

infographics at ECDC



EUROPEAN CENTRE FOR
DISEASE PREVENTION
AND CONTROL

EUROPEAN ANTIBIOTIC AWARENESS DAY



A European Health Initiative

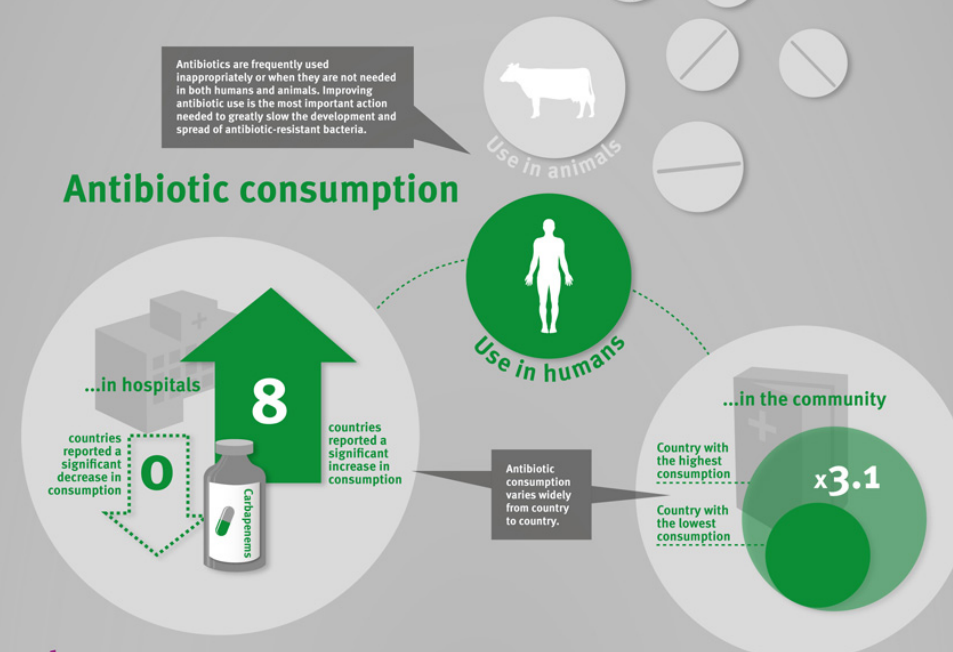


Antibiotics be responsible

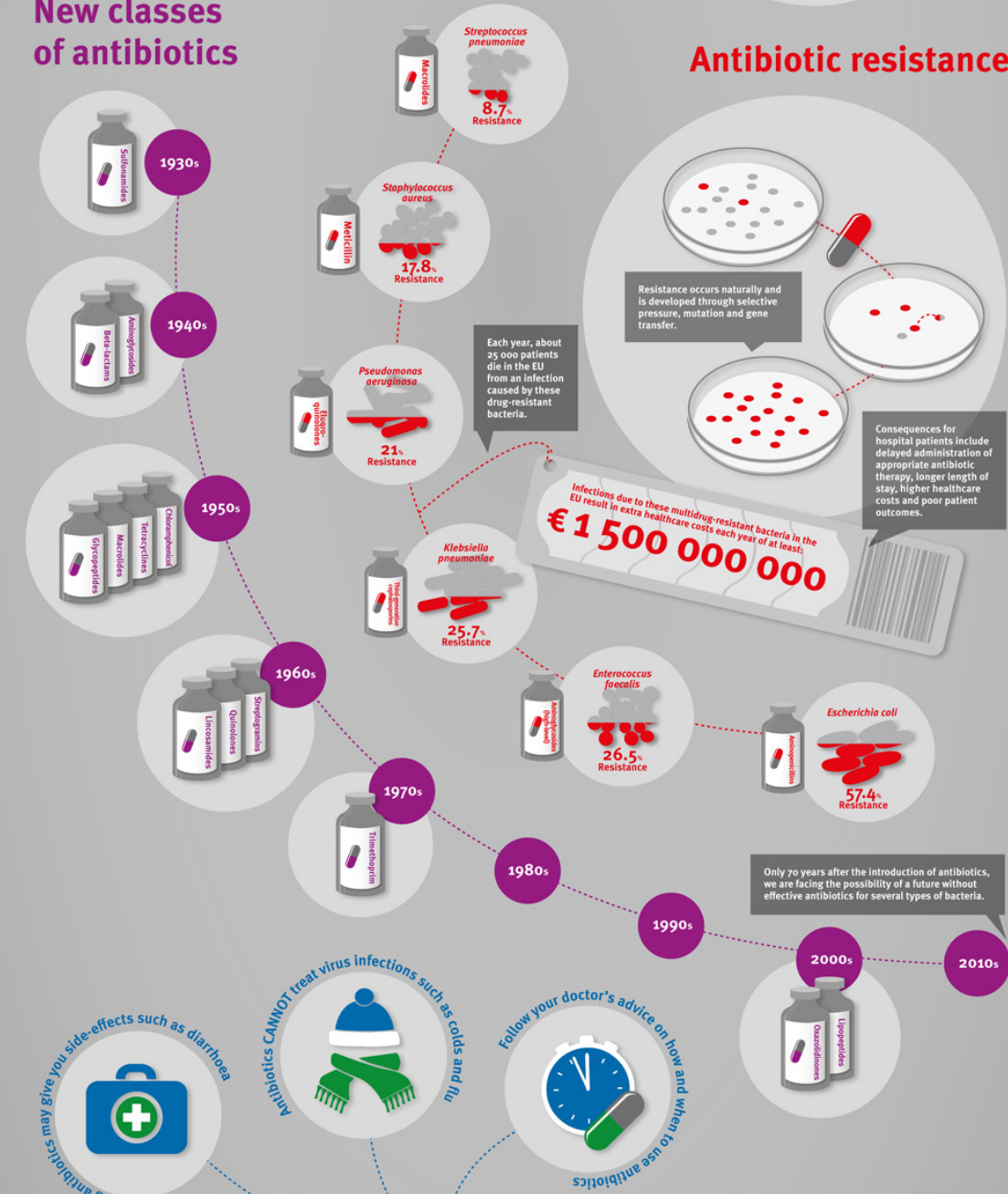
The emergence and spread of antibiotic resistance, in other words the ability of bacteria to resist the action of an antibiotic, has become a recognised global problem. Antibiotic resistance severely limits the number of antibiotics available for the treatment of diseases.

Each year, 30 EU/EEA countries report data on antimicrobial resistance to the European Antimicrobial Resistance Surveillance Network (EARS-Net) and on antimicrobial consumption to the European Surveillance of Antimicrobial Consumption network (ESAC-Net). Both networks are hosted at ECDC.

