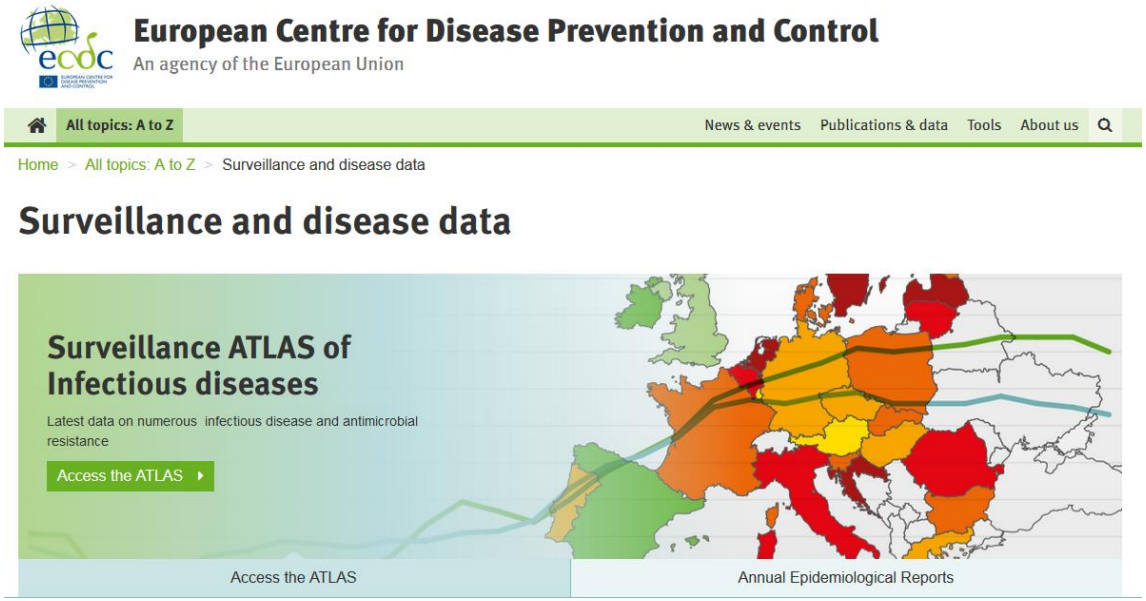
La surveillance à l'échelle européenne : rôle de l'ECDC

22es Journées Nationales d'Infectiologie de Montpellier, 30 août 2021

Julien Beauté
julien.beaute@ecdc.europa.eu

ECDC surveillance activities

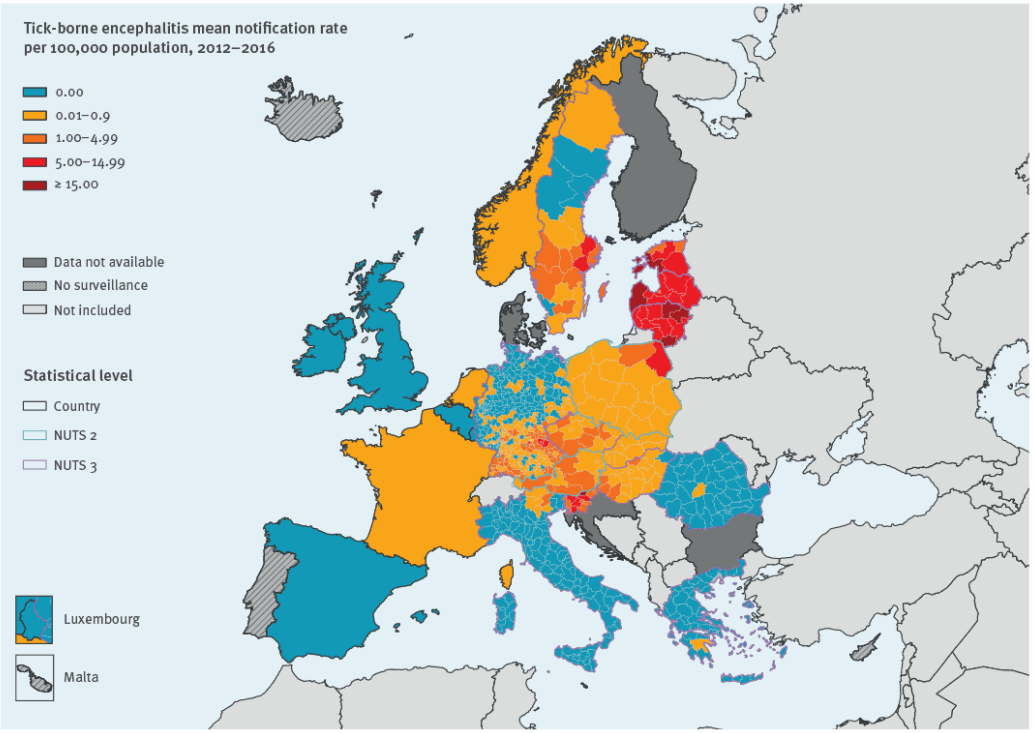
- Tools and procedures
- Data analysis and interpretation
- Data dissemination



