

FungiScope™ – Global Emerging Fungal Infection Registry

D. Seidel¹, K. Wahlers¹, M.J.G.T. Vehreschild¹, P. Köhler¹, F. Müller¹, H. Wisplinghoff², J.J. Vehreschild¹, O.A. Cornely^{1,3} on behalf of
The FungiScope ECMM/ISHAM Working Group

¹ 1st Department of Internal Medicine, University of Cologne, Cologne, Germany, ² Institute for Medical Microbiology, Immunology and Hygiene, University of Cologne, Cologne, Germany,

³ Clinical Trials Center Cologne, ZKS Köln, BMBF 01KN1106, University of Cologne, Cologne, Germany



A working group of:



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Background

The incidence of invasive fungal infections (IFI) is increasing worldwide. While the etiology of this development has not been completely understood, evermore invasive medical care as well as increasing numbers of long-term immunocompromised patients are considered major contributing factors.

A wide variety of so-called "emerging fungi" accounts for a significant proportion of IFI. Data on their epidemiology, pathogen biology and clinical course is scarce, often impeding evidence-guided decision making in the clinical setting.

To overcome these difficulties and eventually improve patient care, FungiScope™ – Global Emerging Fungal Infection Registry has been created in 2003.

Methods

- ✓ Filing patient data in an online database
- ✓ Epidemiological survey on the incidence of emerging fungal infections
- ✓ FungiThek: Biobanking and reference analysis of cultured isolates and tissue samples, as well as exchange with other centers for research projects
- ✓ FungiQuest: A search engine of the FungiScope database
- ✓ Therapeutic antifungal drug monitoring
- ✓ **Inclusion criteria:** Cultural, histopathological, antigen or molecular biologic evidence of IFI
- ✓ **Exclusion criteria:** Colonization or infections due to *Aspergillus* spp., *Candida* spp., *Cryptococcus neoformans*, *Pneumocystis jiroveci* and any endemic fungal infection
- ✓ The registry is open to everybody wishing to contribute a case of an emerging fungal infection

FungiScope

www.fungiscope.net

Registration and Password Acquisition
register@fungiscope.net

Electronic Case Report Form

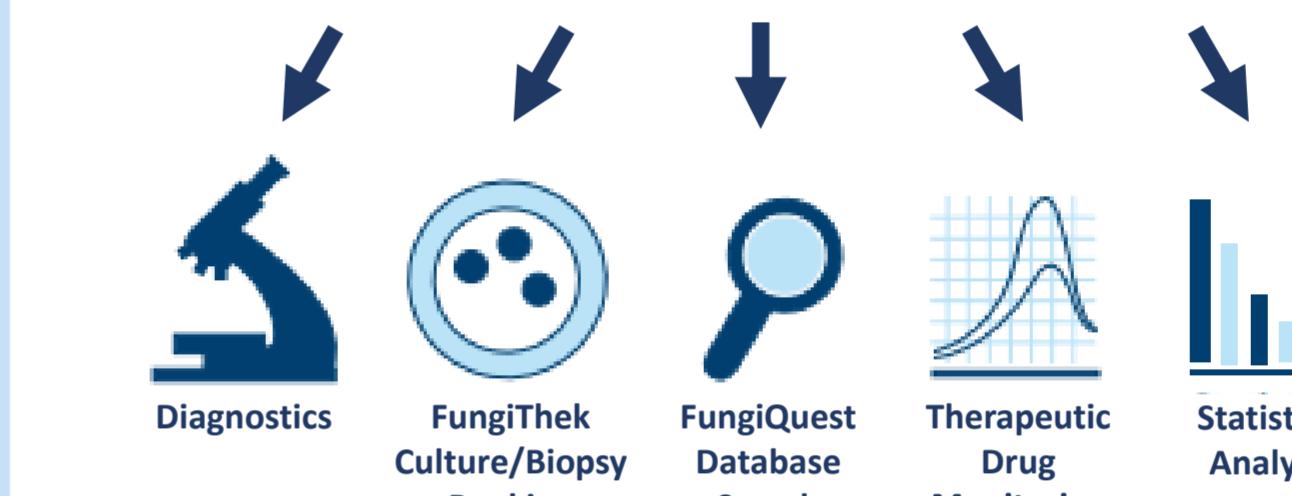


Figure 1: Project overview

FungiThek

Diagnosis of IFI with rare fungus
Centralization and storage of isolates

Diagnostics laboratories
Macroscopic and microscopic identification
Sequencing
Mass Spectrometry

Reference database
Link specimens to clinical and demographic data
Manage requests for specimen use

