
2.5 million Europeans die from hospital infections every year

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Infections acquired while in hospital cause more disability and premature death than we previously thought, say scientists.

Every year, 3.5 million Europeans contract an infection while in hospital and 2.5 million die or are seriously debilitated as a result, shows new research from the European Center for Disease Prevention and Control (ECDC).

The study is the first of its kind, and does not only assess the number of acquired infections and patient deaths each year, but also details the toll in terms of years of lost life among the affected people.

“Hospital infections account for a significant proportion of the deaths in Europe each year, and it represents the largest effect on the European population’s health,” says co-author Alessandro Cassini from the ECDC.

“We track a lot of diseases at ECDC, and hospital infections have a bigger impact than all of these combined. So it’s important that we study this and look at what we can do about it in the future,” he says.

[The new results are published in the journal PLOS Medicine](#) [6].

Hospital infections costs more in lost years of life than flu and tuberculosis

Chief Physician Brian Kristensen from the Central Unit for Infection Control at the Statens Serum Institut, Denmark, describes the new results as exciting.

Kristensen, who was not involved in the new research, is particularly struck by the finding that hospital infections in Europe are responsible for more years of lost life than both flu and tuberculosis combined.

“It shows just how seriously we need to take hospital-acquired infections. And we can use these new figures to target our intervention,” says Kristensen.

He is surprised by just how high the figures are, which he says is due to researchers not only looking at the death toll but also the combined effects of infections acquired in the hospital.

“It makes sense to widen the definition as much as possible. It helps to underline the importance of hospital-acquired infections, which can have many different consequences. They can cause blindness or the loss of ability to drive, so it's not only limited to something you can die from,” says Kristensen.

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Study included long-term disabilities caused by infections

In the new study, the ECDC scientists studied the number of lost years of life due to hospital infections in European hospitals.

The scientists concentrated on hospital-acquired pneumonia, urinary tract infections, infections acquired during operations, neonatal sepsis (an infection that affects newborn infants), intestinal infections, and septicaemia.

They developed a method to assess the impact of hospital infections beyond the usual measures, which are typically limited to the number of infections and the number of deaths due to infections.

They specifically used a measure called DALYs, short for “Disability Adjusted Life Years.” This accounts for the number of years lost due to both premature death and the number of years where a patient suffers from a reduced quality of life due to an infection that they acquired when in hospital.

“DALYs allow us to relate the human cost of various kinds of infections,” says co-author Diamantis Plachouras from the ECDC. “Some types of infection may be very rare, but have a high risk of death. Others are more common but with a lower risk of death.”

“For example, renal dysfunction after an infection can persist for a number of years and lead to a reduced quality of life. By using DALYs we can compare diseases across these different long-term consequences,” says Plachouras.

Read More: [Nose bacteria can reduce risk of hospital infections](#)[8]

Infections hit those who are already sick

While the numbers may look bad, the scientists emphasise that most of these infections are contracted by people who were already suffering from another disease and whose immune systems are already weak and more susceptible to infection.

“We’re not trying to point the finger at hospitals because a large part of this is due to the fact that they are treating more complex conditions than ever before,” says Plachouras.

“It’s clear that when you carry out a complex surgical transplant or undergo extensive chemotherapy, the risk of the patient contracting an infection along the way is increased,” he says.

“This helps to explain the high numbers. In general, European hospital hygiene is good and the average person is unlikely to contract an infection in hospital,” says Plachouras.

Read More: [Obese people more susceptible to infection](#)[9]

Number of infections needs to be reduced

Higher complexity or not, there is still room for improvement, say the ECDC researchers.

“We are able to reduce these numbers, and I’m certain we can reduce them drastically,” says Cassini.

One way would be to improve hospital hygiene and for surgical teams to follow hygiene procedures more closely.

“Our model can be used to figure out what we can do to reduce these numbers, but it’s ultimately a question about costs,” says Plachouras.

“We need further studies to know how much it would cost to reduce the number of hospital infections, and thereby reduce the number of years of life lost among Europeans,” he says.

[Read the Danish version of this article on Videnskab.dk](#) [10]

 [2.5 million people across Europe die or are seriously debilitated every year due to infections acquired while in hospital, show new research. \(Photo: Shutterstock\)](#) [11]

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["Burden of Six Healthcare-Associated Infections on European Population Health: Estimating Incidence-Based Disability-Adjusted Life Years through a Population Prevalence-Based Modelling Study", PLoS Medicine, doi:10.1371/journal.pmed.1002150](#) [20]

Side story

Side story

How they did it

The scientists started by collating previous studies that have calculated the number of hospital infections each year in Europe.

They compared different types of hospital infections with the life expectancy data of patients with these infections, the risk of dying from these infections, as well as other contributing factors, such as patient age and sex.

From this, they calculated the average number of years of life that are lost due to these infections.

The researchers also looked at why people had been admitted to hospital. For example, if it was due to cancer, this was taken into account when calculating life expectancies.

The researchers could also estimate how long, on average, people lived with a debilitating condition due to any given hospital infection.

They found that 27,000 people died each year due to pneumonia contracted at the hospital, which translates to a cost of 169 DALYs per 100,000 Europeans. This means that each year, out of a group of 100,000 people, the human cost of disability or premature death can be equated to 169 years of lost life.

Approximately 24,000 deaths are caused by blood poisoning, which is 145 DALYs per 100,000 people. Urinary tract infections cost a little over 14,000 lives, equal to 81.2 DALYs. And infections acquired during surgery causes 16,000 deaths annually or 58.2 DALYs.

Intestinal infections cost 31.2 DALYs every year, which means that they are responsible for approximately 8,000 deaths each year. Neonatal sepsis in children costs 1,100 lives or 16.8 DALYs per 100,000 people.

“It’s interesting when you compare the numbers in this way,” says Cassini. “For example, we can see that pneumonia and blood poisoning have almost the same DALY, even though there are approximately 700,000 hospital related incidences of pneumonia per year compared with just 160,000 cases of blood poisoning,” says Cassini.

“This means that blood poisoning actually costs more lives each year than pneumonia,” he says.

[Kristian Sjøgren](#) [21]

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