

Enhancing Tools to Aid in Antimicrobial Stewardship Services in a Multi-State Health System

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Background

- Antibiotic resistance is one of the most serious and growing threats to public health
- Infectious disease (ID) pharmacists monitor usage and resistance patterns to facilitate appropriate antibiotic use
- Current state:
 - A third-party clinical surveillance program identifies patients for antimicrobial surveillance (AMS)
 - Requires constant shifting between platforms to do a comprehensive review

Objective

- Optimize tools to perform antimicrobial- and culture-based surveillance and to report antimicrobial consumption within an EHR to improve the efficiency of AMS services

Methods

- Conducted a one-week time study using current workflows
 - Established a baseline of the number of patients reviewed using the third-party clinical surveillance program
- Consulted stakeholders:
 - Discussed current AMS workflows across the system
 - Aligned plans with system-wide initiatives
- Developed deliverables:
 - Patient list-based workflow within the EHR
 - Custom columns to help identify and prioritize the most acute or complex patients
 - Patient overview report to highlight the most pertinent information

Results

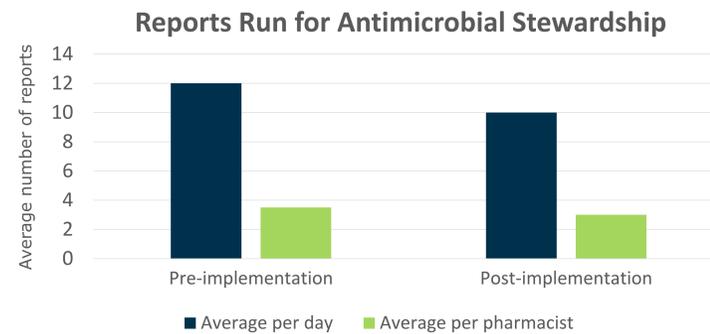


Figure 1. Reports run for antimicrobial stewardship. After implementation, both the average number of reports run per day and the average number of reports run per pharmacist per day decreased.

a)

Adm. Unit	Room/Bed	Patient Name/Age/Gender	Restrict Abx	ID Consult
SLMMOR	OR/OR	Test, R (33 year old M)	1	—
SLM10T	T10121/A	Adt, H (25 year old F)	2	📞
SLM2L	/A	Clindoc, S (73 year old M)	🔄	—
SLM10T	T10115/A	Asap, C (31 year old M)	✓	—

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b)

Restricted Anti-Infectives

Tier 1: Amphotericin, Bezlotoxumab, Cefiderocol, Ceftaroline, Ceftazidime/Avibactam, Ceftolozane/Tazobactam, Cidofovir, Colistin IV, Dalbavancin, Flucytosine, Fosfarnet, Ganciclovir, Imipenem/Cilastatin, Imipenem/Cilastatin/Relebactam, Letemovir, Meropenem/Vaborbactam, Minocycline IV, Peramivir, Polymyxin B, Primaquine, Pyrimethamine, Sulfamethoxazole/Trimethoprim IV, Tigecycline, Voriconazole

Tier 2: Albendazole, Artemether/Lumefantrine, Atovaquone/Proguanil, Daptomycin, Ertapenem, Itraconazole PO, Isavuconazole, Levofloxacin, Linezolid, Meropenem, Mefloquine, Ribavirin

Tier 3: Amikacin, Aztreonam, Ciprofloxacin, Clindamycin, Fidaxomicin, Ketoconazole, Isoniazid, Micafungin, Moxifloxacin, Posaconazole PO, Rifabutin

Next Review: [input field]

AMS MONITORING

Anti-Infective Orders from this Admission (72h ago, onward): None

Anti-Infective Monitoring Notes: [comment field]

Microbiology Results (last 7 days): ** No results found for the last 168 hours. **

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Figure 2. Restricted anti-infective patient list and report. (a) "Restricted Abx" column displays a numerical icon for new anti-infective regimens, a clock when follow-up is needed, or a green check when review is completed. (b) Form to document agents appropriate to continue, followed by a patient overview form to facilitate comprehensive patient review.

Results (cont'd)

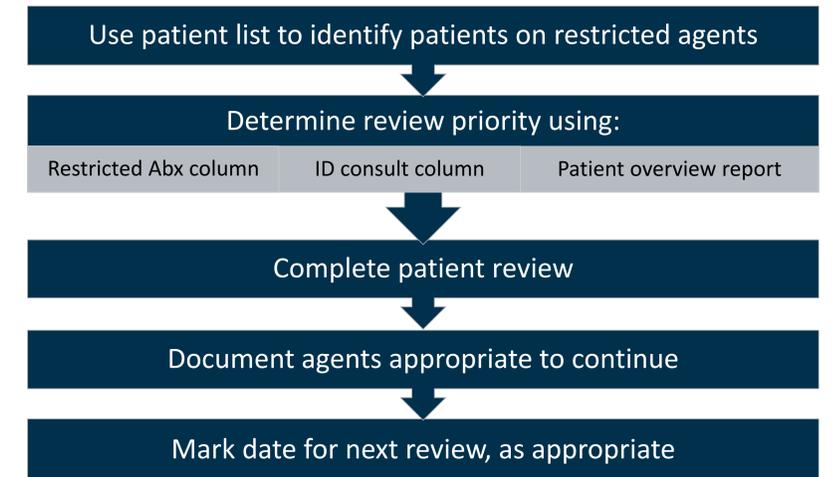


Figure 3. Standardized restricted anti-infective review workflow. Prioritization is primarily driven by Restricted Anti-Infective column. For patients within the same priority group, ID pharmacist can consider using the ID consult column and additional information in the patient overview report to facilitate prioritization.

Discussion

- Workgroup discussions provided an opportunity to identify differences in workflows among sites

Limitations:

- Implementation of AMS-focused EHR module delayed due to COVID-19

Future Directions:

- Development of a blood culture-based patient list workflow
- Develop reporting tools to participate in NHSN reporting
- Standardization of all AMS-focused services with quantitative metrics

Conclusions

- Patient list-based workflow introduced standardization that was well-received by stakeholders