https://www.ecdc.europa.eu/en/about-us/what-we-do/ecdc-activities-surveillance

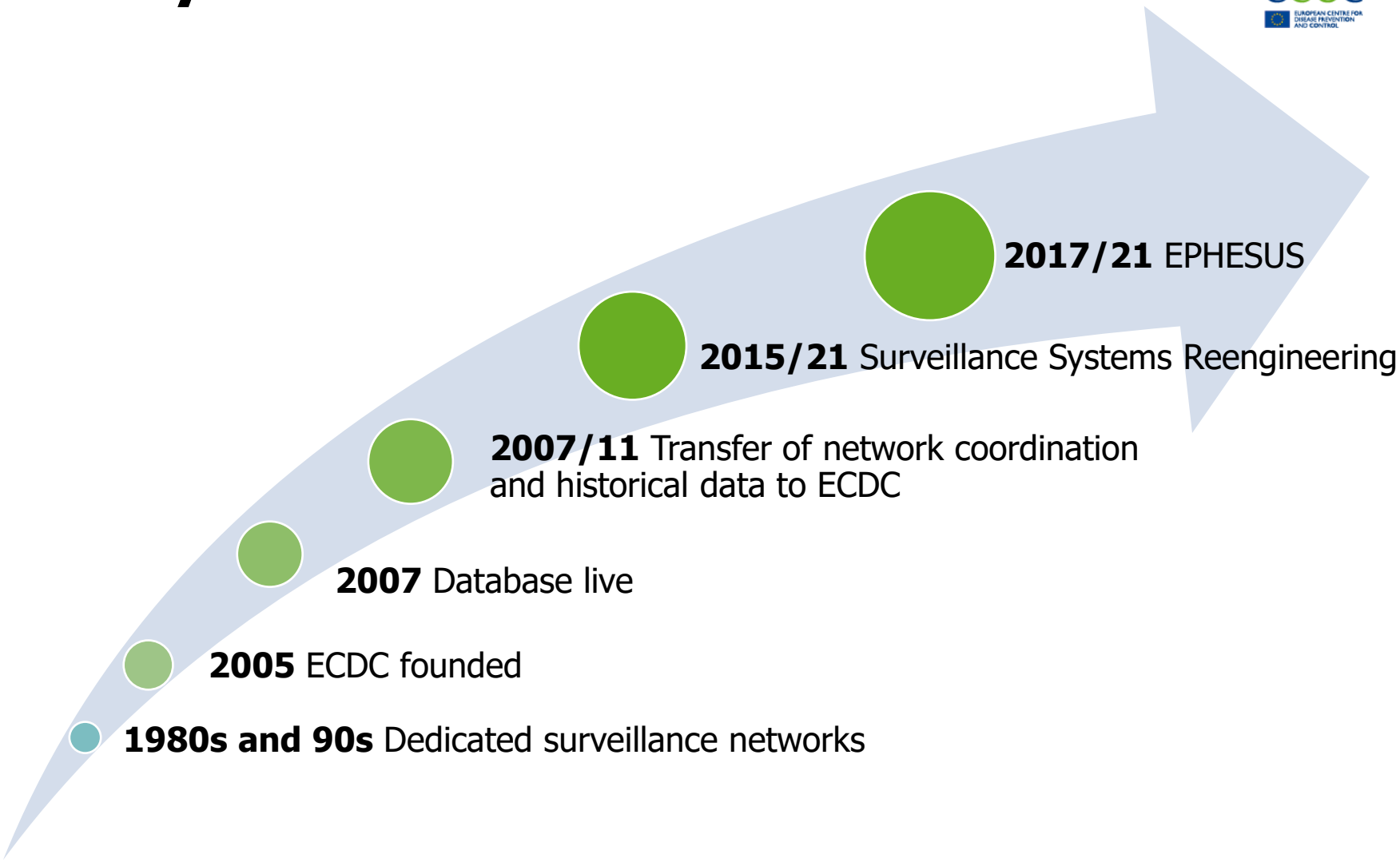
Objectives of surveillance

- Descriptive disease epidemiology
- Outbreak detection
- Information for healthcare provision
- Evaluation of interventions
- Research
- …