Antibiotic consumption



New classes of antibiotics



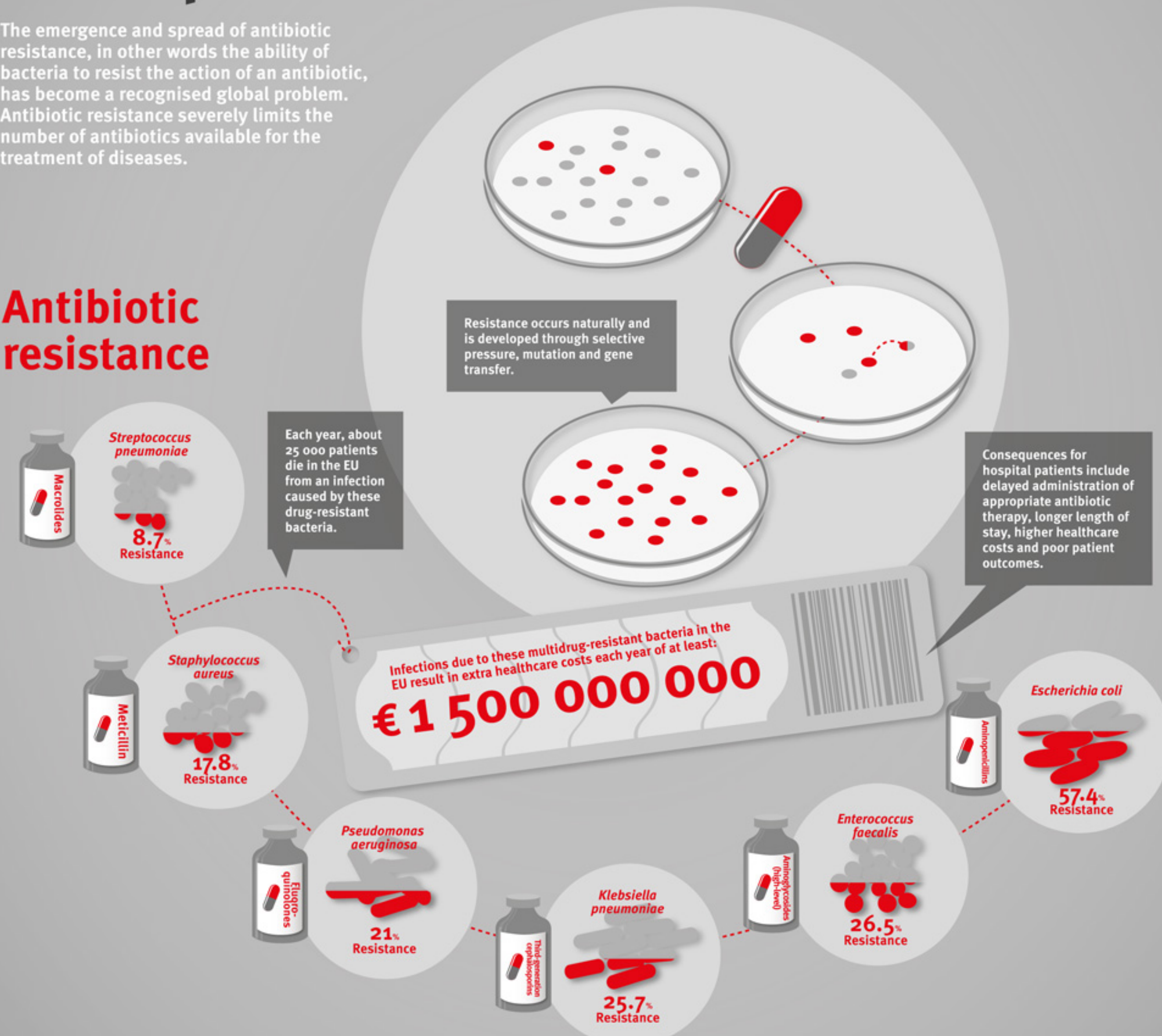
Take antibiotics responsibly!

Antibiotics be responsible

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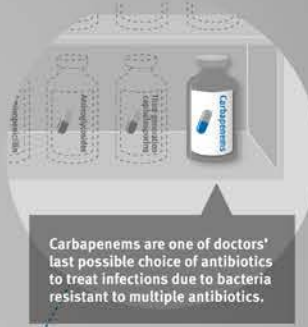
Antibiotic resistance



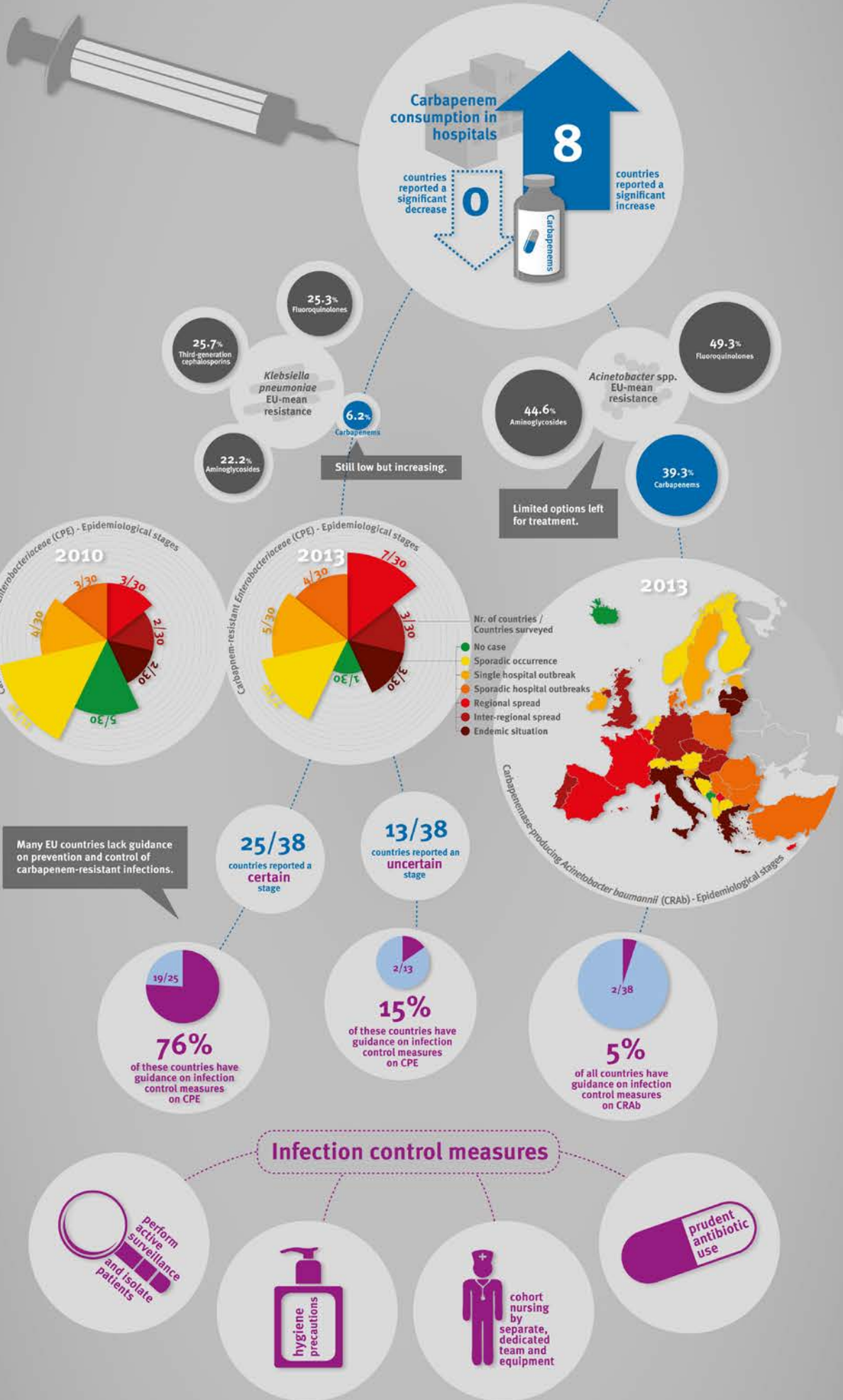
Growing resistance to last-line antibiotics

Carbapenems are a major last-line class of antibiotics to treat bacterial infections. The spread of carbapenem-resistant infections is a threat to healthcare and patient safety in Europe as it seriously curtails the ability to cure infections.

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Carbapenems are one of doctors' last possible choice of antibiotics to treat infections due to bacteria resistant to multiple antibiotics.

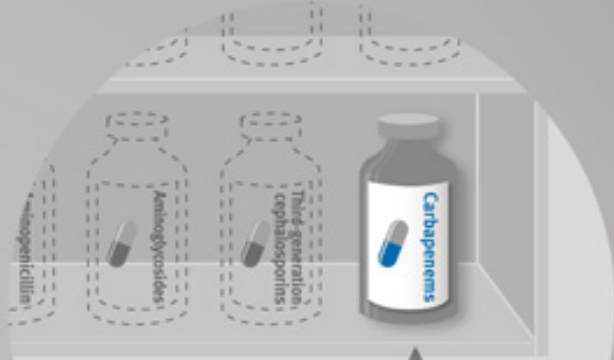


Everyone is responsible.
Use antibiotics prudently!

