



Clinical and cost effectiveness of diagnostic strategies incorporating Beta-D-glucan (BDG) tests to reduce unnecessary use of empirical antifungal therapies for invasive *Candida* infection in the critical care setting

What is invasive *Candida* infection?

Candida species are a type of fungus which can cause life-threatening infections in patients in critical care. Infections must be treated without delay. Since traditional methods of testing blood and tissues are quite slow and can be inconclusive, patients are often started on treatment with antifungal medications if they are showing symptoms which raise suspicion of infection. The large majority of patients however turn out not to have this infection.

What is Beta-D-Glucan testing?

The Beta-D-Glucan (BDG) test is a rapid test which aims to diagnose fungal infection quickly and so might allow more efficient use of antifungal medicines meaning that patients can be spared unnecessary treatments and the side effects these may bring. Also, there may be benefits around reducing costs of treatments and risk of antimicrobial resistance by cutting down on overuse of medications.

What we did

We looked for trials in which BDG testing took place as soon as there was suspicion of infection to see if BDG testing could rule out infection and safely allow antifungal medications to be held back or stopped after a short time.

We conducted modelling based on known technical characteristics of the test to work out if it would be good value for money. We consulted experts in Scotland to advise us on how the test could be safely used.

What we found

Published evidence

There was only a small amount of evidence on this topic and we were not able to conclude whether or not BDG testing can be safely used to guide use of antifungal medications. We identified four ongoing studies which will help answer the question.

Cost, patient safety and antimicrobial resistance

In principle, introducing the test would be slightly more expensive than current practice but it would result in considerably less unnecessary antifungal prescribing. This can have great advantages for preventing development of antimicrobial resistance. It also means that patients who are unnecessarily treated under current practice will suffer fewer complications and adverse events from antifungals, which can further save costs to NHSScotland. However, since the test is not perfect, there is an important risk that a small proportion of patients could be harmed if their treatment is delayed or stopped too soon.

What is our advice to NHSScotland?

Whilst it has potential to benefit patient care, the BDG test should only be used with great caution due to the risk of harm to patients if their treatment is delayed or stopped too soon.

Future work

A number of studies are ongoing and so it may be helpful to look again at this topic when these are completed.

This plain language summary has been produced based on SHTG Advice Statement 02/19 (Jan 2019)