

INITIATIVES TO HELP YOUR ANTIBIOTIC STEWARDSHIP PROGRAM BECOME A G.O.A.T

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DISCLOSURES

- I have nothing to disclose.



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LEARNING OBJECTIVES

- Describe implementable stewardship activities that help to resolve erroneous penicillin allergies.



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WHAT DO YOU CONSIDER TO BE A G.O.A.T.?




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ANTIMICROBIAL STEWARDSHIP PROGRAM (ASP) TIERS

Foundational	On The Rise	G.O.A.T.
<ul style="list-style-type: none"> Meet regulatory requirements Policy/protocol Baseline metrics Prospective audit and feedback Antibiogram Education 	<ul style="list-style-type: none"> Optimizing lab involvement Annual quality improvement projects Expanded antibiotic restriction program Use antibiogram to drive practice 	<ul style="list-style-type: none"> Outpatient stewardship Allergy testing Optimizing metrics and data Clinical decision support Rapid diagnostics (blood cultures, procalcitonin)



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ANTIBIOTIC STEWARDSHIP INITIATIVES-COLLABORATION

- Working with the micro lab can lead to significant patient care improvement initiatives:
 - Antibiogram optimization**
 - Developing criteria for testing to help with diagnostic stewardship (ie. C.diff, Urine)**
 - Rapid diagnostics** (Procalcitonin, rapid molecular blood culture technology, etc.)
 - Suppression of micro sensitivities to help direct prescribing
 - Plate rounds



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ANTIBIOTIC STEWARDSHIP INITIATIVES-COLLABORATION

St. Peter's Hospital
Microbiology and Pharmacy Departments
Antibiotic Sensitivity Profile for Period January-December 2017

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ANTIBIOTIC STEWARDSHIP INITIATIVES-COLLABORATION

- Urine stewardship
 - Review your lab's criteria for reflexing urine samples to culture
 - Develop clinical decision support to drive antibiotic prescribing best practices
 - Antibiotic selection and duration of therapy

Institution	UA Reflex Criteria	Dipstick Reflex Criteria
Hospital A	TWO of the following: -Nitrite + -LE + -WBC-5	Nitrite + AND LE+ LE+ AND WBC>5 Nitrite + AND WBC>5 All 3 of the above
Hospital B	>3 Bacteria >10 RBC >10 WBC	No specific criteria, provider specific on what to send for culture.
Hospital C	>10WBC AND positive bacteria (≥ 1+)	No specific criteria, provider specific on what to send for culture.
Hospital D	No reflex criteria, UA available for ordered but not tied to reflex criteria. Culture ordered per MD discretion.	No specific criteria, provider specific on what to send for culture.
Hospital E	-WBC clumps ≥9 WBC/hpf 2+ or more bacteria	Any of the following trigger a microscopic exam: + leukocyte esterase + nitrites + protein > 30 mg/dL + blood in any quantity
Gold Standard	Reflex if TWO of the following criteria are present: 1. WBC≥10 2. Leukocyte esterase is ≥ moderate 3. Bacteria ≥ moderate 4. Nitrites positive	

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ANTIBIOTIC STEWARDSHIP INITIATIVES-COLLABORATION

- Procalcitonin is a biomarker produced in response to systemic bacterial infections
 - More specific biomarker compared to others used to assess infections (ie. CRP, WBC, ESR)
 - Potential to distinguish viral vs. bacterial infections vs. non-infectious etiologies
 - Can be a very helpful tool to assist with de-escalation of antibiotics in the setting of acute respiratory infections and sepsis

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ANTIBIOTIC STEWARDSHIP INITIATIVES-COLLABORATION

PCT LRTI Initial Level

PCT Value	<0.1 µg/L	0.1 - 0.24 µg/L	≥ 0.25-0.5 µg/L	>0.5 µg/L
Antibiotic Use Recommendation	Strongly Discouraged	Discouraged	Encouraged	Strongly Encouraged

- Consider alternative diagnosis
- Repeat PCT in 6-12 hours if antibiotics not begun and no clinical improvement
- If clinically unstable, immunosuppressed or high risk, consider overruling (PSI Class IV-V, CURB-2, GOLD III or IV)

Repeat every 2-3 days to consider early antibiotic cessation
See Algorithm 2

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ANTIBIOTIC STEWARDSHIP INITIATIVES-OUTPATIENT STEWARDSHIP

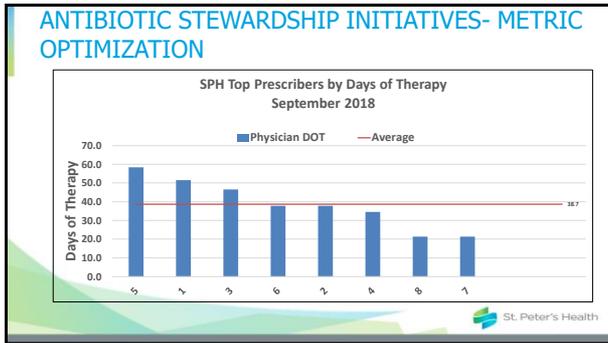
- Outpatient antibiotic stewardship programs are as imperative as inpatient
 - Annual education initiatives to target providers and patients
 - Urine stewardship**
 - Pneumonia
 - Cellulitis
 - Emergency department culture review
 - Pharmacist involvement with outpatient culture review has been shown to reduce ED visits, improve antibiotic selection, and improve the accuracy of cultures being reviewed¹