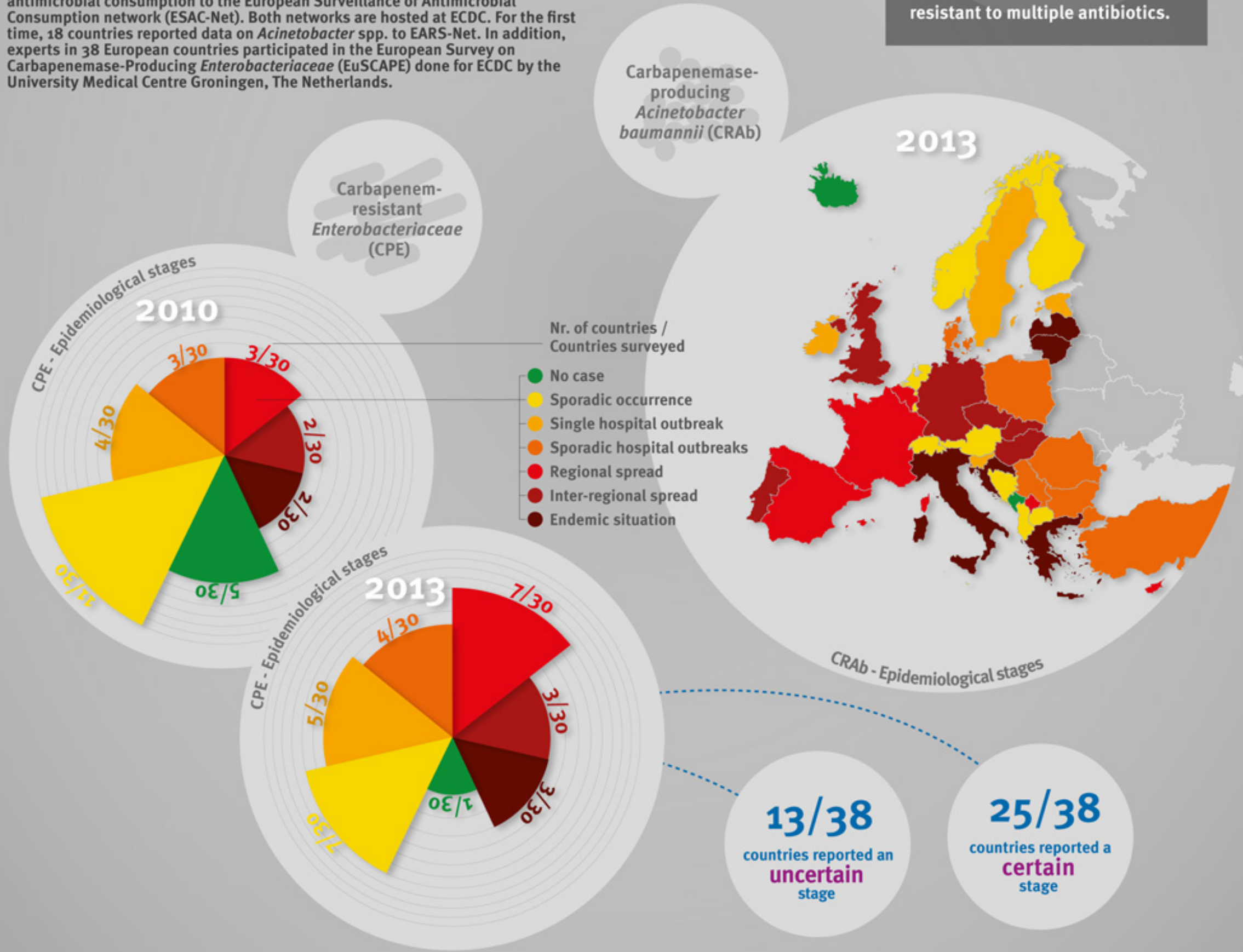
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Tuberculosis

Tuberculosis (TB) is a serious and sometimes lethal infectious bacterial disease which most commonly affects the lungs. It is caused by various strains of mycobacteria, usually *Mycobacterium tuberculosis*.

One untreated person with TB can infect 10–15 other individuals per year

How is it transmitted?



Mainly transmitted from person to person through the air. When someone with active pulmonary TB coughs, sneezes, spits or speaks, infected droplets can be projected into the air. Inhaled bacteria can then lodge in the lungs and cause TB. In general, the closer and more frequent the contact, the higher the chance of transmission.

What treatments are there?



Tuberculosis is a curable disease but TB bacteria are difficult to eliminate. Standard treatment lasts at least six months and consists of a combination of antibiotics. It can have adverse reactions and should be followed thoroughly to be effective.

Is it preventable?



Good cough hygiene reduces transmission. Vaccination provides some protection against TB. It is primarily given to infants to protect against severe forms of TB. Transmission of TB is prevented best by quickly detecting and treating people with infectious pulmonary tuberculosis.

What are the symptoms?



Cough with sputum, sometimes with blood, chest pain and weakness. Other unspecific symptoms include: weight loss, fatigue, lethargy, fever and night sweats.

If the infection occurs outside of the lungs, symptoms are related to the site of the disease: for example, TB in the vertebrae column can cause back pain; TB in the lymph nodes can cause enlargement of the lymph nodes in the neck, armpit or groin; TB in the kidney can cause blood in the urine or have the same symptoms as a regular urinary tract infection.

Inhaled bacteria travel via the circulatory and lymphatic systems to other parts of the body. When the infection occurs somewhere other than the lungs, the disease is called:

Extrapulmonary tuberculosis



Children are at least twice as likely to be reported with extrapulmonary TB as adults

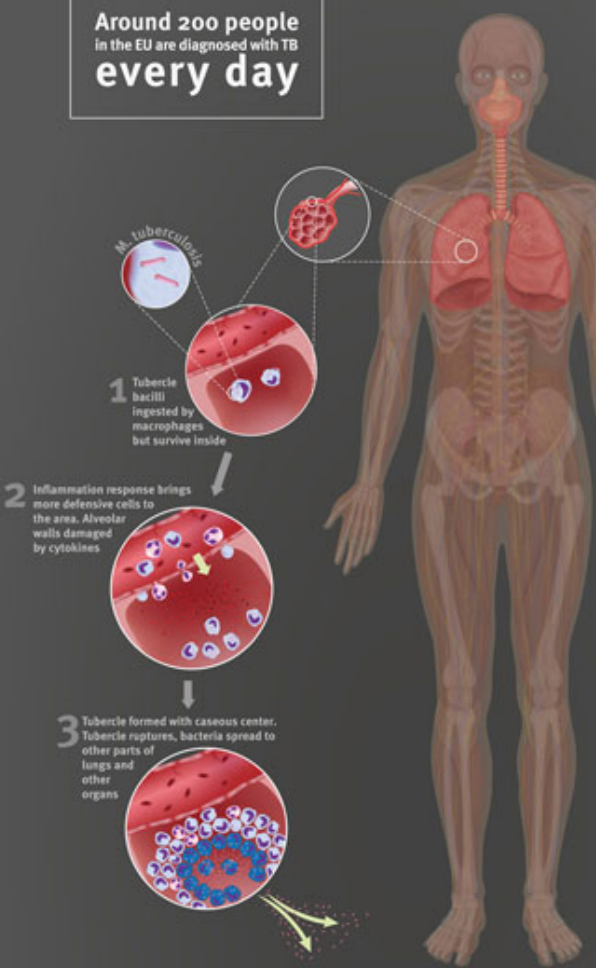


Patients with extrapulmonary tuberculosis are usually not infectious



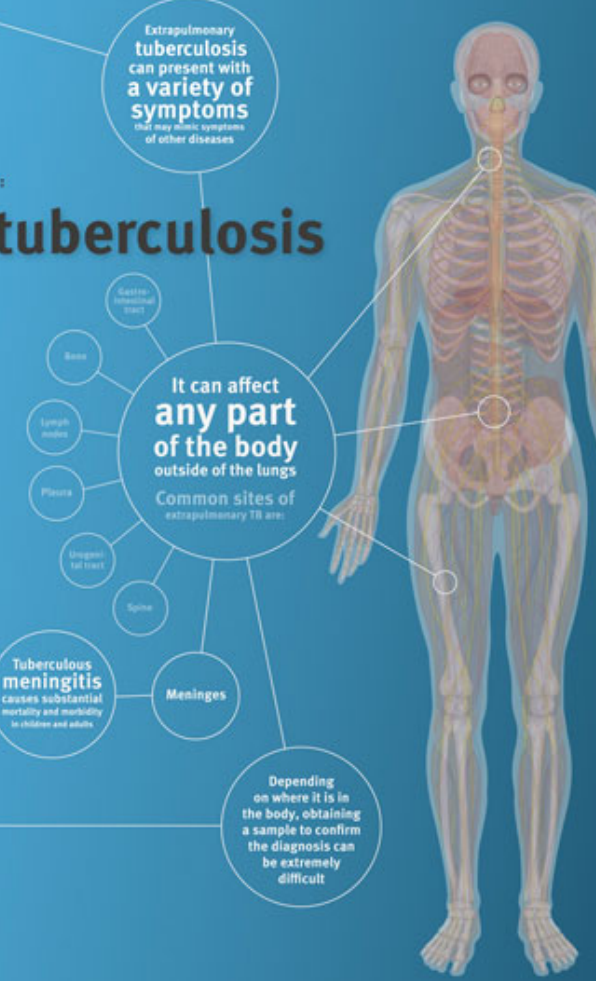
Easy to miss: Symptoms are unspecific and clinicians may not consider it in their differential diagnosis

Around 200 people in the EU are diagnosed with TB every day



inside the lungs
outside the lungs

Extrapulmonary tuberculosis can present with a variety of symptoms including symptoms of other diseases



