

UK NEQAS for Fungal and Related Antigens – Next Steps

S. MASLIN, H. WILKINSON, D. PATEL, R. SARGUR

UK NEQAS for Immunology, Immunochemistry & Allergy (UK NEQAS IIA)

Northern General Hospital, Sheffield, United Kingdom

ukneqas@immqas.org.uk

INTRODUCTION

UK NEQAS for Immunology, Immunochemistry and Allergy (IIA) provides an ISO 17043 accredited EQA scheme for IgG antibodies to Fungal and Related Antigens. Participation has increased from 58 participants when the scheme was launched in 1991 to 158 participants in 2023. Participants are able to submit both qualitative and quantitative results within the scheme but are scored based on their qualitative results using the misclassification index scoring (MIS) system (Figure 1). There are 6 distributions per year, with 2 samples being distributed every 8 weeks (one fungal and one avian sample per distribution).

UK NEQAS for Fungal and Related Antigens includes IgG antibodies to: *Aspergillus fumigatus*, *Candida albicans*, Pigeon, *Budgerigar* and *Micropolyspora faeni* (M.f.aeni). The clinical utility of these analytes includes the diagnosis and monitoring of conditions including extrinsic allergic alveolitis (EAA), type III hypersensitivity diseases, candida and aspergillus infections, farmers lung and bird fanciers lung. EAA is also known as Hypersensitivity Pneumonitis (HP) and is considered an interstitial lung disease. HP is a type IV hypersensitivity reaction which is immune system mediated and is a result of an individual inhaling an antigen to which they have previously been sensitized¹. The acquisition of suitable patient material in sufficient volumes for use within the EQA scheme is challenging and operationally critical in terms of the continuation of the scheme.

UK NEQAS for Fungal and Related Antigens Report

AIMS AND OBJECTIVES

- To determine the feasibility of continuing the UK NEQAS for Fungal and Related Antigens scheme.
- To gather information from participants to allow UK NEQAS IIA to identify the most efficient way of optimising the scheme to aid in delivering a high quality service whilst preserving precious positive samples that are difficult to obtain.
- To engage participants with a view to helping with sample acquisition.

METHOD

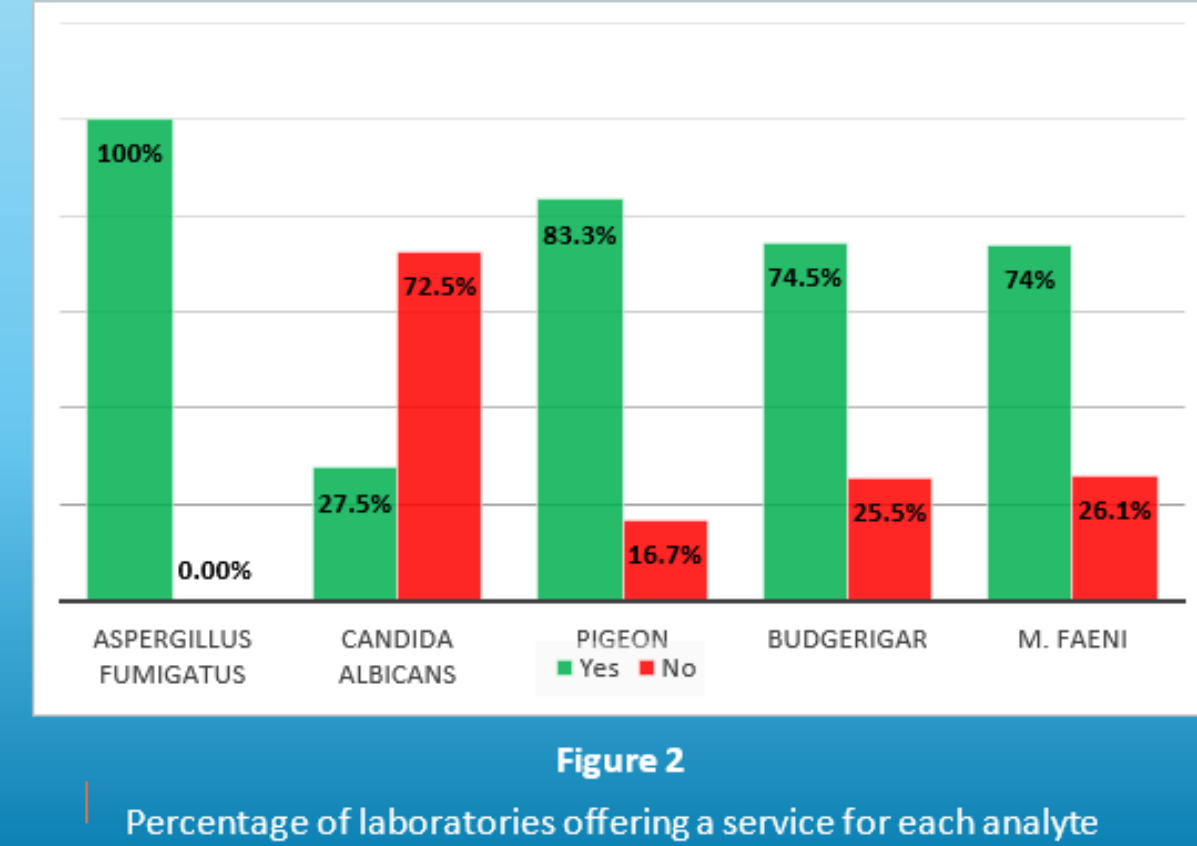
In August 2022, a survey was distributed to all participants of the UK NEQAS for Fungal and related Antigens scheme. The survey was used to gather information from participants about their analyte repertoire, frequency of analysis, volume of sample required for testing, and assay information, together with reference ranges. Participants were also asked their top 3 clinical scenarios for requesting the tests, the positivity rate for each analyte over a 12-month period and whether or not they could help with positive sample donations.

