Positive Impact of an Antiviral Stewardship Program at a Large Academic Veterans Affairs Medical Center

Tomasz Z. Jodlowski, PharmD, BCPS-AQ ID; Jordan Chiasson, PharmD; Michael Kent, PharmD; Jessica M. Guastadisegni, PharmD; Marcus Kouma PharmD, BCPS; James B. Cутrell, MD.1

1Pharmacy Service, VA North Texas Health Care System, Dallas, TX; 2Medical Service, VA North Texas Health Care System, Dallas, TX; 3Assistant Professor, Department of Medicine, UT Southwestern, Dallas, TX

BACKGROUND

• Patients on antivirals for chronic infections such as HIV or viral hepatitis are frequently affected by medication prescribing errors when admitted to acute or long-term care facilities1
• These errors are multifactorial including a lack of familiarity with these medications among frontline providers and pharmacists1-3
• Our antimicrobial stewardship program (ASP) instituted targeted audit and feedback of these antivirals during daily antimicrobial stewardship activities

STUDY DESIGN & OBJECTIVES

Study Objective
• To determine the impact of the implementation of a focused antiviral antimicrobial stewardship intervention in a large academic Veterans Affairs Medical Center

Study Design
• Retrospective quality improvement project conducted at a single Veteran Affairs (VA) medical center during the review period of January 1, 2017 through December 17, 2018
• Potential interventions were identified by an Infectious Diseases clinical pharmacist using TheraDoc® clinical support software, which draws data from the Computerized Patient Record System (CPRS)
• Alert categories were built to identify all patients who were admitted to the medical center or satellite inpatient facilities that were receiving HIV, Hepatitis C (HCV) or Hepatitis B (HBV) antiviral agents
• In addition to standard daily prospective audit and feedback interventions, ASP and HCV pharmacists reviewed these patients’ regimens to ensure safety and correctness of orders
• Recommendations for medication changes were communicated to the Clinical Pharmacy Specialist (CPS) or the ordering provider to make the necessary change.
• Interventions were documented in TheraDoc® noting the type of clinical activity, outcome/action taken, any comments for further follow up, and an estimated cost savings by the software

Primary Endpoint
• Total number of interventions

Secondary Endpoints
• Intervention acceptance rate
• Total estimated cost savings
• Estimated cost savings per intervention

RESULTS

• From January 1, 2017 through December 17, 2018, 170 patients were documented as reviewed by the ASP team for a total estimated savings of $83,791
• Of the reviewed patients, 26% (45/170) had clinically-important interventions documented, with a 93% (42/45) acceptance rate. Major intervention categories included renal dose adjustments, avoidance or mitigation of drug-drug interactions, or correction of home medication regimens

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DISCUSSION

• Identified high rate (26%) of potential medication errors in this population receiving antiviral treatment for HIV, HCV and HBV which confirms a high risk group that requires additional audit during hospitalization
• Automatic electronic identification of patients allowed for rapid and real time identification of patients on antivirals
• Having Clinical Pharmacists with Infectious Diseases training review patients increased the identification and subsequent correction of errors versus standard of care with non-infectious diseases trained healthcare providers

LIMITATIONS

• Outcomes are be limited due to lack of weekend and holiday coverage
• Projection of cost savings is difficult to estimate due to “potential” savings (prevention of inappropriate prescribing, significant drug–drug interaction, etc.)

CONCLUSION

• Medication errors involving patients on antiviral agents are a frequent concern, affecting over one-quarter of inpatients on antiviral agents, and require patient level reviews throughout hospitalization
• Despite more favorable interaction profiles compared to early agents, drug–drug interactions remain the most common source of errors identified
• Targeted antiviral stewardship interventions have the potential to have significant positive impacts on patient care and health care savings and should be included in all Antimicrobial Stewardship Programs

References:

Estimated Cost Savings*

<table>
<thead>
<tr>
<th>Intervention Type</th>
<th>Total Savings</th>
<th>Savings per Intervention</th>
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<tbody>
<tr>
<td>Yes</td>
<td>$83,791</td>
<td>$492.89</td>
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<tr>
<td>No</td>
<td></td>
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*All interventions had cost savings estimates assigned by TheraDoc®

Examples of Interventions:

• Patient re-initiated on ledipasvir/sofosbuvir on admission as still on outpatient profile, but had completed therapy and achieved SVR. Contacted CPS to discontinue medication
• Hemodialysis patient started on lamivudine 50 mg Q6H after transferring floors, provider contacted to recommend appropriate dose

Number of Interventions

<table>
<thead>
<tr>
<th>Type of Intervention</th>
<th>Interventions</th>
</tr>
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<tbody>
<tr>
<td>Drug-drug Interaction</td>
<td>16</td>
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<tr>
<td>Adjust antimicrobial medication</td>
<td>13</td>
</tr>
<tr>
<td>Discontinue medication</td>
<td>8</td>
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<tr>
<td>Other</td>
<td>7</td>
</tr>
<tr>
<td>Initiate medication</td>
<td>5</td>
</tr>
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</table>

Charts Reviewed from TheraDoc® Alerts (n=170)

- Intervention: 125 (74%)
- No Intervention: 45 (26%)

Charts Reviewed per Disease State (n=170)

- HIV: 55 (32%)
- HBV: 106 (63%)
- HCV: 45 (26%)

Interventions by Type

- Drug-drug Interaction: 16
- Adjust antimicrobial medication: 13
- Discontinue medication: 8
- Other: 7
- Initiate medication: 5