↓	0.2	45–64
Verocytotoxin-producing *Escherichia coli* (VTEC/STEC)	↔	0.6	0–4
Giardiasis	Insufficient data	61.7	0–4
Hepatitis A	↓	2.8	5–14
Leptospirosis	↔	0.2	45–64, 25–44
Listeriosis	↑	0.4	65+
Salmonellosis	↓	34.3	0–4
Shigellosis	↓	2.1	0–4
Toxoplasmosis	↓	0.8	5–14
Trichinellosis	↔	0.2	25–44
Tularaemia	↔	0.3	45–64
Typhoid/paratyphoid fever	↓	0.2	0–4
Variant CJD	Insufficient data	<0.01	15–24
Yersiniosis	↑	2.9	0–14

Disease	General 10-year trend	EU notification rate per 100 000 (2007)	Main age groups affected (2007)
Emerging and vector-borne diseases			
Malaria	↔	1	25–44
Plague	Insufficient data	0	No cases
Q Fever	↓	0.2	15–24, 45–64
Severe acute respiratory syndrome (SARS)	Insufficient data	0	No cases
Smallpox	Insufficient data	0	No cases
Viral haemorrhagic fevers (VHF)	Insufficient data	Insufficient data	Insufficient data
Chikungunya	Insufficient data	<0.01	Insufficient data
West Nile Fever	Insufficient data	<0.01	> 15
Yellow fever	Insufficient data	0	No cases
Vaccine-preventable diseases			
Diphtheria	↓	<0.01	45–64, 5–14
Invasive *Haemophilus influenzae* infection	↔	0.5	65+, 0–4
Invasive meningococcal disease	↓	1.0	0–4
Invasive pneumococcal infection	↔	6.3	65+, 0–4
Measles	↓	0.6	0–4
Mumps	↓	4.3	5–14
Pertussis	↓	4.4	5–14
Poliomyelitis	Insufficient data	0	No cases
Rabies	Insufficient data	<0.01	Insufficient data
Rubella	↓	1.2	0–4
Tetanus	↓	<0.1	65+
Antimicrobial resistance and healthcare-associated infections			
AMR	↑	Not applicable	No data
Nosocomial infections	↑	Not applicable	No data

14. HIV/AIDS surveillance in Europe 2008

(Published in December 2009)

Key points

HIV infection remains of major public health importance in Europe, with evidence of increasing transmission of HIV in several European countries. Overall, despite incomplete reporting, the number of newly diagnosed cases of HIV infection reported for 2008 has increased, while the number of diagnosed AIDS cases has continued to decline in the WHO European Region, except in the East, where the number of AIDS cases has increased.

- In 2008, 51 600 cases of HIV were diagnosed and reported by 48 of the 53 countries in the WHO European Region and Liechtenstein (data not available from Austria, Denmark, Liechtenstein, Monaco, Russia or Turkey). The highest rates were reported from Estonia, Latvia, Kazakhstan, Moldova, Portugal, Ukraine and United Kingdom.
- 7 565 cases of AIDS were reported by 47 countries (data not available from Denmark, Sweden, Kazakhstan, Liechtenstein, Monaco, Russia or Turkey).
- In 2008, 25 656 newly diagnosed cases of HIV infection were reported by the countries of the European Union and European Economic Area (EU/EEA) (data not available from Austria, Denmark or Liechtenstein). In the EU/EEA, the highest rates were reported from Estonia, Latvia, Portugal and United Kingdom.
- In the EU/EEA, the predominant mode of transmission for HIV infection is sex between men, followed by heterosexual contact. Around 40% of the cases reported to be heterosexually acquired were diagnosed in individuals originating from countries with generalised HIV/AIDS epidemics.
- In the three geographical/epidemiological areas, the predominant transmission mode varies by area, illustrating the wide diversity in the epidemiology of HIV in Europe. In the East, injecting drug use is still the main mode of transmission, while in the Centre the predominant mode of HIV transmission is sex between men followed by heterosexual contact. In the West, the predominant transmission mode is sex between men, followed by heterosexual contact, when cases originating from countries with generalised epidemics are excluded.
- Since 2000, the rate of newly diagnosed cases of HIV reported per million population has more than doubled from 44 per million in 2000 to 89 per million in 2008, based on the 43 countries that have consistently reported HIV surveillance data.
- Among the 46 countries consistently reporting AIDS data for 2000–08, the number of reported AIDS diagnoses declined from 12 072 cases (19/million) to 7 564 cases (12/million).
- The data presented here have some limitations, due to incomplete reporting and missing data from a number of countries and because the data are subject to reporting delays. This limits the conclusions that can be drawn with respect to the size and scope of the HIV and AIDS epidemics in Europe. If the data were to be corrected for these limitations, the overall number of HIV infections would most likely double for 2008. Furthermore, the number reported for 2008 is expected to be updated in the coming years due to the reporting delay in several countries.

Recommendations for HIV/AIDS surveillance

HIV/AIDS surveillance data are vital to monitor the trends of the HIV epidemic and evaluate the public health response. Therefore all countries in Europe should:

- implement case-based national reporting systems for HIV and AIDS cases and ensure data completeness and timeliness; and
- improve the quality of data reported, especially regarding probable routes of transmission.

