



ANTIMICROBIAL STEWARDSHIP QIP UPDATE

SEMN and SWMN Regions



PENICILLIN ALLERGY LABEL QI PROJECT

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BACKGROUND

Penicillin allergy labels are associated with increases use of non-preferred antibiotics leading to decreased treatment efficacy, increased cost, and increased adverse effects

Project goal: update or remove penicillin allergy labels as able

Departments included:

- SEMN – River Corridor Family Medicine
- SWMN – OB/GYN

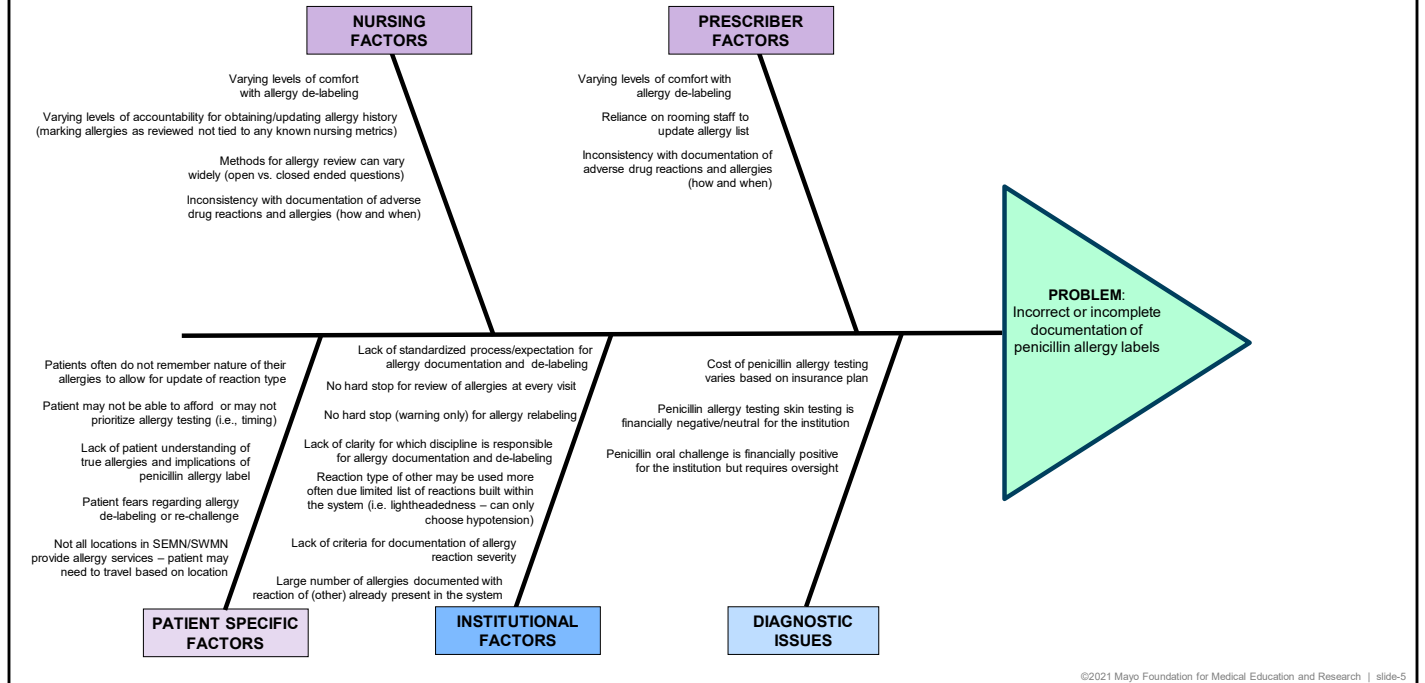
DEFINE: AIM STATEMENT

We will decrease the percentage of patients with a penicillin allergy who have a reaction of "other" documented by 21.9% from 19.2% to 15.0% by 9/1/2024.

