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Background. Invasive aspergillosis (IA) remains a burdensome illness and is associated with substantial mortality. With increasing use of aggressive chemotherapy and immunomodulatory treatments, the prevalence of IA is likely to have grown. However, little is known about the current US burden of IA-related hospitalizations.

Methods. Using aggregated data available on the interactive website from the Agency of Healthcare Research and Quality's Health Care Utilization Project Net, we examined the annual volume of IA-related hospitalizations in the United States, based on the presence of the ICD-9-CM codes 117.3, 117.9, and 484.6. Age-adjusted volumes were derived through population incidence calculated using year-specific censal and intercensal US population estimates available from the US Census Bureau. We additionally determined time trends in IA as the principal diagnosis (PD) and its associated charges.

Results. Between 2004 and 2013, the number of annual hospitalizations with IA grew from 29,774 (standard error, SE 2,425) to 51,870 (SE 2,642), a 74.2% overall increase. This increase was most notable among those aged 45–64 and 65–84 years. Regionally, the South contributed the plurality of the cases (40%), and the Northeast the fewest (17%) with the remainder split evenly between the West and the Midwest. When age-adjusting to year 2013, the growth in the volume of cases was slightly more modest (44.2%), going from 35,968 cases in 2004 to 51,870 in 2013. The proportion of IA hospitalizations in which IA was the PD dropped, from 14.4% in 2004 to 9.3% in 2013. Despite mean hospital length of stay (LOS) decreasing from 13.3 (SE 0.07) in 2004 to 11.5 (SE 0.6) days in 2013, the corresponding mean hospital charges rose from $71,164 (SE $5,248) to $123,005 (SE $9,738). The aggregate US inflation-adjusted hospital charges for IA PD rose from $436,074,445 in 2004 to $592,358,369 in 2013.

Conclusion. The rate of growth in IA-related hospitalizations in the United States between 2004 and 2013 was substantial. The plurality of cases appears to arise in the South. Despite a moderate decrease in LOS during the time period studied, there was a modest rise in the corresponding hospital charges. The aggregate US annual hospital bill for IA PD discharges is over $0.5 billion.

Disclosures. **M. D. Zilberberg**, Astellas Pharma Global Development, Inc.: grant investigator, research support **R. Harrington**, Astellas Pharma Global Development, Inc.: employee, former employee and salary **J. Spalding**, Astellas Pharma Global Development, Inc.: employee, salary **A. F. Shorr**, Astellas Pharma Global Development, Inc.: Consultant and Speaker's Bureau, consulting fee, research support and speaker honorarium Cidara: consultant, consulting fee Merck: consultant, scientific advisor and Speaker's Bureau, research support and speaker honorarium

149. β-D-Glucan Testing Is Overused in Patients Without Solid Organ/Stem Cell Transplant or Hematologic Malignancies

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Background. The β-D-glucan (BDG) assay aids in diagnosis of some invasive fungal infections (IFI) in at-risk patients. Due to an increase in the number of BDG tests ordered at Johns Hopkins Hospital in patients not at high risk for IFI, we evaluated the appropriateness of testing and conducted a survey to understand providers' knowledge about the test.

Methods. From December 2015 to July 2016, we identified inpatients >17 years with at least one BDG test. We did not evaluate patients with solid organ/stem cell transplant or hematologic malignancies as they generally have indications for BDG testing. Using a standard data collection form, one infectious disease (ID) physician reviewed all test for appropriateness; 20% of cases were reviewed by an additional ID physician. Students, housestaff and allied staff from departments of medicine and surgery were surveyed regarding their knowledge of BDG test characteristics including indications and causes of false-positive results.

Results. 355 patients with at least one BDG were included. 33% (n = 116) had a risk factor for IFI (e.g., AIDS, immunosuppressing medication, malignancy, total parenteral nutrition, and prolonged ICU stay) although only 13% (n = 48) of these had proved or possible IFI. 49% (n = 173) had no indication for testing. Of these, 4% (n = 8) had inappropriate antifungals started based on BDG results. Being at an intensive care unit or having cirrhosis was associated with inappropriate BDG use (P = 0.03). Most of the 47 clinicians surveyed recognized the utility of BDG in the diagnosis of candidiasis (63%) and Aspergillosis (78%) but only 49% recognized its utility in diagnosis of Pneumocystis. Fifty-two percent identified its lack of utility for diagnosis of Cryptococcus infection but only 44% recognized lack of utility for diagnosing Zygomycetes. The majority of those surveyed were unable to identify causes of false-positive results of the assay.

