Supplementary Data

Supplementary Table 1. The number of Centers for Disease Control Prevention antimicrobial stewardship core elements implemented at Missouri hospitals stratified by critical access and non-critical access hospitals.

	Non-Critical Access Hospitals (n=38)	Critical Access Hospitals (n=7)
Number of Cores Implemented		
7	27 (71%)	3 (43%)
6	5 (13%)	3 (43%)
5	3 (8%)	1 (14%)
4	2 (5%)	-
3	1 (2%)	-

Note. No comparisons were statistically significant.

Supplementary Table 2. Number of interventions Implemented to improve antibiotic use in hospitals stratified by critical access and non-critical access hospitals.

Number of Interventions Implemented		
	Critical Access Hospitals (n = 7)	**All Other Hospitals (n = 38)**
2	0	1 (3%)
3	0	0 (0%)
4	1 (14%)	1 (3%)
5	1 (14%)	2 (5%)
6	0	3 (8%)
7	1 (14%)	4 (11%)
8	1 (14%)	8 (21%)
9	2 (29%)	4 (11%)
10	1 (14%)	7 (18%)
11	0	5 (13%)
12	0	3 (8%)

Supplementary Table 3. Description of Educational Interventions Implemented at All Responding Hospitals

Educational Intervention	Frequency of Implementation n (%)
Best practice alerts	20 (44)
Feedback on facility-specific antibiotic prescribing trends	23 (51)
Didactic presentations	18 (40)
Educational posters and flyers	20 (44)
Educational newsletters	16 (36)
Reviewing de-identified cases in committees or meetings	7 (16)
Web-based educational resources	11 (24)
Other**	5 (11)
None of the above	1 (2)

*** Other category includes: "Distribution of pertinent articles from the medical literature.", "Education on system level for all SLHS facilities", "Medical Staff Committees", "Power Point Presentations on Usage Trends" and "We are currently developing formal education process. We currently do in the moment feedback"*

Supplementary Table 4. Outcome Measures Tracked by Responding Hospitals

Outcome Measures Tracked*	Frequency n (%)
***Clostridioides difficile* rates**	32 (71)
Antibiotic resistance rates	25 (56)
Drug cost savings	17 (38)
Adverse drug event rates	13 (29)
Patient admission/stay measures	6 (13)
Not answered	3 (7)

**Note. 4 (10%) of hospitals tracked 4 outcome measures, 12 (29%) implemented 3 outcome measures, 15 (36%) implemented two outcome measures, and 11 (26%) implemented only one outcome measure.*

Supplementary Table 5. Code frequencies from qualitative interviews

Code Description	Frequency (%)
Internal resources and decisions support tools	85
Stewardship barriers	42
Education	37
External resources	27
Stewardship collaborators	27
Reporting antibiotic use	23
Desired resources	22
Climate	21
Leadership support	20
Stewardship facilitators	18
Tracking antibiotic use	14
Patient/care outcomes	14
Externalities	13
Internal program evaluation	8

Supplementary Table 6: Themes with Supporting Quotes

Theme	Supporting Quotes
Stewardship is highly collaborative but pharmacy driven	*"We have a stewardship team…"* *"Well, you know, we follow the Joint Commission Standards as far as what that multidisciplinary team was going to be."* *"So, the clinical monitoring alerts can be handled by any pharmacist that's here, but I am the one who definitely goes through and makes sure that anything that's related to antibiotics has either been taken care of by somebody else or I take care of it myself."* *"[Stewardship] is just kind of one of those things that one of the pharmacists do every day."*
High need for internal resources and support	*"Basically, even though that committee has support on paper from administration, there's not FTE's assigned to it. There's no budget for it."* *"I don't believe in our policies [stewardship] is actually a requirement in our job descriptions."* *"I actually got written up one time… for standing my ground… even though I had the policy behind me."*
Resistant physicians	*"And we sent [out an educational handout], but I don't know how many of them actually read it."* *"With the physicians, it gets a little bit more hard…well, not a little bit. It gets a lot harder getting them to try to do some continuing education on Antimicrobial Stewardship."* *"I used to have education more often, but I was recently directed to move it… it's very difficult to get physicians to attend education, so we used to have education at the med staff meeting. And then I got told I couldn't do that anymore because it was taking too long…"*
Proper tracking tools are important	*"I feel like prior to having TheraDoc, I just reviewed everybody and… I felt like I was spinning my wheels… and I felt like I was wasting my time."* *"We're still working with our EMAR and our electronic system trying to get the utilization and the resistance of the AUR data… It's been a very slow go with our system, getting that up and running."*
Common desire for networked relationships and platforms	*"The second thing is if you've got, there would be a helpline."* *"It might be nice if there was maybe like a drop box or similar format but you also invite other stewardship programs if they have tools they want to share and they could put them in there. Maybe create like a resource database that can be made because I'm sure there are lots of people that are trying to work on the same things or maybe want to work on something, but they don't have time to make the tool."* *"I would love to know data from other facilities. I would love if people who are not using postop antibiotics would share what their SSI rates were…. That would be kind of cool if we can maybe get de-identified information together so that we can say… Look at other places in Missouri, you know, don't use postop antibiotics and they're doing just fine."* *"I think it would be nice if we could have a database within Missouri or St. Louis… to kind of see where we're at comparatively."*