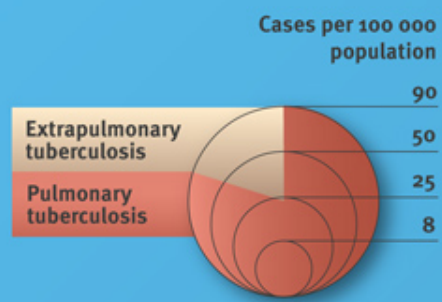
Data from the ECDC/WHO Europe Tuberculosis Surveillance and Monitoring in Europe 2013. Stockholm, 2013



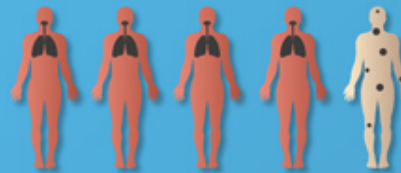
1 in every 5 tuberculosis patients has extrapulmonary tuberculosis

Extrapulmonary tuberculosis in the EU

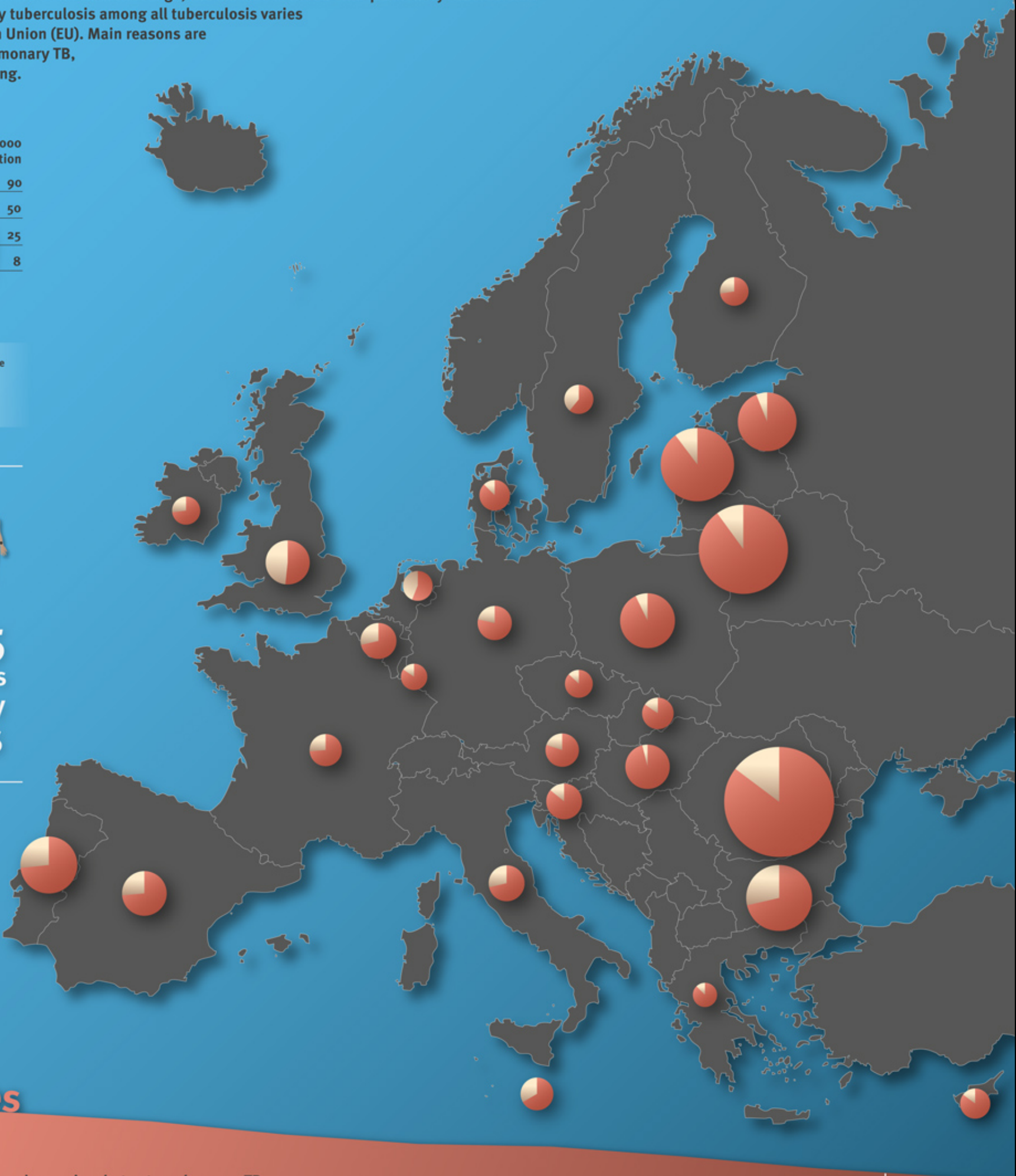
Tuberculosis (TB) is a serious and sometimes lethal infectious bacterial disease which most commonly affects the lungs. When the infection occurs somewhere other than the lungs, the disease is called extrapulmonary tuberculosis. The proportion of extrapulmonary tuberculosis among all tuberculosis varies significantly across the European Union (EU). Main reasons are different risk factors for extrapulmonary TB, under-diagnosis or under-reporting.



Data from the ECDC/WHO Europe Tuberculosis Surveillance and Monitoring in Europe 2013. Stockholm, 2013



1 in every 5 tuberculosis patients has extrapulmonary tuberculosis



TB cases									
102 347	Tuberculosis cases are decreasing but extrapulmonary TB does not show the same downward trend. As a result, the proportion of extrapulmonary TB patients increased from 16% in 2002 to 22% in 2011								72 334
Extrapulmonary TB cases									
16 689									16 116
2002	2003	2004	2005	2006	2007	2008	2009	2010	2011

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The burden of MDR TB

To treat TB
it takes at least

6
months
and 4
different
drugs

To treat MDR TB
it takes at least

18
months
with on average
8 drugs

MDR TB

Multidrug-resistant tuberculosis

Patients with MDR TB do not respond to
standard treatment (isoniazid and rifampicin)



Around

1 500

cases are reported
in the EU every year



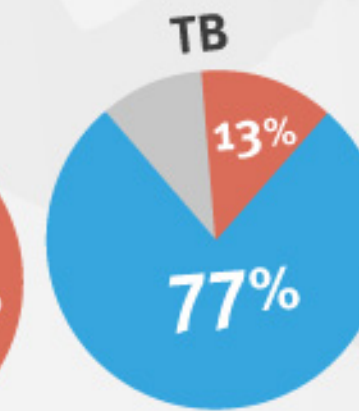
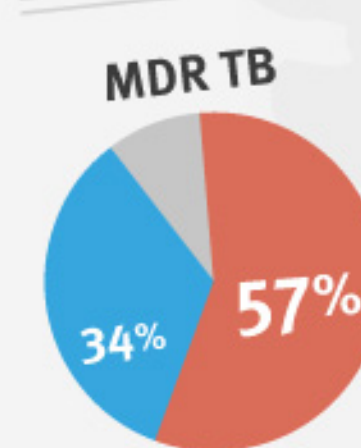
Drug resistance is a man-made
phenomenon caused by:

- Poor quality drugs
- Unfinished treatment
- Inadequate use of drugs



MDR TB treatment causes
substantial side effects like
vomiting, deafness, blindness,
depression and fatigue

Europe fails to treat MDR TB



Treatment
successful not successful unknown



Only 1 in 3
patients with MDR TB is
treated successfully

Costs for treatment
of multidrug-resistant TB are
5X higher
than
for TB

Average cost per MDR TB
case in the EU, 2012:
33 000 €

Diel R et al., Costs of tuberculosis disease
in the European Union: a systematic
analysis and cost calculation.
Eur Respir J. 2014;43(2):554-65.