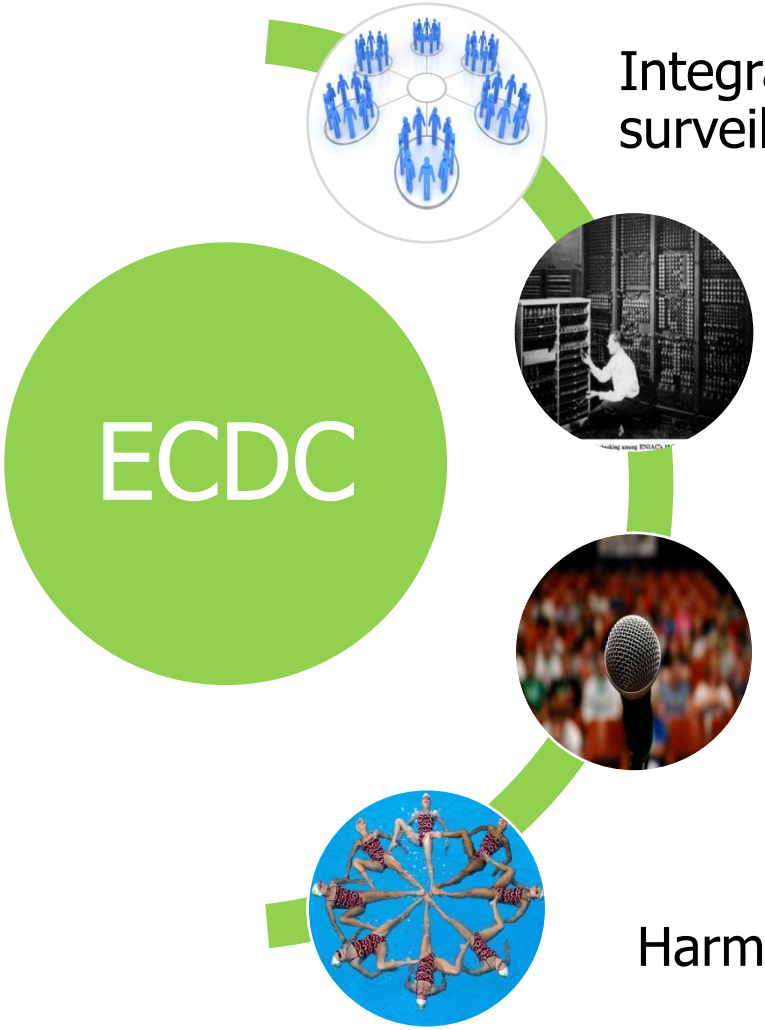


Beauté J, Spiteri G, Warns-Petit E, Zeller H. Tick-borne encephalitis in Europe, 2012 to 2016. Euro Surveill. 2018;23(45).

History


2017/21 EPHESUS
2015/21 Surveillance Systems Reengineering
2007/11 Transfer of network coordination and historical data to ECDC
2007 Database live
2005 ECDC founded
1980s and 90s Dedicated surveillance networks

Role of ECDC
(as per founding regulation)



Integrated operation of surveillance networks

Maintain surveillance database

Communicate data analyse results

Harmonise and rationalise

EpiPulse - the European surveillance portal for infectious diseases

- Online portal for European public health authorities and global partners
- Supports threat detection, monitoring, risk assessment, and outbreak response
- Integrates different platforms:
  - The European Surveillance System (TESSy);
  - The Epidemic Intelligence Information System (EPIS) platforms;
  - The Threat Tracking Tool (TTT).
- Facilitates collection, analysis and dissemination of indicator- and event-based surveillance data on infectious diseases

