

The Health Care Improvement Foundation  
2017 Delaware Valley Patient Safety and Quality Award  
Entry Form

**1. Hospital Name**

Holy Redeemer Health System

**2. Title Of Initiative**

Implementation of an Antimicrobial Stewardship Program in a Small Community Hospital

**3. Abstract (Please limit this description to 250 words.)**

An Antibiotic Stewardship Program that met CDC Core Elements was successfully implemented in a small Community Hospital with limited resources. A multi-disciplinary Antibiotic Stewardship Committee was formed. Stewardship goals were identified: decrease hospital-acquired C.diff infections, decrease inappropriate prescribing of fluoroquinolones and piperacillin/tazobactam, and decrease the unnecessary treatment of asymptomatic bacteriuria. Antimicrobial Stewardship education was developed and distributed to clinicians. Our Stewardship pharmacist reviews all patients on antibiotic therapies on Mondays, Wednesdays, and Fridays. Specific patients are reviewed further with the program's Infectious Disease physician to optimize antimicrobial use. The Stewardship team then rounds on the floors where physician-to-physician communications occur to discontinue, de-escalate, revise, or decrease durations of antimicrobial therapy. Empiric probiotic therapy is recommended for eligible patients, with the goal of decreasing hospital-acquired C. difficile infections. All interventions are documented and trended. 1724 pharmacist reviews occurred from October 2016 - May 2017, of which 588 were further reviewed with the Infectious Disease physician. 914 interventions were made with physicians. Excluding probiotic recommendations, interventions resulted in antibiotic discontinuations (53%), antibiotic de-escalations (18%), changes in dose/frequency (10%), additional monitoring (9%), and changes in antimicrobial therapy (7%). Fluoroquinolone utilization has decreased since the inception of our program. Our C. difficile rates are improving. The estimated cost savings from discontinuations and de-escalations was \$20,504. More importantly, antimicrobial therapies are optimized to meet patient specific needs.

**4. What were the goals of your initiative?**

In compliance with the Centers for Medicare and Medicaid Services conditions for participation, the hospital implemented an Antimicrobial Stewardship Program (ASP) in September 2016 with the support of senior leadership. In addition to maintaining the Centers for Disease Control Core Elements of Hospital Antibiotic Stewardship Programs (leadership commitment, accountability, drug expertise, action, tracking, reporting, and education), the Antibiotic Stewardship Committee developed hospital-specific goals:

1. Decrease rates of hospital-acquired C.diff infections
  - Timeliness of stool samples

- Early isolation with suspected cases
  - Empiric probiotic use
2. Decrease inappropriate prescribing of fluoroquinolones
    - Decrease use in sinusitis, acute bronchitis, and uncomplicated urinary tract infections
  3. Decrease inappropriate prescribing of piperacillin/tazobactam
    - De-escalation when appropriate
    - Appropriate duration of therapy
  4. Decrease treatment of asymptomatic bacteriuria

**5. What were your initiative's baseline data and the results of your initiative?**

Senior leadership was committed to these stewardship efforts from inception by providing proper funding for designated personnel to run weekly ASP activities. To ensure appropriate prescribing and monitoring, the ASP includes a rounding program with a designated pharmacist and infectious disease physician. Three days per week, regimens are first reviewed by a pharmacist who then selects specific patients for physician review. Recommendations are made via physician-to-physician communication to optimize the antimicrobial drug regimen, dose, duration of therapy, and route of administration. We felt strongly that the program's success was dependent on physician-to-physician communication rather than pharmacist-to-physician communication.

Metrics that are tracked and reported include the following:

- the number of patients reviewed by the ASP (Table 1)
- the number and types of interventions made by the ASP (Table 2; Figure 1)
- the estimated cost-savings for de-escalated and discontinued antimicrobial therapies (Table 3)
- Daily Defined Doses and Days of Therapy per 1000 patient days of fluoroquinolones (Figure 2)
- Daily Defined Doses and Days of Therapy per 1000 patient days of piperacillin/tazobactam (Figure 3)
- Hospital-acquired *Clostridium difficile* infection rates reported by standard infection ratios (Figure 4)

Coinciding with the FDA's warnings on the risks of fluorquinolone use, the ASP has dramatically helped to decrease fluoroquinolone usage. (See Figure 2 for Baseline Data and results through May 2017)

**6. Describe the interventions that were instrumental in achieving the results for your initiative.**

Optimization of antibiotic therapies occurs during weekly rounds. Recommendations to discontinue, de-escalate, change dose/frequency, change therapy, etc. are made at this

time.

