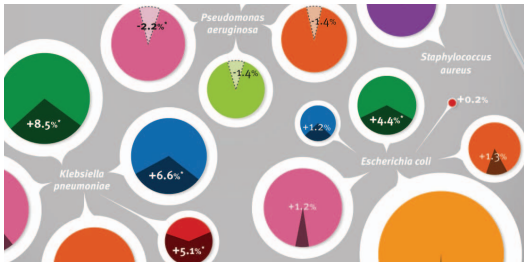

European Centre for Disease Prevention and Control

Achievements, challenges and major outputs 2014

Highlights from the Annual Report of the Director

www.ecdc.europa.eu

This digest offers a selection of key activities from 2014 but by no means represents the entire range of ECDC's work and accomplishments in 2014.

A detailed look at ECDC's range of activities, its organisational and administrative structures, and its work plan can be found in the unabridged version of the Annual Report.

Suggested citation:
Achievements, challenges and major outputs 2014 – Highlights from the Annual Report of the Director. Stockholm: ECDC; 2015.

Stockholm, August 2015

ISBN 978-92-9193-639-0

doi 10.2900/087780

Catalogue number TQ-01-15-379-EN-N

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Foreword by the Chair of the Management Board

The last year will be remembered as a challenging year for ECDC. The West African Ebola epidemic that emerged in 2014 quickly became a global concern – and a major challenge for ECDC. As Chair of ECDC I am proud that our Centre has played an important role in supporting the EU-level and international response to Ebola.

Given all the challenges ECDC faced, it is remarkable that the Centre nonetheless managed to deliver nearly 85% of its planned output. Even under unplanned pressure, ECDC has maintained a very high level of quality in its work.

The most important and authoritative confirmation the Management Board received regarding ECDC's added value and usefulness was the final report of the second independent external evaluation of ECDC. According to the evaluation report, ECDC has a good capacity of quickly reacting to health threats and performing in crisis conditions. The report also confirms that the Centre produces products of good professional quality in all areas, that the Centre has scientific credibility, and that ECDC is generally a source of EU-level added value. These conclusions reinforce my own personal conviction that ECDC has established itself as the hub of a strong network linking the key infectious disease experts and public health laboratories across Europe. The Centre has proved its value time and again, most recently and visibly as a major asset for Europe in responding to Ebola.

Dr Françoise Weber
Chair of Management Board
22 February 2015

Introduction by the Director

Supporting the Commission and Member States in implementing Decision 1082/2013[1] is a priority in ECDC's Strategic Multi-annual Programme 2014–2020 (SMAP). We have therefore adapted the EU's Early Warning and Response System on public health threats (EWRS) in order to widen the scope of the type of health threats that can be reported on EWRS. Similarly, the reinforcement of the Preparedness Support function at ECDC in 2014 is something promised in the SMAP, as is additional support to our partners' efforts in implementing Decision 1082/2013.

The SMAP and ECDC's Public Health Emergency (PHE) plan ensured that we could support the EU-level Ebola response. We mobilised the relevant specialists, and our in-house infection control experts provided the expertise needed on hygiene measures against Ebola. Our preparedness team conducted surveys on the Member States' preparedness to manage Ebola cases, and our public health training team developed tutorials on the safe use of personal protective equipment. Ebola really was a team effort and showed ECDC at its best: one ECDC team that is flexible, service oriented and committed to scientific excellence.

Though ECDC's Ebola PHE has ended, the epidemic in West Africa is not yet fully under control. ECDC has five teams deployed in Guinea and a commitment to stay there until at least the middle of 2015.

Dr Marc Sprenger
ECDC Director
2 March 2015

1 Decision No 1082/2013/EU of the European Parliament and of the Council of 22 October 2013 on serious cross-border threats to health and repealing Decision No 2119/98/EC

ECDC's Tomteboda headquarters

ECDC and its role in public health

Established in 2005 and based in Stockholm, Sweden, the European Centre for Disease Prevention and Control (ECDC) is the European Union agency with the responsibility to strengthen Europe's defences against infectious diseases. ECDC identifies, assesses and communicates current and emerging threats to human health posed by infectious diseases and supports the Member States of the European Union in their preparedness and response efforts. The Centre provides scientific advice to EU/EEA Member States and is a trusted source of information and resources in all areas related to public health.

In 2014, ECDC had a core budget of EUR 60.4 million.

As of 31 December 2014, ECDC had 277 permanent staff members engaged in disease surveillance, outbreak detection, scientific advice, information technology, communication, and administration.

Public health is our business

One of ECDC's main strengths is its capacity to respond quickly to the changing epidemiology of infectious diseases. ECDC operates and maintains three systems, each of which is essential to one specific area of disease control: EWRS (threat detection alerts), EPIS (epidemic intelligence), and TESSy (disease surveillance).

The Early Warning and Response System (EWRS) is a confidential system allowing Member States and the European Commission to share information and send alerts about health events with potential EU-level impact and coordinate the response measures required to protect public health. The system has been successfully used for outbreaks of SARS, pandemic influenza A(H1N1) and, most recently, Ebola.

Vytenis Andriukaitis (Commissioner for Health and Food Safety) and Marc Sprenger (Director ECDC) meet with Denis Coulombier (Head of Unit for Surveillance and Response Support, ECDC) in ECDC's Emergency Operations Centre

The Epidemic Intelligence Information System (EPIS) is a secure web-based communication platform which allows an international exchange of epidemiologic information that could be signals of infectious disease outbreaks.