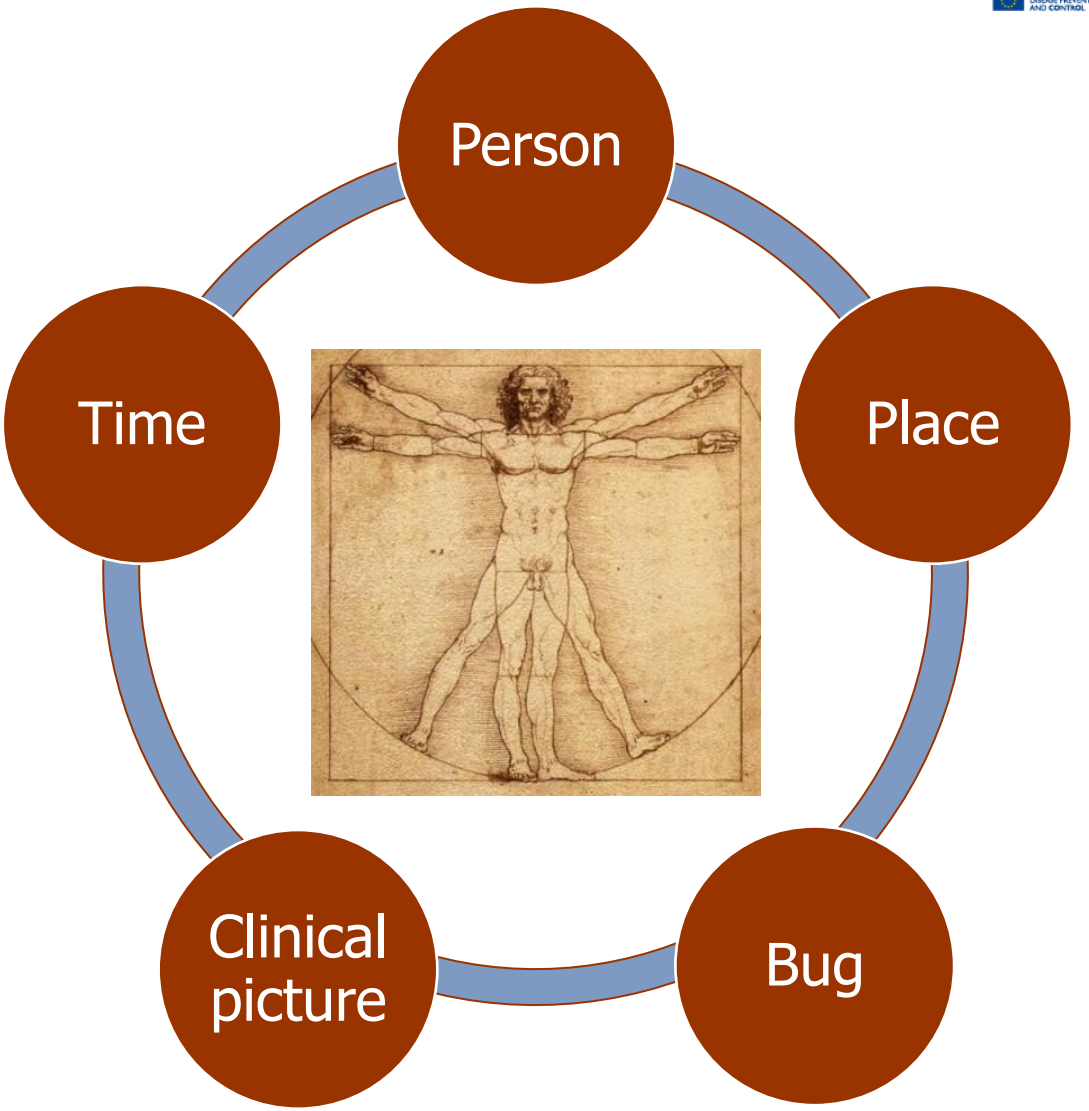
Surveillance systems

- Description of surveillance system
  - To make sure it is fit for purpose
  - To help interpret the data
- Set of indicators, including
  - System design
  - Coverage
  - Case definition
  - …
- Toward surveillance standards

Beauté J, Ciancio BC, Panagiotopoulos T. Infectious disease surveillance system descriptors: proposal for a comprehensive set. Euro Surveill. 2020;25(27).

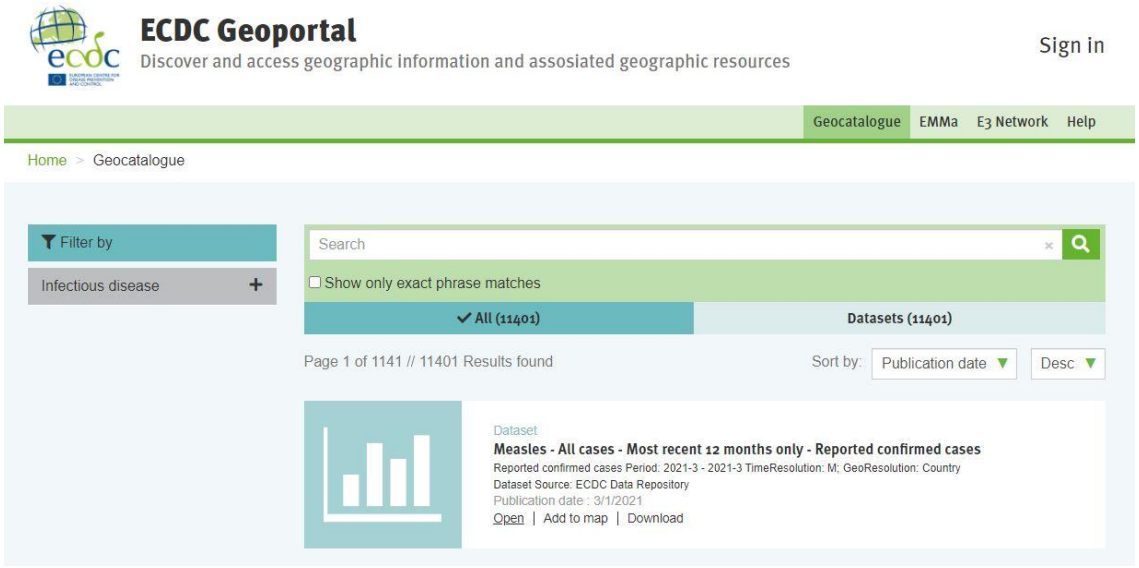
Metadata

- List of variables and values for each disease under surveillance
- Agreed with Member States
- Binding for data providers
- Updates max. once per year



