Background

Previous studies show when pharmacists, compared to providers, dose vancomycin there is a higher proportion of troughs in goal range.

Timeline at Denver Health

Prior to Feb ’13 – Providers were dosing/monitoring vancomycin

July ’14 – Pharmacy protocol was revised

Feb ’13 – Initial pharmacy protocol was implemented

Initial protocol

- Providers
  - CrCl (mL/min)
    - <60
      - Actual bodyweight (kg)
        - 60-80
        - 81-100
        - >100
        - >90
        - 50-90
      - 15-49
      - <15, CrCl, HD

- Revised protocol
  - Ccr (mL/min)
    - Goal trough mcg/mL
      - <50
      - 50-60
      - 60-80
      - 81-100
      - 101-120
      - >120
      - >90
      - 50-90
      - 15-20
      - <15, CrCl, HD

Objectives

To determine if two different pharmacist-driven protocols, compared to provider dosing, had an impact on proportion of troughs at goal level, time to therapeutic trough, and the number of troughs per patient.

To evaluate risk factors for supratherapeutic troughs (>25 mcg/mL).

Methods

- Retrospective cohort study compared adult patients who received ≥1 dose of vancomycin by one of three dosing strategies: provider dosing 8/2012 – 2/2013; initial pharmacy protocol 2/2013 – 7/2013; revised pharmacy protocol 7/2014 – 1/2015 with the more specific dosing table.

- Patients were excluded if they received vancomycin for perioperative prophylaxis.

Results

<table>
<thead>
<tr>
<th>Risk factors for vancomycin trough &gt;25 mg/L</th>
<th>Univariate</th>
<th>Multivariate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>No (N=103) n(%)</td>
<td>Yes (N=41) n(%)</td>
</tr>
<tr>
<td>ICU Weight &gt; 100 kg</td>
<td>16 (16)</td>
<td>10 (24)</td>
</tr>
<tr>
<td>1/2015</td>
<td>7/2013; revised pharmacy protocol 7/2014 – 1/2015 with the more specific dosing table.</td>
<td></td>
</tr>
<tr>
<td>Protocol non-adherence</td>
<td>19 (18)</td>
<td>16 (39)</td>
</tr>
<tr>
<td>≥ 4 g/day</td>
<td>21 (21)</td>
<td>22 (54)</td>
</tr>
<tr>
<td>DR 2016</td>
<td>20 (20)</td>
<td>12 (29)</td>
</tr>
</tbody>
</table>

Conclusions

- Patients receiving vancomycin during the revised protocol time period experienced a higher proportion of supratherapeutic troughs. This was most likely do to overuse of Q8H dosing.

- Compared to providers dosing, pharmacy-driven protocols had similar vancomycin troughs while obtaining fewer troughs per patient.

- Q8H dosing and a rise in creatinine are risk factors for supratherapeutic troughs.

Future direction:
- 1. Provide education to pharmacists based on these results
- 2. Update protocol to provide guidance on who should receive Q8H dosing (ie <40 years old, otherwise healthy)
- 3. Re-evaluate data in 6 months