The European Surveillance System (TESSy) is a highly flexible database system for collecting disease data. Thirty-one EU/EEA countries report data on infectious diseases to the system.

ECDC is also supporting the work of the European Commission and Member States in the EU's Health Security Committee to ensure a constant flow of information on the latest developments and secure the synchronisation of public health measures.

2014
The year in review

This digest offers a selection of key activities from 2014 but is by no means representative of the entire range of ECDC's accomplishments in 2014. A detailed look at ECDC's range of activities, its organisational and administrative structures, and its work plan can be found in the unabridged version of the Director's Annual Report[1].

1 European Centre for Disease Prevention and Control. Annual report of the director – 2014. Stockholm: ECDC; 2015.

Emergency Operations Centre at ECDC: The Centre's Public Health Emergency plan enables the Centre to rapidly mobilise resources to support the EU-level response to serious cross-border health threats

Preparedness support

Preparedness planning is essential in order to respond effectively to outbreaks and epidemics, although approaches tend to vary between countries.

The European Commission and the Member States, via the EU Health Security Committee, have therefore committed to further improve the level of their preparedness. Improving preparedness, while also making preparedness plans interoperable between countries and sectors – as required by Article 4 of Decision No. 1082/2013/EU on serious cross-border health threats – sets an ambitious agenda for all partners. ECDC will provide technical help and support throughout this process.

Since ECDC's inception 10 years ago, preparedness planning has always been a top priority. Two of the main pillars of preparedness are the Emergency Operations Centre (EOC) and the EU *Early Warning and Response System on Public Health Threats* (EWRS).

2014 was the first year of implementation for Decision 1082/2013/EU on serious cross-border health threats. ECDC provided technical support to the Commission on a number of tasks linked to implementation of Article 4 of the Decision, most notably the development of a questionnaire for Member States on preparedness arrangements and some initial work on methodologies, indicators, and tools for assessing preparedness.

From ECDC's guide on the safe use of personal protective equipment in the treatment of highly infectious diseases: safe removal of a respirator

In August, emphasis shifted to Ebola and whether EU Member States were prepared to manage possible Ebola cases. ECDC was called on to support the Commission in developing a questionnaire on this topic. The initial focus of this work was to assess the overall risk for the EU in a series of comprehensive rapid risk assessments, while at the same time addressing specific problems such as medical evacuation procedures for EU citizens exposed to Ebola. Later, the focus moved to the availability of isolation beds for Ebola cases and tutorials on the safe use of personal protective equipment by health workers treating Ebola cases.

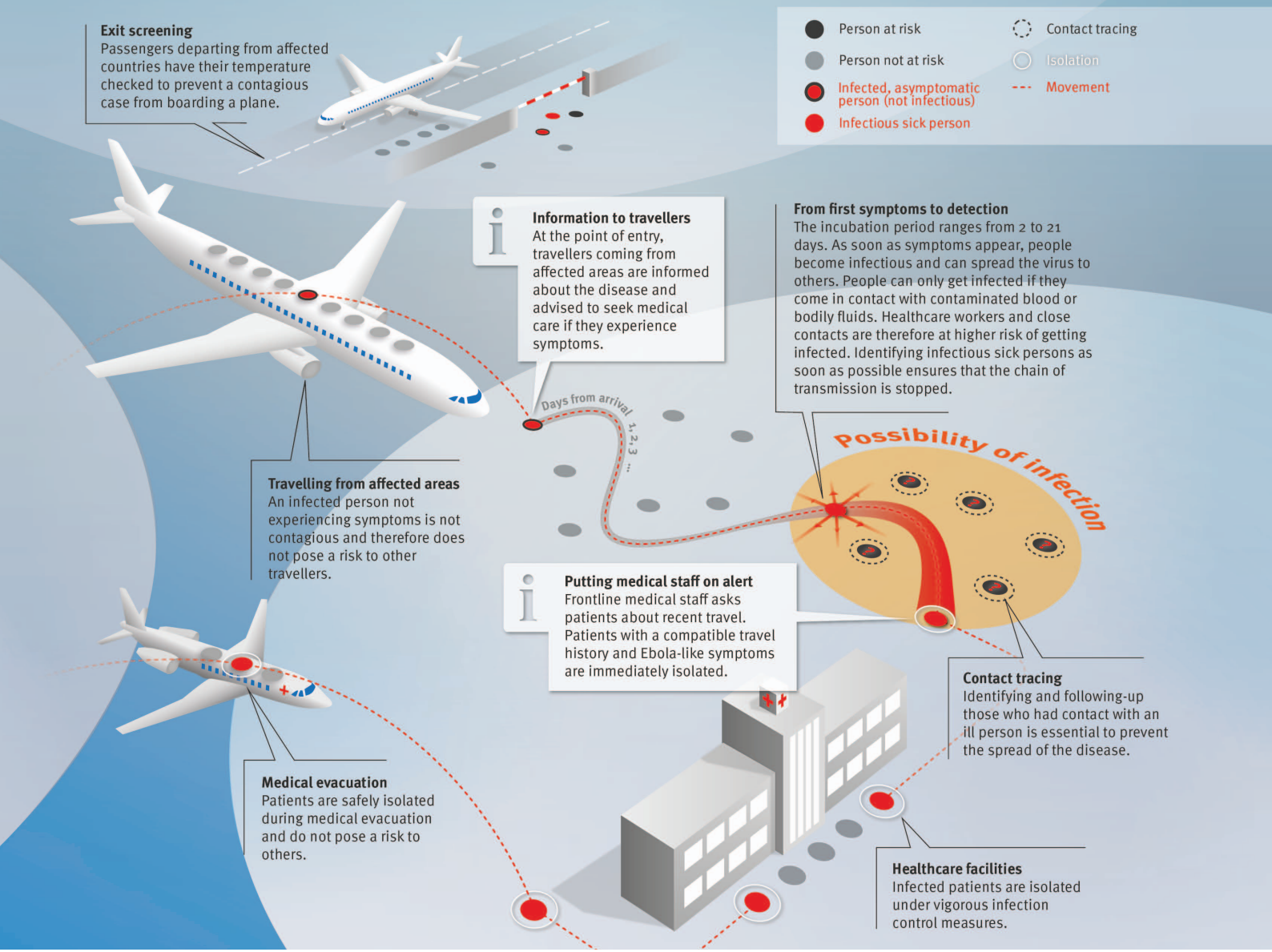
In March, ECDC conducted a crisis simulation exercise – based on a revised and updated Public Health Emergency plan – to test its ability to react to a crisis that emerges during a weekend. In September, experts from the Centre participated in an exercise led by the Commission to test EU-level cooperation against a chemical threat. In October, a first meeting of ECDC's network of National Focal Points for Preparedness took place to understand the gaps and needs at national and EU level, and a coordination group was elected to assist the Centre in its work. In addition, ECDC commissioned a number of case studies and literature reviews on preparedness for health threats[1] and published a handbook on how to organise crisis simulation exercises in EU public health settings[2].