https://www.ecdc.europa.eu/en/publications-data/tessy-metadata-report

Data management, access, and analysis

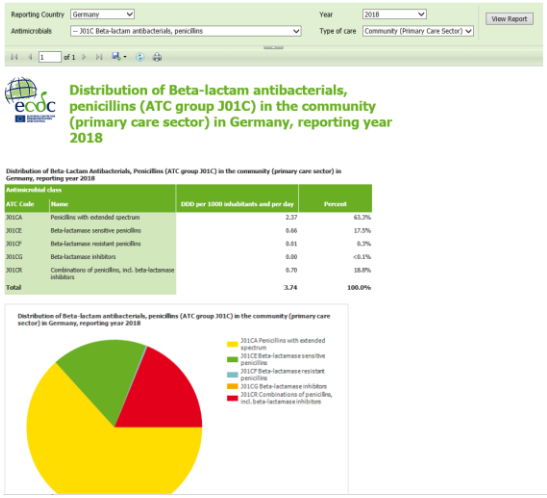


https://geoportal.ecdc.europa.eu/geocatalogue/

Automated surveillance outputs

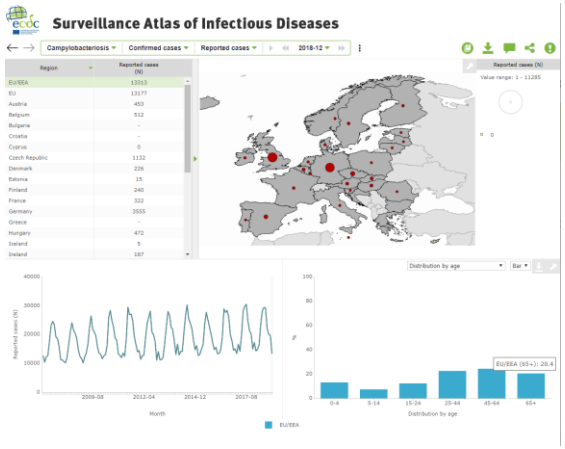
TESSy reports

- Restricted
- Static
- Generic and disease specific



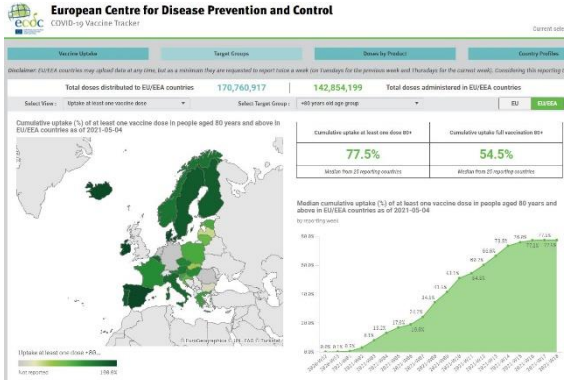
Surveillance atlas

- Public
- Limited interactivity
- Generic



Dashboards

- Public
- Interactive
- Disease specific



https://atlas.ecdc.europa.eu/public/index.aspx

Semi-automated and manual outputs

AER

- Public
- Descriptive
- Generic

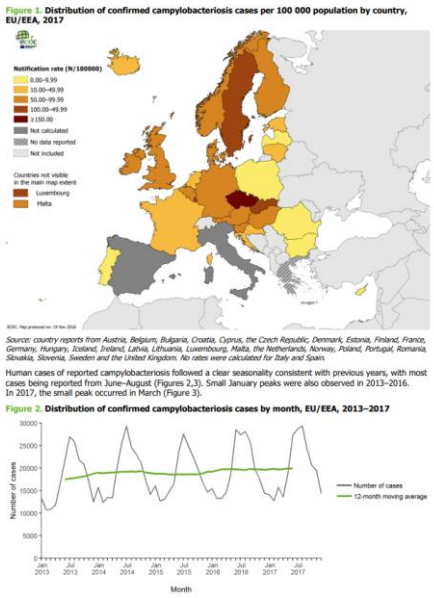


Figure 1. Distribution of confirmed campylobacteriosis cases per 100 000 population by country, EU/EEA, 2017

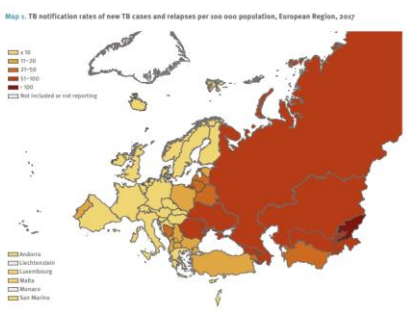
Source: country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden and the United Kingdom. No rates were calculated for Italy and Spain.

Human cases of reported campylobacteriosis followed a clear seasonality consistent with previous years, with most cases being reported from June–August (Figures 2,3). Small January peaks were also observed in 2013–2016. In 2017, the small peak occurred in March (Figure 3).

Figure 2. Distribution of confirmed campylobacteriosis cases by month, EU/EEA, 2013–2017

Enhanced reports

- Public
- Mostly descriptive
- Disease specific


Map 1. TB notification rates of new TB cases and relapses per 100 000 population, European Region, 2017

During the period 2013–2017, an overall downward trend of 21.3% was observed in the notification of incident TB cases, from 32.9 to 25.9 cases per 100 000 population (Table 4). This trend reflects a genuine reduction in the spread of the disease, significantly influenced by the decrease in notification rates throughout the Region's 18 HPCs from 63.6 to 49.1 per 100 000 population. The notification rate of new and relapse cases in the 18 HPCs is almost twice as high as for the Region overall (49.1 cases per 100 000, compared to 25.9 for the Region) and about five times higher than the rate in the EU/EEA (10.2 cases per 100 000 population) (Fig. 1).

Previous treatment history

Previously treated cases represented 10.0% and 31.7% in the EU/EEA and non-EU/EEA respectively in 2017. The average in the 18 HPCs was 31.2%, impacting the pan-European average of 27.4%. Previously treated cases accounted for 15% or more of all TB cases in 16 countries: Azerbaijan (45.7%), the Russian Federation (37.9%), Ukraine (30.7%), the Republic of Moldova (30.5%), Kazakhstan (27.2%), Kyrgyzstan (26.8%), Georgia (26.1%), Armenia (25.4%), Belarus (25.0%), Uzbekistan (24.7%), Romania (20.2%), Lithuania (19.5%), Tajikistan (16.7%), Estonia (16.6%), Slovakia (16.5%) and Turkmenistan (15.8%). Reasons for the high percentage of previously treated cases include clinical failure or poor treatment adherence in previous treatment episodes, and possible re-infection and misclassification during the current treatment episode.