FungiQuest

Diagnosis of IFI with rare fungus
www.fungiquest.net

Search the database

Browse through cases

Results

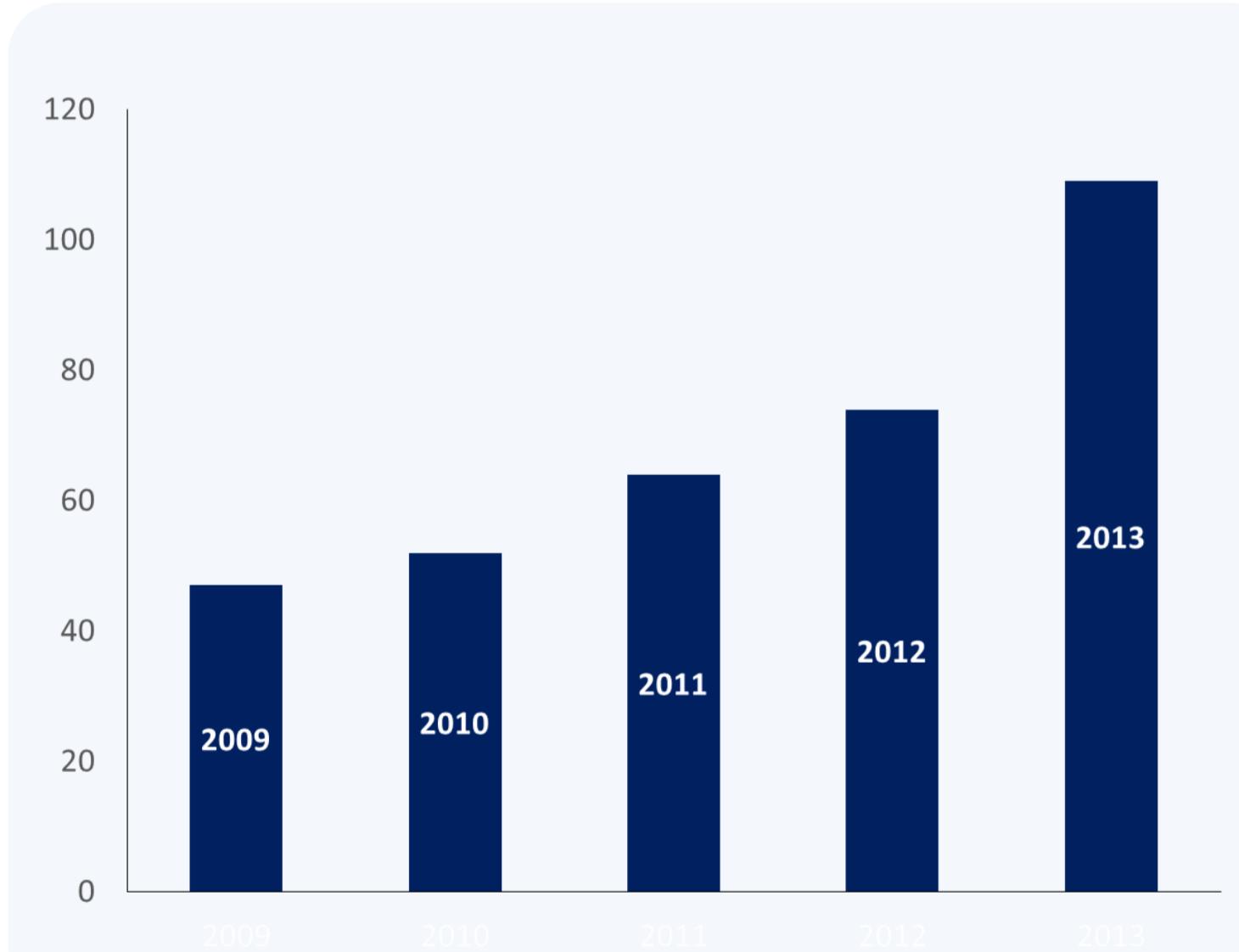


Figure 2: Annual case documentation is steadily increasing

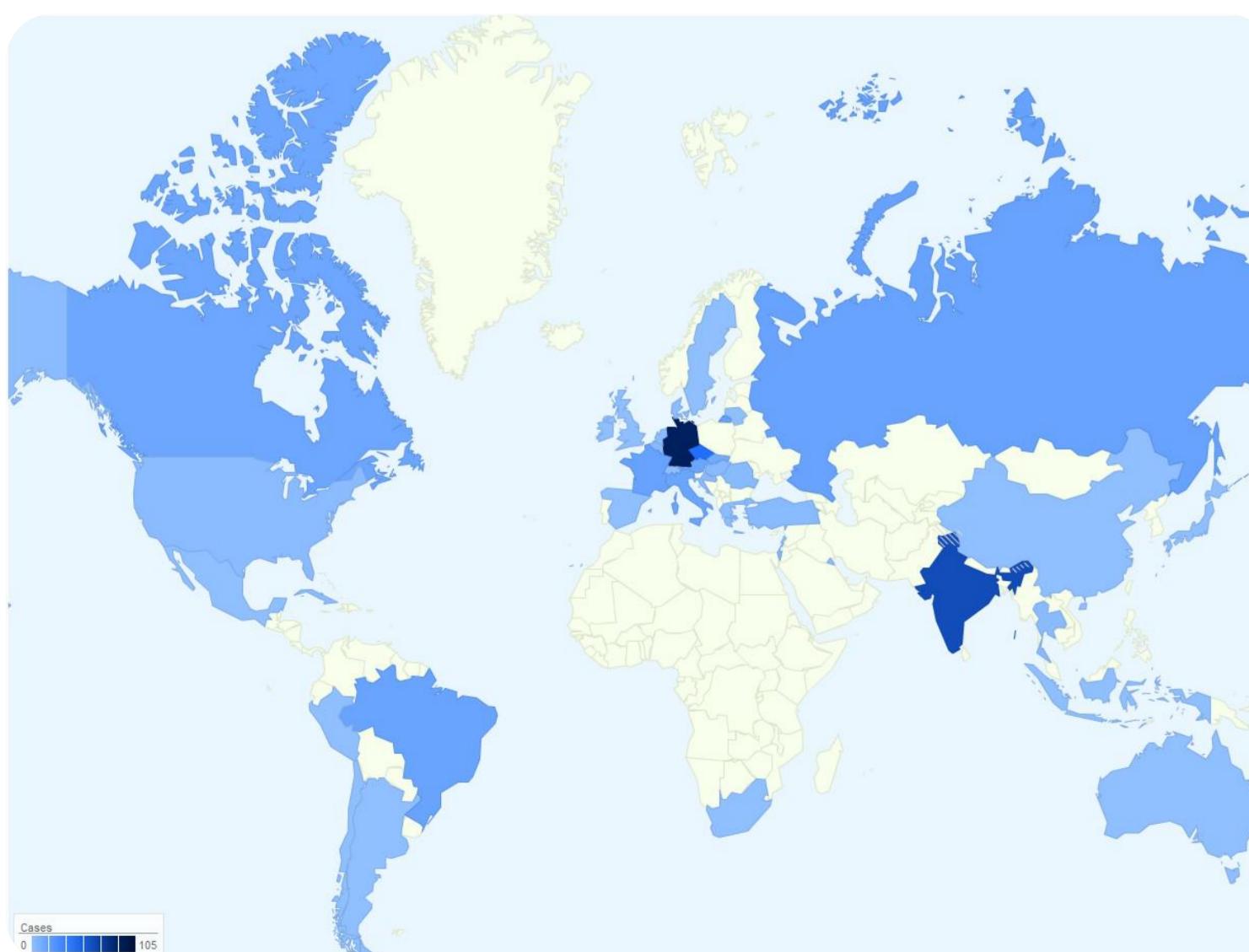


Figure 3: Contributing countries
The three top contributing countries are Germany, India and the Czech Republic.