1 European Centre for Disease Prevention and Control. Preparedness planning for respiratory viruses in EU Member States – Three case studies on MERS preparedness in the EU. Stockholm: ECDC; 2015.

2 European Centre for Disease Prevention and Control. Handbook on simulation exercises in EU public health settings – How to develop simulation exercises within the framework of public health response to communicable diseases. Stockholm: ECDC; 2014.

Ebola: reducing the risk of transmission

As long as the epidemic of Ebola virus disease is continuing and expanding in West Africa, the risk of importation of contagious cases to European and other countries increases. The risk of further transmission in Europe is extremely low, but cannot be excluded. To minimise this risk, public health efforts in the EU focus on early case detection and isolation.



Exit screening
Passengers departing from affected countries have their temperature checked to prevent a contagious case from boarding a plane.

Information to travellers
At the point of entry, travellers coming from affected areas are informed about the disease and advised to seek medical care if they experience symptoms.

From first symptoms to detection
The incubation period ranges from 2 to 21 days. As soon as symptoms appear, people become infectious and can spread the virus to others. People can only get infected if they come in contact with contaminated blood or bodily fluids. Healthcare workers and close contacts are therefore at higher risk of getting infected. Identifying infectious sick persons as soon as possible ensures that the chain of transmission is stopped.

Travelling from affected areas
An infected person not experiencing symptoms is not contagious and therefore does not pose a risk to other travellers.

Putting medical staff on alert
Frontline medical staff asks patients about recent travel. Patients with a compatible travel history and Ebola-like symptoms are immediately isolated.

Contact tracing
Identifying and following-up those who had contact with an ill person is essential to prevent the spread of the disease.

Medical evacuation
Patients are safely isolated during medical evacuation and do not pose a risk to others.

Healthcare facilities
Infected patients are isolated under vigorous infection control measures.

ECDC epidemiologist Alice Friaux teaches a class on Ebola prevention in Guinea

Prevention course graduates assemble outside the training building

Ebola and its health implications for the EU

The first cases of the West African Ebola epidemic were reported on 22 March 2014, with an initial report of 49 cases in Guinea. By the end of the year, WHO reported that 7 890 people had succumbed to the disease, with more than 20 000 probable, confirmed, and suspected cases in the region[1].

Despite earlier, much more limited outbreaks, scientific data on Ebola were sparse. ECDC quickly built an evidence base that would answer some of the most urgent questions on infection control, medevac flights to Europe, proper use of protective equipment, and border screening. These topics were of vital importance not only to West Africa but also to Europe, where the first evacuated healthcare workers infected with Ebola were arriving on medevac flights.

Keeping tabs on the actual number of Ebola cases in West Africa was difficult, and the affected countries faced a number of challenges in gathering data. Choosing a different angle, ECDC threw its weight behind scientific advice that had direct implications for public health in Europe. During the Ebola crisis, ECDC published a series of documents which put Ebola in a European context. For example, the Centre regularly surveyed the Member States' preparedness to manage Ebola cases, developed an Ebolavirus disease case definition for use by EU Member States, and assessed the risk of Ebola transmission through blood donations. In addition, ECDC published reports on entry and exit screening, medevac flights, public health management of people who had contact with Ebola cases in the EU, and public health management of healthcare workers returning from Ebola-affected areas.

ECDC – in conjunction with WHO and the Global Outbreak Alert and Response Network (GOARN) – has also deployed teams of public health experts to Guinea and made a commitment to send experts to the affected countries until June 2015.

1 World Health Organization. Ebola data and statistics. [Internet]. 2014 [cited 2015 Feb 26]. Available from: http://apps.who.int/gho/data/view.ebola-sitrep.ebola-summary-20141231?lang=en

Dr Zoltán Kis, a pharmacist with a specialisation in international public health, reports from his mission to Guéckédou, Guinea. Zoltán is enrolled in the EUPHEM Member State-track and also a trained member of the European Union Mobile Laboratory (EMLab) for rapid deployment in complex emerging situations

EPIET and EUPHEM: Giving European field epidemiology a much-needed boost

Preceding the establishment of ECDC by ten years, EPIET, the European Programme for Intervention Epidemiology Training, is now fully integrated in ECDC's scope of activities. EPIET and its partner programme EUPHEM, which focuses on public health microbiology training, are funded by ECDC. Salaries, however, are either paid by an ECDC grant (for EU-track fellows) or by the participating training institutions (Member State-track fellows).

