Background. Patients undergoing allogeneic stem-cell transplantation (aSCT) are at high risk of invasive fungal disease (IFD). Optimization of antifungal prophylaxis strategies may further improve patient outcomes and reduce treatment costs.

Methods. We performed a retrospective single-center pharmacoeconomic evaluation comparing patients who received either posaconazole oral solution plus micafungin intravenous bridging as rescue post (POS-MIC) to patients who received only micafungin (MIC) as antifungal prophylaxis after aSCT at the University Hospital of Cologne. Epidemiological, clinical, and direct treatment cost data extracted from the Cologne Cohort of Neutropenic Patients (CoCoNut) were analyzed. Revised 2008 EORTC/MSG criteria were used for classification of IFD.

Results. During the observation period from January 2010 to December 2015, 313 patients (97 in the POS-MIC and 216 in the MIC group) fulfilled inclusion criteria. Most patients were male (n = 174, 56%) and median age was 52 years (range: 18–75 years). Acute myeloid leukemia was the most common underlying disease (n = 146, 47%). In the POS-MIC and MIC group, median overall length of stay (LOS) was 42 days (IQR: 35–52 days) vs. 40 days (IQR: 35–49 days; P = 0.296), resulting in median overall direct treatment costs of €42,964 (IQR: €35,040–€56,348) vs. €43,281 (IQR: €37,281–€51,848; P = 0.407). In both groups, possible IFD occurred in six patients (6%) vs. 16 patients (7%; P = 0.696) and probable/proven IFD occurred in five patients (5%) vs. three patients (1%; P = 0.051). Overall in-hospital mortality rates in the POS-MIC and MIC group were 10% (n = 10) vs. 4% (n = 9; P = 0.055). Kaplan–Meier analysis showed improved outcome of patients who received MIC at day 100 (P = 0.037) and at day 365 (P < 0.001) following aSCT. Multivariable Cox-regression model demonstrated treatment on ICU as the most important independent covariate for mortality at day 100 (HR: 8.08; P < 0.001) and at day 365 (HR: 4.70; P < 0.001).

Conclusion. We observed a higher mortality in patients receiving POS-MIC instead of MIC, which was not explained by breakthrough IFDs. The higher drug acquisition costs of micafungin compared with posaconazole oral solution did not translate into higher overall direct treatment costs.

7 Intravenous and Tablet Formulation of Posaconazole in Antifungal Therapy and Prophylaxis: A Retrospective, Non-Interventional, Multicenter Analysis of Patients Treated in German Tertiary-Care Hospitals

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Background. Novel formulations (gastro-resistant tablet and intravenous solution) of posaconazole (POS) have been approved in prophylaxis and therapy of invasive fungal diseases (IFD). The aim of the multicenter, non-interventional study was to analyze treatment strategies and clinical effectiveness of these new options.

Methods. We set up a web-based registry on the science platform www.ClinicalSurveys.net and members of the Infectious Diseases Working Party of the German Society of Hematology and Medical Oncology (AGIHO) were invited to participate in this registry. The registry was intended to analyze treatment strategies and clinical effectiveness of these new options. Data analysis was performed on the basis of the receiver operating characteristics (ROC) curve, the optimal cut-off was determined, and the area under the ROC curve was 0.89 (95% CI, 76 to 100) in diagnosing CRC. Of the 15 patients with CRC, 11 (73%) revealed positive DTP, whereas none of the 17 patients with non-CRC exhibits positive DTP. The sensitivity and specificity of DTP for the diagnosis of CRC were 73% (95% CI, 58 to 94) and 100% (95% CI, 71 to 100), respectively.

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415. Breakthrough Invasive Fungal Infections in Adult Hematologic Malignancy Patients Receiving Isavuconazole Prophylaxis

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Background. Isavuconazole (ISA) is a novel triazole antifungal approved for treatment of catheter-related Candidemia and Aspergillosis and proven (EORTC/MSG) to patients who received only micafungin (MIC) as antifungal prophylaxis after aSCT at the University Hospital of Cologne. Epidemiological, clinical, and direct treatment cost data extracted from the Cologne Cohort of Neutropenic Patients (CoCoNut) were analyzed. Revised 2008 EORTC/MSG criteria were used for classification of IFD.

Results. The background. The decision of catheter removal in neutropenic patients with candidemia is difficult because they usually have surgically implanted catheter, and CRC are less common in such patients. However, there are limited data on distinguishing CRC from non-CRC before catheter removal. We thus evaluated the diagnostic performances of DTP to diagnose CRC in neutropenic cancer patients with suspected CRC.

