BACKGROUND
• Antimicrobial stewardship programs (ASP) have primarily focused on the optimization of antibiotic therapy, while the use of antifungal and antiviral therapy has been relatively ignored.
• Antifungal and antiviral medications are often used in high-risk patients (i.e., immunocompromised, oncology, transplant), are costly, and are frequently associated with adverse drug effects.
• Use of antifungal and antiviral therapy in children demands closer scrutiny to improve patient outcomes and potentially reduce hospital expenditures.

OBJECTIVE
• Study Design: Retrospective cohort study of antifungal and antiviral prescribing in high-risk hospitalized pediatric patients across 47 free standing children’s hospitals.
• Data Source: Pediatric Health Information System database.
• Study Population: Less than 16 years of age;
Discharged between January 1 and December 31, 2015.
• High-risk patients: All Patient Refined Diagnosis Related Group (APR-DRG); version 52 for oncology, bone marrow transplant, or solid organ transplant.

METHODS
• Data Collection:
• Antifungal and antiviral use: proportion of patients who received any antifungal or antiviral therapy within each APR-DRG. Total days of antifungal or antiviral therapy (DOT) were standardized per 1,000 patient days.
• Statistical analysis:
  • Frequencies and proportions for categorical data; medians and interquartile ranges for continuous variables.
• Study deemed nonhuman subjects by the Children’s Hospital of Philadelphia Institutional Review Board.

RESULTS
Demographics: 784,240 total inpatient discharges; 35,211 (4.5%) of which were defined as high-risk, bone marrow transplant, or solid organ transplant by APR-DRG. These high-risk patients were predominantly male (56%) and Caucasian (83%), with a median age of 7.9 years (3.6-13.6 IQR).

Use: high-risk patients received 50% of all antifungal DOT and 46% of all antiviral DOT despite comprising less than 5% of all hospital discharges.

Variability: antifungal use ranged from 75 to 608 DOT/1000; median 231 (263-428) antiviral use ranged from 18 to 451 DOT/1000; median 220 (146-275)


CONCLUSION
• Antifungal and antiviral agents represent important stewardship targets because they:
  • Are used for the treatment or prevention of relatively high-risk infections.
  • Can be associated with a relatively high rate of adverse drug effects.
  • Often require challenging therapeutic drug monitoring.
• Costly.
• Prescribing of antifungals and antivirals is relatively high among this immune compromised population.
• Variability in the use of these agents exists, even when examining this relatively homogeneous cohort.
• Guidelines exist to address antifungal and antiviral therapy in oncology and transplant patients and our data suggests that more can be done to standardize practice and minimize unnecessary use.
• Benchmarking antifungal and antiviral is an important step in identifying targeted stewardship strategies to enhance judicious antimicrobial prescribing.

REFERENCES
• Goldman JL et al. Variability in the use of antifungal and antiviral therapy in hospitalized children. Poster #58549.

ACKNOWLEDGEMENTS

Antifungal and Antiviral Use in Hospitalized Children

Poster #58549

1. Children’s Mercy Hospitals & Clinic, Kansas City, MO (2) The Children’s Hospital of Philadelphia, Philadelphia, PA (3) St. Louis Children’s Hospital, Washington University, St. Louis, MO (4) Department of Pediatrics, University of Utah School of Medicine, Salt Lake City, UT, USA (5) Seattle Children’s, Seattle, WA

TABLE 1. Antifungal Therapy (AFT) and Antiviral Therapy (AVT) Prescribing Among High-Risk Children

<table>
<thead>
<tr>
<th>APR-DRG Title</th>
<th>Total Patients (N)</th>
<th>AFT (%)</th>
<th>AVT (%)</th>
<th>AFT DOT/1000 Days</th>
<th>AVT DOT/1000 Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Categories</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hematologic/oncologic diagnosis except sickle cell disease &amp; coagulopathy</td>
<td>1684</td>
<td>12%</td>
<td>57%</td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td>Acute leukemia</td>
<td>2431</td>
<td>34%</td>
<td>46%</td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>Bone marrow transplant</td>
<td>1223</td>
<td>34%</td>
<td>84%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Nervous system malignancy</td>
<td>772</td>
<td>6%</td>
<td>66%</td>
<td>3%</td>
<td>25%</td>
</tr>
<tr>
<td>Other DRG prophylaxis for lymphatic/hematopoietic or other neoplasms</td>
<td>500</td>
<td>19%</td>
<td>43%</td>
<td>7%</td>
<td>92%</td>
</tr>
<tr>
<td>Other malignancies, metastases &amp; neoplasms</td>
<td>489</td>
<td>4%</td>
<td>38%</td>
<td>4%</td>
<td>45%</td>
</tr>
<tr>
<td>Major OR prophylaxis for lymphatic/hematopoietic or other neoplasms</td>
<td>434</td>
<td>16%</td>
<td>56%</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>Kidney or liver transplant</td>
<td>363</td>
<td>31%</td>
<td>125%</td>
<td>85%</td>
<td>65%</td>
</tr>
<tr>
<td>Heart &amp; lung transplant or unrelated transplant</td>
<td>336</td>
<td>4%</td>
<td>41%</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>User transport to &amp; from inpatient facility</td>
<td>332</td>
<td>71%</td>
<td>45%</td>
<td>54%</td>
<td>65%</td>
</tr>
</tbody>
</table>

• Variability in the use of antifungal and antiviral agents is highly related to the presence of infections and transplantation status.
• Guidelines exist to address antifungal and antiviral therapy in oncology and transplant patients and our data suggests that more can be done to standardize practice and minimize unnecessary use.
• Benchmarking antifungal and antiviral is an important step in identifying targeted stewardship strategies to enhance judicious antimicrobial prescribing.

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### RESULTS

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