Disease localization

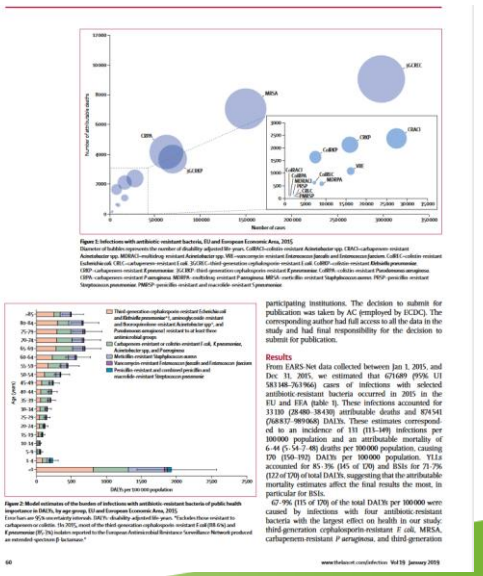
Pulmonary localization was notified in about 83% of the incident TB cases in the Region in 2017 (Table 7b). The proportion of patients with pulmonary localization in the non-EU/EEA was slightly higher compared to EU/EEA countries. Extrapulmonary TB was notified on average for 17% of all incident TB cases in the Region. Eight countries reported more than 30% of their TB cases having extrapulmonary localization: Albania, the Netherlands, Norway, Sweden, Tajikistan, Turkey, the United Kingdom and Uzbekistan.

Bacteriological confirmation

Bacteriological confirmation of TB diagnosis was reported for 129 065 (64.8%) of all 199 129 new and relapse pulmonary cases in the Region (Table 7b). Testing of cases using WHO (such as Xpert MTB/RIF) was much lower in EU/EEA countries (25.0%) than in the non-EU/EEA countries and

Advanced outputs

- Public
- Mostly analytic
- Disease specific



participating institutions. The decision to submit for publication was taken by AC (employed by ECDC). The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

Results

From EARS-Net data collected between Jan 1, 2015, and Dec 31, 2015, we estimated that 671 689 (95% UI 583 148–763 966) cases of infections with selected antibiotic-resistant bacteria occurred in 2015 in the EU and EEA (table 1). These infections accounted for 33 110 (28 480–38 430) attributable deaths and 874 541 (768 837–989 068) DALYs. These estimates corresponded to an incidence of 131 (113–149) infections per 100 000 population and an attributable mortality of 6·44 (5·54–7·48) deaths per 100 000 population, causing 170 (150–192) DALYs per 100 000 population. YLLs accounted for 85·3% (145 of 170) and RSIs for 71·7% (122 of 170) of total DALYs, suggesting that the attributable mortality estimates affect the final results the most, in particular for RSIs.

67·9% (115 of 170) of the total DALYs per 100 000 were caused by infections with four antibiotic-resistant bacteria with the largest effect on health in our study: third-generation cephalosporin-resistant *E coli*, MRSA, carbapenem-resistant *P aeruginosa*, and third-generation

