

**Title**

Antifungal prophylaxis in adult patients with acute myeloid leukaemia treated with novel targeted therapies: a systematic review and expert consensus recommendation from the European Hematology Association

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**Plain word title:**

A review of the use of medication to prevent serious fungal infections in patients, being treated for a type of blood cancer called acute myeloid leukaemia, with new targeted drugs, by the European Hematology Association

**Glossary:**

- *Acute myeloid leukaemia* – a cancer of the blood and bone marrow
- *Antifungal prophylaxis* – medication used to prevent serious fungal infections
- *European Hematology Association* – a not-for-profit organisation that promotes excellence in patient care, research, and education in haematology
- *Evidence* – data and information from research studies
- *Evidence-based* – a conclusion made by looking at data and information from studies
- *Novel targeted therapies* – new anti-cancer drugs that directly target cancer cells
- *Systematic review* – a summary and analysis of all medical literature on a specific topic

**Summary of trial and results:**

New technology now means that when someone is diagnosed with cancer, we can look very closely at the cancer cells to find out what is helping them survive. New anti-cancer medications referred to as novel targeted therapies attack these cancer cells directly and they are sometimes used instead of, or as well as, regular chemotherapy. This research paper looks at drugs that are used to treat different types of acute myeloid leukaemia. Many of these drugs have been used in patients only recently, and we do not know if they increase or decrease the risk of serious

fungal infections, or if they interfere with the drugs sometimes used to prevent serious fungal infections. This study attempts to find out what information was available, and what research had been done, on these new targeted drugs.

The researchers used the internet to look at every study that had been published that looked at both these new drugs and serious fungal infections. They looked at how many people got infections, how long people stayed in hospital, how many people survived, and their quality of life. They also looked at what drugs could be used to prevent serious fungal infections, and when they should be started and stopped. Use of medication to prevent fungal infections is called antifungal prophylaxis.

Researchers put all this information together and, as a group of experts from across Europe, had a discussion to make a recommendation of whether patients using these new drugs require antifungal prophylaxis. Patient representatives were involved through the entire process.

They found that there was very little research on this topic; they found 21 studies that were relevant. Of the 18 different new medications considered the group of experts felt there was only enough research on 5 medications to give an evidence-based recommendation for or against the use of antifungal prophylaxis. For a further 7 medications they came to an expert opinion; and the rest they could not give any recommendation at all. The recommendations were generally very situational, such as recommending for the use of prophylaxis in some contexts, but against it in others. All the evidence was of either low or very low certainty, this is a measure of how good the research is and how confident we feel it is accurate.

The researchers also found that there are problems with antifungal prophylaxis drugs interfering with some of the new targeted drugs which could cause side effects or overdoses, and more research also needs to be done into this topic.

#### **Comment relating to the BioDriveAFS trial:**

This paper shows that there is a lack of quality research data on the role of drugs to prevent serious fungal infections in the era of novel targeted therapies. It is also clear that there is not a one-size-fits-all approach, and that decisions will need to be made on a person-by-person basis based on their individual situation.

Whilst it is not the focus of BioDriveAFS many of the people that participate in the BioDriveAFS trial will be on these new medications. By patients joining the trial they will be helping us to understand whether antifungal prophylaxis is necessary when taking these novel targeted therapies.