



DANMAP

The number of invasive infections and the number of cases of resistant bacteria is still increasing

The number of invasive infections increased to 11,983 cases in 2020. The increase would probably have been even higher if it were not for the many COVID-19 restrictions, according to the new DANMAP 2020 report.

COVID-19 dominated large parts of our daily lives in 2020. The restrictions and the increased focus on hygiene have also had a significant effect on the spread of antimicrobial resistant bacteria that result in disease in humans.

These are among the findings of the DANMAP 2020 report from DTU National Food Institute and Statens Serum Institut (SSI).

The number of invasive infections continues to increase

SSI monitors all infections in Denmark and pays special attention to the development of resistant bacteria in so-called invasive infections. These are bacteria found primarily in blood.

According to the new DANMAP report, the number of invasive infections (bacteria found primarily in blood) continued to increase in 2020; a trend seen in the past 10 years. From 8,504 cases in 2011 to 11,983 cases in 2020. This corresponds to an increase of 41%.

The number of antimicrobial resistant bacteria is following suit

The more cases of invasive infections that occur, the higher the increase in cases of antimicrobial resistant bacteria. According to DANMAP, the ratio of cases in which resistant bacteria are found out of the total number of invasive infections has thus been more or less stable in the past 10 years. This also applied in 2020.

“It’s therefore problematic that the total number of invasive infections is rising. It increases the number of infections with resistant bacteria and thus the use of broad-spectrum antimicrobial agents,” says Brian Kristensen, Head of Section, from SSI.

According to Brian Kristensen, there are many reasons for the increase:

“The reasons for this include that there are more patients in risk groups, that people generally live longer, and that there is a higher activity level in hospitals with more, and more advanced, treatments and surgical interventions. Once the antimicrobial resistant bacteria have entered the hospitals, we see more cases of spreading,” he says.

E. coli cause of infections

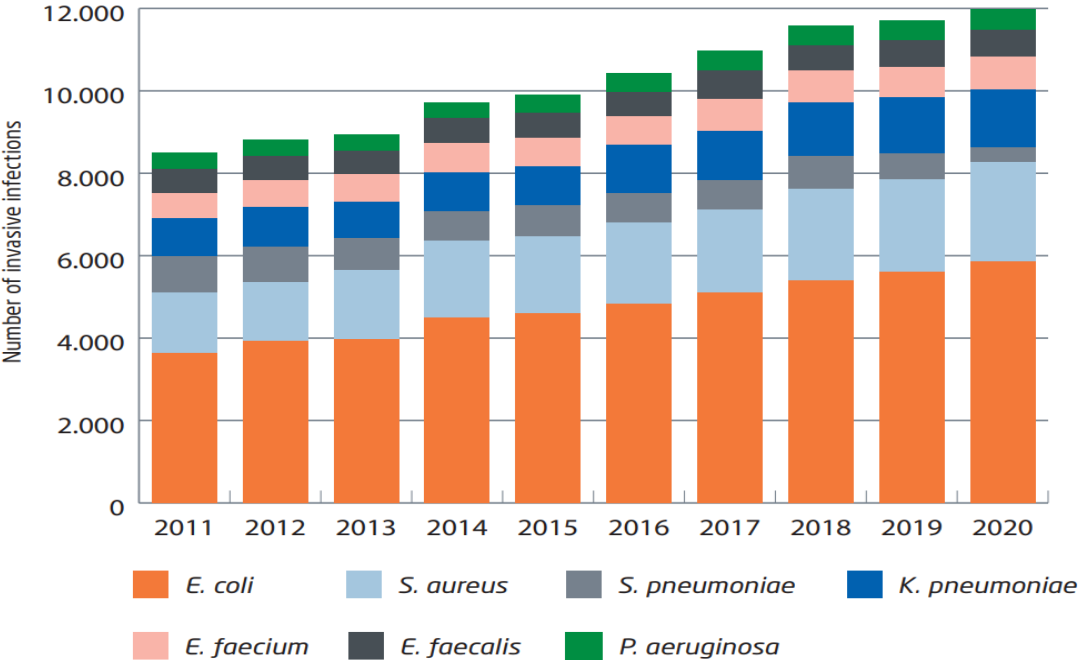
However, the report highlights both increases and decreases among the different bacteria types and resistance types.

The bacterium *E. coli*, which is one of the primary causes of invasive infections in Denmark, is one of the bacteria that is causing an increasing number of infections. The number of *E. coli* infections has increased by 38% in the past 10 years. From 3,642 cases in 2011 to 5,870 cases in 2020.