The EPIET/EUPHEM two-year curriculum places a clear emphasis on assignments at public health institutes all across Europe where fellows are fully immersed in the daily workings of public health.

Participation in the introductory course and subsequent training modules provides the basic induction required to acquire competencies through practice.

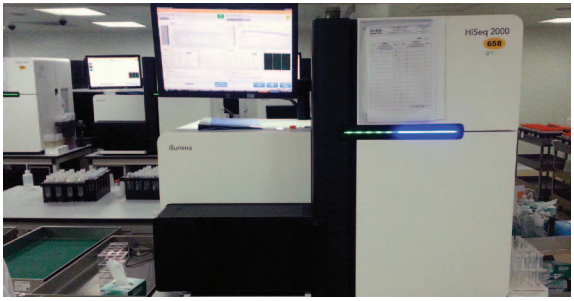
In 2014, a new cohort of 38 fellows was recruited, while 31 fellows graduated from the programmes. As at the end of 2014, 77 participants were enrolled in the EPIET/EUPHEM programmes.

EPIET has always been more than just a training programme for aspiring field epidemiologists. Programme participants provide on-location assistance to support Member States in their response to outbreaks and participate in international relief missions. In 2014, eleven EPIET fellows were on location in West Africa, supporting the international Ebola relief effort.

Preparing for a meeting with ECDC's National Microbiology Focal Points: Karl Ekdahl (Head of Unit, Public Health Capacity and Communication), Kathryn Edwards (Policy Expert), Amanda Ozin-Hofsäss (Senior Expert Microbiology) and Marc Struelens (Chief Microbiologist)

The changing landscape of public health microbiology

Whole genome analysis is currently transforming microbiological diagnostic and typing approaches, helping to uncover novel markers of virulence and drug resistance. At the same time, rapid microbial and drug resistance screening tools are reaching the point-of-care diagnostic market. In both areas, technology is progressing faster than the policy-building process in most Member States. ECDC's Public Health Microbiology Programme, in an attempt to overcome this disparity, critically assessed the accuracy and public health usefulness of these new technologies. As a first result of this assessment, ECDC and its networks have now agreed on a roadmap for a gradual and cost-efficient introduction of molecular typing technologies and the sharing of molecular data as part of EU-level disease surveillance.



Whole genome sequencers can analyse genomes from bacteria to large and complex organisms. High-throughput DNA sequencing machines like the ones at BGI Hong Kong can replace 50 machines of the previous generation, and rooms full of equipment for E. coli *amplification (cloning and robotic colony picking).*

How safe is your food?

Common food-borne diseases in the European Union in 2013

ecdc EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

efsa European Food Safety Authority

Number of outbreaks: 155	44	37	71	95

32 *Campylobacter* outbreaks

214 800 campylobacteriosis cases (44% hospitalised)

82 700 salmonellosis cases (36% hospitalised)

Other food sources

315 *Salmonella* outbreaks

6 500 yersiniosis cases (48% hospitalised)

1 *Yersinia* outbreak

6 000 VTEC* infections (37% hospitalised)

12 VTEC outbreaks

1 800 listeriosis cases (99% hospitalised)

* Verocytotoxin-producing *E. coli*.

Only strong-evidence outbreaks are visualised. Percent hospitalised is calculated from

Still indispensable: traditional laboratory diagnostics in a laboratory at the Swedish Smittskyddsinstitutet (Swedish Institute for Communicable Disease Control)

