to explore the characteristics, clinical outcomes, and risk factors for mortality in *Fusarium* infections in patients with hematological malignancies.

Methods. This is a retrospective study of adult hematological malignancy patients admitted to surgical/medical wards or critical units at an academic medical center from January 2010 to January 2021 and diagnosed with proven invasive *Fusarium* infections through positive microbiological culture data from a biopsy, surgical specimen or sterile site. Primary end point was 30-day mortality. Statistical analysis was done using Fischer's exact test and Mann-Whitney U test.

Results. 31 patients with hematological malignancies were identified with proven Fusarium infections during the 10-year period (13,390 total unique patients with diagnosis of hematologic malignancies). Two were excluded due to incomplete data. Demographic characteristics, type and status of hematological malignancy, chemotherapy, exposure to steroids, neutropenia, lymphopenia, antifungal prophylaxis, and other factors were analyzed. Mean age at diagnosis was 52.6 years. 16/29 (55.2%) had undergone stem cell transplant prior to infection with median duration of 150.5 days (range 12 to 1503) prior to infection. The most common pathologies were invasive sinusitis and disseminated cutaneous infection in 13/29 (44.8%) patients. Blood culture was positive in 5/29 (17.2%). Overall mortality was 86.2% with 30-day mortality of 44.8% and 1-year mortality of 83%. Death was attributed to fusariosis in 12/25 (48%). Median duration to death was 56 days (range 2 to 1627 days). Risk factors for 30-day mortality were assessed (table 1).

RISK FACTORS FOR 30-DAY MORTALITY FOR FUSARIOSIS IN PATIENTS WITH HEMATOLOGICAL MALIGNANCIES

RISK FACTOR ASSESSED	DECEASED (12)	SURVIVORS (17)	P value
GENDER - MALE	8 (66.7%)	11 (64.7%)	0.615
TRANSPLANT BEFORE FUSARIUM	6 (50%)	10 (58.8%)	0.463
POSITIVE BLOOD CULTURE	2 (16.7%)	3 (17.6%)	0.671
PRIMARY CANCER TYPE (AML VS OTHER)	9 (75%)	12 (70.6%)	0.568
CANCER STATUS ACTIVE	8 (66.7%)	13 (76.4%)	0.432
CANCER STATUS REFRACTORY	4 (33.3%)	4 (23.5%)	0.432
CANCER STATUS RELAPSED	7 (58.3%)	11 (64.7%)	0.514
AZOLE PROPHYLAXIS*	6 (0.5%)	8 (47%)	0.587
SURGERY FOR FUSARIUM	4 (33.3%)	11 (64.7%)	0.099
NEUTROPENIA AT DIAGNOSIS	9 (75%)	16 (94.1%)	0.178
NEUTROPENIA RECOVERY	7 (58.3%)	16 (94.11%)	0.030
LYMPHOPENIA AT DIAGNOSIS	11 (91.6%)	17 (100%)	0.414
LYMPHOPENIA RECOVERY	3 (25%)	10 (58.8%)	0.076
CENTRAL VENOUS LINE WAS REMOVED	2 (16.7%)	4 (23.52%)	0.443
SYSTEMIC STEROIDS AT DIAGNOSIS	6 (50%)	4 (23.5%)	0.140

*VORICONAZOLE, POSACONAZOLE AND ISAVUCONAZOLE

The table describes risk factors for 30-day mortaity for fusarium infections in patients with hematological malignancies. statistical analysis done using fischer's exact test

Conclusion. *Fusarium* infections result in morbidity and mortality in patients with hematological malignancies. A variety of host and disease factors dictate eventual outcome of *Fusarium* infections in these patients. Lack of neutrophil recovery is a significant risk factor for 30-day mortality in this population.

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986. Incidence of Invasive Fungal Infections in Previously Untreated Patients with Acute Myeloid Leukemia Receiving Venetoclax and Azacitadine

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Session: P-55. Medical Mycology

Background. Acute myeloid leukemia (AML) is associated with poor prognosis, particularly in elderly patients with co-morbidities. Low-intensity therapies like azacitidine (aza) were the standard of care and were associated with low response rates and limited survival. Combining venetoclax (ven) with aza demonstrated significant improvements in responses and survival compared to aza alone, and represents the new standard of care for this population. However, as a myelosuppressive regimen, infectious complications, especially invasive fungal infections (IFI), are a potential concern. The incidence of IFI and the role for antifungal prophylaxis have not been well defined for newly-diagnosed AML patients receiving ven/aza.