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SWMN OBGYN patients from 7/1/2021 to 2/29/2024 with MyChart activated: 1989 patients with a penicillin allergy label; 338 (17.0%) with penicillin allergy label and reaction of "other"
SEMN River Corridor Family Med empaneled patients from 7/1/2021 to 2/29/2024 with MyChart activated: 1825 patients with a penicillin allergy label, 393 (21.5%) with penicillin allergy label and reaction of "other"
Total: 3814 patients with penicillin allergy label, 731 (19.2%) with reaction of "other"

ANALYZE: FISHBONE



- 1) State the problem
- 2) Define the categories (Human, System, Process; OR 5Ms - Man, machine, method, material, measurement; OR 4Ss - surroundings, suppliers, systems, and skill)
- 3) Brainstorm each category – causes and secondary causes (5 whys?)
- 4) Analyze the results (don't overanalyze causes without a major effect on the problem)

IMPROVE: KEY CAUSES

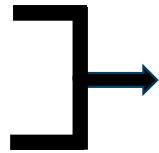
Causes of gap in quality identified for intervention in Analyze phase:

Large number of allergies documented with reaction of "other" already present in the system



Contact patients to update documentation and offer allergy referral if appropriate

Lack of clarity for which discipline is responsible for allergy documentation and de-labeling



Evaluate need for quick reference document for nursing/rooming staff

Methods for allergy review can vary widely (open vs. closed ended questions)

IMPROVE: INTERVENTIONS

- Patient messages
 - Update allergy documentation
 - Offer referral to Allergy if appropriate
- Education for nursing/rooming staff
 - SWMN OBGYN: 7/16/24

.penallergy :

Dear @name,

We are currently working to clarify penicillin allergy documentation. According to our records, you currently have an allergy to *** listed. Please let us know if you remember what happened when you took *** so that we may update your chart.

- What reaction occurred and how long ago did it happen?

- Did the reaction occur within 4 hours of taking the medication?

- Did you require any treatment (Benadryl, EpiPen, emergency room visit)?

- Have you taken *** or another medication in the penicillin family (amoxicillin, Augmentin) since?

Did you know that 9 out of 10 people who think they are allergic to penicillin actually are not? There are quite a few reasons why a penicillin allergy can be mistaken. For many, this happens because there's not enough detailed information on the type of reaction someone had in their childhood. Penicillin and other related antibiotics are the preferred treatment for many bacterial infections. Learn more about the benefits of penicillin antibiotics and penicillin allergy testing by viewing the video link:

<https://www.mayoclinic.org/pe?mc=MC6060-02>

If you are interested in meeting with the Mayo Allergy department to determine if you have a true penicillin allergy, please let us know and a consultation appointment will be ordered for you to schedule at your convenience.

Sincerely,

RESULTS

	Pre-intervention			Post-intervention			p value
	SEMN	SWMN	Total	SEMN	SWMN	Total	
Patients with penicillin allergy label	1825	1989	3814	1804	1964	3768	
Patients with reaction of “other”	393	338	731	227	163	390	<0.001
Percent with reaction of “other”	21.5%	17.0%	19.2%	12.6%	8.3%	10.4%	
Percent of penicillin allergy referrals with earliest appointment date >90 days	14%	100%	25%	18%	62%	32%	0.62

RESULTS

	SEMN	SWMN	Total
Patient charts reviewed	398	338	736
Patients contacted via MyChart message	289	255	544
Response received from patient	72	80	152
Allergy documentation updates	216	201	417
Allergy removed	15	25	40
Reaction updated after chart review	158	127	285
Reaction updated after patient message	43	49	92
Allergy department referrals placed	20	28	48

LESSONS LEARNED

- Engagement of provider champions from within the targeted departments was critical to project success.
- Patient response rate to templated patient messages can vary, highlighting the importance of ongoing allergy conversations during scheduled visits.
- There were varying levels of comfort with penicillin de-labeling, even amongst members of the team, highlighting the opportunity for future education/intervention/policy.
- Availability of allergy consultation appointments remains a limitation in SWMN.