500



Only
25%
of all patients
with extensively
drug-resistant TB
finish treatment
successfully

XDR TB

Extensive drug resistance

XDR TB is resistant to even more
drugs than MDR TB and therefore
extremely difficult to treat



Data from the Tuberculosis Surveillance
and Monitoring in Europe 2014,
ECDC/WHO Europe
Stockholm, 2014

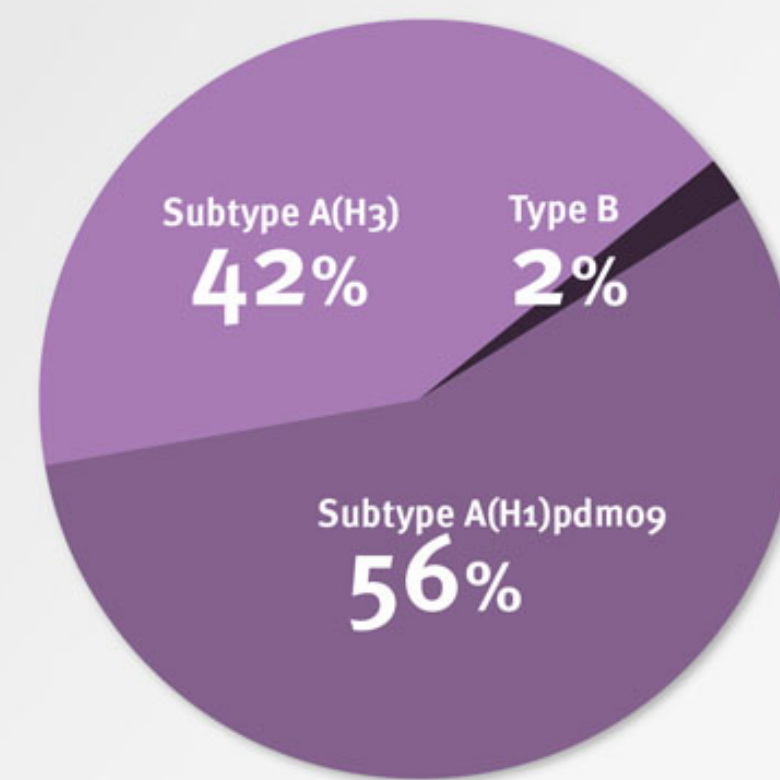
Influenza in Europe

Week 9 (24 February–2 March 2014)



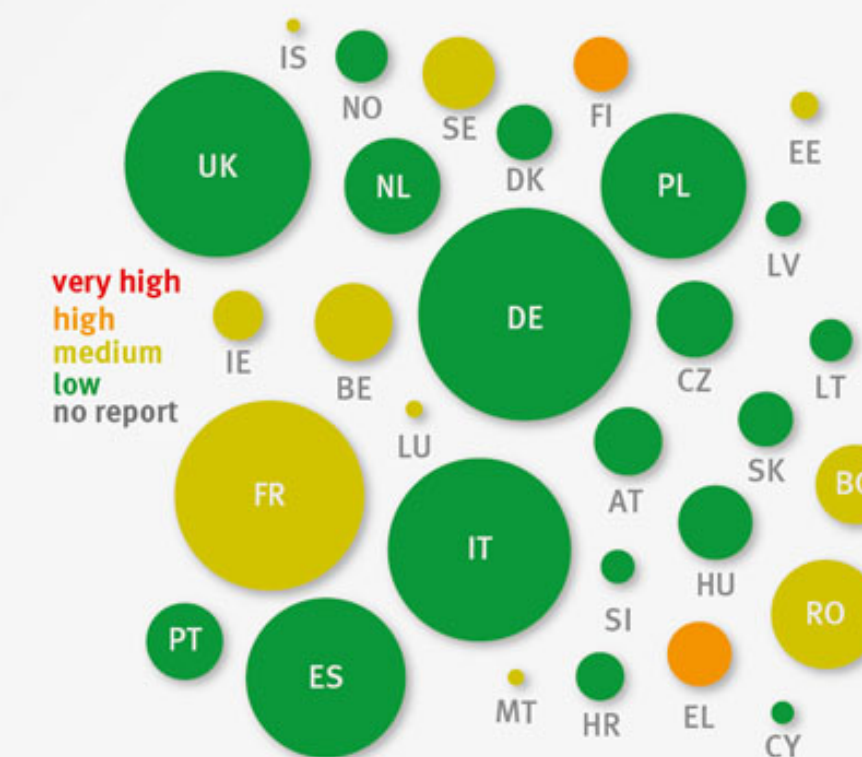
Viruses circulating in 2013–2014

Only subtyped viruses are included



Influenza intensity in week 9

based on sentinel reports of influenza-like illness and/or acute respiratory infections in European countries

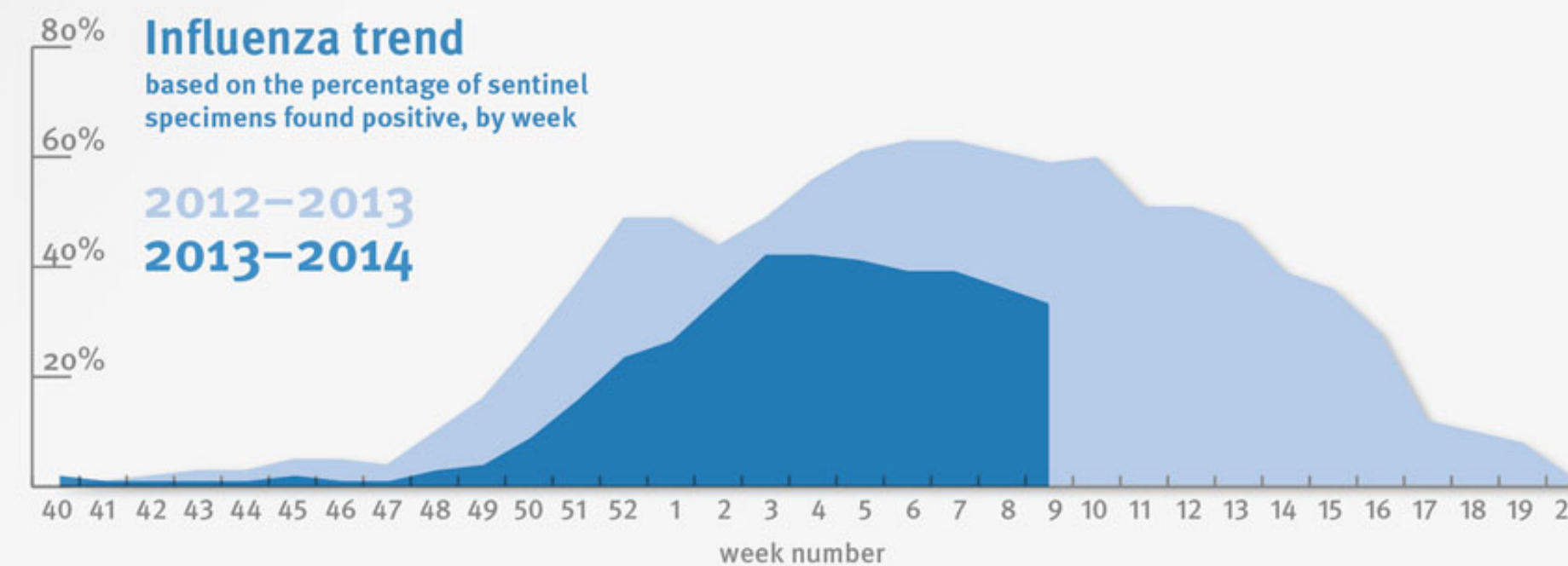


Bubble size is indicative of country population

Influenza trend

based on the percentage of sentinel specimens found positive, by week

2012–2013
2013–2014





An emerging threat

Mosquito-borne diseases in Europe

Tropical mosquito-borne diseases are originally prevalent in tropical and subtropical regions. Some are especially endemic in regions of Africa, Asia, and the Americas and cause substantial illness for more than one billion people globally.

An emerging (or re-emerging) infectious disease is often a disease already known but spreading to new geographic areas, new populations, or reappearing after having been eradicated.

Mosquitoes can carry infectious diseases from person to person and from place to place.

Just one bite away from infection

Different species of mosquitos can carry different diseases

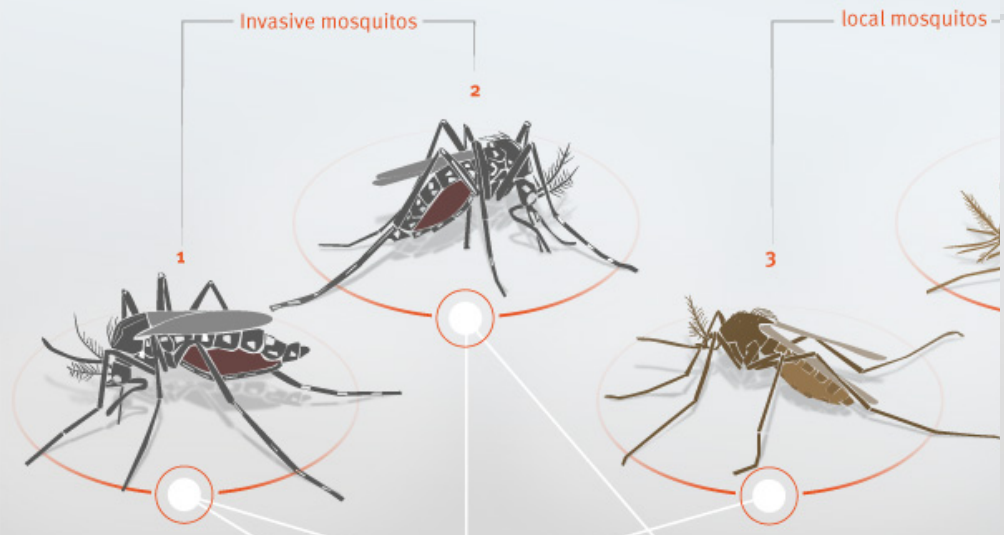
Invasive mosquitoes are determined by their ability to colonise new territories. A considerable increase in the spread of invasive mosquitoes has been observed in Europe since the late 1990s.