To combat Clostridium difficile infections, the ASP has taken a collaborative approach. With input from physicians, pharmacists, nursing, and laboratory personnel, the hospital is moving forward with a new C. diff testing algorithm that will increase testing sensitivity with the goal of capturing more true C.diff positive results. In addition, a probiotic protocol was implemented to allow the ASP to initiate probiotic therapy in eligible patients on treatment antibiotic doses to help prevent C.diff infections.

**7. How can this initiative be replicated through the region? (Please limit this description to 100 words.)**

An Antibiotic Stewardship Program can be replicated throughout the region by thoroughly evaluating the resources allocated by senior management and tailoring a program to fit an organization's needs. Goals must be established based on an organization's specific utilization patterns.

**8. Explain how the initiative demonstrates innovation (Please limit this description to 100 words.)**

Our organization created an Antibiotic Stewardship Program that was innovative. We used limited resources to launch a robust program which is highly successful. We utilize technology to assist us with our efforts. We are now branching out to the long-term care and home care settings to assure that antimicrobial therapies are being discontinued appropriately.

**9. How does this initiative demonstrate collaboration with other providers within the continuum of care? (Please limit this description to 100 words.)**

Our Antibiotic Stewardship Program is truly a collaborative effort, with input from physicians, pharmacists, nurses, laboratory personnel, infection control, quality, and Information Services. Everyone is passionate about their roles to optimize therapy to assure positive patient outcomes.

**10. Explain ways in which senior leadership exhibited commitment to the initiative (Please limit this description to 100 words.)**

Senior Leadership committed to this initiative by allocating the appropriate resources to successfully launch this program. A part-time stewardship pharmacist position was created, and a contract was executed with an Infectious Disease physician.

**11. Appendices (i.e., tables and graphs)**

**TABLES AND FIGURES**

**Table 1. Antimicrobial Stewardship Patient Review Summary**

Month	Pharmacist Review	Physician Review
<b>October - November</b>	295	159
<b>December</b>	228	68
<b>January</b>	286	89
<b>February</b>	210	84
<b>March</b>	240	74
<b>April</b>	229	51
<b>May</b>	236	63
<b>TOTALS</b>	<b>1724</b>	<b>588</b>

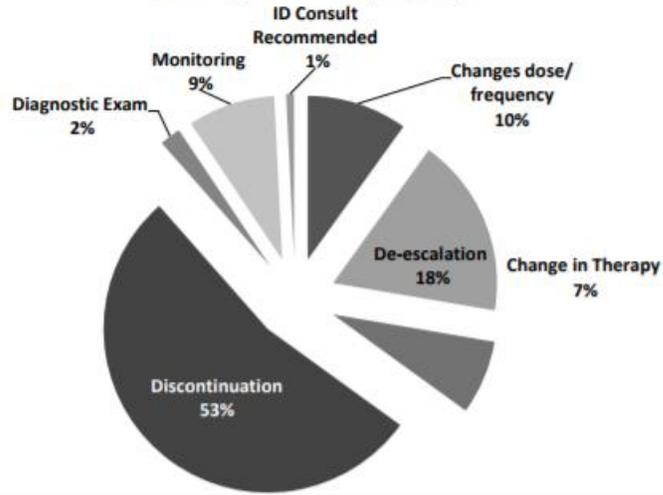
**Table 2. Antimicrobial Stewardship Program Interventions**

	Changes dose/ frequency	De- escalation	Change in Therapy	Discontinuation	Diagnostic Exam/Lab	Monitoring	ID Consult Recommended	Addition of Probiotic
<b>Oct- Nov 17</b>	13	8	2	39	4	14	3	13
<b>Dec 16</b>	1	7	2	19	1	5	0	82
<b>Jan 17</b>	5	15	4	32	1	2	0	90
<b>Feb 17</b>	8	7	9	29	1	6	0	102
<b>Mar</b>	4	12	5	28	0	4	0	79
<b>Apr</b>	3	6	3	26	1	1	0	85
<b>May</b>	4	13	3	32	0	0	0	80
<b>TOTALS</b>	<b>38</b>	<b>68</b>	<b>28</b>	<b>205</b>	<b>8</b>	<b>33</b>	<b>3</b>	<b>531</b>

**Figure 1. Antimicrobial Stewardship Interventions**

**Oct 2016 through May 2017**

(excluding the addition of probiotics)

