

# Assessing Trends in 1,3-β-D Glucan and *Aspergillus* Galactomannan Antigen Ordering to Improve Use



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## Background

- 1,3-β-D Glucan (BDG) and *Aspergillus* galactomannan antigen (GM) are commonly ordered
- Overutilization increases the incidence of false positive results, potentially leading to unnecessary follow up testing, procedures and treatment
- The aim of this quality improvement (QI) project was to improve our understanding of BDG and GM utilization at our institute

## Methods

- Test orders for BDG and GM were modified within our electronic medical record (EMR) to provide education and require selection of ordering reason
- Educational sessions were provided to non-transplant groups who order BDG and GM frequently
- Total number of tests, test results, patient immunosuppressed status, ordering location, and provider specialty were compared for a 3-month period pre/post intervention
- Ordering criteria was collected post-intervention
- SPSS software was used to perform Chi square tests

**Table 1: Comparison of BDG tests pre- and post- intervention**

	Pre-Intervention Tests	Post-Intervention Tests	P value
Total number of tests	457	435	.461
Tests in immunosuppressed patients	274	259	.878
Tests ordered simultaneously with GM	269	264	.578
<b>Number of tests per location</b>			<b>.917</b>
Inpatient	377	360	
Outpatient	80	75	
<b>Results of Test</b>			<b>.859</b>
Positive	77	72	
Intermediate	13	14	
Negative	356	316	
Test not performed	11	33	
<b>Number of test per provider group</b>			<b>.201</b>
Heme/Onc	83	78	.695
Pulmonary/Crit	114	122	.603
Hospitalists	79	48	.006
IM Residents	66	68	.863
ID	49	55	.556
Other APRN/PA	14	19	.384
Other Residents	23	25	.773
Other physicians/fellows	28	20	.248

**Table 2: Comparison of GM tests pre- and post- intervention**

	Pre-Intervention Tests	Post-Intervention Tests	P value
Total number of tests	306	299	.776
Tests in immunosuppressed patients	218	205	.186
Tests in immunocompetent with COVID	13	24	.124
Tests ordered simultaneously with BDG	269	264	.884
<b>Number of tests per location</b>			<b>.445</b>
Inpatient	253	240	
Outpatient	53	59	
<b>Results of Test</b>			<b>.289</b>
Positive	6	10	
Negative	300	289	
<b>Number of test per provider group</b>			<b>.325</b>
Heme/Onc	83	77	.635
Pulmonary/Crit	65	64	.93
Hospitalists	49	36	.159
IM Residents	55	58	.778
ID	34	34	1
Other APRN/PA	7	5	.564
Other Residents	7	19	.019
Other physicians/fellows	6	6	1