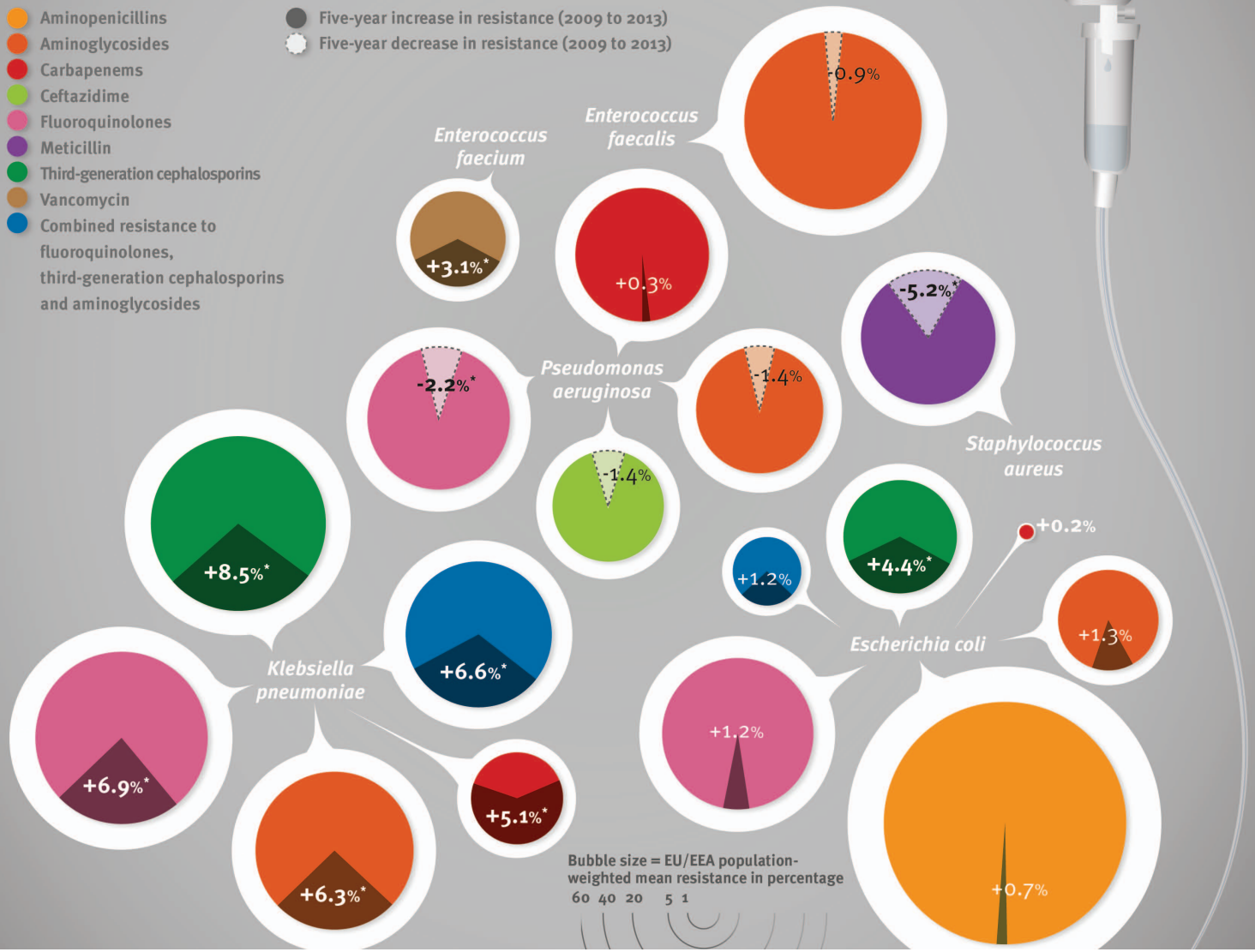
The pilot phase of EU level molecular surveillance, which covered three foodborne pathogens (*Salmonella*, *Listeria* and VTEC) received a positive evaluation in 2014. The sharing of molecular data became part of routine EU-level surveillance for these pathogens, and preparations began for extending molecular surveillance to other pathogens, for example *Neisseria meningitides*, multidrug-resistant *Neisseria gonorrhoeae*, MRSA and carbapenemase-producing Enterobacteriaceae.

Microbiology played an important role in the EU-level response to the Ebola epidemic in West Africa. One of the key objectives of the EU-level response was that health authorities in all Member States should have access to laboratories able to accurately, and safely, test for Ebola. ECDC's microbiologists worked with the European Commission-funded QUANDHIP network to achieve this objective and share good practice in testing methods.

As in previous years, laboratory networks linked to ECDC and the Centre's Disease Programmes organised external quality assessment (EQA) schemes to evaluate the capacity of laboratories to test for key pathogens and drug resistance traits. EQAs are consistently ranked among the activities perceived by the Centre's partners as adding the most EU-level value.

Antimicrobial resistance in Europe

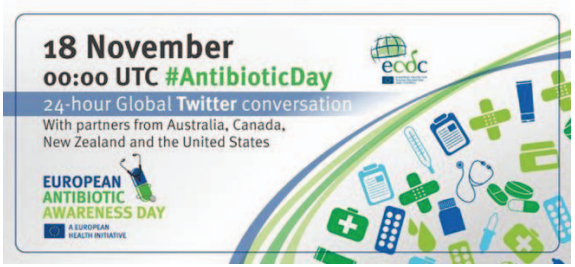
Each year, 30 EU/EEA countries report data on antimicrobial resistance to the European Antimicrobial Resistance Surveillance Network (EARS-Net), hosted at ECDC.



European Antibiotic Awareness Day

Now in its eighth year, 18 November is firmly established as European Antibiotic Awareness Day: a European health initiative coordinated by ECDC to raise awareness about the prudent use of antibiotics. ECDC supports countries across Europe to raise awareness on, and around, this day by providing toolkits containing key messages and template communication materials for adaptation and use in national campaigns, at EU-level events, and as strategy and media materials.

Over 40 countries participated in the 2014 European Antibiotic Awareness Day. A Global Twitter conversation, in connection with the European Twitter chat on 18 November, connected Europe, the United States, Canada, Australia and New Zealand. Scientific evidence of antibiotic resistance is mounting, and some of the most dramatic shifts were documented in ECDC's 2014 update of EU data on antimicrobial resistance and antimicrobial consumption.