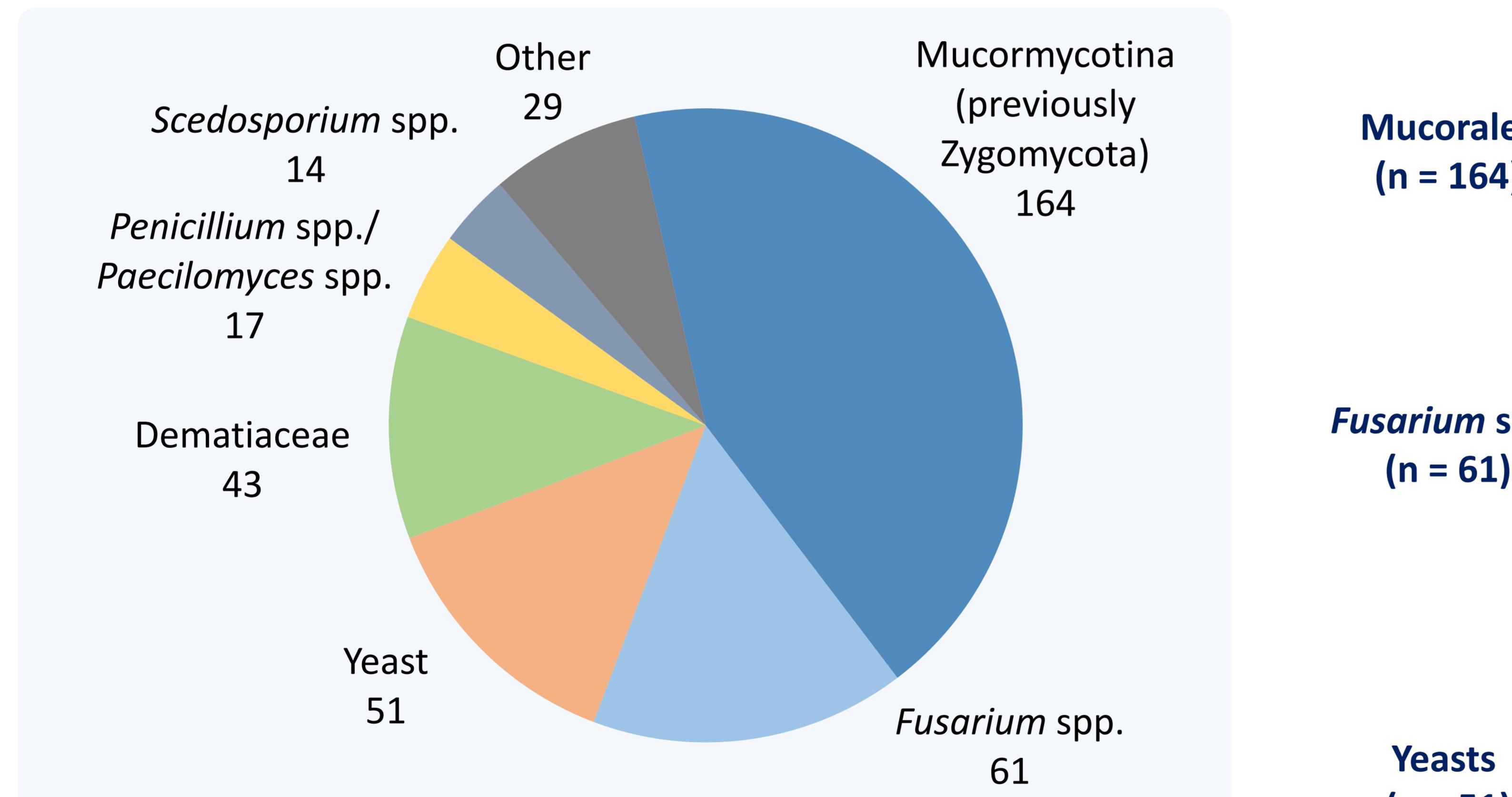


Figure 4: Distribution of Pathogens
From January 2003 – July 2014, 379 cases have been documented and considered valid - Mucormycotina are the most commonly registered pathogens followed by Fusarium spp. and yeasts.