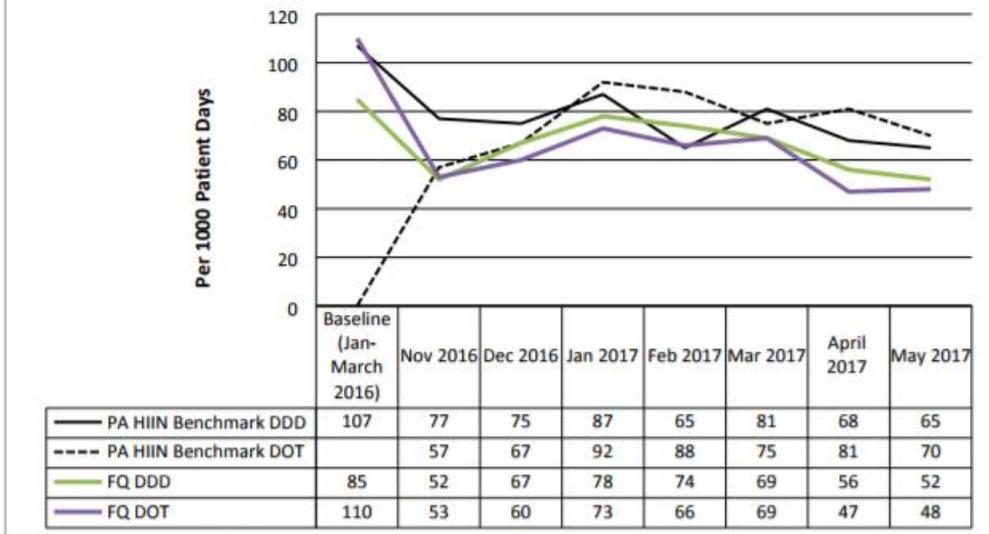


**Table 3. Estimated Cost Savings for De-Escalated or Discontinued Antimicrobials\***

Month	Discontinuations	De-escalations
October - November	\$ 2753.63	\$ 2061.20
December	\$ 1114.35	\$ 438.75
January	\$ 842.25	\$ 1738.76
February	\$ 759.52	\$ 1025.94
March	\$ 870.58	\$ 2256.44
April	\$ 589.76	\$ 1359.57
May	\$ 1011.22	\$ 4107.84
<b>SUBTOTAL</b>	<b>\$ 7,954.45</b>	<b>\$ 12,549.75</b>
<b>TOTAL</b>	<b>\$ 20,504.20</b>	

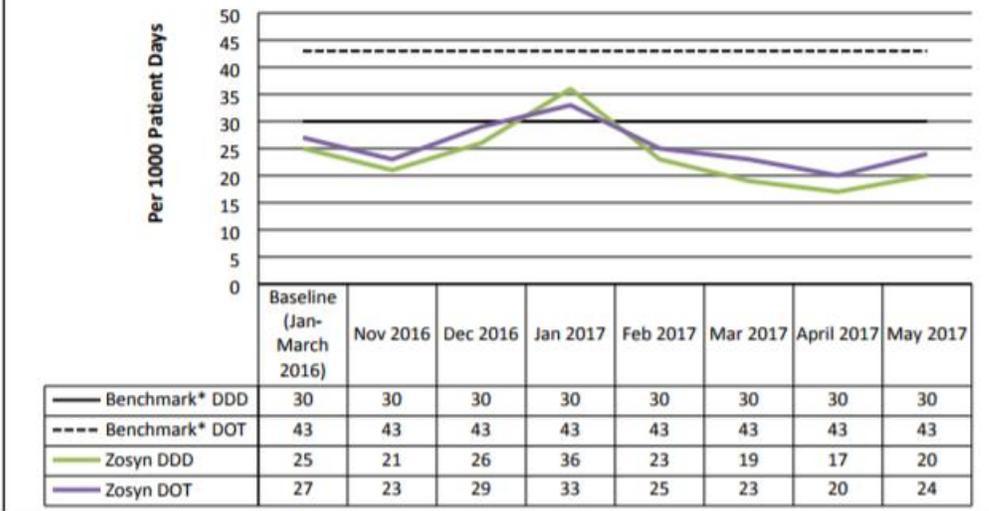
\*Based on projected durations for specified indication

**Figure 2. Antimicrobial Stewardship Metrics  
Daily Defined Dose (DDD) and Days of Therapy (DOT)**



\*Benchmark data from participating PA Hospital Improvement Innovation Network hospitals

**Figure 3. Piperacillin/Tazobactam  
Daily Defined Dose (DDD) and Days of Therapy (DOT)**



\* Benchmark data taken from *Clin Infect Dis.* 2007 Mar 1;44(5):664-70.

Figure 4. C. difficile Standardized Infection Ratio