Conclusion. In patients without solid organ/stem cell transplant or hematologic malignancies, clinicians ordered the BDG assay in the absence of clinical risk or evidence of IFI in almost 50% of patients. Survey results suggest an incomplete understanding of organisms associated with positive BDG tests. Clinicians must be educated about the correct patient population in which a new test should be used.

Disclosures. **All authors:** No reported disclosures.

150. Risk Factors and Mortality Associated with *Candida krusei* Bloodstream Infections

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Background. *Candida krusei* (CK) candidemia is associated with high mortality, but whether this is due to underlying comorbidities in affected patients or the organism itself is unknown. We analyzed factors associated with *C. krusei* candidemia and its outcomes.

Methods. A retrospective analysis of hospitalized patients with candidemia was conducted at our institution between 2002 and 2015. Data were collected on demographics, comorbidities, medications, procedures, central lines, vital signs, and labs. Univariable logistic and Cox regression were used to identify potential risk factors associated with CK and mortality, respectively. Multivariable analyses were then constructed parsimoniously from these variables.

Results. Of 1,873 candidemia events, 59 were due to CK. In multivariable analysis, CK candidemia was predicted by hematologic malignancy (OR 8.9, 95% CI [4.1, 19.7]), stomach cancer (OR 14.6, 95% CI [2.9, 72.5]), absolute neutrophil count (OR 2.4, 95% CI [1.2, 4.8]), and the use of prophylactic azole antifungals (OR 2.2, 95% CI [1.1, 4.3]), monoclonal antibodies (OR 5.7, 95% CI [2.0, 15.8]), and penicillin β-lactamase inhibitors (OR 2.5, 95% CI [1.3, 4.8]). The C-statistic was 0.86 (95% CI [0.81, 0.91]). The crude mortality rates were 86.4% for CK candidemia and 63.6% for non-CK candidemia. Although CK was associated with higher mortality in univariable Cox regression (Figure 1, HR 1.8, 95% CI [1.3, 2.4]), this relationship was no longer significant (HR 1.2, 95% CI [0.8, 1.7]) with the addition of the following confounders: hematologic malignancy (HR 0.9, 95% CI [0.7, 1.1]), absolute neutrophil count (HR 1.7, 95% CI [1.4, 2.2]), stomach cancer (HR 1.0, 95% CI [0.5, 1.9]), coagulopathy (HR 1.0, 95% CI [0.9, 1.2], and prophylactic corticosteroids (HR 1.4, 95% CI [1.2, 1.7] (Figure 2).

Conclusion. A similar set of patient characteristics is associated with both CK infection and increased mortality, suggesting that patients with CK candidemia are at higher risk of mortality due to underlying illness rather than organism-specific mechanisms.

Figure 1. Univariable 90-day survival analysis stratified by CK (red) versus non-CK (blue) candidemia.

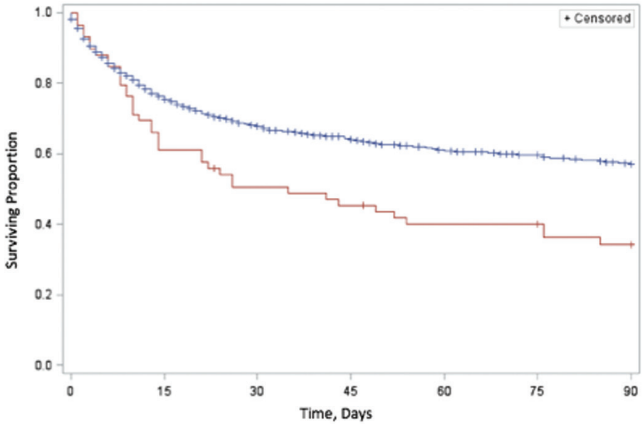
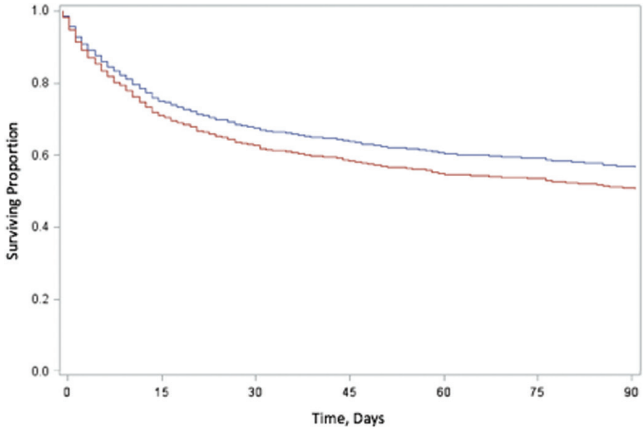


Figure 2. Multivariable 90-day survival analysis stratified by CK (red) vs non-CK (blue) candidemia.