RESULTS

36% of participants responded to the survey.

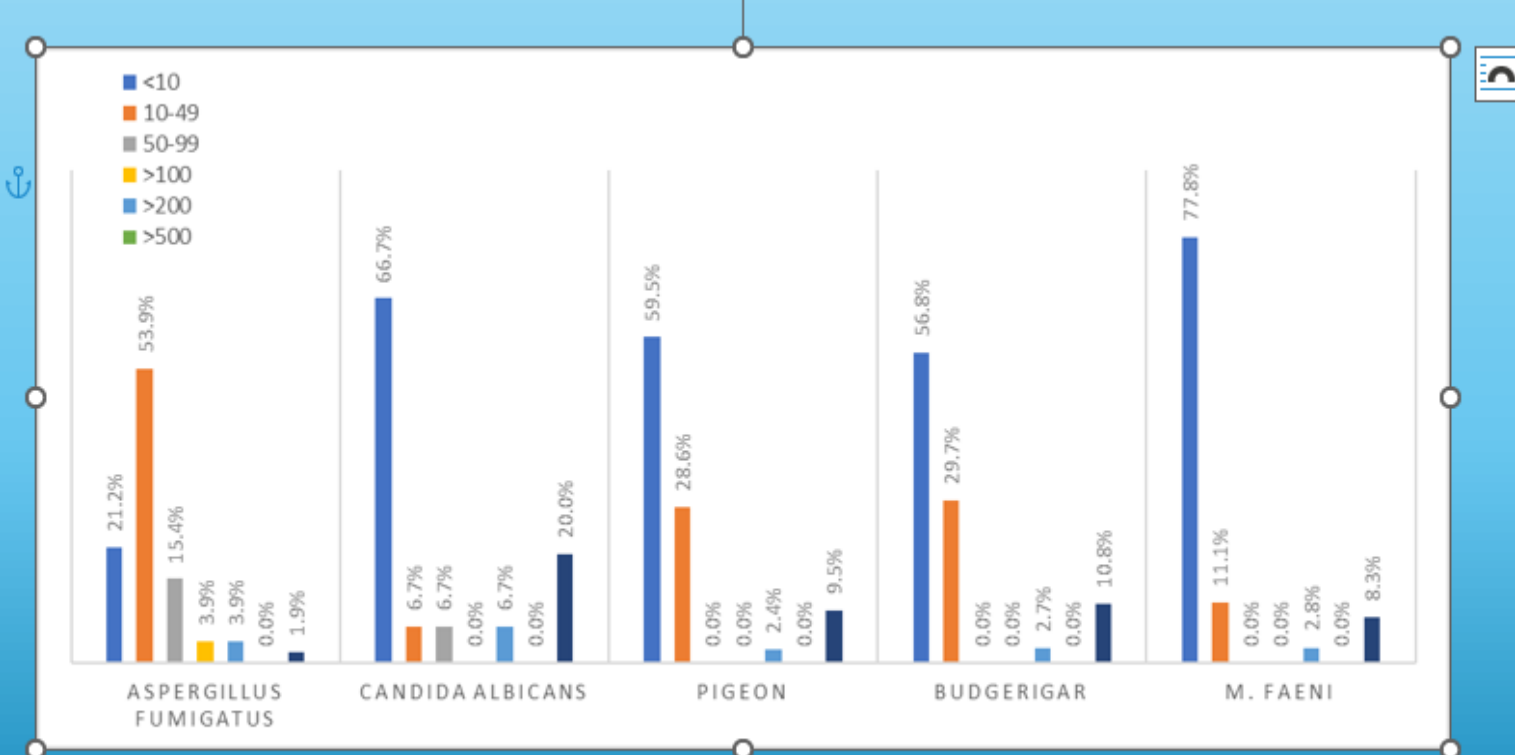
Analyte Repertoire:

All survey respondents stated that their laboratory offers antibodies to *Aspergillus fumigatus* as part of their testing repertoire but only 28% of respondents offer antibodies to *Candida albicans* testing. Testing for antibodies to avian antigens ranged from 83% for pigeon to 74% for M.f.aeni & budgerigar. (Figure 2).



Sample Numbers :

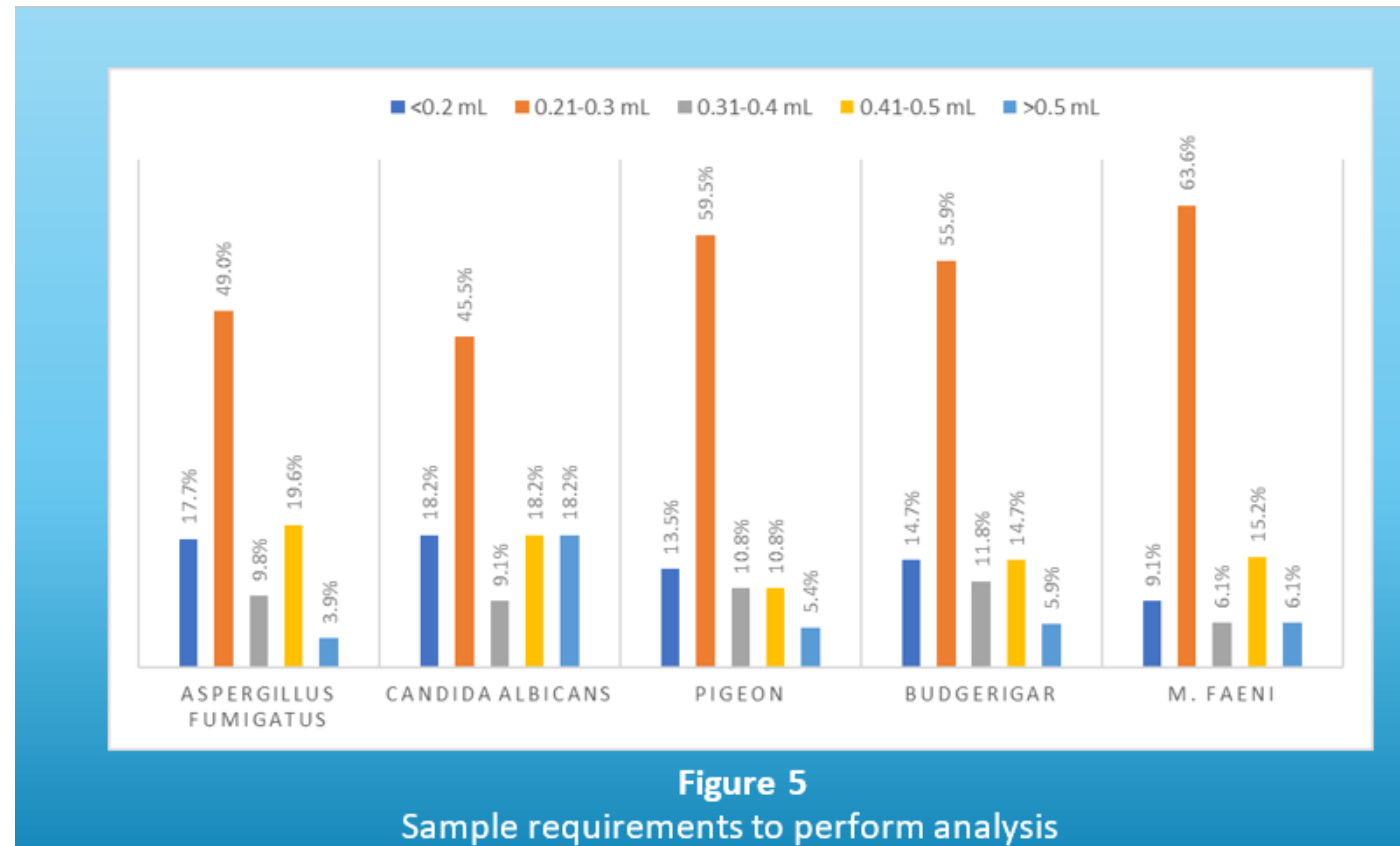
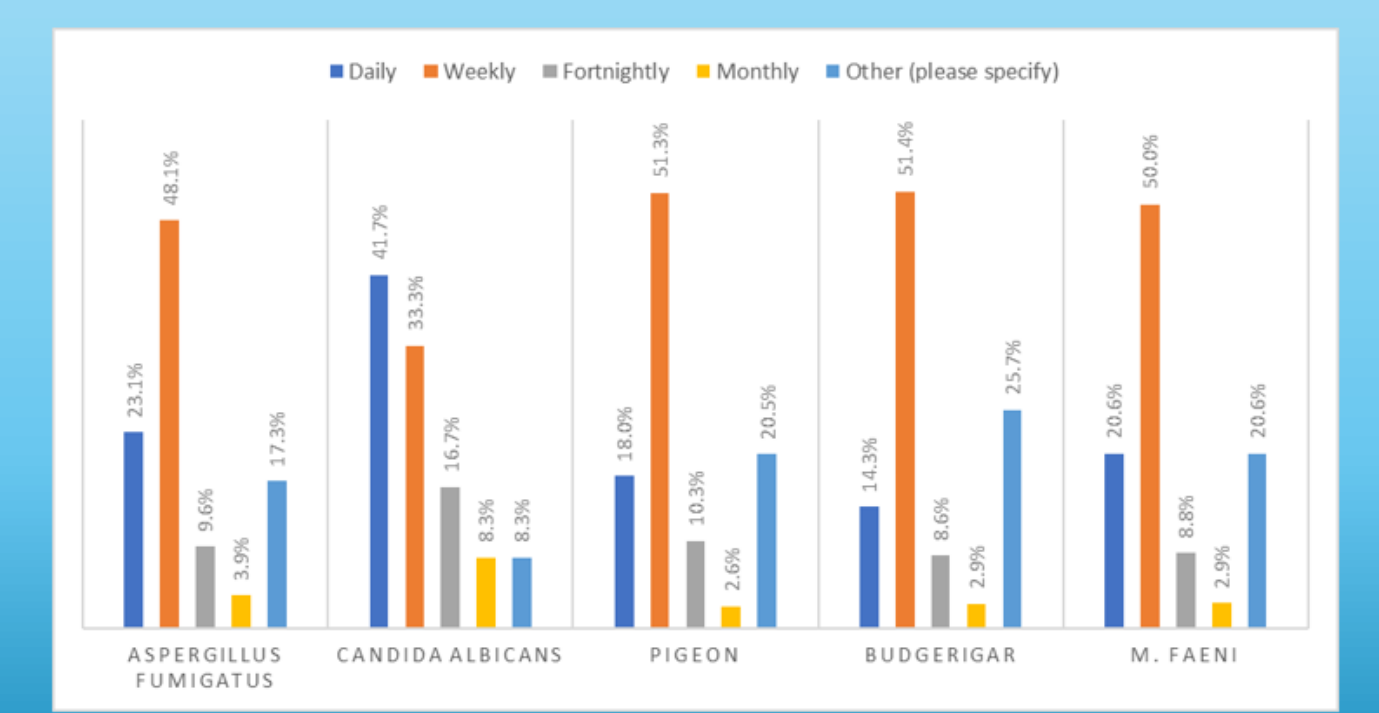
The majority of respondents stated that they analyse fewer than 10 samples per week for all analytes, with the exception of *Aspergillus fumigatus*. *Aspergillus fumigatus* is the most requested analyte with 54% of respondents receiving between 10 and 49 requests per week (Figure 3).