E. coli thus accounted for 49% of the cases of invasive infections last year.

As a small plus, however, the number of *E. coli* cases in which the invasive *E. coli* bacteria were ESBL/AmpC positive decreased slightly (6%) between 2019 and 2020, from 373 to 352 cases. These *E. coli* types are resistant to most types of penicillin and can therefore be difficult to combat.

Overview of invasive infections caused by the main bacteria, 2011-2020



Pneumococci stood out

In turn, one bacterium that stood out positively in 2020 is pneumococci, which can cause meningitis and blood poisoning. Here, the number of invasive infections dropped from 896 cases in 2011 to 363 cases in 2020 – a decrease of 59% in the past 10 years.

“Much of the positive development is due to the introduction of pneumococcal vaccination in the childhood vaccination programme in 2007, and that elderly persons aged over 65 have been offered pneumococcal vaccination since 2019. In addition, the COVID-19 restrictions in 2020 also resulted in less spread of pneumococci,” says Brian Kristensen.

Overall, this means that there are fewer infections with pneumococci. Which also leads to less use of antimicrobial agents.

COVID-19 restrictions led to fewer cases of MRSA

The COVID-19 restrictions as well as reduced travel activities and less contact between humans have also affected the number of infections caused by another bacterium *Staphylococcus aureus*. It often causes mild skin infections and food poisoning. But it is also one of the most common causes of bacteria in the blood. This is a problem because the resistant types of the bacterium – also called MRSA (methicillin-resistant *S. aureus*) – may be particularly difficult to treat, as they are resistant to most types of penicillin.

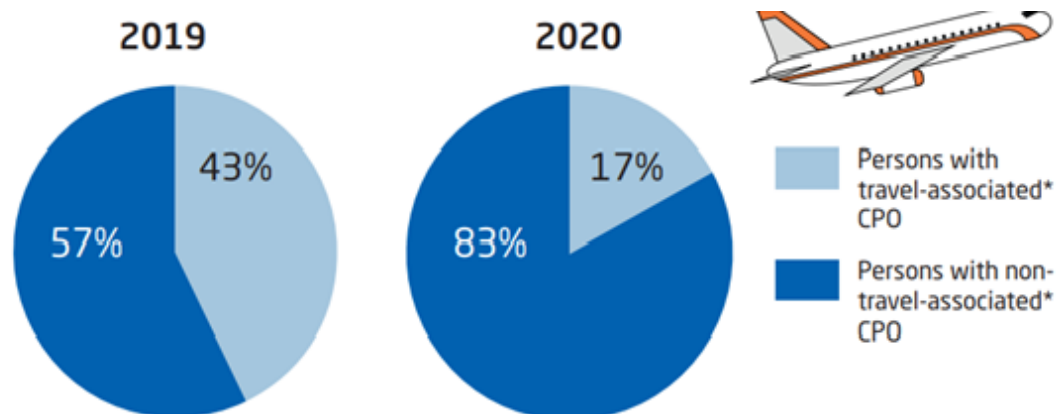
Fortunately, the total number of MRSA cases fell last year, for the first time in several years, from 3,657 cases in 2019 to 2,883 cases in 2020. This is equal to a decrease of 21%. The largest fall was seen precisely among travel-related MRSA cases, which declined by 45% from 651 in 2019 to 351 in 2020. Furthermore, the number of society-related MRSA cases decreased by 14%. Here, there were 1,536 cases in 2019 against 1,307 cases in 2020.

Concern about more cases of CPO

Conversely, the prevalence of another group of the multi-resistant bacteria CPO (carbapenemase-producing organisms) has continued to increase from 187 cases in 2019 to 207 cases last year. This has occurred despite the greatly reduced level of travel activity due to the COVID-19 restrictions.

“It’s worrying that we’re seeing an increase in the number of CPO infections. While MRSA typically spreads out in society, the continued increase in CPO is primarily due to increased spread of infection in Danish hospitals,” says Brian Kristensen and continues:

“Where people meet, and especially in situations in which they are being treated for something, the routes of transmission will, other things being equal, be shorter. In addition, the consequences of antibiotic resistance will be greater. It’s therefore very important that we continue to focus on hygiene,” says Brian Kristensen.



* Travels outside of the Nordic countries

Find out more

Download the DANMAP report or the new summary report published to mark DANMAP’s 25th anniversary from DANMAP’s website.

Facts about DANMAP

The spread of antimicrobial resistant bacteria is an increasingly large health and societal problem globally. A problem that can make it difficult to treat otherwise simple infections.

The DANMAP programme was established in 1995. Since then, DANMAP has monitored antimicrobial consumption and the occurrence of resistance in bacteria from humans, food and animals in Denmark.

The ongoing surveillance is crucial to our monitoring of the development of antimicrobial resistant bacteria in Denmark and to our ability to act in time.

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