CONTROL PLAN AND NEXT STEPS

- Control plan
 - Plan to review the percentage of patients with a penicillin allergy who have a reaction of "other" documented at 3- and 6-months post project completion.
 - If penicillin allergies with a reaction of "other" are re-documented such that the rate increases to above 15%, antimicrobial stewardship pharmacists will restart the process of sending portal messages to appropriate patients until the rate returns to 12% or lower.
- Next Steps
 - Share results with participating departments and antimicrobial stewardship committee
 - Submitted for Gold Quality Project credit



MANKATO ICU PNEUMONIA PCR QIP

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BACKGROUND

- Mankato ICU patients with pneumonia mPCR panel ordered November 2023 to January 2024 reviewed
 - 63% of de-escalation opportunities were acted upon
 - 45% of mPCR panels resulted in de-escalation
- Potential drivers
 - Lack of trust in the test
 - Lack of confidence with interpreting results

DEFINE: AIM STATEMENT

We will increase the percentage of pneumonia mPCR panels in the Mankato ICU that result in antibiotic de-escalation by 22% from 45% to 55% by 8/1/24

IMPROVE

•Pneumonia PCR quick reference guide

- Shared with SWMN pharmacists
- Presented to Mankato ICU team
- Posted to Mankato ICU provider Teams page

Pneumonia PCR Panel

Recommended for patients with clinically suspected pneumonia and ≥ 1 of the following:

- Severe community-acquired pneumonia, hospital-acquired pneumonia, or ventilator-associated pneumonia
- Empiric coverage of *Pseudomonas* or MRSA

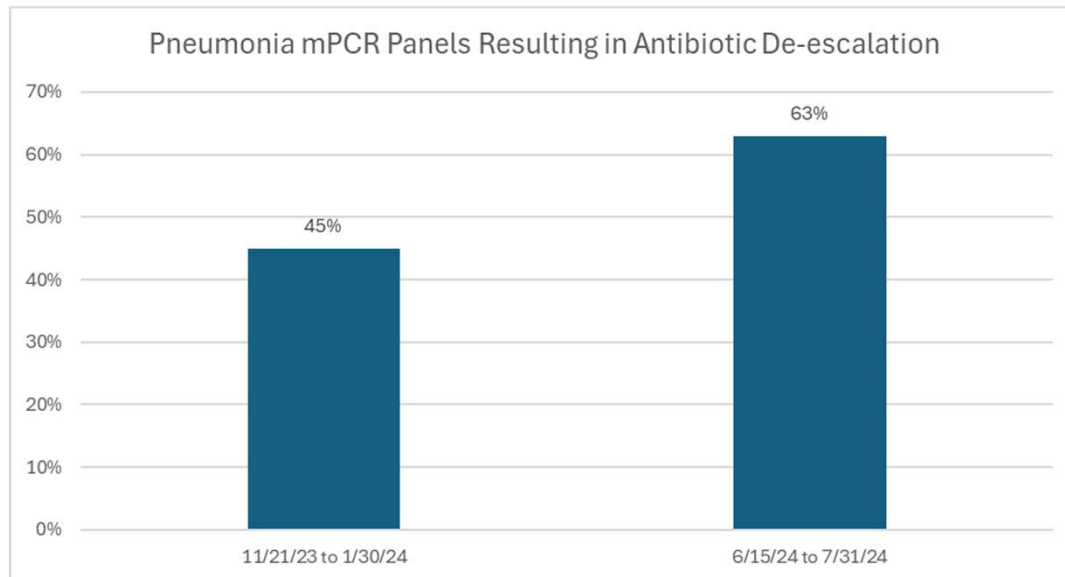
**S. pneumoniae* and *Legionella* urine antigens and Respiratory Pathogen PCR panel NOT recommended if Pneumonia PCR panel has been collected*

Targeting antibiotics based on Pneumonia PCR results:

