Antimicrobial Stewardship: Using a Multidisciplinary Approach to Improve Antibiotic Utilization

Kent Stock, DO, Sara Utley, PharmD, Dawn Bouknight, PharmD, Radha Patel, PharmD, Holly Balcer, PharmD, Jessica Mercer, PharmD, Doug Hammond, BS Pharm, Melissa Baird, PharmD, Tracy Bishop, PharmD, Cassie Gibbes, CPhT, Elaine Condon, MT, Mary Holmes, MT, CIC, Nancy Butters, RN

Roper St Francis Healthcare Antimicrobial Stewardship Program

Program Background

The Antimicrobial Stewardship Program (ASP) was implemented in 2009 to address the ongoing threat of increasing antimicrobial resistance by improving antimicrobial use at Roper St Francis Healthcare. The program was initially staffed part-time by one infectious diseases (ID) physician that worked in collaboration with select clinical pharmacists at each facility. The pharmacists incorporated stewardship efforts into their established daily workflow. In 2013, a part-time pharmacist was added to provide additional support as the workload and initiatives increased. While the program continued to make progress, system-level goals to reduce overall antibiotic utilization were not being achieved. An analysis of the staffing model revealed less than 70% of hospitalized patients were being reviewed daily for the program’s audit and feedback process. To improve quality outcomes and patient safety, it was determined additional resources were required to fully support the program efforts and goals. Beginning in August 2016, the team was expanded to include 3 full-time ID pharmacists, a data analyst, and a part-time ID physician to work in collaboration with ICU and clinical pharmacists. The expansion of the program, demonstrated commitment by organizational leadership to the corporate Quality goal of Antimicrobial Stewardship (AS) as well as improving patient care and clinical outcomes.

Program Goal

The system goal for reducing overall antimicrobial use was set by the Hospital Improvement Innovation Network (HIIN) of 5%, with a 7.5% stretch.

Several projects were identified to achieve success.

The overall goals of each project were:

1. Reduce linezolid and daptomycin use (DOTs) by 10% each, reduce ceftriaxone and tigecycline by 20% each for 2017 compared to 2016
2. Reduce ICU DOTs by 5%
3. Reduced fluoroquinolone use (DOTs) by 10% for 2017 compared to 2016
4. Reduce etanepenem usage by 25% for 2017 compared to 2016
5. Reduce overall DOT for each facility by 5%

Results/Outcomes

The system showed an overall 12.4% reduction in antimicrobial use was reduced by approximately 90.7%.

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• A repeat MUE of the anti-staphylococcal agents was completed in the Spring of 2017 which revealed an overall 41% reduction in DOTs, associated with a cost savings of $392,506 for 2017 (Fig. 1).
• All four ICUs exceeded the DOT reduction goals; SF ICU: -32.6%, SICU: -8.9%, MPI ICU: -11.8%, CVICU: -24.6% (Fig. 2).
• Overall fluoroquinolone use was reduced by 39% from 71.5 DOTs to 43.0 DOTs (Fig. 3).
• Ertapenem use was significantly reduced and actual cost savings was $19,342 (Fig. 4).
• The system showed an overall 12.4% reduction in DOTs (Roper -11%, St Francis -16.2%, Mt Pleasant -6.1%) (Fig. 5).
• Overall cost savings were significant, with the system-wide anti-infective spend reduced by $637,119 (26%).

Discussion

Antimicrobial Stewardship at RSFH has been elevated to the corporate level of Quality Measures. The overarching emphasis of creating culture change, the spirit of cooperation and teamwork within the organization regarding antibiotic utilization was targeted using several strategies. By including providers across many disciplines, developing multiple education campaigns, and including more pharmacists on the team under the direction of a strong ID physician, the results achieved were beyond what was expected.

Contact Info

kstock@lcids.com
sara.utley@rsfh.com
radha.patel@rsfh.com
dawn.bouknight@rsfh.com

References


Figure 1. Daptomycin, tigecycline, ceftriaxone, linezolid use by Facility

Figure 2. ICU DOT by Unit

Figure 3. Fluoroquinolone use by Facility

Figure 4. RSFH Ertapenem Use

Figure 5. RSFH Antibiotic Stewardship Days of Therapy 2017