Methods. All adult neutropenic cancer patients with candidemia were enrolled in a tertiary care hospital from July 2012 to December 2016. Definite CRC was defined if (1) one or more granulocytes were present, (2) clinical improvement within 48 hours after catheter removal with antifungal agent therapy or (2) the infection was refractory to antifungal therapy after catheter removal. None of the patients who received antifungal treatment for candidemia after catheter removal. None of the patients who received antifungal treatment for candidemia after catheter removal. If the above conditions were not met, they were grouped into indeterminate, and were excluded from the final analysis. We defined the DTP as the difference in the time to positivity between blood cultures drawn simultaneously from the central vein and a peripheral vein.

Results. A total of 35 neutropenic patients with candidemia were enrolled. Of these, 15 patients (43%) with CRC (6 definite and nine probable) and 20 (57%) with non-CRC were analyzed. The area under the ROC curve was 0.89 (95% CI, 76 to 100) in diagnosing CRC. Of the 15 patients with CRC, 11 (73%) revealed positive DTP, whereas none of the 17 patients with non-CRC exhibits positive DTP. The sensitivity and specificity of DTP for the diagnosis of CRC were 73% (95% CI, 58 to 94) and 100% (95% CI, 71 to 100), respectively.

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Table 1. Characteristics of Breakthrough IFI Among Hematologic Malignancy Patients Receiving ISA Prophylaxis

| Age/Gender | Disease | IFI site | Organism | Diagnostic Test | ANC Nadir | Neutropenia Duration (days) | Duration (ISA) | Outcome (12 weeks) |
|------------|---------|----------|----------|-----------------|-----------|----------------------------|----------------|-------------------|
| 32M | AML | Lung | Aspergillus fumigatus | BAL fungal culture | <10 | 118 | 38 | Death |
| 65M | Acute leukemia | Blood | Aspergillus fumigatus | Blood culture | <10 | 14 | 13 | Death |
| 44F | ALL | Lung | Aspergillus niger | FNA, PCR, path | 0 | 143 | 52 | Partial response |
| 63F | AML | Lung | Unknown | Lung FNA | 110 | 90 | 73 | Partial response |

*Probable IFI; other threecases were proven.

**Conclusion.** We demonstrate a 12% rate of breakthrough IFI among hemato-oncology malignant patients on ISA prophylaxis, similar to published rates (10–15%) on posaconazole prophylaxis. Further study is needed to characterize risk factors for and epidemiology of ISA breakthrough.

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416. Culture-Documented Invasive Mold Infections (cMIs) at MD Anderson Cancer Center (MDACC) in Houston, Texas Pre- and Post-Hurricane Harvey Diagnosis

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**Background.** Hurricane Harvey caused record flooding in late August 2017. As flood damage causes mold overgrowth, excess rates of IMIs in immunocompromised cancer patients is of concern.

**Materials.** We compared the rates (patient-1,000 days) of cMIs (EORTC/MSG criteria), in the period 7 months preceding and 7 months following hurricane Harvey, diagnosed in cancer patients at our institution. We focused on the four molds (Aspergillus, Mucorales, Scedosporium) that account for the vast majority of cMIs in our patient population.

**Results.** No changes in cMl rates (0.184 pre-Harvey vs. 0.171 post-Harvey, P = NS) and mold distribution as causes of IMIs were seen (table). No increased cases of cMIs were encountered amongst different services (table), including patients with lymphoma/multiple myeloma or solid tumors (40% pre-Harvey vs. 31% post-Harvey, P = NS).

**Conclusion.** Despite concerns for extensive environmental mold exposure after hurricane Harvey, we did not detect increased rates of cMIs nor the emergence of unusual molds as causes of IMIs in high-risk cancer patients at MDACC, including in patients with solid tumors, where mold-active prophylaxis is not used. Whether excess IMI cases not fitting the traditional diagnostic criteria (e.g., biomarker-positive, but culture-negative IMIs) or pneumonias not requiring hospitalization were seen, requires further study.