Methods. We conducted a retrospective cohort review of AML patients treated with ven/aza at the University of Colorado Hospital from January 2014 to August 2020. Duration of therapy was defined as the time from initiation of treatment through one of the following endpoints (1) patient discontinuation, (2) progression of disease, (3) bone marrow transplantation, or (4) death. Four patients with a history of prior IFI were excluded. We assessed the impact of patient age, sex, duration of neutropenia, antifungal prophylaxis, and AML specific risk factors on the incidence of IFI as defined by the European Mycoses Study Group.

Results. One hundred forty-four AML patients were included in the study. Ten patients received antifungal prophylaxis and none developed IFI (p=0.21). Twenty-five (17%) patients developed IFI: 2 (8%) had proven IFI, 6 (24%) probable IFI, and 17 (68%) possible IFI. Invasive pulmonary aspergillosis represented all 25 cases of proven, probable, and possible IFI. There was a statistically significant association between prolonged neutropenia (>60 days) and IFI (p=0.007), whereas age, sex, and SWOG classification were not significantly associated with IFI.

Conclusion. The incidence of IFI in our AML cohorts treated with ven/aza was 17%, lower than that reported at other institutions. Neutropenia > 60 days was significantly associated with IFI in our AML cohort treated with ven/aza. Although we were not powered to determine whether antifungal prophylaxis impacted IFI, there was no significant difference in IFI for patients who received prophylaxis.

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987. Clinical Epidemiology and Outcomes of Invasive Pulmonary Aspergillosis as a Complication of Respiratory Viral Infection in Hospitalized Patients

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Session: P-55. Medical Mycology

Background. Invasive pulmonary aspergillosis (IPA) is increasingly recognized as a complication of severe respiratory viral infections (RVIs), including influenza and COVID-19. However, the incidence and outcomes of IPA following other RVIs is not well-described. We hypothesized that IPA may be an underreported complication of non-influenza RVIs. The objective of this study was to quantify the incidence and associated outcomes of IPA following RVI in hospitalized patients.

Methods. We conducted a single-center retrospective cohort study of adult hospitalized patients with RVI diagnosed by multiplex PCR-based assay at the University of Kansas Hospital (Kansas City, Kansas) from September 2018-October 2019. Patients with a diagnosis of proven or probable IPA prior to RVI and those with hospital admission < 24 h were excluded from analysis. Proven or probable IPA was defined according to EORTC/MSGERC consensus definitions. The primary outcome was 1-year all-cause mortality.

Results. A total of 195 patients met study criteria and were included in the analysis. The most common types of RVI observed were rhinovirus/enterovirus (57.9%, *n*=113), parainfluenza (13.3%, *n*=26), influenza (8.2%, *n*=16), and respiratory syncytial virus (7.7%, *n*=15). The cumulative incidence of IPA infection within 6 weeks of RVI was 5.6% (*n*=11). Excluding patients co-infected with multiple respiratory viruses (*n*=5), IPA was numerically more likely to occur following influenza compared to non-influenza RVI (12.5% [*n*=2/16] vs. 4.6% [*n*=8/174]; odds ratio, 2.96; 95% confidence interval [CI], 0.57-15.3; *P*=0.176). Overall, one-year all-cause mortality was 20% (*n*=39/195) in this cohort. Development of IPA as a complication of RVI was associated with a significant decrease in 1-year survival (hazard ratio [HR], 3.04; 95% CI, 1.19-7.78; *P*=0.021), and this relationship persisted after adjustment for age (HR, 2.77; 95% CI, 1.08-7.10; *P*=0.034).

Conclusion. In a cohort of hospitalized patients with RVI, 5.6% of patients developed proven or probable IPA. Although IPA was more likely to occur in patients with influenza, this complication was also observed with other types of RVI. Invasive pulmonary aspergillosis may be an underappreciated complication of non-influenza RVI in hospitalized patients and warrants continued study.

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988. Is There Value of Infectious Diseases Consultation in Candidemia? A Single Center Retrospective Review From 2016-2019

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Session: P-55. Medical Mycology

Background. Candidemia is the second most common cause of healthcare-associated bloodstream infections in the US with mortality of approximately 25%. Studies demonstrate lower candidemia mortality with infectious diseases consultation (IDC). We evaluated effects of IDC on mortality and guideline-adherence at our institution to determine if mandatory IDC was warranted.

Methods. We retrospectively reviewed adults hospitalized with candidemia (≥ 1 blood culture positive for *Candida*) between 1/1/2016-12/31/2019. Exclusion criteria included age < 19 years, polymicrobial blood culture, or death or hospice within 48 hours. Primary outcome was all-cause 30-day mortality. Secondary outcomes included guideline-adherence and treatment choice. Guideline-adherence was assessed with a modified EQUAL Candida score (Table 1). Descriptive statistics were performed.