Organism	Actions if Detected	Actions if Undetected
None detected	If no organisms detected, consider discontinuing antibiotics	
Adenovirus, Coronavirus, Influenza A, Influenza B, Human Metapneumovirus, Parainfluenza, Human Rhinovirus/Enterovirus, Respiratory Syncytial Virus	• Consider discontinuing antibiotics • Consider oseltamivir for influenza or remdesivir for COVID-19 • Consider ribavirin for RSV in immunocompromised host. Consult ID.	
<i>Chlamydia pneumoniae</i> , <i>Mycoplasma pneumoniae</i>	• Azithromycin or doxycycline • Consider discontinuing other antibiotics	If no strong clinical suspicion, discontinue atypical coverage (e.g. azithromycin, doxycycline)
<i>Legionella pneumophila</i>	• Azithromycin or levofloxacin • Consider discontinuing other antibiotics	
<i>Streptococcus pyogenes</i> , <i>Streptococcus agalactiae</i> , <i>Streptococcus pneumoniae</i>	• Ceftriaxone or penicillin	
<i>Staphylococcus aureus</i> with mecA undetected (MSSA)	• Cefazolin	
<i>Staphylococcus aureus</i> with mecA detected (MRSA)	• Vancomycin or linezolid	Discontinue MRSA coverage (e.g. vancomycin) if not needed for other indication
<i>Escherichia coli</i> , <i>Haemophilus influenzae</i> , <i>Klebsiella oxytoca</i> , <i>Klebsiella pneumoniae</i> , <i>Moraxella catarrhalis</i> , <i>Proteus</i> species	• Ceftriaxone preferred pending susceptibilities if resistance genes (CTX-M, KPC, OXA-48, NDM, IMP, VIM) undetected	De-escalate gram negative coverage, accounting for other results
<i>Serratia marcescens</i>	• Ceftriaxone preferred if susceptible • For critically ill patients, consider ceftazidime empirically pending susceptibility results	
<i>Klebsiella aerogenes</i> , <i>Enterobacter cloacae</i>	Ceftazidime preferred pending susceptibilities	
<i>Pseudomonas aeruginosa</i>	• Review patient's prior microbiology for <i>Pseudomonas</i> susceptibilities • Ceftazidime preferred pending susceptibilities if no prior history of <i>Pseudomonas</i>	De-escalate from anti-pseudomonal coverage, accounting for other results
<i>Acinetobacter baumannii</i>	Meropenem preferred pending susceptibilities	
CTX-M resistance gene WITHOUT <i>Pseudomonas</i> or <i>Acinetobacter</i>	Ertapenem preferred pending susceptibilities	
CTX-M resistance gene WITH <i>Pseudomonas</i> or <i>Acinetobacter</i>	Meropenem preferred pending susceptibilities	
KPC or OXA-48 resistance gene	• Ceftazidime/avibactam preferred pending susceptibilities • Consult ID	De-escalate gram negative coverage, accounting for other results
NDM, IMP, or VIM resistance gene	• Aztreonam AND ceftazidime/avibactam preferred pending susceptibilities • Consult ID	

Local Antibiotic Formulary: <https://www.mn.gov/healthcare/antibiotic-formulary>
 IDSA 2025 Guidance on antimicrobial treatment of gram-negative infections: <https://www.idsociety.org/practice-guideline/antimicrobial-treatment-of-gram-negative-infections/>

RESULTS



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Post-intervention: 10 of 11 (91%) opportunities for de-escalation were taken

LESSONS LEARNED

- 1.Centering the rational for the project around improving patient care may have helped with the ICU team's receptiveness to the project.
- 2.Measuring the percentage of antibiotic de-escalation opportunities that were acted upon may have been a better metric to highlight the progress made than percentage of total mPCR panels that resulted in de-escalation as some results do not offer opportunities for de-escalation.
- 3.Persistence was required to get project meetings and presentations scheduled.

QUESTIONS?