**Inpatient Hospital Infection Rates 7 Months Pre Harvey**

| Organism | Rates 7 Months Pre Harvey |
|----------|---------------------------|
| Aspergillus | 0.1506 |
| Mucorales | 0.0167 |
| Fusarium | 0.0167 |
| Scedosporium | 0.0000 |
| Total | 0.1840 |

**Inpatient Service Line Infection Rates 7 Months Pre Harvey**

| Organism | Rates 7 Months Pre Harvey |
|----------|---------------------------|
| MM/Lymphoma | 0.3185 |
| Solid Tumor | 0.0588 |
| Leukemia | 0.3655 |
| Stem Cell Transplant | 0.1835 |

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417. Clinical Mycology in Latin America and the Caribbean: Diagnostic Capabilities and Antifungal Therapy

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**Background.** No data are available about diagnostic capabilities and practice in clinical mycology in Latin America and the Caribbean.

**Methods.** Here, we conducted an online survey aimed to assess availability, routine diagnostic procedures and access to therapy. Contacts were made through IFI initiative (Leading International Fungal Education), SBI (Brazilian Society of Infectious Diseases), SBAC (Brazilian Society of Clinical Analysis), and SBM (Brazilian Society of Microbiology) during the first 2018 trimester.

**Results.** We got 128 responses, each one from a single healthcare institution. Countries included Brazil (96), Mexico (9), Colombia (5), Uruguay (3), Guatemala (3), Argentina (2), Chile (2), Paraguay (2), Venezuela (2), Barbados (1), Ecuador (1), Honduras (1), and Peru (1). Most frequent institution profiles were public (38%), private (14%), and university hospitals (22%). Number of hospital beds varied between 12–3,000 (median 200 beds). ICU beds ranged 3–500 (15 beds). Most institutions provided care for hematology (63%) and HIV (31%) patients. Yeast identification was performed by biochemical tests (76%), automated methods (65%), and MALDI-TOF (15%). Twelve percent of responders had access to DNA sequencing. Almost a half (39%) of institutions did not undertake antifungal susceptibility tests, 47% did it only for yeasts, 2% molds. Fifty-two (12%) institutions performed antifungal susceptibility tests routinely for all fungal isolates. Automated methods were the most frequently used antifungal susceptibility methodology (38%). Eighty-two (64%) institutions had no access to therapeutic drug monitoring (TDM). Cryptococcal antigen testing was available for 75% of responders.

**Conclusion.** This survey was the largest and most updated snapshot of the clinical mycology scenario in Latin America and Caribbean. Efforts should be made to improve diagnostic capabilities and equalize regional disparities.

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418. Evaluation of β-D-Glucan (BG) and Galactomannan (GM) Detection Assays in the Diagnosis of Invasive Fungal Infections in High-Risk Pediatric Cancer Patients

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**Background.** Diagnosing IFD in pediatric patients is challenging: cultures are often negative and diagnostic efficacy of biomarkers such as β-D-glucan assay (BG) and galactomannan assay (GM) is unclear. The 2017 International Pediatric Fever and Neutropenia Guideline Panel recommended against the use of fungal biomarkers for the diagnosis of IFD in pediatric patients.

**Methods.** We conducted a retrospective chart review of pediatric oncology patients at the University of Chicago Children’s Hospital between July 2009 to December 2016 to determine the utility of BG and GM for diagnosis of IFD. Inclusion criteria: neutropenic patients at UCM Comer Children’s Hospitals between July 2009 to December 2016, patients at UCM Comer Children’s Hospitals between July 2009 to December 2016, BG was sent on 76 FNEs and GM on 115 FNEs, Underlying diagnoses included: Acute lymphoblastic leukemia (43 cases (37%)), acute myeloid leukemia (24 (20%)), lymphoma (12 (10%), solids (24 (20%), others (6)) (5%). Overall, 59 (51%) cases underwent stem cell transplant. Of 15 deaths, five had IFD, three were not related to fungal infections. Sensitivity, specificity, positive and negative predictive values for BG are 43%, 87%, 63% and 78%, respectively, and for GM 15%, 95%, 50% and 79%, respectively. False-positive BG was noted in three FNEs. False-positive GM was noted in four FNEs (2 with non-Aspergillus molds, and two patient had bacteremia). Both BG and GM have low sensitivity and positive-predictive value supporting low utility in IFD diagnosis for pediatric patients. Our study shows a false-positive BG may be as high as 250 pg/mL in the absence of clinical and radiological symptoms suggesting IFD. High specificity of the GM may be of value in diagnosing invasive Aspergillus (IA). Novel fungal biomarkers are needed for early IFD detection to improve outcomes.

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419. Diagnostic Performance of Immunohistochemistry Test to Differentiate Mycormycosis From Formalin-Fixed Tissue Specimens

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