Table 1. Original vs Modified EQUAL Candida Score

Original EQUAL	Modified EQUAL	CVC+ Score	No CVC Score
Initial BCx x2 bottles with 40mL of blood	Any BCx collected	3	3
Species identification	Same	3	3
Susceptibility testing	Same	2	2
Echocardiography	Same	1	1
Ophthalmoscopy	Same	1	1
Echinocandin treatment	Same	3	3
Fluconazole step down if susceptible	Same, also gets points if not susceptible to fluconazole	2	2
Treatment for 14 days after first negative follow-up BCx	Same, no points if no repeat/cleared BCx	2	2
CVC Removal within 24 hours	Same	3	N/A
CVC Removal >24 <72 hours	Same	2	N/A
Daily follow-up BCx until negative	Any BCx for follow-up	2	2
Max Score	22 (combined CVC & No CVC scores in a mean)	22	19

Abbreviations. CVC: central venous catheter, BCx: blood culture

Results. Of 187 patients reviewed, 92 episodes of candidemia with 94 species of *Candida* were included. Patient characteristics are shown in Table 2. Central venous catheters (CVCs) were present in 66 (71.7%) patients and were the most common infection source (N=38 [41.3%]) followed by intra-abdominal (N=23 [25%]). The most isolated species were *Candida glabrata* (40/94 [42.6%]) and *C. albicans/dublienensis* (35/94 [37.2%]). 30-day mortality was 21.7%. IDC was performed in 84 (91.3%) cases. Outcomes are in Table 3. Mortality was not different between IDC vs no IDC (18 [21.4%] vs 2 [25%]); other comparisons were numerically different but not significant: repeat blood culture (98.8% vs 87.5%), echocardiography (70.2% vs 50%), CVC removal (91.7% vs 83.3%), and initial treatment echinocandin (67.9% vs 50%). All patients received antifungal therapy. IDC resulted in more ophthalmology consultations (77.4% vs 12.5%, p< 0.01). Mean modified EQUAL Candida score was higher with IDC (17.4 vs 13.9, p< 0.01).

Table 2. Patient Characteristics

Characteristics	IDC (n=84)	No IDC (n=8)
Age (mean)	52.4	55.5
Males	49 (58.3%)	5 (62.5)
TPN use within 7 days	34 (40.5%)	4 (50%)
Intravenous Drug Use	2 (2.4%)	1 (12.5%)
ICU required within 48 hours	43 (51.2%)	4 (50%)
Charlson Comorbidity Index (mean)	4.2	3.6
Myocardial infarction	9 (10.7%)	0 (0%)
Congestive heart failure	13 (15.5%)	1 (12.5%)
Peripheral vascular disease	2 (2.4%)	0 (0%)
Cerebrovascular accident/transient ischemic attack	10 (11.9%)	0 (0%)
Dementia	2 (2.2%)	0 (0%)
Chronic obstructive pulmonary disease	12 (14.3%)	1 (12.5%)
Connective tissue disease	2 (2.4%)	0 (0%)
Peptic ulcer disease	2 (2.4%)	0 (0%)
Liver disease	18 (21.4%)	3 (37.5%)
Diabetes mellitus	26 (31%)	2 (25%)
Hemiplegia	4 (4.8%)	0 (0%)
Chronic kidney disease or end-stage renal disease	8 (9.5%)	0 (0%)
Solid tumor	18 (21.4%)	1 (12.5%)
Leukemia/lymphoma	5 (6%)	0 (0%)
AIDS	0 (0%)	0 (0%)
Solid organ transplant	21 (25%)	3 (37.5%)

Abbreviations. TPN: total parenteral nutrition, ICU: intensive care unit, AIDS: acquired immunodeficiency syndrome

Table 3. Outcomes

Outcomes	IDC (n=84)	No IDC (n=8)	p-value
30-day all-cause mortality	18 (21.4%)	2 (25%)	NS
Length of Admission (mean, days)	34.4	27.6	NS
60-Day Recurrence	1 (1.1%)	0 (0%)	NS
CVC Removal	55/60 (91.7%)	5/6 (83.3%)	NS
Repeat blood cultures	83 (98.8%)	7 (87.5%)	NS
Ophthalmology consultation	57 (67.9%)	1 (12.5%)	p<0.001
Echocardiography	59 (70.2%)	4 (50%)	NS
Planned duration of treatment (mean, days)	22.3	15.6	NS
Time to blood culture clearance (hours)	111.9	108.1	NS
Initial antifungal echinocandin	57 (67.9%)	4 (50%)	NS
Initial antifungal fluconazole	26 (31%)	4 (50%)	NS
Initial antifungal susceptible	78/83 (94%)	6/8 (75%)	NS
Modified EQUAL Candida Score (mean, points)	17.4	13.9	p<0.001

Abbreviations. NS: non-significant, CVC: central venous catheter

Conclusion. IDC was common in candidemic patients and not associated with significant differences in outcomes. Current antimicrobial stewardship and consultation practices at our center do not warrant mandated IDC for candidemia.