Figure 1: BDG Ordering Criteria

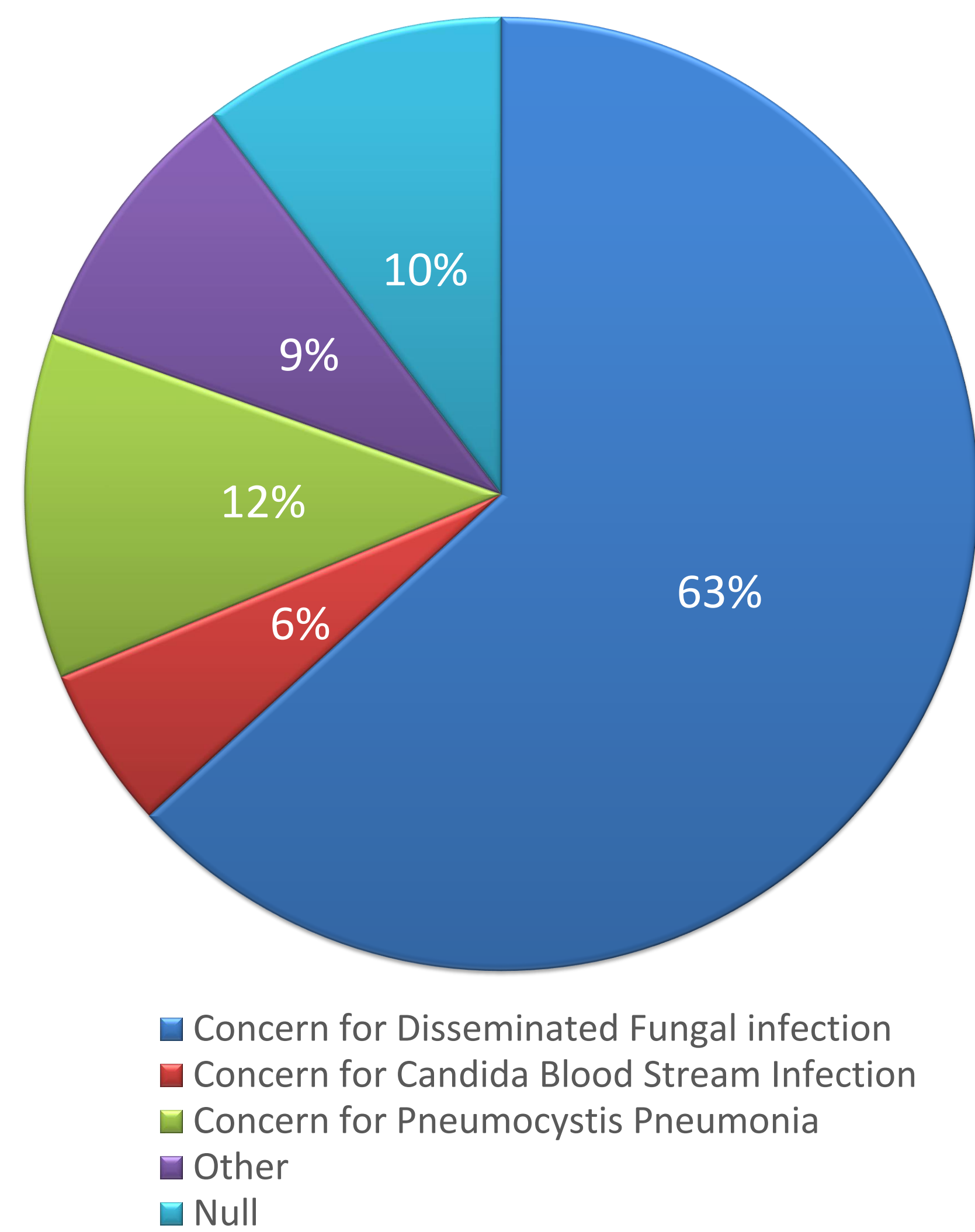
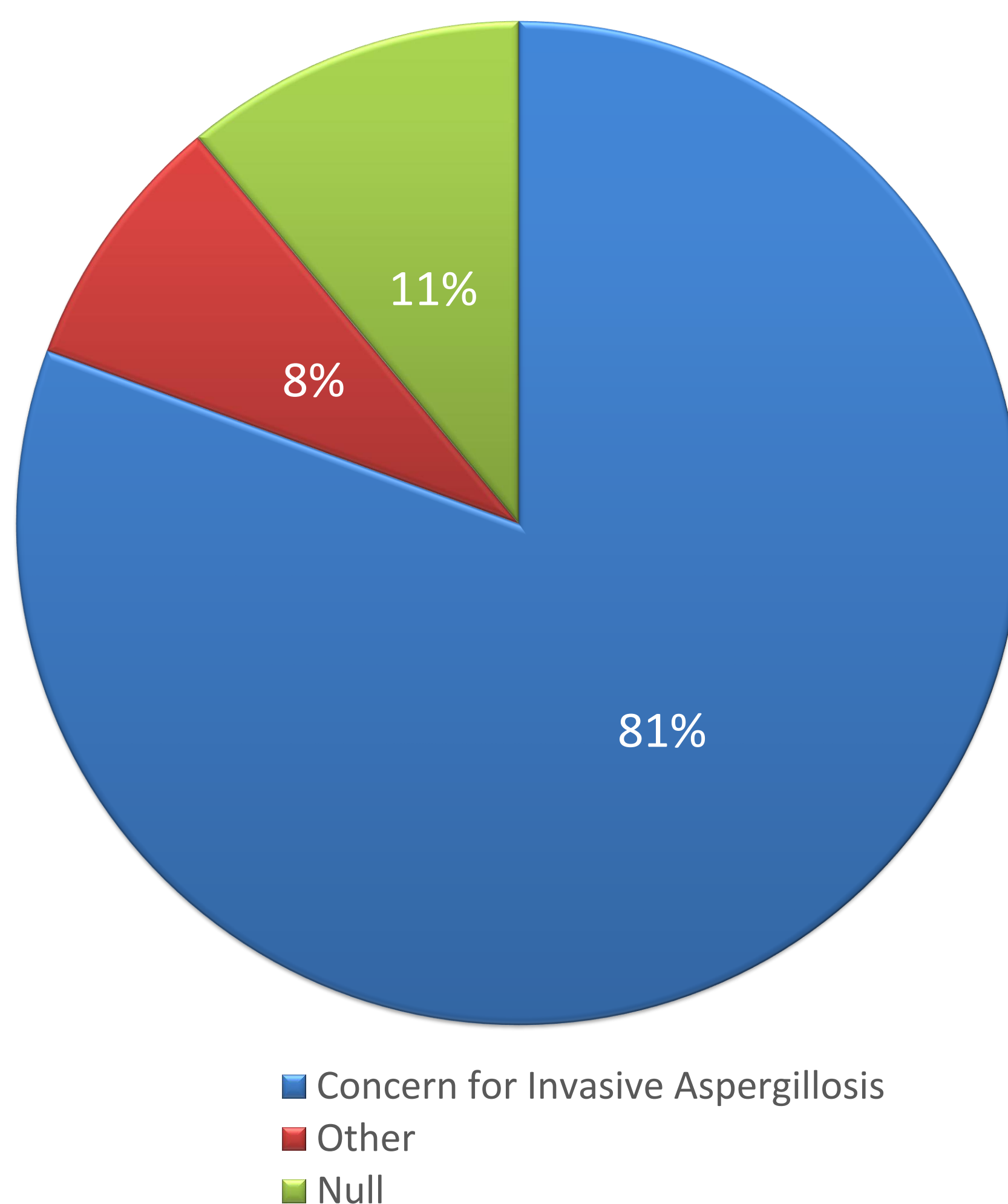


Figure 2: GM Ordering Criteria



## Results

Ordering practices for BDG demonstrated the following:

- Tests were predominantly ordered inpatient
- Tests were more likely to be positive in the inpatient setting
- Tests were most frequently ordered by pulmonary critical care group
- Most common reason for ordering was concern for disseminated fungal infection

A significant decrease in hospitalist ordering was found for BDG following intervention (n=79 (pre), n=48 (post), p=0.006)

Ordering practices for GM demonstrated the following:

- Low positivity rate (2.7%; 16/589)
- Tests were predominantly ordered inpatient
- Tests were most frequently ordered by the hematology/oncology group
- Most common reason for ordering was concern for invasive aspergillosis

## Conclusions

- This QI project improved our understanding of how BDG and GM are utilized
- These results will be used to provide more targeted education to specific provider groups
- Further EMR order entry modification will focus on potential false positive results to further optimize BDG test utilization