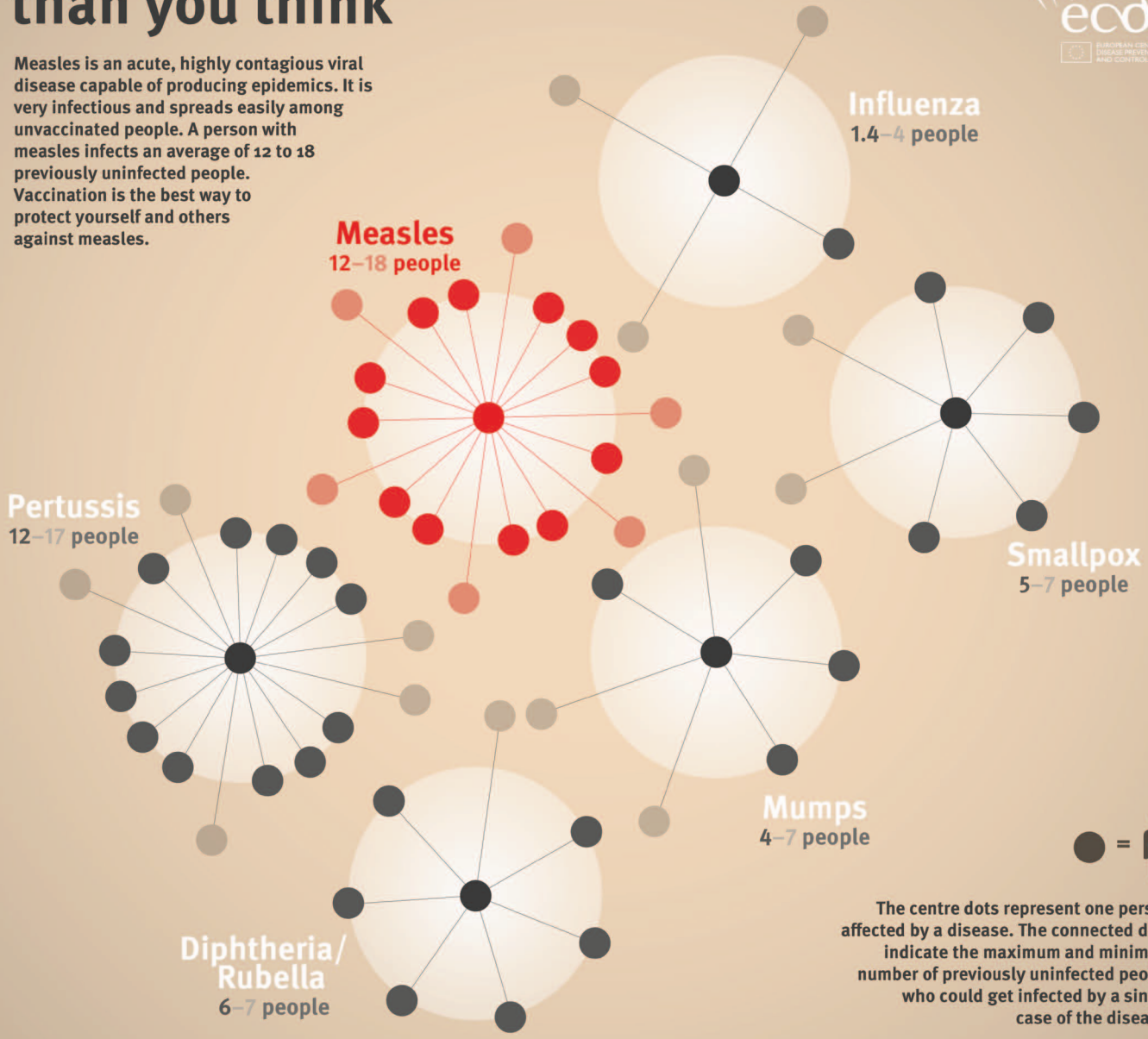


A Global Twitter conversation, related to the European Twitter chat on 18 November, connected Europe, the United States, Canada, Australia and New Zealand using the common hashtag #AntibioticDay

Campaign poster, European Antibiotic Awareness Day 2014

Measles is more contagious than you think

Measles is an acute, highly contagious viral disease capable of producing epidemics. It is very infectious and spreads easily among unvaccinated people. A person with measles infects an average of 12 to 18 previously uninfected people. Vaccination is the best way to protect yourself and others against measles.



The centre dots represent one person affected by a disease. The connected dots indicate the maximum and minimum number of previously uninfected people who could get infected by a single case of the disease.

Source: Plotkin S, Orenstein W, Offit P. Vaccines. Fifth Edition, 2008, Elsevier Inc.

Measles: Pushing for eradication

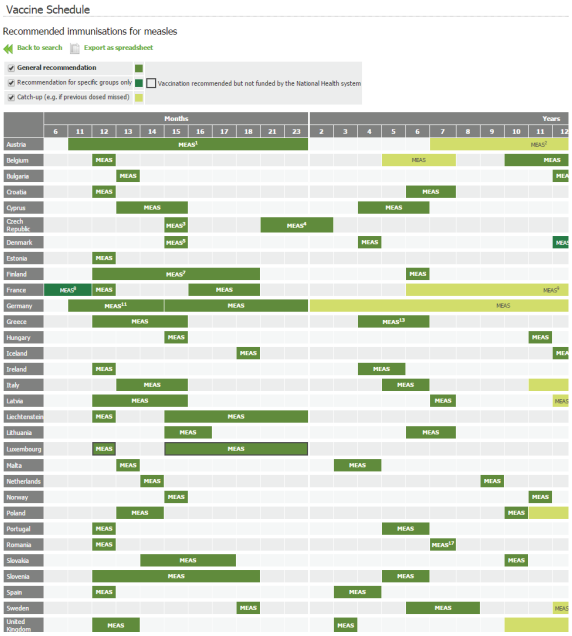
Two doses of the measles–mumps–rubella vaccine provide nearly total protection against measles. And if 95% of people in a population are fully immunised, this stops the virus from spreading.

Most countries in the EU have not reached this level of immunisation, so the EU continues to experience sporadic measles outbreaks.

ECDC continues to support the Member States in their efforts to reach measles eradication in Europe. In April 2014, ECDC published a special report on implementing the ECDC Action Plan for Measles and Rubella which summarised results from several ECDC initiatives in 2012 and 2013 and presented a new analysis of why the EU has so far not managed to eliminate measles. The report concluded that EU Member States have all the elements needed to eliminate measles and rubella, but need to take concerted and sustained action.