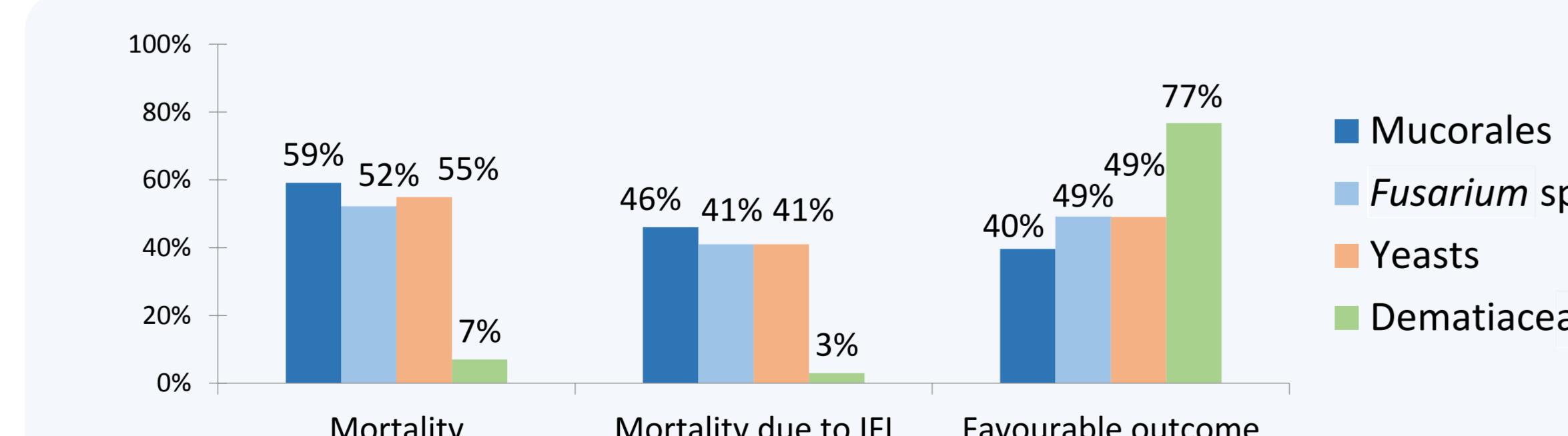
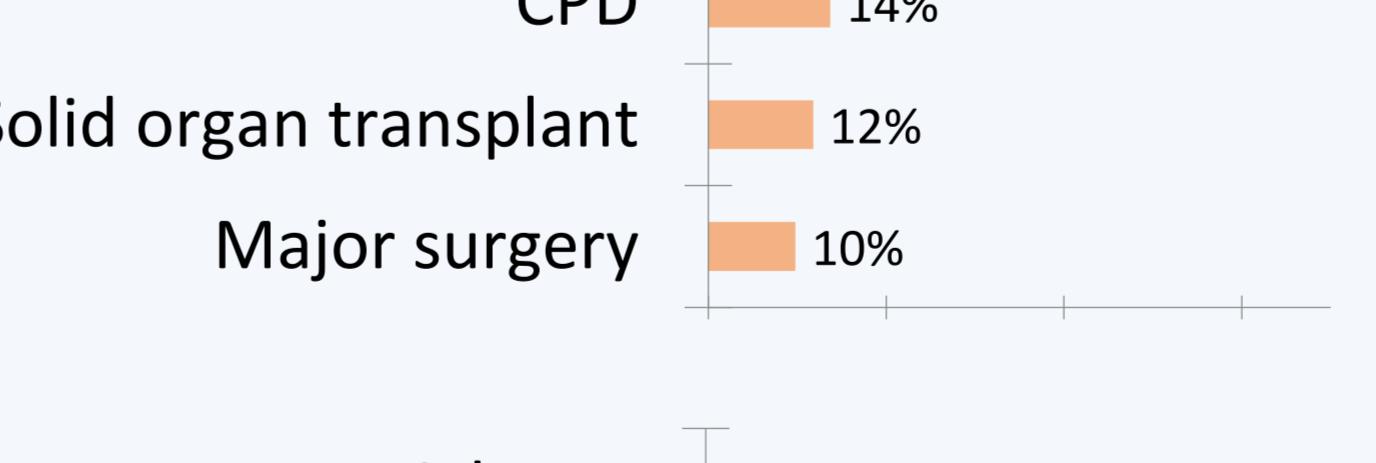