Surveillance cycle

Reports

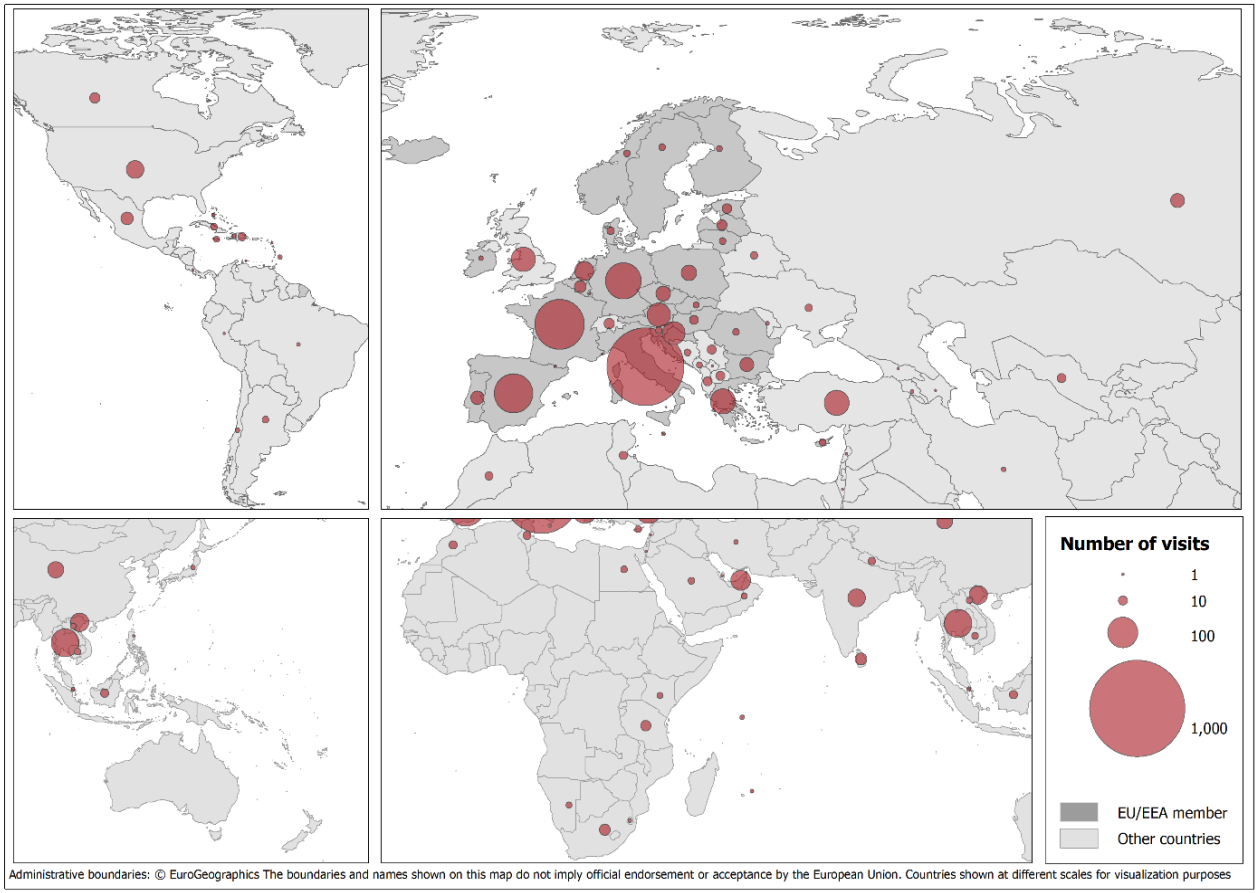
Metadata revision

Atlas, Geoportal

Data call

Data collection

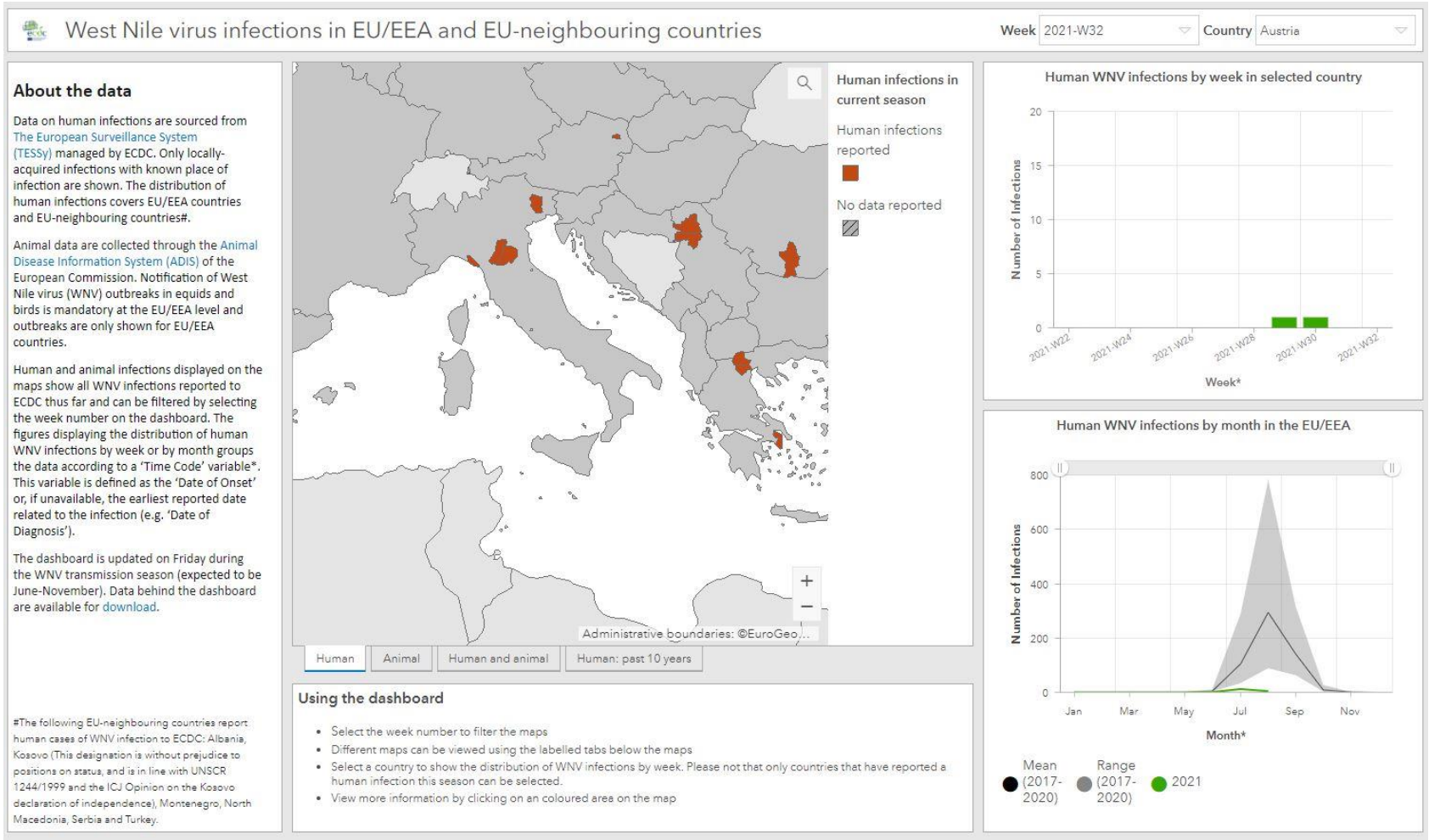
Near-real-time reporting of travel-associated cases of Legionnaires' disease to inform control measures at the implicated tourist accommodation sites



Distribution of accommodation site visits made by travel-associated Legionnaires' disease cases, by destination country, worldwide, 2019

https://www.ecdc.europa.eu/en/all-topics-z/surveillance-and-disease-data/annual-epidemiological-reports-aers

Surveillance of West Nile Virus to inform measures to prevent transmission via SoHO



https://www.ecdc.europa.eu/en/west-nile-virus-infection

HIV in people over the age of 50 years : findings from a pooled analysis

- Around one in six new cases of HIV diagnosed in Europe are in people aged 50 years and over;
- Older people more likely to be diagnosed with advanced HIV disease, and acquire HIV through heterosexual sexual contact.