1. After disappearance in the 20th century **Aedes aegypti** has recently established in Madeira. It is also present around the Black Sea coast, Russia and Georgia.

2. **Aedes albopictus** is considered to be the most invasive mosquito species in the world.

3. The **Anopheles** mosquito can be found from south-eastern Sweden to Portugal.

4. **Culex pipiens** is the most widespread mosquito in Europe



A West Nile Fever
Cases can be severe, most often among the elderly. An estimated 1 out of 140 to 320 persons infected can get severely sick.

B Dengue:
Most infected people have fever lasting 10 days. More than 390 million cases are estimated worldwide.

C Chikungunya
Infected people suffer from fever and strong arthralgia, which can last for months. No vaccination is available.

D Malaria
Worldwide, approx. 600 000 people die every year. Early diagnosis and prompt treatment can prevent illness and death. Prophylaxis is available.



ECDC, Stockholm, 2014.
To evaluate the risk of emerging vector-borne diseases to the EU, ECDC issues risk assessments on outbreaks occurring in European territories. ECDC collects environmental and climatic data through the E3 Network to support predicting the environmental vector-borne disease transmission in Europe. Jointly, EFSA and ECDC collect data on vectors and vector-borne diseases and analyse their spread in the European Union.



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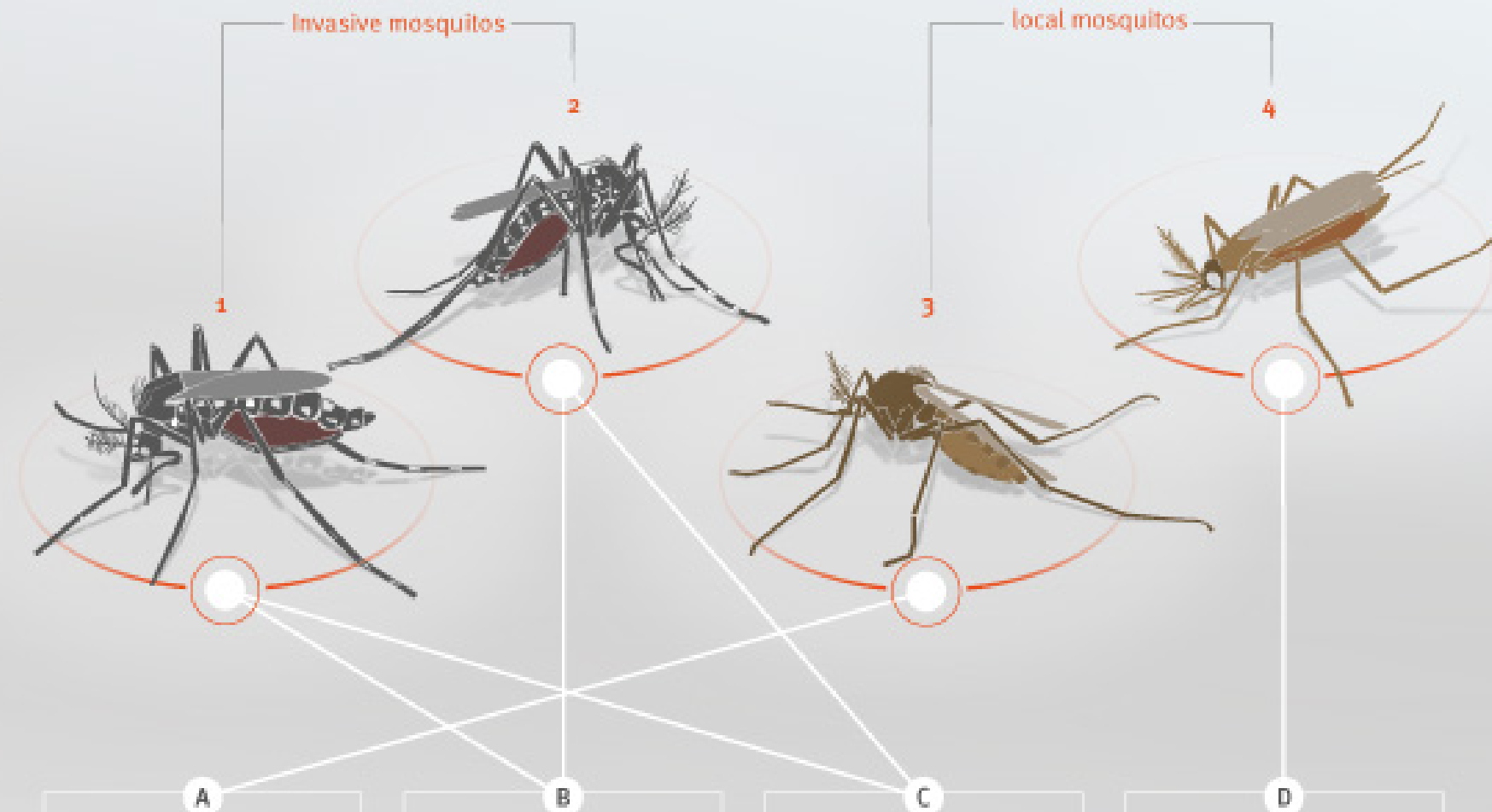
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Recent outbreaks

Vector-borne disease outbreaks in Europe

West Nile Fever, 2010 to present

Culex pipiens (local)

West Nile

In 2010, Europe witnessed an unprecedented upsurge in the numbers of West Nile fever cases. Human cases of West Nile fever were detected in several south-eastern EU countries. There have been recent outbreaks since then.

Dengue, 2012

Aedes aegypti (invasive)

Dengue – imported through travel

From 2012 to January 2013, the autonomous province of Madeira, Portugal, reported its first dengue outbreak, with 2 168 dengue cases. 87 patients returning from Madeira were diagnosed in other European countries with dengue infection.

Chikungunya, 2007

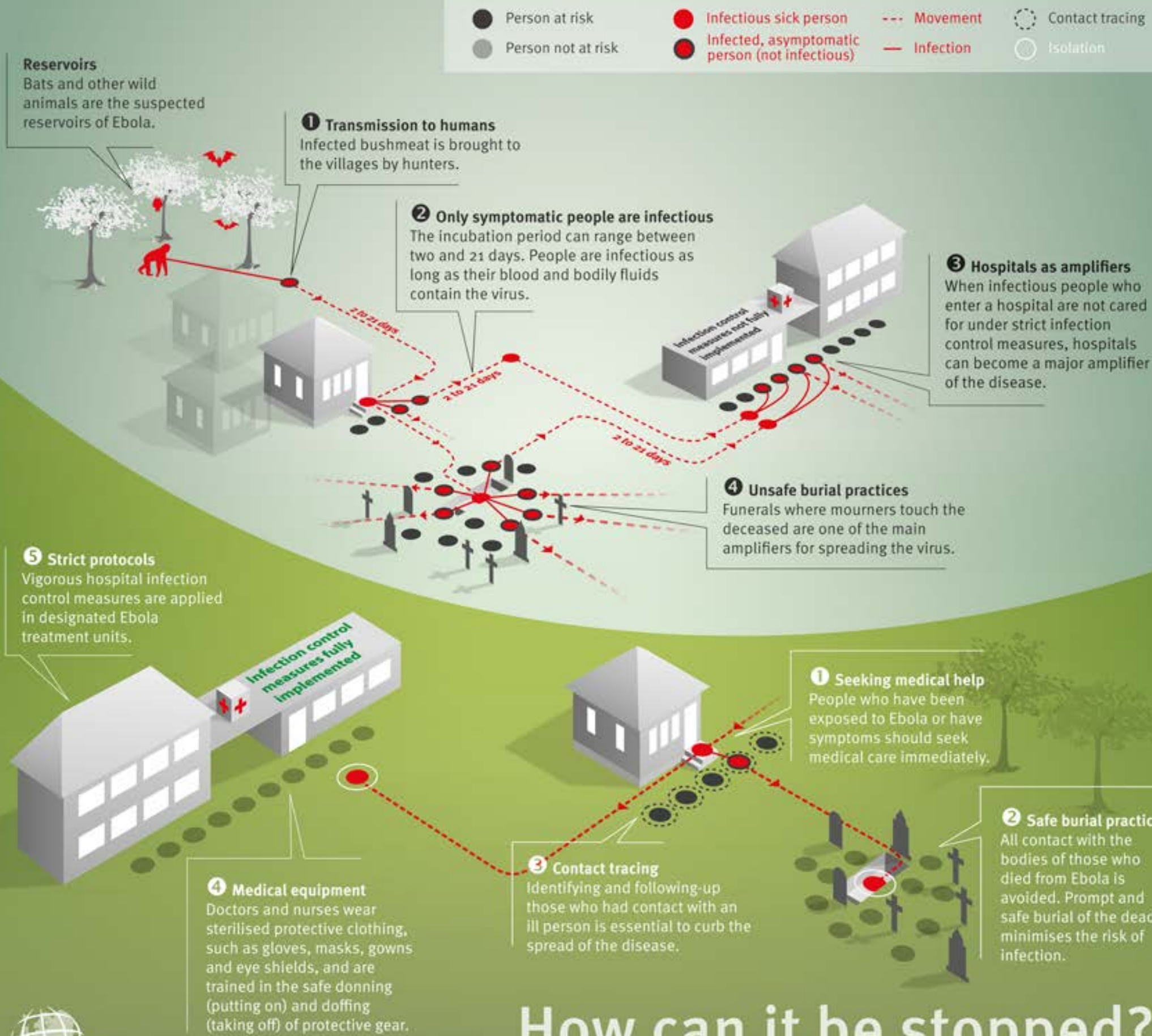
Aedes albopictus (invasive) – Imported in Italy in the 90s through international trade: in car tyres from the US into Genova and spreading from there.

