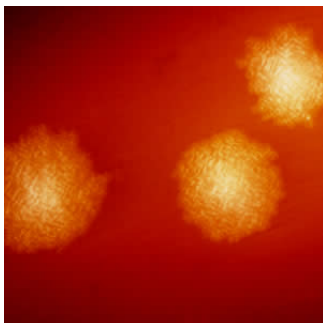


## Test can identify ICU patients at risk of life-threatening infections



Researchers in the UK say a new test can help identify patients in intensive care units (ICUs) at great risk of developing life-threatening secondary infections, including from antibiotic-resistant bacteria such as MRSA and *C. difficile*. The test is used to identify the presence of markers on three immune cells that correlate with an increased risk of secondary infection.

"These markers help us create a 'risk profile' for an individual," explained Dr. Andrew Conway Morris, intensive care specialist and Senior Research Associate in the John Farman Intensive Care Unit, Addenbrooke's Hospital, Cambridge, in a media release. "This tells us who is at greatest risk of developing a secondary infection." Estimates of the proportion of patients in ICU who will develop a secondary infection range from one in three to one in two; around half of these will be pneumonia. However, some people are more susceptible than others to such infections – evidence suggests that the key may lie in malfunction of the immune system.

The markers identified are found on the surface of key immune cells: neutrophils (frontline immune cells that attack invading pathogens), T-cells (part of our adaptive immune system that seek and destroy previously-encountered pathogens), and monocytes (a type of white blood cell). The researchers used an imaging technique known as flow cytometry, which involves labelling components of the cells with fluorescent markers and then shining a laser on them such that they give off light at different wavelengths. The researchers tested the correlation of the presence of these markers with susceptibility to a number of bacterial and fungal infections. An individual who tests positive for all three markers would be at two to three times greater risk of secondary infection compared with someone who tests negative for the markers. The research team published their findings in *Intensive Care Medicine*. The [Immune Failure in Critical Therapy \(INFECT\) Study](#) examined data from 138 individuals in four ICUs in the UK and replicated findings from a pilot study in 2013.

According to the researchers the markers do not indicate which secondary infection an individual might get, but rather that they are more susceptible in general. "In the long term, this will help us target therapies at those most at risk," said Dr. Conway Morris. Clinical trials for interventions to prevent secondary infections have met with mixed success, in part because it has been difficult to identify and recruit those patients who are most susceptible, say the researchers. Using this new test should help fine tune the selection of clinical trial participants and improve the trials' chances of success.

Dr. Conway Morris told *ICU Management & Practice* that currently there are not any licensed immunomodulatory therapies. Trials are mostly small-scale and use single markers. He added that the research team is looking at applying this test in further clinical trials, "either as a way of trying to predict how patients will respond if and when they get an infection, or as a way to stratify patients going into clinical trials of immunomodulatory therapies." This will require a better way of standardising the flow cytometry tests, which is possible in the context of a clinical trial, but in everyday practice would need standardised flow cytometric measures across labs.

Source: University of Cambridge

Image Credit: [CDC](#)

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