prevention of transmission during procedures with possible blood exposure, HCW training, and needle-stick injury postexposure prophylaxis.

Florian H. Pilsczek, MD
From the Immunology Research Group, Department of Physiology and Biophysics, University of Calgary, Calgary, Alberta, Canada
E-mail: f.h.pilsczek@gmail.com

References


Temporal variation in the incidence of catheter-associated urinary tract infection at a Thai tertiary care center

To the Editor:

A hospital-wide intervention to remove unnecessary urinary catheters was recently reported to be associated with significantly reduced rates of inappropriate urinary catheterization and catheter-associated urinary tract infection (CA-UTI).¹ This intervention was initiated on July 1, 2005. We report a similar temporal pattern in the incidence of CA-UTI in the same university-based hospital in 2005 and 2006 (Table 1). The CA-UTI incidence was highest in January through April (period 1), declined in May through August (period 2), and was lowest in September through December (period 3). Data collected included patient demographics, clinical data (admission diagnosis, admission Acute Physiology and Chronic Health Evaluation II [APACHE-II] score, duration of catheterization, period rate of CA-UTI) and potential ecological factors, such as seasonality, the number of holidays in each assigned period, and the start of the academic year for medical education. Seasonality was defined by the 3 seasons in Thailand: summer (March to June), rain (July to October), and winter (November to February). This hospital serves as a regional trauma center, and the new academic year for interns and residents begins on July 1.

In the 2412 patients studied, no differences among the 3 periods were found with respect to age, sex, or severity of illness. However, patients diagnosed with traumatic neurologic disorders were seen more often during period 1 than during periods 2 and 3 (Table 1). In addition, there was a significant trend for longer duration of catheterization and total number of holidays in period 1 (inclusive of the Thai New Year) compared with periods 2 and 3 (Table 1). Correlations between the monthly average duration of catheterization and CA-UTI incidence were seen in both 2005 (r = .89; P < .001) and 2006 (r = .64; P < .001), as were correlations between the monthly average number of patients diagnosed with traumatic neurologic disorders and the monthly average duration of catheterization (2005: r = .71, P < .001; 2006: r = .51, P < .001). No correlation was found between the incidence of CA-UTI and season or starting date of the new academic year.

In Thailand, motor vehicle–related accidents account for the majority of injuries and deaths.² Notable risk factors for vehicular injuries, such as excess alcohol consumption, lack of valid driver’s license, limited driving experience, poor compliance with seat belt use, and youth have been associated with long holiday weekends.³ Although the variation in the incidence of CA-UTI in 2005 may have been attributable to the intervention, a similar temporal pattern was seen in 2006, as well as a correlation between the monthly mean duration of catheterization and the monthly mean number of patients diagnosed with traumatic neurologic disorders.

Our findings have some important implications. First, the higher CA-UTI incidence in period 1 was positively correlated with the monthly average number of patients diagnosed with traumatic neurologic disorders. Based on this finding, targeted medical and public health efforts can be designed that focus on patients with neurologic disorders and also on modifiable risks for vehicular injuries.³ Second, the longer mean duration of catheterization in period 1 suggests that additional strategies to reduce CA-UTI should include focused educational and preventive measures among health care workers caring for patients with long-term catheterization at the start of this period. Finally,
the recognition of a temporal variation in CA-UTI incidence permits future intervention trials using quasi-experimental designs that include this variable in 12-month studies, to minimize the potential risk and biases of internal variation.4

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Anucha Apisarnthanarak, MD
Division of Infectious Diseases
Thammasart University Hospital
Pratumthani, Thailand
E-mail: anapisarn@yahoo.com

Linda M. Mundy, MD
St. Louis University School of Public Health
St. Louis, Missouri

References


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Table 1. Demographic, clinical characteristics, and incidence of CA-UTIs in 3 periods in 2005 and 2006

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Year 2005*</th>
<th>Year 2006†</th>
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<tbody>
<tr>
<td></td>
<td>Jan-Apr (n = 401)</td>
<td>May-August (n = 368)</td>
</tr>
<tr>
<td>Age, years, mean ± SD</td>
<td>46 ± 4.1</td>
<td>48 ± 5.4</td>
</tr>
<tr>
<td>Female sex</td>
<td>200 (50)</td>
<td>167 (45)</td>
</tr>
<tr>
<td>Principal condition diagnosed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>100 (25)</td>
<td>88 (24)</td>
</tr>
<tr>
<td>Gastrointestinal diseases</td>
<td>92 (23)</td>
<td>81 (21)</td>
</tr>
<tr>
<td>Traumatic neurologic disorders²</td>
<td>102 (25)</td>
<td>74 (20)</td>
</tr>
<tr>
<td>Other²</td>
<td>107 (26)</td>
<td>125 (34)</td>
</tr>
<tr>
<td>APACHE-II score, mean ± SD</td>
<td>14 ± 5.6</td>
<td>13 ± 7.6</td>
</tr>
<tr>
<td>Number of holidays (%)</td>
<td>9 (8)</td>
<td>6 (5)</td>
</tr>
<tr>
<td>Duration of catheterization</td>
<td>13.1 ± 0.4</td>
<td>10 ± 2.4</td>
</tr>
<tr>
<td>CA-UTI</td>
<td>24.1 ± 4.1</td>
<td>14.2 ± 5.5</td>
</tr>
</tbody>
</table>

*January 1, 2005, through December 31, 2005.
†January 1, 2006, through December 31, 2006.
²Includes cerebrovascular disease, pulmonary disease, diabetes, immunocompromised state, and malignancy.
§Calculated as the number of holidays (not including Saturday and Sunday) divided by total number of days in each period.
²P <.05 using trend analysis. Trend analysis was performed using χ² tests for trend (Epi Info version 12), and correlations among variables were assessed by Pearson’s correlation analysis.