Disclosures. **W. Powderly**, Merck: Grant Investigator and Scientific Advisor, Consulting fee and Research grant Gilead: Scientific Advisor, Consulting fee Astellas: Grant Investigator, Research grant **A. Spec**, Astellas Pharma US, Inc.: Grant Investigator, Research grant

151. Risk Factors Predicting *Candida glabrata* Bloodstream Infection

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Background. Increased incidence of *Candida glabrata* (CG) infection is a growing concern in recent years due to the higher rates of fluconazole resistance associated with *C. glabrata* . This study aimed to create a risk predictive model for *C. glabrata* in patients with culture-positive candidemia.

Methods. Demographic data, risk factors, laboratory parameters, and outcomes were retrospectively collected on all cases of candidemia occurring at a large tertiary referral hospital between January 2002 and January 2015. Between-group differences were compared using ^{2} square tests. A risk predictive model was built using multivariate logistic regression.

Results. Of 1,913 subjects with candidemia, 398 (21%) had *C. glabrata* isolated. Those with *C. glabrata* were older (mean [SD] 61 [23] vs. 58 [23] years; $P < 0.001$) and more often female (231 (58%) vs. 681 (45%); $P < 0.001$). On univariate analysis, age (OR 1.01 [95% CI 1.01,1.02]), gender (0.6 [0.5, 0.7]), history of rectal cancer (2.00 [1.2, 3.5]), other GI malignancy (3.0 [1.5, 6.2]), breast cancer (1.8 [1.1, 3.0]), enteral and parenteral feeding (1.9 [1.2, 3.2]), bowel resection (3.0 [1.4, 6.2]), temperature (0.9 [0.8, 1.0], recent fluconazole use (2.0 [1.4, 2.9]), and The presence of urinary catheter (2.3 [1.4, 3.6]), central line (1.4 [1.1, 1.7) or ventilator (2.2 [1.3, 3.8]) were all associated with *C. glabrata* infection ($P < 0.05$) and included in the multivariate modeling. Age, gender, history of rectal malignancy, other GI malignancies, use of enteral or parenteral feeding and recent fluconazole use remained significant (effect size 1.2 [95% CI 1.1, 1.3]; 1.8 [1.4, 2.3]; 2.0 [1.1, 3.6]; 3.0 [1.3, 6.9]; 1.9 [1.0, 3.3]; 2.0 [1.3, 3.0], respectively). The final model had a c-statistic of 0.66 [95% CI 0.63–0.69]). Ninety-day mortality in the *C. glabrata* group was not significantly different from the non-*C. glabrata* group (40% (158/398) vs. 42.5% (644/1515).

Conclusion. Underlying bowel pathology was more commonly associated with *C. glabrata* candidemia than with other candida species. Further exploration of the direct association between *C. glabrata* and GI malignancy and indirect effects of prior surgery or antifungal use on risk of *C. glabrata* candidemia are required. Interestingly, mortality did not differ between groups with glabrata and non-glabrata candida blood stream infections. This may reflect increasing empiric use of echinocandin therapy.

Disclosures. **A. Spec**, Astellas Pharma US, Inc.: Grant Investigator, Research grant

152. Primary or Secondary Prophylaxis with Voriconazole Compared with Posaconazole for Prevention of Invasive Fungal Infections After Hematopoietic Stem Cell Transplantation

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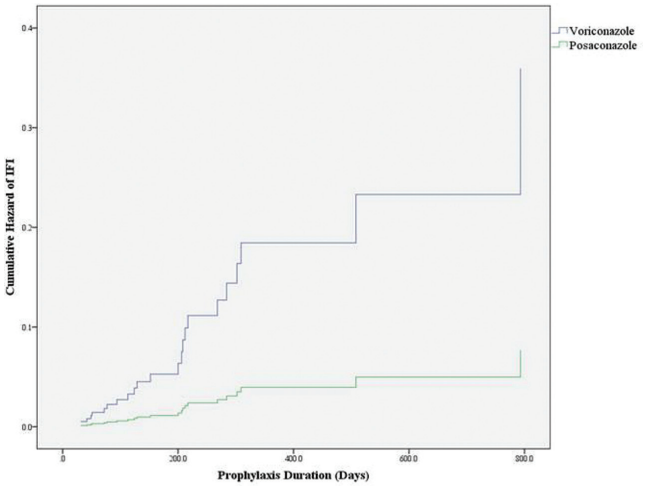
Background. Invasive fungal infections (IFI) remain a serious complication in hematopoietic stem cell transplantation (HSCT) patients and are associated with increased costs, morbidity, and mortality. Posaconazole (PCZ) and voriconazole (VCZ) are frequently utilized as antifungal prophylaxis in this population. To date, no direct comparison between PCZ and VCZ exists for the prevention of IFI in adult HSCT patients.

