IMPACT OF A PHARMACIST-MANAGED CULTURE QUEUE ON APPROPRIATE ANTIBIOTIC PRESCRIBING IN AN AMBULATORY CLINIC

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DISCLOSURES

- IRB Status: Exempt
- Co-investigators:
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  - Jada Cunningham, PharmD, BCPS
  - Stephanie Schritter, PharmD, BCPS
  - Daniel Stockton, PharmD, BCPS
- Conflicts of interest: None
- Project sponsorship: None

ST. PETER'S HEALTH (SPH)

- Non-profit, community owned
- 123-bed hospital
  - 99 acute care beds
- Serves >100,000 patients across 5 counties



- Includes 9 specialty clinics and 5 primary clinics
- Applicable pharmacy services:
  - Antimicrobial Stewardship (AMS) Pharmacist
  - Ambulatory Clinical Pharmacist

BACKGROUND

- The most **common** focus of AMS in hospital systems is the inpatient setting as it is a more contained environment to make improvements in antimicrobial use
  - Pharmacist-driven emergency department outpatient culture follow-up is also common
- Framework exists for development of both inpatient and outpatient stewardship
  - Inpatient antimicrobial stewardship guidance is more detailed and clear

BACKGROUND CONT.

- It is important to maintain a strong AMS program in both the inpatient and outpatient setting to maintain regulatory compliance and to optimize patient outcomes
- Unnecessary antimicrobial prescribing:
  - Increased antimicrobial resistance
  - Increased adverse events
  - Increased healthcare cost
  - Inefficient use of resources
  - Suboptimal patient outcomes

BACKGROUND CONT.

- A prospective observational study was conducted to assess the antimicrobial prescribing patterns for patients seen at an outpatient clinic associated with a tertiary care hospital
  - 296/301 (98.3%) of prescriptions were empiric therapy
    - 3/296 (1%) of prescriptions were followed by definitive therapy
  - 22/301 (7.3%) had a documented indication

Suresh-kumar D., 2024

Abstract #6013

BACKGROUND CONT.

- A prospective observational study conducted at two community hospital emergency departments (ED) followed four emergency medicine clinical pharmacists that individually measured their time spent on follow up of patient urine, blood, stool, wound, CSF, throat, and respiratory culture results.
  - Over the duration of 560 pharmacist hours:

Physician Time Saved (Mean): 75 minutes per shift (mps)				
General Questions	Urine Culture Follow Up	Culture Call-Backs (From Patient)	Other Culture Follow Up	Antibiotic Change
25.2 mps	11.3 mps	7.5 mps	6.5 mps	4.7 mps

Grill J, 2019

Abstract #6013

SPH PRACTICE PRIOR TO IMPLEMENTATION OF COLLABORATIVE PRACTICE AGREEMENT (CPA)

Provider managed without pharmacist intervention:

- SPH **did not have formal outpatient clinic** AMS efforts to assess efficacy and safety of prescribed therapy or monitor outpatient practices that could contribute to bacterial resistance trends.
- There have been **multiple attempts** to improve outpatient clinic antimicrobial stewardship (AMS) at St. Peter's Health (SPH), **but the initiatives have not produced lasting results**.

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OBJECTIVES

- Primary
  - Percentage of patients switched to or maintained on appropriate therapy in response to culture queue results
- Secondary
  - Time (in hours) to optimal therapy
  - Duration/dose discrepancy
  - Provider time saved
  - Adverse drug reaction adjustments
  - Drug-bug mismatch adjustments

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METHODS

Phase I: Aug – Sept 2025

Project development

Phase II: Oct – Dec 2025

Retrospective data collection

Phase III: Jan – Mar 2026

Prospective data collection

Phase IV: Apr – May 2026

Data analysis

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PHASE I: AUG – SEPT 2025

- Obtained buy-in from the SPH Primary Care Team and Antimicrobial Stewardship Team
- Requested development of the results message queue from SPH Informatics Committee
- Developed the CPA

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PROPOSED CPA

- Pharmacists independently modify the prescribed therapy
  - Prescriptions are entered under the primary care provider (PCP)
- Included PCR results and cultures:
  - Wound, abscess, body fluid, urine, blood, sputum, throat, ear, eye
  - Gastrointestinal, giardia, cryptococcus
- Excluded PCR results and cultures:
  - Chlamydia, gonorrhea, herpes simplex virus, human immunodeficiency virus cultures/tests

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PHASE II: OCT – DEC 2025

- Retrospective data collection performed
  - February 1 – March 31, 2025
  - Control group
- Electronic culture queue developed in our electronic health record (EHR)
  - Results flow into a pool in the EPIC "In Basket"
- CPA approved by the Primary Care Team and Pharmacy & Therapeutics Committee

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PHASE III: JAN – MAR 2026

- Outpatient Culture Queue Implementation:
  - Go live: February 1st, 2026
- Prospective Data Collection
  - February 1 – March 31, 2026

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DAILY WORKFLOW OUTLINE

Patient is seen for infectious concern by PCP, cultures obtained sent to lab for evaluation.

