



Executive Science Update **no 12**

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Evidence-based medicine as a warrant for excellence



The European Centre for Disease Prevention and Control has actively pursued its goal of becoming a centre of scientific excellence in its first five years of existence. The Centre aspires to work in accordance with the principles of evidence-based methodologies when giving advice to the Member States on technical and scientific questions.

What does it mean to work evidence-based?

The rationale behind evidence-based medicine (EBM) is to acquire and use the best available evidence to serve patients' needs. Evidence-based work implies explicitly and systematically displaying the evidence behind a piece of advice or a decision made, and defining research needs for the health sector. The time has come to merge the cultures of classical epidemiology with evidence-based methodologies to strengthen public health decisions.

How can it be achieved?

Introducing the principles of EBM often means changing the working culture of an institution. Evidence from implementation research states that there are no magic formulas explaining how to change practice and behaviour within an organisation. Nevertheless, the effects of an intervention get stronger and have more impact when introduced through as many channels over as long time as possible.

EBM for Public Health

In order to apply these principles, ECDC established a project called EBM for public health in order to accomplish the following:

- train staff on how to search, appraise and assess evidence and to develop public

health and infectious disease prevention and control guidance;

- develop methods and tools on how to work on an evidence-based basis within the public health/ infectious disease field, with special attention to situations where time is limited and evidence is scarce or where methodological standards are less well not well formalised;
- establish transparency in the way ECDC works when it comes to data collection, synthesis of evidence, analyses and formulation of scientific advice and in cooperation with external bodies, including terms of reference for guidance tenders.

What is the added value for ECDC?

The European Centre for Disease Prevention and Control continuously deals with many public health events affecting Europe. These events can be serious or of unknown origin and have the potential to spread across borders, which could seriously impact the health-care systems of the affected countries. In addition, there are many long-term questions that need to be addressed in the field of prevention and control of infectious diseases. Applying systematic EBM approaches will increase the quality of outputs and the credibility of ECDC, as well as reduce the duplication of work at national, EU and global levels.

The example of Q fever

With reference to the ongoing Q fever outbreak in the Netherlands, ECDC tested if an evidence-based approach was appropriate for giving general public health advice. Articles were retrieved from bibliographic databases,

Key points:

- For ECDC to become a centre of scientific excellence in the public health field, it is of the greatest importance to work according to the best standards of evidence collection, appraisal and application.
- Evidence-based medicine is often defined as the integration of the best research evidence with clinical expertise and patients' values and circumstances.
- Evidence-based public health means integrating the best available evidence with the knowledge and considered judgements from stakeholders and experts to benefit the needs of a population.
- The Q fever outbreak risk assessment is an example that shows the added value of applying evidence-based medicine when issuing general public health advice.

studies were categorised and evidence tables were compiled. The results were discussed with an expert panel and can be read on www.ecdc.europa.eu. By systematically assessing the evidence on several questions about Q fever, ECDC was able to draw some new conclusions. The most striking finding was the lack of sound scientific evidence behind some standard treatment regimes for Q fever in pregnancy.

There is a need to develop new methods for grading evidence from different sources in the field of public health. The European Centre for Disease Prevention and Control concluded that public health advice benefits from an evidence-based approach. Criteria to define indications for in-depth evidence-based assessments should be further developed.

For more information: www.ecdc.europa.eu

Coordination needed to tackle travel-associated Legionnaires' disease in Europe

Legionnaires' disease is an uncommon form of pneumonia. Its causative organism, *Legionella*, lives in fresh water and can be transmitted through the inhalation of aerosols containing this bacterium. However, drinking water itself is harmless. The incubation time is normally between 2 and 10 days. Symptoms usually start with a dry cough, fever, headache and sometimes diarrhoea, and many people go on to develop pneumonia. Effective antibiotic treatment is available if the diagnosis is made early on. Legionnaires' disease has a mortality of up to 15%. It particularly affects older persons and those with underlying illness.

The *Legionella* bacterium was identified in 1976 after a large outbreak at a hotel in Philadelphia, USA. The disease was named after American military veterans (members of an organization called American Legion) who were attending a convention at this hotel. Since the outbreak in 1976, cases and outbreaks have been reported from all countries in Europe.