Chikungunya – imported through travel, after an infected traveller returned from India

It was the first autochthonous chikungunya outbreak in Europe, with over 200 individuals affected. Since then it is acknowledged that Europe is vulnerable for transmission of "tropical arboviruses", particularly in areas where **Aedes albopictus** is present.

ECDC, Stockholm, 2014.
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How does Ebola spread?



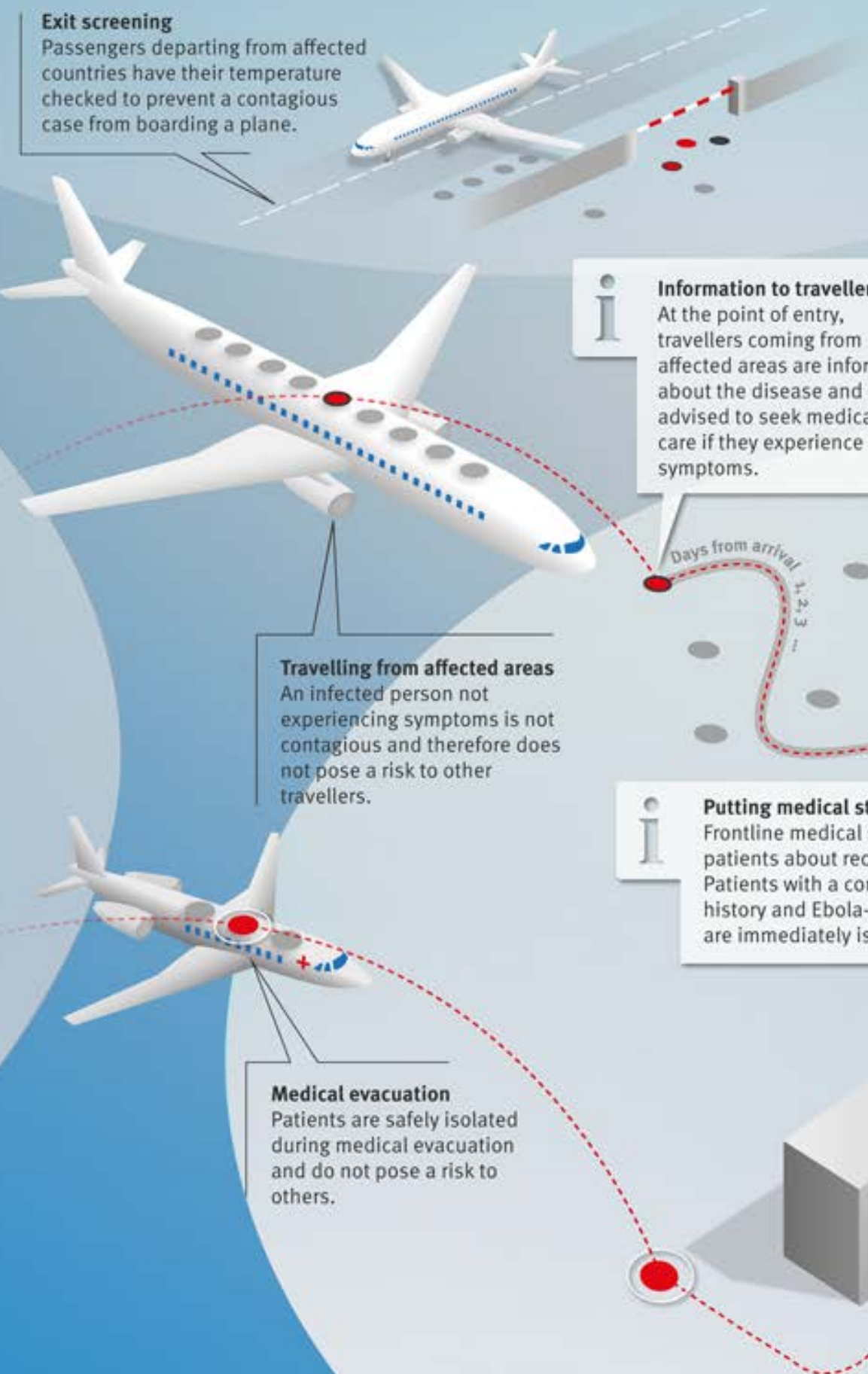
How can it be stopped?

The control of the outbreak relies on breaking the chain of transmission through containment measures and changing people's behaviour.



Ebola: reducing the risk of

As long as the epidemic of Ebola virus disease is continuing and expanding in West Africa, the risk of further transmission in Europe is increasing. To minimise this risk, public health efforts in the EU focus on early case detection and isolation.

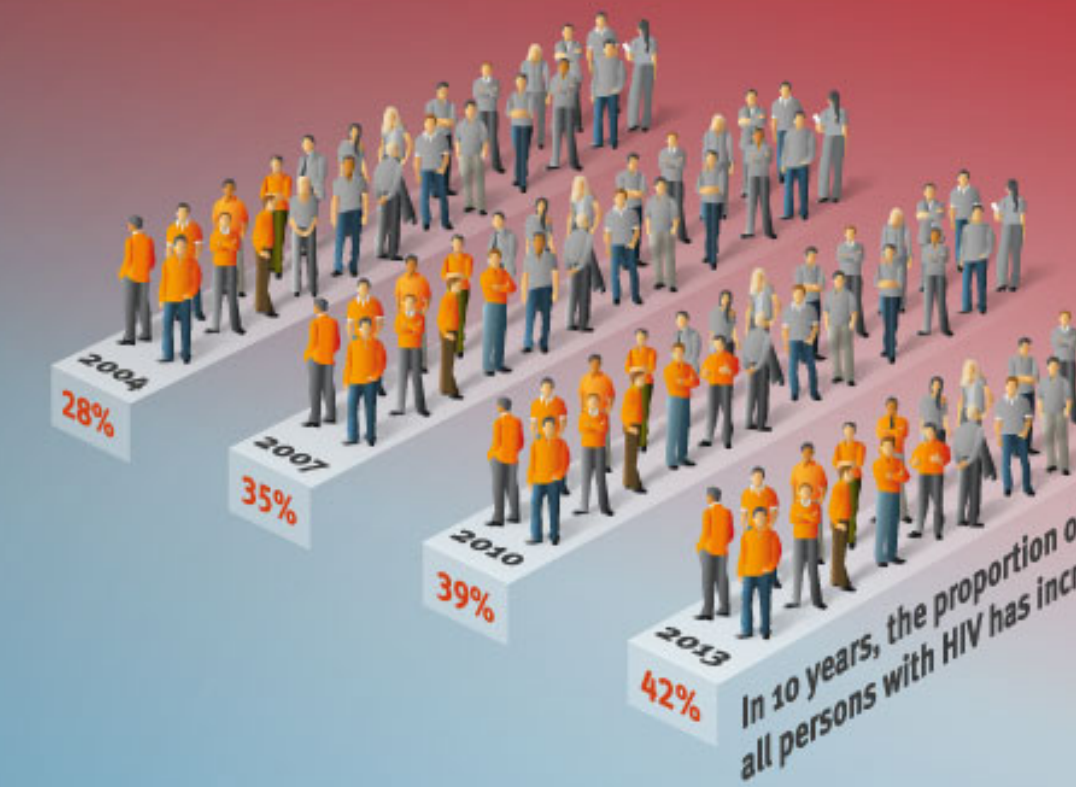


HIV in the EU

During 2013, more than 29 000 people in the European Union tested positive for HIV and many more remain undiagnosed. Who are these HIV+ persons? How did they become infected?