Methods. A retrospective cohort analysis of HSCT patients aged ≥18 years who received ≥28 continuous days of primary (PPPx) or secondary (SPPx) antifungal prophylaxis with either VCZ or PCZ between February 26, 2003 and September 30, 2015 at Barnes-Jewish Hospital was conducted. Patients who received PPPx or SPPx with both VCZ and PCZ were analyzed following intention to treat of the initial agent received. Patients who received both PPPx and SPPx were included once for both PPPx and SPPx. The primary outcome of interest was development of possible, probable, or proven IFI as defined by EORTC/MSG guidelines. In the SPPx patients, development of IFI was confirmed as a distinct event from primary IFI based on manual chart review and radiographic evidence.

Results. Overall, there were 472 patients included; 402 in the VCZ group and 70 in the PCZ group. At baseline, patients in the PCZ group had more graft vs. host disease (GVHD) prior to prophylaxis (27.1% vs. 16.7%, $P = 0.04$) and were more likely to be on SPPx (60% vs. 41%, $P < 0.01$). There were 22 and 1 IFI events in the VCZ and PCZ groups, respectively, which corresponded to a crude incidence rate of 0.345 and 0.077 per 1000 person-days of prophylaxis. Figure 1 displays the Cox proportional hazard model which was completed in the backwards stepwise method accounting for gender, transplant type, GVHD prior to prophylaxis, disease remission, and PPPx or SPPX. The hazard ratio for development of IFI while on prophylaxis between VCZ and PCZ was 5.22 (95% CI: 0.69–39.4; $P = 0.11$) after controlling for PPPx or SPPx.

Conclusion. There was not a significant difference between rates of IFI in HSCT patients who received antifungal prophylaxis with VCZ compared with PCZ. Our data trends towards favoring PCZ but is limited by low rates of IFI. Larger, prospective analyses are necessary to confirm our findings.

Figure 1. Cox model for IFI rates.



Disclosures. **W. Powderly**, Merck: Grant Investigator and Scientific Advisor, Consulting fee and Research grant. Gilead: Scientific Advisor, Consulting fee. Astellas: Grant Investigator, Research grant

153. Coccidioidomycosis After Solid Organ Transplantation: A Population-Based Study

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Background. Coccidioidomycosis is an invasive fungal infection in solid organ transplantation (SOT) recipients with an incidence of 1.4–6.9% in endemic regions. There are no population-level data describing the incidence and outcomes of coccidioidomycosis in SOT recipients.

Methods. We assembled a large cohort of adult SOT recipients using ICD-9-CM billing data from the California State Inpatient Databases from 2004 to 2011. Demographics, comorbidities, coccidioidomycosis coded during hospitalization and inpatient death were identified. We used Cox proportional hazard multivariate analyses to identify risk factors for coccidioidomycosis and death.

Results. 20,602 SOT recipients were identified during the study period (median follow-up time = 1507 days). Eighty-seven patients (0.42%) with coccidioidomycosis were identified of whom 17 (20%) were coded with progressive/disseminated disease. Median time to diagnosis was 164 days (IQR 16–844) from transplantation. Fifty-one of 87 (58%) of these infections were diagnosed within the first year post-transplant and 29/87 (33.3%) were identified within the first month. Twenty-one of 87 (24%) of patients with coccidioidomycosis died compared with 1928/18587 (9.4%) of patients without coccidioidomycosis ($P < 0.001$). Coccidioidomycosis was independently associated with death (HR, 3.1; 95% CI, 2.0–4.4), after adjusting for age, type of transplantation, transplant failure/rejection, and other comorbidities (Table) (Figure).

Conclusion. Coccidioidomycosis resulting in hospitalization is rare in an endemic region in the current era of screening and prophylactic antifungal therapy. Preventing infection in solid organ transplant recipients is imperative because overall mortality remains high.