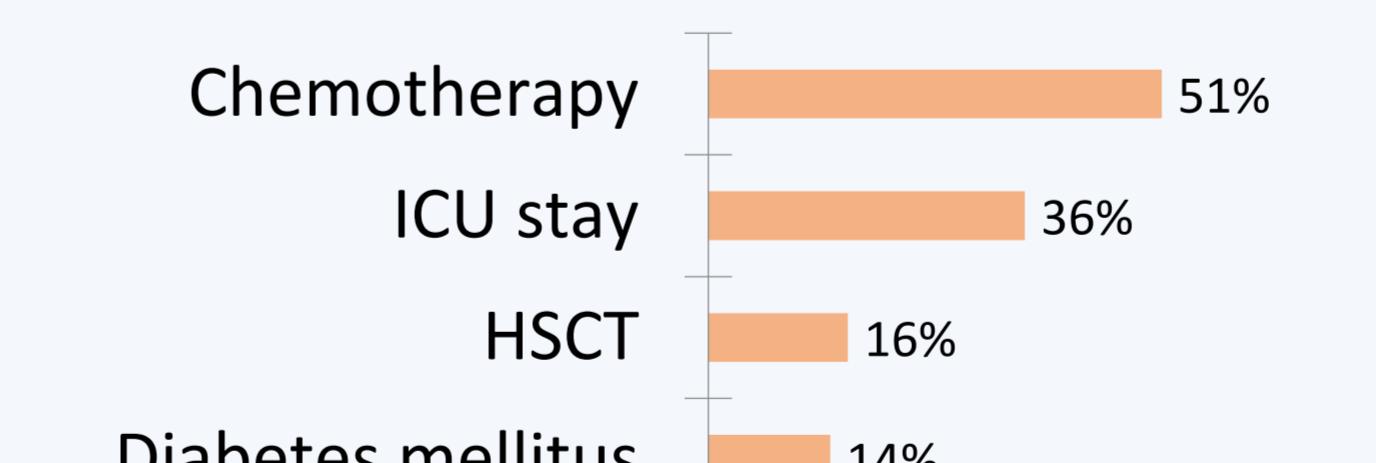
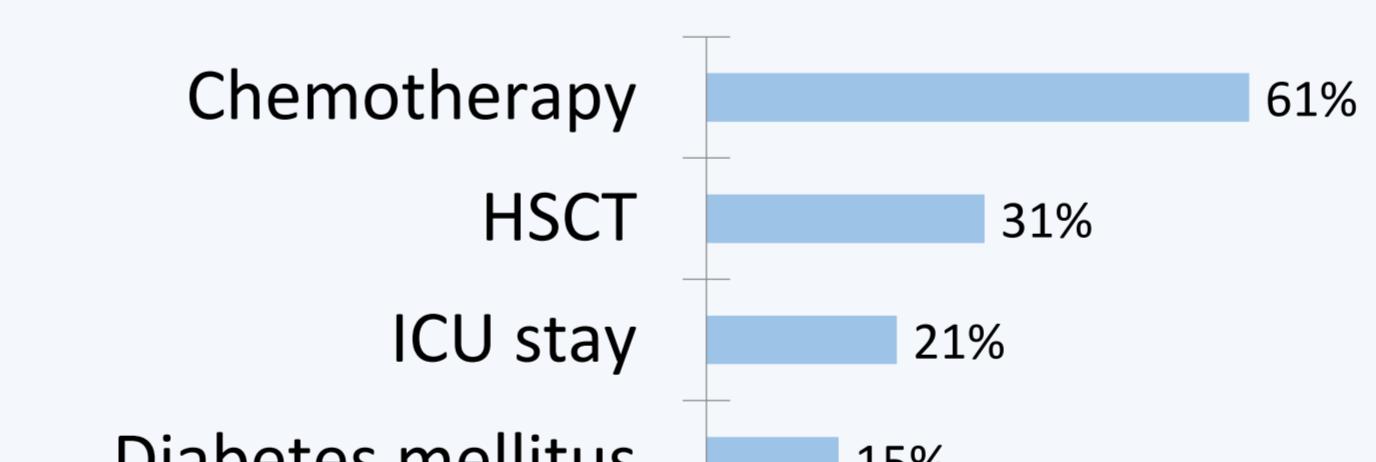
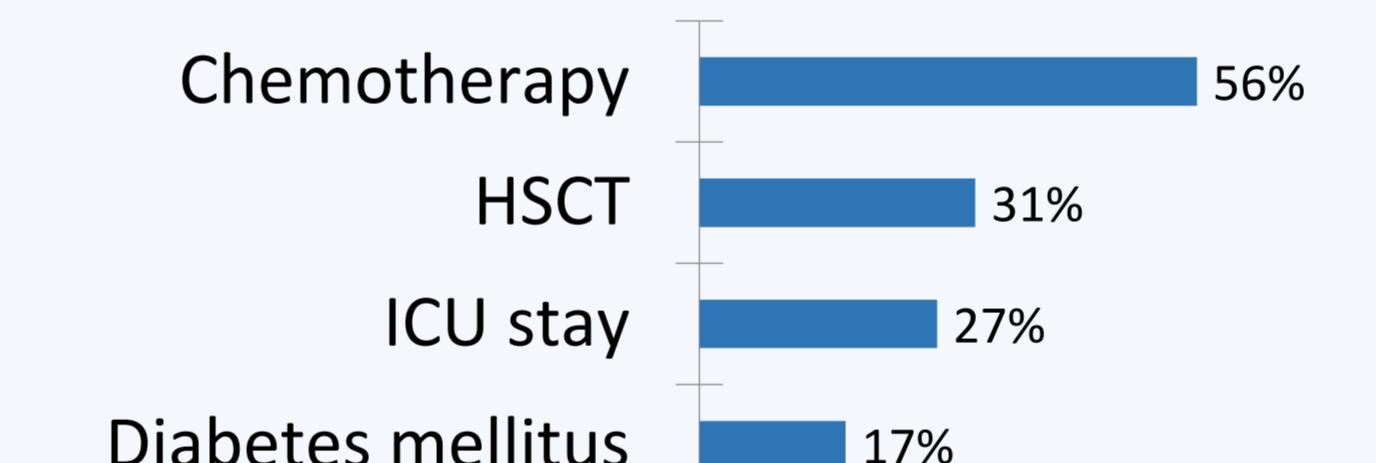
