Descriptive study of patterns of urine testing and antibiotic use in an inpatient physical medicine and rehabilitation population

Christina Andrezewski, PharmD1, Kathleen Shutt, MS2, Henry Freedy, PharmD3, Gary Galang, MD1, and Mohamed H. Yassin, MD, PhD1
1University of Pittsburgh Medical Center (UPMC) Mercy, 2Department of Medicine, University of Pittsburgh, Pittsburgh, PA

BACKGROUND

• Excessive antibiotic use is often related to asymptomatic bacteriuria (ASB) or abnormal catheter radiographs. Many patients admitted to inpatient rehabilitation (IPR) have bacteriuria which is largely asymptomatic and requires no antibiotic therapy. However, the majority of antibiotic use in IPR at our institution is for the treatment of presumed urinary tract infections (UTI).

• The practice of sending urinalysis and culture routinely upon admission to acute care or rehabilitation is not supported by the Infectious Diseases Society of America (IDSA) guidelines,1 but is common.

• The presence of bacteriuria often prompts the use of antibiotics inappropriately. Overuse of antimicrobial agents for ASB is not associated with any consistent benefit and can increase antibiotic resistance and C. difficile-associated diarrhea, with subsequent increases in length of stay (LOS).

• The departments of Infection Control, Antibiotic Stewardship, and Physical Medicine and Rehabilitation conducted a quality improvement (QI) study at our institution to evaluate the patterns of ordering urine studies, documented symptoms, and the use of antibiotics.

STUDY OBJECTIVES

• Provide a descriptive analysis of patterns of ordering urine studies in rehabilitation patients in relation to symptoms encountered

• Identify any risk factors that prompt the request for urinalysis and culture

• Assess the appropriateness of antibiotic use

IDEA WEEK 2014; October 8-12, Philadelphia, PA

METHODS

• Site:
  - A 48-bed community teaching hospital within a university-affiliated academic medical center with 76 IP beds. IPR units include spinal cord injury (SCI), traumatic brain injury (TBI), stroke, and general rehabilitation populations.

• Study Design:
  - Retrospective, case-control, observational study.
  - This review included 181 patients randomly selected from patients admitted to IPR units from August 1, 2013 to October 31, 2013.
  - The cases were chosen based on the ordering of urine studies (n=104). The controls were selected based on the absence of urine testing ordered (n=77).

• The presence of bacteriuria is seen in 36 patients (34.6%) was a major predisposing factor.

RESULTS

Table 1. Multivariable logistic regression analysis for risk factors associated with urine positive IPR patients.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual LOS</td>
<td>2.1</td>
<td>(1.4, 3.2)</td>
<td>0.0006</td>
</tr>
<tr>
<td>WBC Count (&lt;10,000 K/µL)</td>
<td>4.4</td>
<td>(1.4, 15.9)</td>
<td>0.014</td>
</tr>
<tr>
<td>Symptoms</td>
<td>4.2</td>
<td>(1.3, 13.9)</td>
<td>0.013</td>
</tr>
<tr>
<td>IPR Unit</td>
<td>Stroke</td>
<td>4.2</td>
<td>(1.3, 13.9)</td>
</tr>
<tr>
<td></td>
<td>TBI</td>
<td>0.14</td>
<td>(0.01, 2.4)</td>
</tr>
</tbody>
</table>

• Inpatient cumulative logistic regression analysis for risk factors associated with urine positive IPR patients.


CONCLUSIONS

• The results of this QI initiative demonstrate the frequency of urine screening in the absence of symptoms in IPR patients. This practice can potentially increase the rate of hospital-acquired UTI (HA-UTI) reported at our institution.

• The high rate of bacteriuria in the IPR patients in this study led to the use of antibiotics in many of these patients regardless of the presence of symptoms.

• This study highlights an opportunity for practice improvement which will benefit antimicrobial stewardship efforts and potentially reduce reports of HA-UTI.

• Another study is being conducted with a focus on trauma-related SCI patients to assess their unique risk factors for UTI symptoms, and treatment and aid in future protocol development in our institution.

REFERENCES


DISCLOSURES

None of the authors have any disclosures.