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989. Isavuconazonium Sulfate Treatment of Blastomycosis: A Case Series

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Session: P-55. Medical Mycology

Background. *Blastomyces* fungi, endemic to the Ohio and Mississippi River Valleys, cause pneumonia and disseminated disease in both immunocompetent and immunocompromised patients. Prolonged antifungal therapy is commonly complicated by hepatic toxicity, QT prolongation, and drug interactions. Isavuconazonium sulfate is dosed once daily, does not prolong the QT interval, and has fewer drug interactions, but there is a paucity of data for its use in blastomycosis.

Methods. This case series of blastomycosis treated with isavuconazonium sulfate at the University of Wisconsin Hospital and Clinics from 2015 to December 2019 focuses on long term outcomes. Inclusion criteria were adults, that received at least one day of isavuconazole. Exclusion criteria was no blastomycosis diagnosis.

Results. Of 14 cases, median age was 53 years, 6/14 were female, 11/14 White, 2/14 Black, 1/14 Hmong, 6/14 had a solid organ transplant (4 renal, 1 heart, 1 bilateral lung), 1/14 on a TNF-alpha inhibitor (infliximab). Most cases, 9/14 had moderate severity illness requiring inpatient care, 2/14 required ICU level care, and 3/14 were outpatient. Most cases, 11/14, were initially treated with Liposomal Amphotericin B (LAMB) for a median duration of 14 days, 9/14 cases received itraconazole, 8/14 voriconazole, 1/14 posaconazole. Isavuconazonium sulfate was started after adverse drug effects with other azoles in 10/14 cases, prolonged QT interval in 3/14, drug interactions in 2/14, subtherapeutic azole levels in 2/14. Isavuconazonium sulfate was well tolerated and used for median duration of 255 (average 68% total treatment course). 3/14 cases had adverse reactions to isavuconazonium sulfate: nausea, rash, elevated liver enzymes. There was only one death during therapy from a fatal hemorrhagic stroke, and 2/14 cases were still on therapy at end of data collection. 11/14 were cured after treatment course.

Conclusion. This is the largest case series treating Blastomycosis with isavuconazonium sulfate, and it adds to the evidence that isavuconazonium sulfate can be safely used to treat pulmonary and disseminated blastomycosis. Prospective data is needed to compare isavuconazonium sulfate to other antifungals for the treatment of Blastomycosis.

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990. Fungal Malignant Otitis Externa: Clinical and Therapeutic Features

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Background. Fungal malignant otitis externa is a rare, but a serious infection that might lead to death if not promptly diagnosed and treated. We aimed to study the clinical, therapeutic and evolutionary features of fungal malignant otitis externa.

Methods. We conducted a retrospective study including all cases of fungal malignant otitis externa hospitalized in the infectious diseases department between 2003 and 2020.

Results. We included 35 patients with a mean age of 68±11 years. There were 18 males (51.4%). All patients were diabetics, and 7 patients had a previous medical history of otitis externa (20%). The use of topical corticosteroids was noted in 10 cases (28.5%). The revealing symptoms were otalgia (97.1%), otorrhea (82.9%) and cephalalgia (54.3%). Physical examination revealed tenderness to palpation of the mastoid bone in 21 cases (60%) and the temporomandibular joint in 16 cases (45.7%). Facial paralysis was noted in 14.3% of the cases. Otoscopic examination revealed stenosis of the external auditory canal (94.3%), granulation tissue (34.3%) and a polyp (31.4%). *Candida* species were isolated in 22 cases (62.8%) represented by *Candida parapsilosis* in 15 cases (42.8%) and *Candida albicans* in 5 cases (14.2%). Serological tests detecting *Candida* were positive in 12 cases (34.2%). *Aspergillus* species were isolated in 13 cases (37.1%) represented mainly by *Aspergillus flavus* in 7 cases (20%). Positive serology results for *Aspergillus* were noted in 8 cases (22.8%). A polyp or granulation tissue biopsy, performed in 12 cases (34.2%), revealed non-specific inflammatory reaction (28.5%) and the presence of fungal hyphae and spores (5.7%). After empirical antibiotics treatment, patients received fluconazole in 18 cases (51.4%) and voriconazole in 17 cases (48.6%). The median duration of treatment was 3 [1.5-12] months. Both surgery and hyperbaric oxygen therapy were indicated in one case (2.8%). Complications including the onset of contralateral otitis (14.3%) and endocranial extension (8.6%) were noted. The disease evolution was favorable in 65.7% of the cases. Four patients were dead (11.4%).