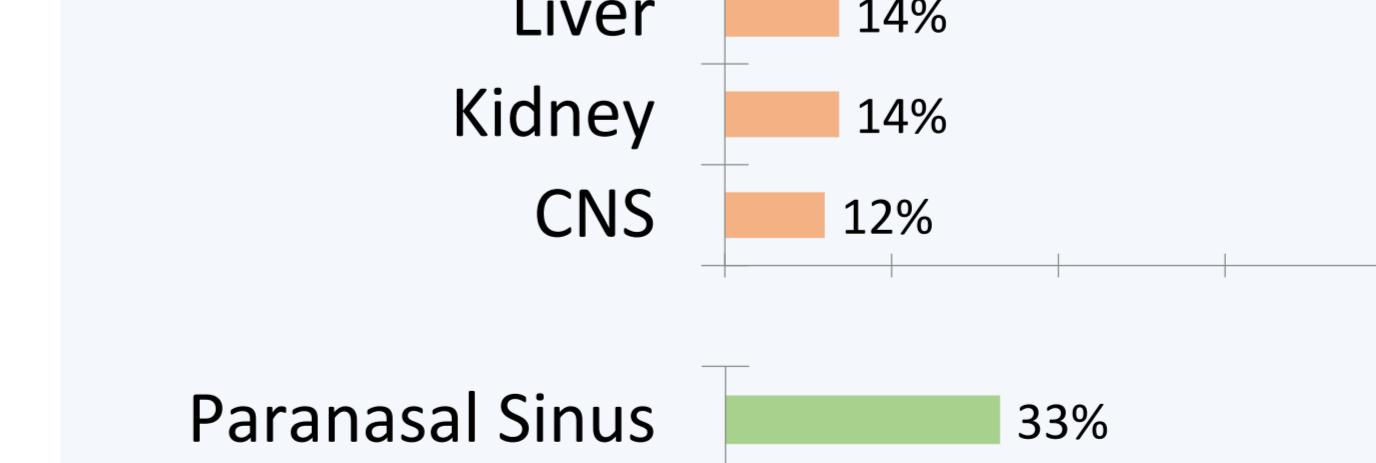
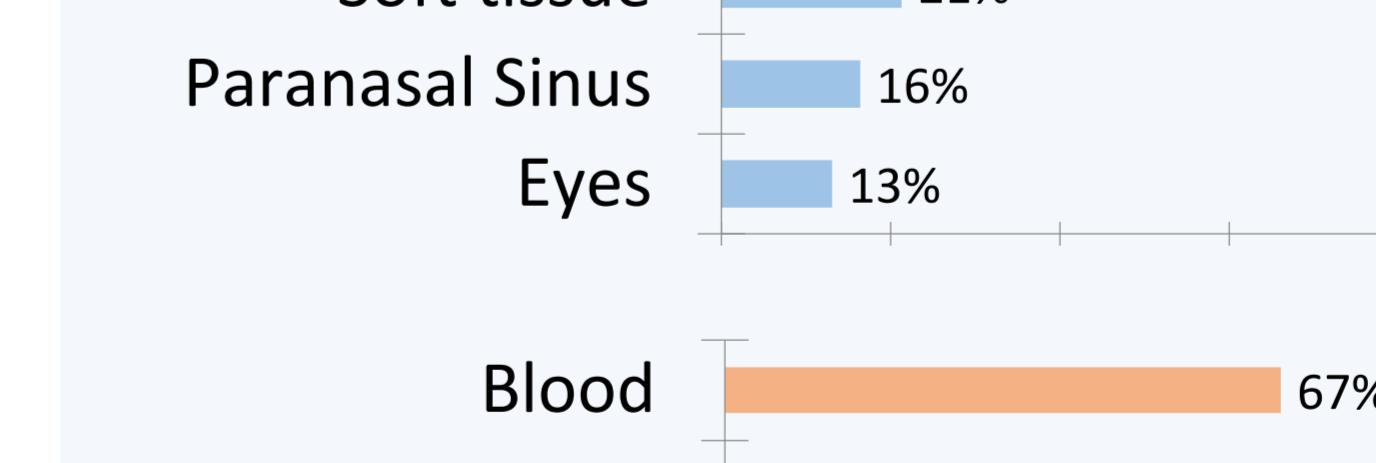