↓

Positive culture results flow into the Outpatient Culture Queue.

↓

The AMS pharmacist will review the culture results and patient specific variables to determine if optimization is required.

If therapy is **adequate**, the AMS pharmacist will document the results in the EHR under the culture result.

If therapy is **inadequate**, the AMS pharmacist will contact the patient to assess symptom improvement/worsening, review culture results, and explain necessary changes.

↓

The AMS pharmacist will independently modify the prescribed therapy under the CPA and document the changes in the EHR under the culture result.*

**The AMS pharmacist may request guidance from the provider for any culture/clinical situation felt to be complicated beyond the pharmacist's scope of practice.*

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PHASE IV: APR – MAY 2026

- Data analysis:
  - Retrospective data and prospective data was analyzed for comparison
- Target Patients:
  - Broadway Primary Care Clinic SPH patients with a positive culture result

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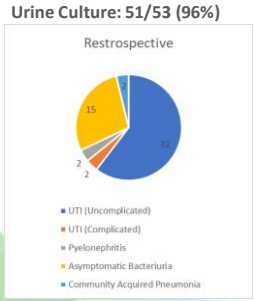
PHASE IV: APR – MAY 2026

- Data Collected:
  - Demographics, infection type, culture type, identified pathogen, empiric antimicrobial, duration of therapy, definitive antimicrobial, intervention made, time to result review
- Assessment:
  - Patients who received appropriate empiric antimicrobial therapy
  - Interventions performed (if applicable)

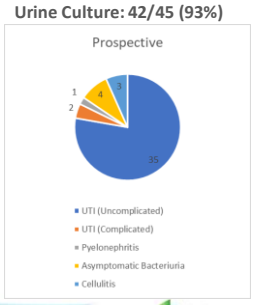
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RESULTS: INDICATION

Urine Culture: 51/53 (96%)



Urine Culture: 42/45 (93%)



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RESULTS: EMPIRIC THERAPY

Empiric Therapy:	Retrospective:	Prospective:
Overall Appropriateness:	42/53 (79%)	45/45 (100%)
Dosing Appropriate:	44/48 (91%)	38/38 (100%)
Duration Appropriate:	28/48 (58%)	33/38 (87%)
Drug-Bug Mismatch:	40/48 (83%)	35/38 (92%)

- Asymptomatic bacteriuria cases that did not receive treatment were excluded from all empiric therapy review criteria except overall empiric therapy appropriateness
- Choice of empiric agent did not differ between the groups

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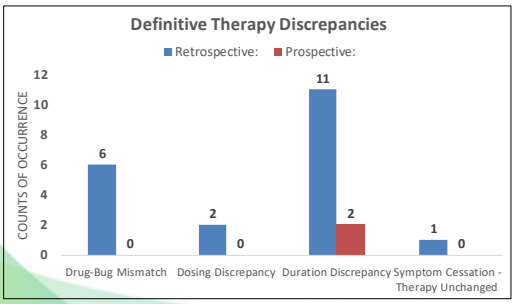
RESULTS: DEFINITIVE THERAPY

Definitive Therapy:	Retrospective:	Prospective:
Adjustment per Culture Result Appropriateness:	6/17 (35%)	8/10 (80%)
Mean Time to Culture Follow Up:	20.8 hours (0.5 - 130)	4.4 hours (0.5-48)
Overall Appropriateness:*	29/48 (60%)	43/45 (96%)

**Overall appropriateness defined as appropriate agent, dose, and duration*

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RESULTS: DEFINITIVE DISCREPANCIES



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RESULTS: PROVIDER TIME SAVED

Total Time Saved (45 cultures):	Total Appointments Opened (30 minute):	Total Appointments Opened (60 minute):
675 minutes (11.25 hours)	22.5 appts	11.25 appts
Allotted provider time savings per culture review & follow up = 15 minutes		

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DISCUSSION AND LIMITATIONS

- Outpatient treatment is highly subjective to patient factors
  - Adherence
  - Health literacy
  - Social determinants of health
- Optimal duration limitation
  - Patient concerns about "early" discontinuation
- Data collection limitation
  - Multiple investigators
- Provider workflow and old habits
  - Occasionally responded to results prior to pharmacist review

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CONCLUSIONS

- Pharmacist are capable of intervening based on culture results to improve patient care.
- Providers expressed high satisfaction with the pharmacist-managed culture queue.
- Providers requested follow-up notes be routed back to them for self-reflection of AMS prescribing practices.
- Institutions should push for implementation of pharmacist-led outpatient clinic culture follow-up to promote efforts of effective antimicrobial use.

FUTURE DIRECTIONS

- Pharmacist-managed culture review and follow-up is expanding to all SPH primary clinics
- Consider expanding services to specialty clinics:
  - Urology, orthopedics, rheumatology, etc.
- Margin analysis
  - Pursue addition of an outpatient AMS pharmacist
- Practice Innovation:
  - Implementing a 48-72 hours watchful waiting period
  - If symptoms persist, prescribe definitively per culture results

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QUESTIONS?

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