How is travel-associated Legionnaires' disease tackled in Europe?

Coordinated by ECDC since 1 April 2010, the European Legionnaires' Disease Surveillance Network (ELDSNet, formerly known as EWGLINET) aims to identify relevant public health risks, enhance the prevention of cases and monitor epidemiological trends. Network members consist of *Legionella* experts from all EU Member States, Iceland, and Norway,

but there is also close collaboration with other countries and WHO.

With an increasing population of retired people in Europe—many of whom travel extensively within and outside the EU—detecting possible risks for Legionnaires' disease worldwide is essential to protecting lives.

Why is a timely and proactive coordination essential?

Cases of travel-associated Legionnaires' disease will likely be detected by a country through its own surveillance system. However, it is usually impossible to identify the source of infection based on a single case, especially if the patient was travelling and infection could have occurred in several places and hotels.

ELDSNet collects these single reports from several Member States and then tries to identify a cluster of cases and a common exposure. In 2009, 38% of all reported travel-associated Legionnaires' disease clusters would have probably not been detected without this network. The figure shows the added value of Member States working together to pool information on cases that, by themselves, would not have provided enough epidemiological evidence to suggest the source of infection.

Cases of travel-associated Legionnaires' disease are usually reported to ECDC by ELDSNet members within one to two weeks after the case-patient falls ill. Timely reporting allows for early identification of a possible cluster from the central database at ECDC and enables

Key points:

- Travel-associated Legionnaires' disease may be acquired in hotels, spas, swimming pools or on cruise ships through the inhalation of aerosols from water that contains *Legionella* bacteria.
- Travel-associated clusters often involve residents from more than one country and as such may not be identified by national surveillance systems alone. The ELDSNet network (see below) alerts Member States to clusters and thus contributes to saving lives.
- In 2008 and 2009, only 35% and 38% of travel-associated Legionnaires' disease clusters could have been detected by this the network.

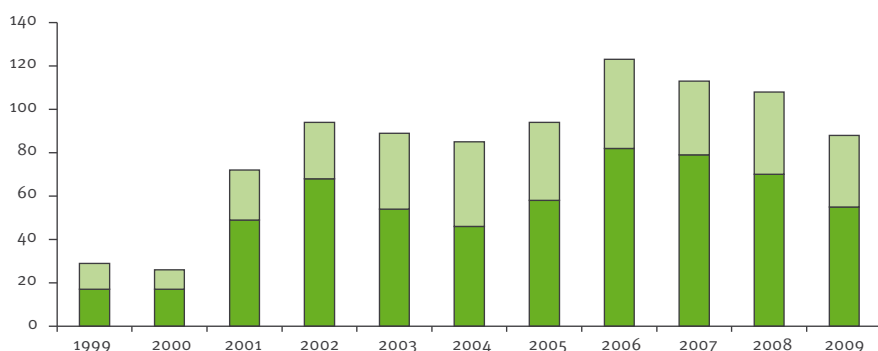
rapid control of the source of infection by the local health authorities in charge.

For every travel-associated cluster detected within the EU/EEA, action must be taken at the national and local level. If such action is not reported back to ECDC within a fixed timeframe, ECDC lists the accommodation site on its public web portal as possibly posing an increased risk of Legionnaires' disease. This might prompt tour operators to withdraw all customers and is meant to help prevent any further exposure to *Legionella* thereby protecting the health of EU citizens.

ELDSNet also detects clusters outside of Europe and communicates them to its international partners. This often results in control measures being taken at a particular accommodation site overseas reducing the possible risk of acquiring Legionnaire's disease for all visitors, regardless of nationality. In a broader and longer-term perspective, the ELDSNet activities may help to increase the awareness of Legionnaires' disease worldwide.

For more information: Travel-associated Legionnaires' Disease in Europe in 2008 Eurosurveillance 27 May 2010

Clusters of travel-associated Legionnaires' disease detected by EWGLINET, 1999-2009



Total number of clusters detected each year (full bars) and number of clusters only detected by the EU network (top part of bars)

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