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## **Increasing antimicrobial consumption in hospitals**

**Antimicrobial consumption in hospitals continues to increase and was last year 24 per cent higher than ten years ago. However, the overall consumption of antimicrobials in society continues to decrease.**

Antimicrobial consumption in hospitals continues to increase.

Last year, consumption was seven per cent higher than in 2019—the year before the start of the COVID-19 pandemic—which is an increase of no less than 24 per cent compared to ten years ago.

This is one of the conclusions of the latest DANMAP report, which has just been published by Statens Serum Institut (SSI) and DTU Food. The DANMAP programme monitors antimicrobial consumption and antimicrobial resistance in bacteria from humans, animals, and food in Denmark, and publishes figures and data for this area every year.

“The increase calls for action, because the higher the consumption of antimicrobials, the greater the risk of bacteria developing resistance,” says Ute Wolff Sönksen, Chief Physician at the Department of Bacteria, Parasites & Fungi at SSI and one of the people behind this year's report.

One of the reasons for the increased consumption in hospitals is that we are getting older and thus also more ill.

“There are more sick patients in hospitals who need antimicrobials today. However, once resistance develops, doctors have to resort to other, often broader spectrum, antimicrobials, thus further increasing the risk of developing resistance. It becomes a vicious circle that is difficult to break,” explains Ute Wolff Sönksen.

### **More potent antimicrobials**

It is in particular the consumption of penicillins combined with so-called beta-lactamase inhibitors that are increasing significantly. One of the drugs, which is often used because it has a narrower spectrum than the most broad-spectrum antimicrobials but is also more potent than regular penicillin, has seen an increase in consumption of 96 per cent in the past ten years.

“This is problematic, because even though this drug is considered less harmful when it comes to resistance development, we can also see the same trend for the others: the broader spectrum the antimicrobials are, the greater the risk of developing resistance. And in hospital environments, it can be difficult to prevent resistant bacteria from passing on infection between patients,” explains Ute Wolff Sönksen, pointing out that in recent years there has been an increasing number of outbreaks with highly resistant bacteria.

### **General practitioners issue fewer prescriptions**

While the antimicrobial consumption has increased at hospitals, the situation is different at general practitioners' (GPs) clinics, where the consumption of antimicrobials has been steadily decreasing since 2013.

The DANMAP monitoring shows that the number of antimicrobial prescriptions in primary healthcare was 25 per cent lower last year compared to ten years ago. Especially during the COVID-19 pandemic, fewer antimicrobial prescriptions for respiratory infections were issued. The number of antimicrobial prescriptions in 2022 was still lower than in 2019, before the start of COVID-19 pandemic (4.7 per cent lower).

The fact that GPs are issuing fewer and fewer antimicrobial prescriptions is due to several targeted initiatives to reduce consumption.

"We're pleased to see that the many initiatives have worked, and that doctors have made a huge effort to find out when it is necessary to use antimicrobials and when to wait and see," says Ute Wolff Sönksen.

At the same time, the report shows that the consumption of antimicrobials in primary healthcare is partly seasonal and follows the occurrence of various respiratory infections. However, many respiratory infections are caused by viruses and do not need to be treated with antibiotics.

### **This is how the numbers are calculated**

The consumption of antimicrobials is calculated using data from the Danish Register of Medicinal Product Statistics. The register contains data on the consumption of all medicinal products in Denmark.

### **What is DANMAP**

Since 1995, the DANMAP programme has monitored the consumption of antimicrobials for humans and animals in Denmark as well as the occurrence of antimicrobial resistance in bacteria from humans, animals, and food. Continuous monitoring is essential for authorities to be able to follow developments and respond in a timely manner. The monitoring is carried out by the Reference Laboratory for Antibiotic Resistance at Statens Serum Institut and DTU Food and is funded by the Ministry of the Interior and Health and the Ministry of Food, Agriculture and Fisheries.

### **Antimicrobials and resistance**

Antimicrobials are used to treat infections with bacteria in animals and humans. When bacteria are exposed to antimicrobials, they can develop resistance to the antimicrobial agent in question. In this way, the bacteria survive and the infection can become worse. Antimicrobial-resistant bacteria can be transmitted between humans and animals, and bacteria can transfer resistance properties to each other. Resistant bacteria have better conditions than sensitive bacteria if antimicrobials are present. Therefore, it is important to only use antimicrobials when necessary.

The spread of antimicrobial-resistant bacteria continues to pose a major health and societal problem globally. This causes problems in treating infections as well as preventing them, for example in connection with surgical procedures. Bacteria do not know national borders, and antimicrobial-resistant bacteria in one

country can spread to other countries. This means that even though the situation in Denmark is favourable compared to other countries, inappropriate use of antimicrobials in both animals and humans and the resulting development of resistance can cause health problems in Denmark.

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