

Correlation between Tennessee Antibiotic Use Point Prevalence Survey and NHSN Antimicrobial Use Module in Four Acute Care Hospitals

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Background

- Tracking and reporting of antibiotic use (AU) data are critical to guide antibiotic stewardship program (ASP) efforts and are two of the CDC's Core Elements of Hospital ASPs.¹
- The National Healthcare Safety Network (NHSN) offers an Antibiotic Use and Resistance (AUR) module to facilitate AU reporting and benchmark hospitals.
- Reporting into NHSN can be cost or labor-prohibitive to achieve.
- Tennessee Department of Health (TDH) developed a voluntary point prevalence survey for hospitals to report AU.
- The TDH AU Survey is a quarterly assessment of numbers of patients who received antibiotics in a 24-hour period/hospital census.
- NHSN represents AU data as Days of Therapy (DOT)/days present.

Methods

- All available DOT from institutions reporting into the NHSN AU Option from October 2015–December 2016 were pulled and aggregated by quarter; TDH AU data were pulled from the same period.
- Matched data points were usable when data existed from both surveys.
- Graphs, linear regression, and coefficients of determination were created using Excel 2010 and SAS 9.4.

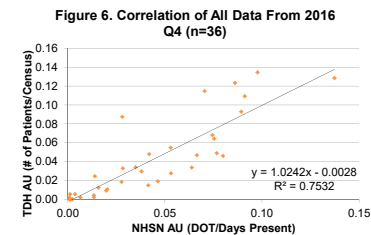
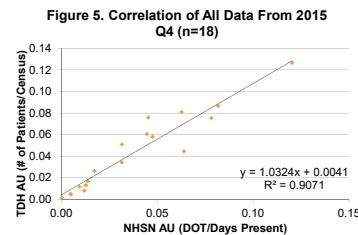
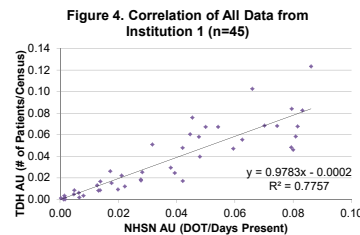
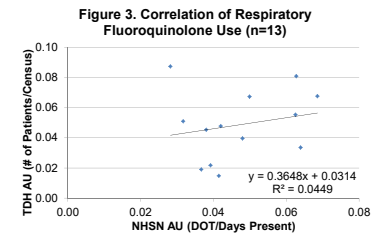
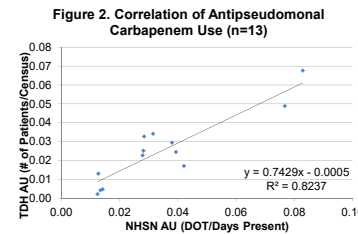
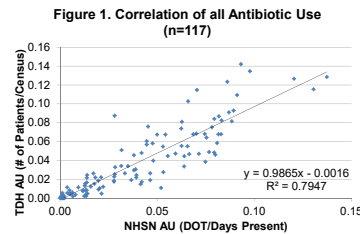
Results

- Four Tennessee hospitals, with bed size ranging from 250–650, reported into both the NHSN AU Option and the TDH AU Survey during the study period.
- There were 117 matched data points for nine different antibiotics or groups of antibiotics.
- A positive correlation was observed for all institutions' reported antibiotic agents ($r^2=0.7947$; $p<0.0001$). (Figure 1)
- The strongest correlation was observed among the anti-pseudomonal carbapenems ($r^2=0.8237$, $p<0.0001$). (Figure 2)
- Significant correlation was observed with all groups of antibiotics, except respiratory fluoroquinolones ($r^2=0.0449$). (Figure 3)
- Correlation coefficients remained strong and significant when data were stratified by institution (range 0.7399–0.8655) and by quarter (range 0.7532–0.9106). (Figures 4–6)

Conclusions

- A positive correlation was observed between the TDH AU Survey metric and the NHSN AU metric.
- For institutions not ready for NHSN reporting, the TDH AU Survey is a reasonable interim proxy for trending AU data.
- The weak correlation with respiratory fluoroquinolone AU warrants further investigation and validation.
- Current TDH AU Survey Adoption:
 - 36 institutions have reported since 2014
 - ~15 do so routinely
 - Phase out as NHSN AU option is widely adopted in acute care hospitals
 - Potential adaptation for other healthcare settings

Figures



Contact and Reference

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¹CDC. Core Elements of Hospital Antibiotic Stewardship Programs. Atlanta, GA: US Department of Health and Human Services, CDC; 2014. Available at <http://www.cdc.gov/getsmart/healthcare/implementation/core-elements.html>.