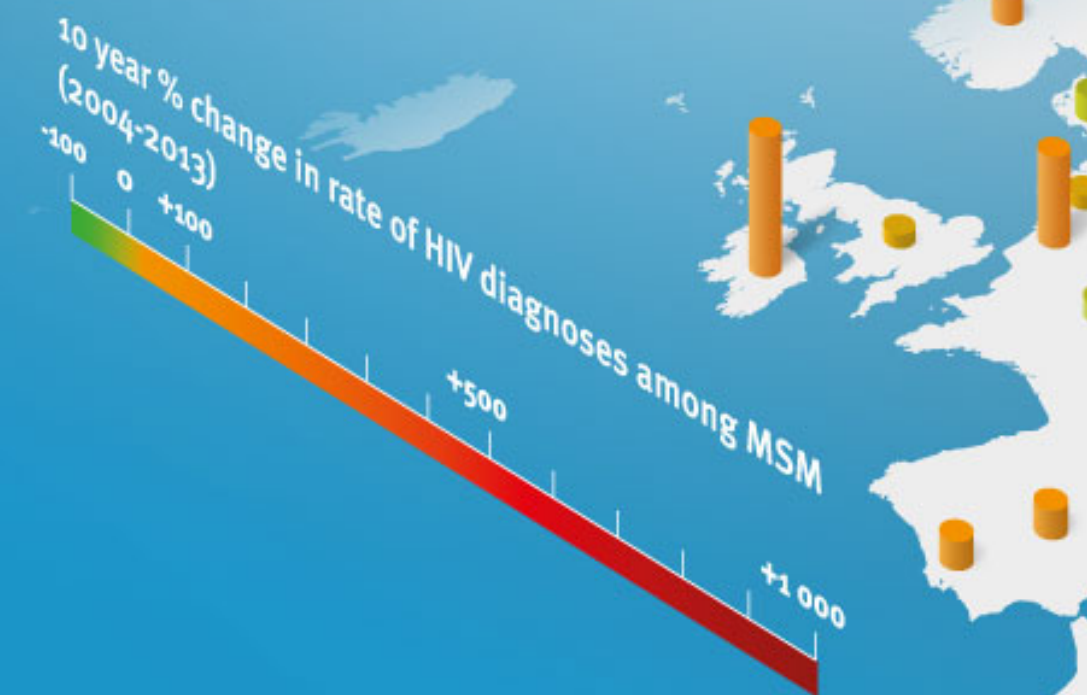


Source: ECDC/WHO Europe, HIV/AIDS surveillance in Europe 2013
More info: www.ecdc.europa.eu
Follow us on twitter: @ecdc_HIVAIDS



HIV and MSM

In Europe, sex between men is still the predominant mode of HIV transmission. Men who have sex with men (MSM) are the only key population not to see a decline in new infections during the last decade: new diagnoses increased by 33% compared to 2004.



Salmonellosis

Just the tip of the iceberg

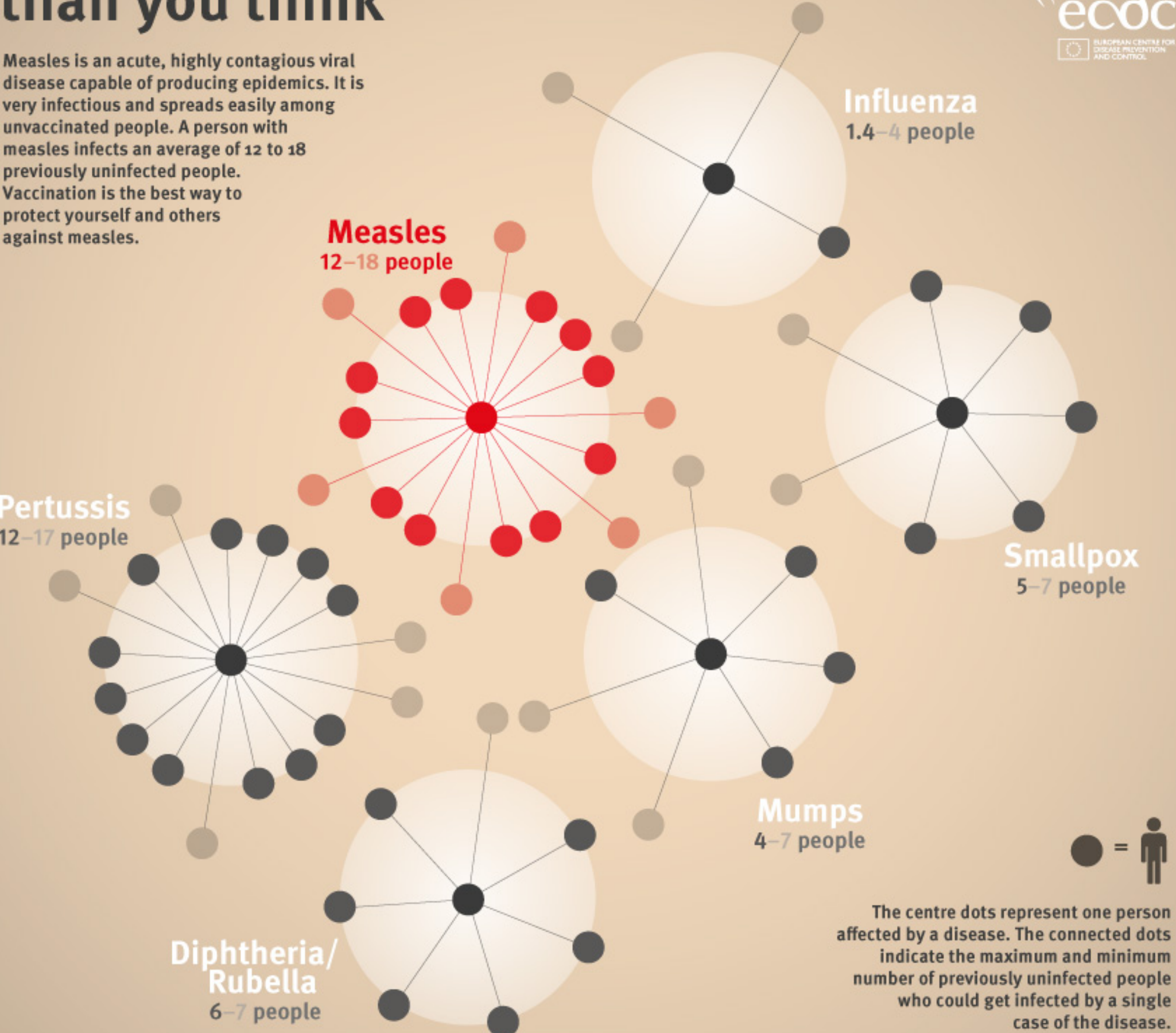
The number of yearly reported cases (white) is represented by the tip of the iceberg, while the estimated frequency of exposure to *Salmonella* (orange) is shown as the rest of the iceberg.

For more information visit <http://bit.ly/seroincidence-tool>

- 
- | | | |
|------------------|--------|------------|
| ① Ireland | 350 | 720 000 |
| ② Romania | 400 | 7 480 000 |
| ③ Greece | 480 | 2 280 000 |
| ④ Denmark | 1 680 | 420 000 |
| ⑤ Austria | 1 800 | 1 000 000 |
| ⑥ Finland | 2 800 | 370 000 |
| ⑦ Spain | 3 400 | 28 460 000 |
| ⑧ Sweden | 4 000 | 510 000 |
| ⑨ France | 6 300 | 24 020 000 |
| ⑩ Italy | 6 520 | 12 780 000 |
| ⑪ Netherlands | 6 590 | 2 400 000 |
| ⑫ United Kingdom | 10 400 | 5 900 000 |
| ⑬ Poland | 16 000 | 20 980 000 |

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.



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

Measles in Europe

A picture of outbreaks in the EU/EEA

Measles is an acute, highly contagious disease capable of creating epidemics. It can be contracted at any age. Infants and children are often believed to be the only age groups affected by measles, but the disease also spreads among teenagers and adults. Vaccination is the best way to protect yourself and others against measles, regardless of age.