Articles

New HIV diagnoses among adults aged 50 years or older in 31 European countries, 2004–15: an analysis of surveillance data

*Lara Tavoschi, Joana Gomes Dias, Anastasia Pharris, on behalf of the EU/EEA HIV Surveillance Network**

Summary

Background The HIV burden is increasing in older adults in the European Union (EU) and European Economic Area (EEA). We investigated factors associated with HIV diagnosis in older adults in the 31 EU/EEA countries during a 12 year period.

Methods In this analysis of surveillance data, we compared data from older people (aged ≥50 years) with those from younger people (aged 15–49 years). We extracted new HIV diagnoses reported to the European Surveillance System between Jan 1, 2004, and Dec 31, 2015, and stratified them by age, sex, migration status, transmission route, and CD4 cell count. We defined late diagnosis as CD4 count of less than 350 cells per μL at diagnosis and diagnosis with advanced HIV disease as less than 200 cells per μL. We compared the two age groups with the χ^2 test for difference, and used linear regression analysis to assess temporal trends.

Findings During the study period 54 102 new HIV diagnoses were reported in older adults. The average notification rate of new diagnoses was 2·6 per 100 000 population across the whole 12 year period, which significantly increased over time (annual average change [AAC] 2·1%, 95% CI 1·1–3·1; p=0·0009). Notification rates for new HIV diagnoses in older adults increased significantly in 16 countries in 2004–15, clustering in central and eastern EU/EEA countries. In 2015, compared with younger adults, older individuals were more likely to originate from the reporting country, to have acquired HIV via heterosexual contact, and to present late (p<0·0001 for all comparisons). HIV diagnoses increased significantly over time among older men (AAC 2·2%, 95% CI 1·2–3·3; p=0·0006), women (1·3%, 0·2–2·4; p=0·025), men who have sex with men (5·8%, 4·3–7·5; p<0·0001), and injecting drug users (7·4%, 4·8–10·2; p<0·0001).

Interpretation Our findings suggest that there is a compelling need to deliver more targeted testing interventions for older adults and the general adult population, such as by increasing awareness among health-care workers and expanding opportunities for provider-initiated and indicator-condition-guided testing programmes.

Funding European Centre for Disease Prevention and Control.

Lancet HIV 2017

Published Online September 26, 2017 http://dx.doi.org/10.1016/S2352-3018(17)30155-8

See Online/Comment http://dx.doi.org/10.1016/S2352-3018(17)30151-0

*Members listed at the end of the paper

European Centre for Disease Prevention and Control, Solna, Sweden (L Tavoschi PhD, J Gomes Dias MSc, A Pharris PhD)

Correspondence to: Dr Lara Tavoschi, European Centre for Disease Prevention and Control, Tomtebodavägen 11A, 171 65 Solna, Sweden lara.tavoschi@ecdc.europa.eu

Introduction

The global population is ageing as a combined result of improvements in living standards, decreasing mortality, and declining fertility.[1] Data from high-income countries, such as the 31 member states of the European Economic Area (EEA, which consists of the 28 countries of the European Union [EU] plus Iceland, Liechtenstein, and Norway), show a steady increase in life expectancy at age 60 years.[2] Health and ageing are high on the global agenda in view of the growing burden of disease among adults aged 50 years or older, the corresponding need for health-care systems to adapt to evolving demands, and the call to invest in healthy ageing.[3]

In 2013, UNAIDS estimated that 4·2 million people aged 50 years or older were living with HIV worldwide. The prevalence of HIV in this segment of the population has steadily increased over the past couple of decades in all WHO regions, particularly in central and western Europe, the USA, and Canada.[3,4] This increase has been attributed to two distinct factors: the rise in life expectancy among people living with HIV on antiretroviral therapy (ART), and the rise, in some settings, in the number of people seroconverting at older ages.[3,4,5]

An increasing trend of new HIV diagnoses among adults aged 50 years or older across the WHO European region[6] and in specific EEA countries[6,7] has been noted. However, no in-depth analysis has been done of the population of older adults newly diagnosed with HIV in the EU/EEA. Estimation of the incidence of HIV is challenging, because infection might have occurred several years before symptoms arise or diagnosis is made. A proxy is provided by surveillance of new diagnoses reported over time. An estimate of about 30 000 new infections occur annually across all age groups in the EU/EEA, with substantial variability in notification rates across countries.[8,9] Studies suggest that older adults infected with HIV are more likely to present late[6,7,10] and are at increased risk of short-term mortality[6,11] than are younger adults. Older adults living with HIV and health professionals caring for them face unique challenges, first and foremost that of increasing coverage and uptake of testing to promote early diagnosis and reduce stigma.[12]

The future

- Multiple data sources
  - Genomic data
  - Web scraping
  - eHealth
  - Environmental data
  - Mobility data
  - Surveys
  - …
- From TESSy to Epipulse
  - Electronic workflows
  - Validation reports
  - Embedded analytical tools
  - Integration with event-based surveillance

Thank you