RESULTS

Frequency of Analysis:

The majority of respondents stated that they test weekly for all antigens included in the scheme with the exception of *Candida albicans* which was more commonly tested daily (Figure 4).



Sample Volume Required:

Over 60% of respondents identified that a sample volume of 0.3mL would be adequate to analyse fungal samples (*Aspergillus fumigatus* and *Candida albicans*).

Over 70% of respondents identified that a sample volume of 0.3mL would be adequate to analyse avian precipitins and M.f.aeni samples. This information (displayed in Figure 5) suggests we could reduce the volume sent out on future distributions for this scheme.

Positivity Rates:

Figure 6 displays the positivity rate for each analyte showed that there is a low frequency of positive results in the population with a clinical suspicion of EEA or Type III Hypersensitivity. This corresponds with the difficulty UK NEQAS IIA has obtaining positive donor samples for use in the scheme.

% Positivity	Aspergillus	Candida	Pigeon	Budgie	M. faeni
1-5	3	2	5	5	8
6-10	5	0	5	1	1
11-20	5	0	5	2	0
21-30	6	0	0	4	0
31-40	2	2	0	0	0
41-50	3	1	0	0	1

Clinical Scenarios:

Participants were asked to list their top three clinical scenarios/situations which determined when service users request a test for *Aspergillus fumigatus*, *Candida albicans*, avian precipitins and M.f.aeni. Allergic bronchopulmonary aspergillosis (ABPA) was stated most frequently when requesting *Aspergillus fumigatus*. *Candida albicans* was most frequently requested without a scenario (Figures 7 & 8). The most frequently stated reason for requesting avian precipitins and M.f.aeni was interstitial lung disease (ILD).

Aspergillus Fumigatus	Candida Albicans
<ul style="list-style-type: none"> Allergic bronchopulmonary aspergillosis (ABPA) Bronchiectasis Cystic Fibrosis (CF) 	<ul style="list-style-type: none"> Unknown Endocarditis Interstitial Lung Disease

Pigeon	Budgerigar	M.f.aeni
<ul style="list-style-type: none"> Interstitial lung disease (ILD) Bird fanciers lung Bronchiectasis 	<ul style="list-style-type: none"> Interstitial lung disease (ILD) Respiratory symptoms, keeps birds Asthma 	<ul style="list-style-type: none"> Interstitial lung disease (ILD) Farmers lung Asthma

CONCLUSION

Analysis of the responses received indicate that it is feasible to continue offering the UK NEQAS for Fungal and Related Antigens scheme. Feedback indicated sample volume could be reduced from 0.5mL to 0.3mL which would help conserve material which can be used in future distributions. This has since been implemented from distribution 232 this year.

Moreover, 35% of the responding participants have indicated that they could help with sample acquisition, which will help increase the frequency of positive samples distributed.

However, we are always requiring positive samples. If you could help please contact us at ukneqas@immqas.org.uk



REFERENCES

- Spagnolo P., et al. (2015). Hypersensitivity Pneumonitis: A Comprehensive Review. J Investig Allergol Clin Immunol 2015; Vol. 25(4): 237-250.

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