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ANTIBIOTIC STEWARDSHIP INITIATIVES- METRIC OPTIMIZATION

- Beyond just collection, how can you leverage data to help drive change?
 - Feedback to providers with data on individual performance**
 - Incorporate stewardship initiatives as part of medical staff performance goals**
 - Using metrics to optimize both inpatient and outpatient antibiotic use

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- ### ANTIBIOTIC STEWARDSHIP INITIATIVES- ANTIBIOTIC ALLERGY CLARIFICATION
- Penicillin allergies are self-reported in 10-20% of the US population
 - It is estimated that <1% are truly allergic
 - Studies have shown that hypersensitivity reactions can wane over time
 - Patients who report penicillin allergies are at higher risk of receiving suboptimal antibiotic therapy:
 - Deviation from treatment of choice
 - Compromised IV → Oral conversion
 - Higher costs of care

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- ### ANTIBIOTIC STEWARDSHIP INITIATIVES- ANTIBIOTIC ALLERGY CLARIFICATION²
- There are several ways pharmacists and pharmacy technicians can help battle the erroneous penicillin epidemic:
 - Thorough investigation of antibiotic allergy history
 - Patient's recollections of allergy
 - Searching medication records looking for history of antibiotic exposure
 - **Antibiotic allergy skin testing**

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- ### ANTIBIOTIC STEWARDSHIP INITIATIVES- ANTIBIOTIC ALLERGY CLARIFICATION
- Pharmacist Penicillin Skin Test Protocol → Approved through P&T
 - Patient Consent Form
 - Acquire Supplies (total cost approximately \$125/test)
 - Develop system for compounding penicillin dilution
 - Determine cost/benefit of kits
 - Pre-pen

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Before starting, ensure that consent form has been discussed, signed, and filled in chart

- 1) Skin Prick Test (Document administration in EMAR)
 - a. Pre-pen x1
 - b. Pen G dilution
 - c. Saline
 - d. Histamine

WAIT 15 MINUTES TO READ

- 2) Intradermal Test (Document administration in EMAR)
 - a. Pre-pen x 2
 - b. Pen G x 2
 - c. Normal Saline x 1

If steps 1 and 2 are successful, proceed to oral challenge or deliver 1st dose of desired antibiotic.

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ANTIBIOTIC STEWARDSHIP INITIATIVES- ANTIBIOTIC ALLERGY CLARIFICATION

Hospital Pharmacy

The Clinical and Historical Record of a Pharmacist Division
Penicillin Skin Testing Program an Antimicrobial Stewardship Practice

Pharmacist	_____
Department	_____
Requestor	_____
Date Submitted	_____
Complete List of Allergies	_____
History	_____
Notes	_____

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RESULTS, CONT.

Outcome	Number of Patients, % (N=31)
Skin Test + Oral/IV Challenge Negative	27, 87%
Scratch Test Positive	1, 3%
Indeterminate Test	3, 10%
De-Escalation Opportunity	15, 48%
Recommendation to De-Escalate Accepted	13, 42%

Examples of interventions:

- Meropenem + clindamycin → Unasyn for facial abscess
- Ertapenem + Azithromycin → Ceftriaxone + azithromycin for CAP
- Prevented use of daptomycin for staphylococcal coverage in cellulitis

Antimicrobial Therapy	Days of Therapy	Total Charges to Patients	Average Antimicrobial Cost/Day
Prior to PST	51	\$9552.16	\$187.30
After PST	49	\$5514.75	\$112.55



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SUMMARY

- Strategic initiative planning is imperative to continue the growth and advancement of your antibiotic stewardship program.
- Working with the microbiology lab is a great avenue to identify opportunities and enact meaningful change.
- Regardless of practice setting, there are opportunities to improve antibiotic allergy clarification.



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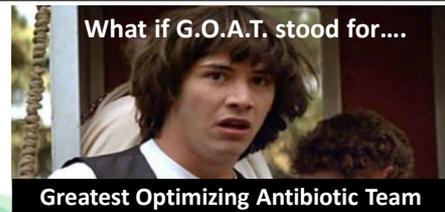
REFERENCES

1. Van Enk et al. Pharmacist-managed culture review service for patients discharged from the emergency department. AJHP. Vol 73 (18). 2016.
2. Cheon et al. New avenues for antimicrobial stewardship: the case for penicillin skin testing by pharmacists. CID. 2018.



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