

Battle against resistant bacteria takes huge leap forward

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In the past it could take several hours for doctors to find out which antibiotic a patient should be treated with for a particular infection. Using a new technique developed in close collaboration of Aarhus University with the Danish biotech research company Unisensor A/S, Aalborg University, Odense University Hospital and Aarhus University Hospital this period has been more than halved. The significantly shorter response time can help prevent the development of resistant bacteria, shorten the course of a disease and may even save lives.

"The new method can tell both which antibiotic and the dosage to be used for treating a given [bacterial infection](#). This means the physician or veterinarian can target the treatment and, if possible, avoid using broad-spectrum antibiotics that may otherwise lead to increased resistance in bacteria," explains industrial postdoc Marlene Fredborg from Aarhus University.

When a patient is admitted to hospital with, for example, suspected blood poisoning, there is a crucial time lapse before doctors are able to determine the [antibiotics](#) the infecting bacterium is resistant to. Only when doctors have the bacterial resistance profile of the patient can they draw up the optimal antibiotic therapy.

This process has previously taken anything from 16 to 24 hours, but with Unisensor's new 3D microscope oCelloScope, the [response time](#) has been reduced significantly. The oCelloScope can within 2-4 hours determine the type of antibiotic the bacterium is resistant to and thus also which antibiotic should be used to fight it in the most efficient manner.

"The oCelloScope is undergoing constant development. Based on its potential we expect to be able to map the resistance profile of a bacterium significantly faster than two hours. We are also looking at other applications for the

oCelloScope, including infections in production animals such as [urinary tract infections](#) and diarrhoea in pigs," says Marlene Fredborg.

The new 3D microscope also differs from current technologies in that the results can be displayed as a video. This video means [doctors](#) can detect any abnormalities much faster and can take further measures if this proves necessary.

The project, which runs from 2012 to 2015, has been granted 1.5 million DKK from the Advanced Technology Foundation and has a total budget of 2.6 million DKK.

Provided by Aarhus University

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