ECDC's surveillance of vaccine-preventable diseases received a major boost in 2014 when three surveillance networks (EUVac.Net; the European Invasive Bacterial Diseases Surveillance Network and the European Diphtheria Surveillance Network) were consolidated into one disease surveillance network.

Online, the EU Vaccination Gateway and the Vaccine Scheduler tool continued to be among the most visited features on ECDC's web portal.



The best protection against measles is to get vaccinated. The European vaccine scheduler helps finding the right point in time

Facts versus fiction, tabloid journalism versus scientific evidence: Gabriel Wikström, Swedish minister for public health, visited ECDC during the height of the Ebola crisis.
Meanwhile, and behind the scenes, the ECDC press and media team provided news and resources for journalists and media professionals, offering a comprehensive view of the EU's response to the Ebola outbreak in West Africa.

Communication matters

In 2014, ECDC released a total of 209 scientific publications. All publications undergo a structured editorial process which ensures that the information published by ECDC is academically sound as well as comprehensible for its key users.

Over the years, ECDC has established a strong online presence and is also active on Twitter, Facebook and YouTube. In 2014, a new section on Data and Tools was added to ECDC's web portal, featuring the *Surveillance Atlas of Infectious Diseases*. The Atlas went live in mid-2014, offering interactive access to case-based EU-level surveillance data on invasive *Haemophilus influenzae disease*, invasive meningococcal disease, and tuberculosis.

Throughout the year, but especially in response to the first local transmission of Ebola in Europe in October 2014, ECDC provided a high-quality service for journalists. The Centre also worked in close cooperation with the Commission and the Health Security Committee, including ECDC's Communicators network, to support an EU-wide communication response.

In 2012, the scientific journal *Eurosurveillance* received its first impact factor. The impact factor in 2014 was 4.65, which put *Eurosurveillance* in the top 10 of infectious disease journals. In the SCImago journal rank, it was listed in the first quarter of journals in four categories (medicine general, virology, public health, environmental and occupational health). The Google Scholar metrics were equally favourable, with the journal ranked fourth and tenth among journals in epidemiology and communicable diseases.

Country preparedness support is another major element of ECDC's approach to communication. The term

Figure 3

Location of sexually transmitted infection clinics[a] and (i) rate of gonorrhoea diagnoses[b] by lower super output area (LSOA) in 2013, and (ii) index of multiple deprivation in 2010[c] by LSOA and lower-tier local authority, London

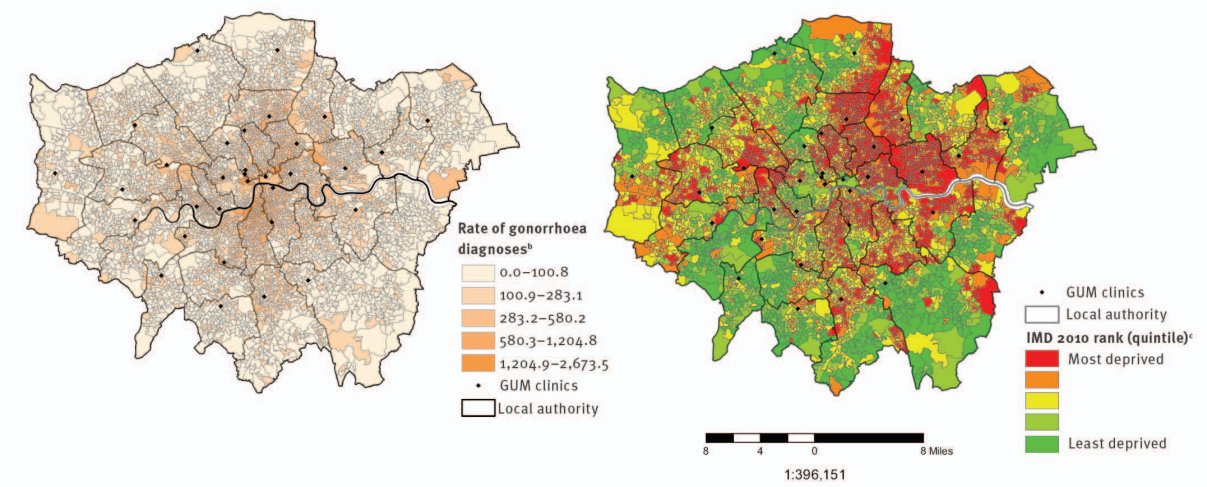
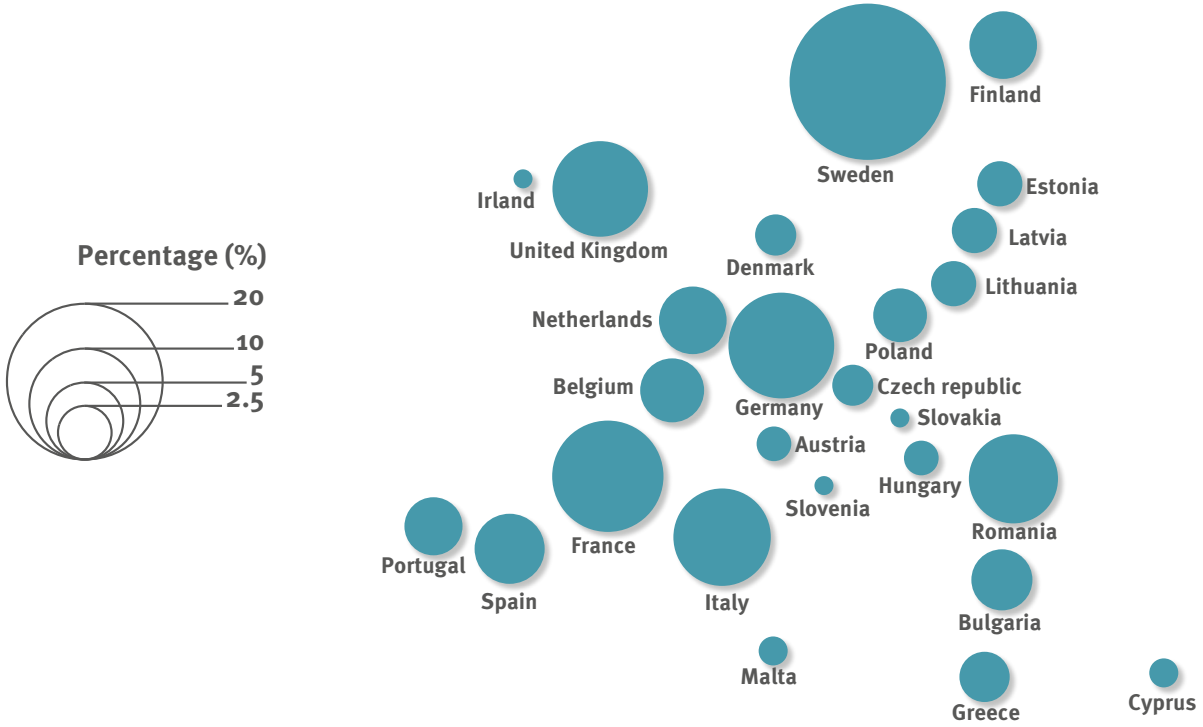