Recommendations for public health

Interventions to control the epidemic should be evidence-based and adapted to the country and geographical area. From the surveillance data available it is reasonable to recommend the following:

- For the countries in the East: interventions to control HIV among injecting drug users, including harm reduction programmes, should be the cornerstone of HIV prevention strategies. Measures should also be strengthened to prevent heterosexual transmission targeted at those with high-risk partners.

- For the countries in the Centre: prevention should be adapted to each country's circumstances in order to limit the epidemic to its current low level. However, as the epidemic among men who have sex with men is increasing, interventions to control HIV in this group should be strengthened as a priority.
- For the countries in the West: interventions to control HIV among men who have sex with men should be the cornerstone of HIV prevention strategies, including innovative programmes for this group. Interventions for prevention, treatment and care must be adapted to reach migrant populations.
- Overall, HIV counselling and testing should be promoted to ensure early diagnosis and access to treatment and counselling to help prevent or reduce further transmission and improve the longer term treatment outcomes for the individuals concerned. Equity in access to HIV treatment and care for all population groups in need should be ensured in order for countries to reach the global goal of Universal Access to prevention, treatment and care.

Annex: ECDC publications in 2009

This list only includes ECDC official publications in 2009. All of them can be found on the Centre's web portal (www.ecdc.europa.eu) and many are also available in print. Some were updated along the year or had second editions – the months listed below refer to the latest edition.

During the year, ECDC staff published, or collaborated in, many scientific articles and other publications, including *Eurosurveillance*, which are not listed here. The Centre also produced a large number of short communication materials related to the influenza pandemic, like risk assessments and planning assumptions. These are available online but not listed here.

Technical reports

May

Development of *Aedes albopictus* risk maps

June

Risk assessment guidelines for infectious diseases transmitted on aircraft

Guide to public health measures to reduce the impact of influenza pandemics in Europe – 'The ECDC Menu'

Surveillance and studies in a pandemic in Europe

July

Migrant health series: Background note

Migrant health series: Epidemiology of HIV and AIDS in migrant communities and ethnic minorities in EU/EEA countries

Migrant health series: Access to HIV prevention, treatment and care for migrant populations in EU/EEA countries

September

Mapping of HIV/STI behavioural surveillance in Europe

The bacterial challenge: time to react (ECDC/EMEA Joint Technical Report)

November

Effectiveness of behavioural and psychosocial HIV/STI prevention interventions for MSM in Europe

ECDC Guidance

May

Interim ECDC public health guidance on case and contact management for the new influenza A(H1N1) virus infection

June

Chlamydia control in Europe

Mitigation and delaying (or 'containment') strategies as the new influenza A(H1N1) virus comes into Europe

Public health use of influenza antivirals during influenza pandemics

August

Use of specific pandemic influenza vaccines during the H1N1 2009 pandemic

November

Scientific panel on childhood immunisation schedule: Diphtheria-tetanus-pertussis (DTP) vaccination

Risk assessment guidelines for diseases transmitted on aircraft – Part 2: Operational guidelines for assisting the evaluation of risk for transmission by disease

Surveillance reports

March
Tuberculosis surveillance in Europe – 2007

June
Analysis of influenza A(H1N1)v individual data in EU and EEA/EFTA countries

Preliminary report on case-based analysis of influenza A(H1N1) in EU and EEA/EFTA countries

October
Annual epidemiological report on communicable diseases in Europe – 2009

December
HIV/AIDS surveillance in Europe – 2008

Meeting Reports

March
Expert meeting on chikungunya modelling (April 2008)

Consultation of the ECDC Competent Bodies for preparedness and response (October 2008)

Consultation on Crimean-Congo haemorrhagic fever prevention and control (September 2008)

Training strategy for intervention epidemiology in the European Union (October 2008)

ECDC workshop on social determinants and communicable diseases (March 2009)

April
Technical meeting on hepatitis A outbreak response (November 2008)

May
European pandemic influenza planning assumptions (January 2009)

June
Expert consultation on rabies post-exposure prophylaxis (January 2009)

Scientific Consultation Group – second meeting (December 2008)

August
Surveillance and studies in a pandemic: Fourth meeting of the SSiaP working group (July 2009)

Expert consultation on West Nile virus infection (April 2009)

October
First meeting of ECDC Expert Group on Climate Change (September 2009)

November
Ensuring quality in public health microbiology laboratories in the EU: Quality control and areas in need of strengthening (September 2009)

December
Joint ECDC/EUPHA meeting on health communication for innovation in the EU: a focus on communicable diseases (May 2009)

Technical documents

July
Web service technical documentation, TESSy, Version 1.1

Transport Protocol Specification XML – Extensible Markup Language, TESSy, Version 2.6

Transport Protocol Specification CSV – Comma Separated Value, TESSy

September

Overview of surveillance of influenza 2009/2010 in the EU/EEA

November

Protocols for cohort database studies to measure influenza vaccine effectiveness in the EU and EEA Member States

Protocols for case-control studies to measure influenza vaccine effectiveness in the EU and EEA Member States

December

Protocol for cluster investigations to measure influenza vaccine effectiveness in the EU/EEA

Corporate publications

Quartely (March, June, September, December)

ECDC Insight

Executive Science Update

June

Annual Report of the Director – 2008

Summary of key publications

August

Annual Report of the Director: Summary – 2008