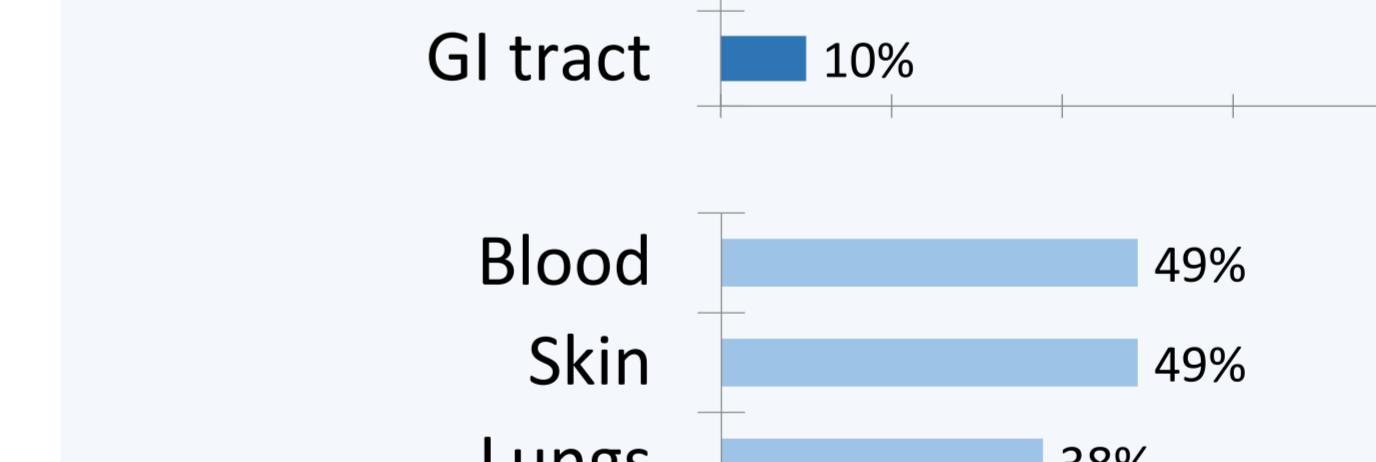
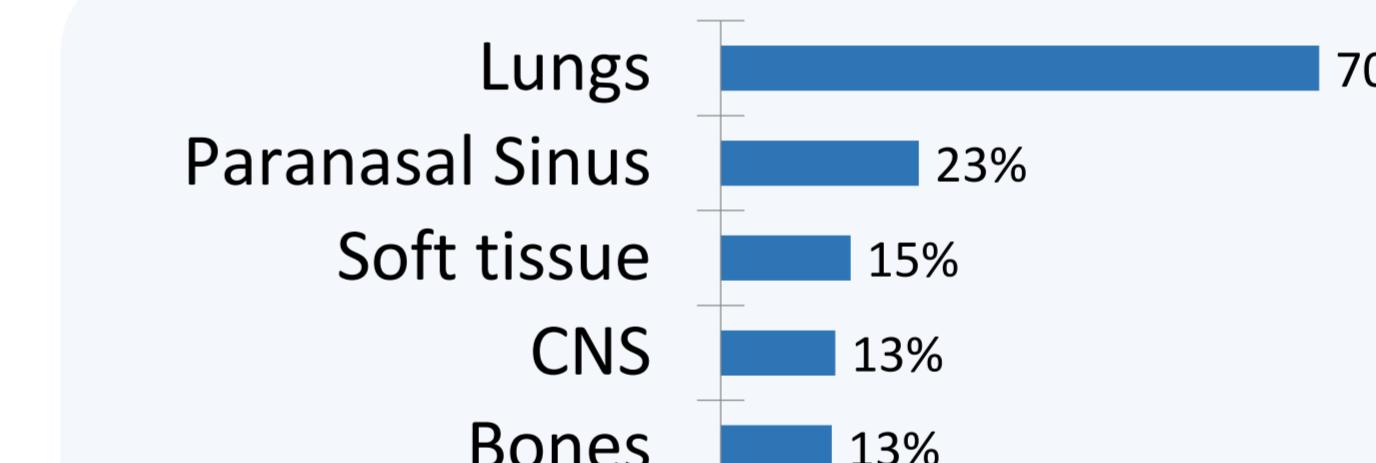