Figure from a Eurosurveillance *article on surveillance of sexually transmitted infections.*
Savage EJ, Mohammed H, Leong G, Duffell S, Hughes G. Improving surveillance of sexually transmitted infections using mandatory electronic clinical reporting: the genitourinary medicine clinic activity dataset, England, 2009 to 2013. Euro Surveill. 2014;19(48)

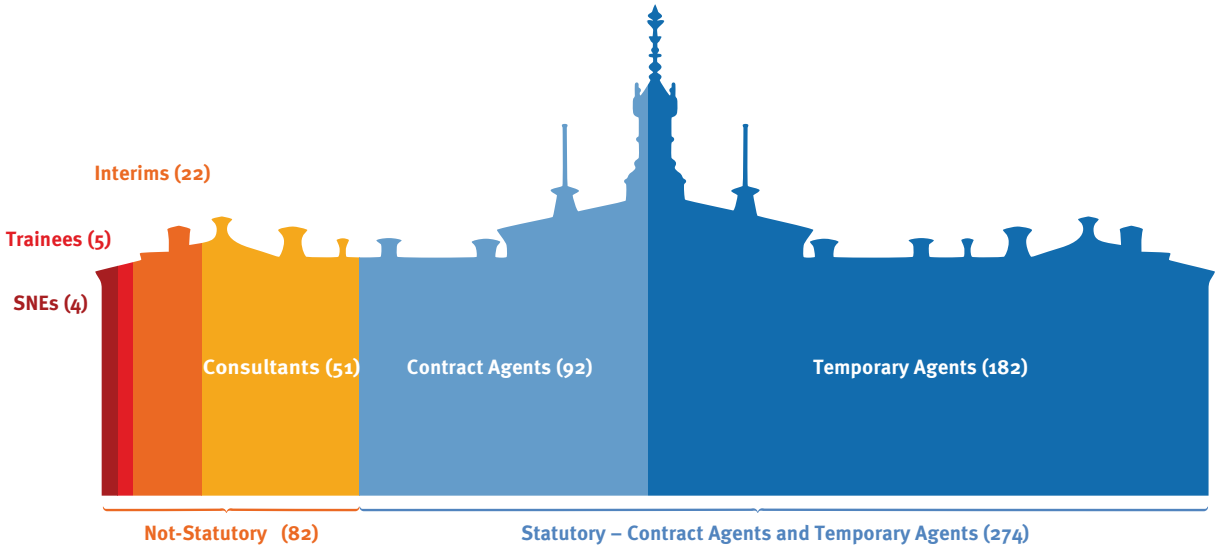
refers to the coordination of activities related to the efficient planning and evaluation of public health measures in the Member States. Country preparedness support can range from preventive action (i.e. the promotion of vaccinations) to emergency preparedness for major outbreaks. This is achieved by offering assessment tools, scientific guidance, and the exchange of experiences and best practices. A good example of ECDC's activities in this area is the cultural adaptation of the ECDC guide *Let's talk about protection* which supports GPs in their conversations with parents on vaccination.

ECDC at a glance

At the end of 2014, ECDC had 277 full-time staff members. 182 temporary agents, 92 contract agents and three seconded national experts. All EU Member States, with the exception of Luxembourg and Croatia are represented among the Centre's staff.



All EU Member States, with the exception of Luxembourg and Croatia, are represented among the Centre's staff



Proportion and geographic balance of statutory ECDC staff (Contract Agents and Temporary Agents), by Member States, 31 December 2014

ECDC budget

Note: Only major budget categories are included

TQ-01-15-379-EN-N

European Centre for Disease Prevention and Control (ECDC)

Postal address:
ECDC, SE-171 83 Stockholm, SWEDEN

Visiting address:
Tomtebodavägen 11A, Solna, SWEDEN

Tel. +46 858601000
Fax +46 858601001
http://www.ecdc.europa.eu

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