Performance in EQA for Antifungal susceptibility from 2007 to 2013, by United Kingdom National External Quality Assessment Service

S. Seaton[1], E. M. Johnson[2], C. Walton[1] [1] UK NEQAS PHE, London, UK, [2] Mycology Reference Laboratory, PHE, Bristol, UK

Introduction

The United Kingdom National External Quality Assessment Service (UK NEQAS) for Microbiology introduced a scheme for antifungal susceptibility in February 2007 and provides participants with the opportunity to assess their performance in identification and antifungal susceptibility for a variety of clinically significant yeasts and filamentous fungi.

Antifungal susceptibility testing results of clinically important fungal isolates are of particular interest to clinicians, enabling them to adopt appropriate strategies for treatment, empiric and prophylactic therapies.

Objective: To review participant performance in identification of fungi (predominantly yeasts) and testing of antifungal susceptibility for isolates distributed as part of the UK NEQAS Antifungal susceptibility EQA scheme between 2007 and 2013.

Methods

Panels of two pure cultures of yeasts or filamentous fungi were distributed three times per year. Specimens included 38 yeasts and 2 moulds, covering the most prevalent yeasts causing fungaemia, and emerging pathogens that have been previously isolated in clinical specimens. Reported results from participants were analysed for concordance with intended results.

Fig.1 *Candida krusei* on SAB agar

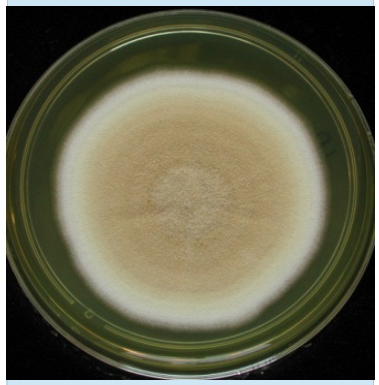


Fig.3 *Aspergillus terreus* species Complex on SAB agar

Results

Participation has increased since the first distribution in February 2007 from 65 to 190 registered participants in October 2013. Participants' results showed a range of outcomes from excellent performance for fungal identification to notable variations in the interpretations of susceptibility results, dependant on the method employed and interpretation of the MICs determined.

Methods reported over this test period has shown a gradual increase in the use of MIC gradient strips and automated systems for determining susceptibilities.

Reference

[1]**Gerhard Blum** *et al* 2013 New Insight into Amphotericin B resistance in *Aspergillus terreus* AAC doi:10.1128

Results

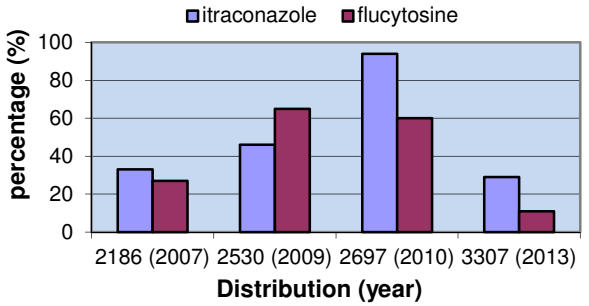
Table 1

Antifungal agents % correct	Distribution (year)			
	2186 (2007)	2530 (2009)	2697 (2010)	3307 (2013)
Correct identification %	89	96	98	98
amphotericin B	100	93	95	85
fluconazole	61	87	84	95
itraconazole	33	46	94	29
flucytosine	27	65	60	11
voriconazole	100	87	96	93
caspofungin	-	-	100*	87

Candida krusei (figure 1) are innately resistant to fluconazole so identification of such an isolate should preclude use of this agent. All isolates should be reported as resistant, irrespective of the MIC obtained. Marked improvement in identification was seen over time (table 1) and the majority of participants correctly reported the yeast as fluconazole resistant. There were high levels of discrepancy with the susceptibility results for flucytosine and itraconazole in distributions in 2007 and 2013 (figure 2). This was notable with laboratories using MIC gradient strips where there appeared to be inconsistencies in reporting end points.

Incorrect identification of *Aspergillus terreus* species complex (figure 3) has important clinical implications as unlike most other *Aspergillus* species it is often resistant to amphotericin B[1]. This isolate was correctly identified by 105/121 laboratories. Only 50 participants returned results for susceptibility to amphotericin with all but one reporting the correct result.

(Fig.2) *C. krusei* % correct susceptibility to itraconazole and flucytosine



Conclusions

Overall, participants have demonstrated satisfactory competence in performing antifungal susceptibility tests on the isolates distributed in the EQA scheme. Analysis of participants' results has highlighted determining susceptibilities of some yeasts, particularly certain species remains challenging.