Figure 5: Outcome for the four most common pathogens
Outcome is poor for most infections with emerging fungi with the exception of IFI due to Dematiaceae.

Risk Factors



Site of Infection



Mucorales (n = 164)
Fusarium spp. (n = 61)
Yeast (n = 51)
Dematiaceae (n = 43)

Figure 6: Risk factors and site of infection for the four most common pathogens

Chemotherapy is the most important risk factor for most fungi except for Dematiaceae. The most common sites of infection vary greatly between the different fungi. Only the more common sites (> 10%) are shown.
HSCT Hematopoietic Stem Cell Transplantation, ICU Intensive Care Unit, CPD Chronic Pulmonary Disease, CNS Central Nervous System, GI Gastrointestinal

Conclusions

- ✓ Increasing relevance of rare IFI
- ✓ Efficient method: 379 cases of rare IFI from Europe, North and South America, and Asia have been documented
- ✓ Increasing annual case numbers

Goals

- ✓ Publication of a comprehensive analysis on rare yeasts
- ✓ Publication of a comparison between sequencing and morphological results for the first 100 FungiThek isolates
- ✓ Further improvement of the FungiQuest platform

Contact Danila Seidel, MS, PhD
University Hospital of Cologne
Center for Clinical Trials Cologne
Herderstrasse 52-54 | 50931 Cologne | Germany
Phone +49 221 478 97343, Fax +49 221 478 89027
Email danila.seidel@uk-koeln.de