

# Elective Penicillin Allergy Testing

## Inpatient Workflow



# Learning Objectives

1. Understand how an inappropriate penicillin allergy label negatively impacts patient outcomes
2. Understand what *penicillin allergy testing* is
3. Identify different types and indications for penicillin allergy testing
4. Describe how patient eligibility for testing is determined
5. Describe the nursing role in the penicillin allergy testing process





# 90% of patients

Who report a penicillin allergy are not allergic

Sacco et al., 2017



# Removing allergy

Reduces antibiotic cost by \$326 per patient admission



# Length of Stay

Is reduced by up to 50% if allergy removed

## Yee's Story

Yee is a 75 year old retired senior with a history of penicillin allergy. She needed antibiotics for a blood infection that would best be treated with penicillin. Because of her allergy she was put on gentamicin which caused kidney damage for which she was readmitted for a month (additional \$47,721 hospitalization cost) . After admission, she was tested and found not to be allergic to penicillin.



# Effects of Inappropriate Allergy Labelling

## *What does the evidence say?*

A systematic review found patients with an untrue penicillin allergy label have:

- longer length of hospital stay due to adverse effects of second line antibiotic use
- higher readmission rates
- suboptimal antibiotic selection
- higher rate of antibiotic-resistant organisms
- greater treatment costs (non-financial and financial)

Wu, et al., 2018



# Penicillin Testing

**What are Penicillin Allergy Tests?** The accepted mechanism to test a patient's true allergy status by way of exposure to a penicillin allergen.

**Who is eligible?** If a true allergy to penicillin is in question, a patient may be screened for eligibility by an Allergist or trained Clinical Pharmacist using a clinical decision tool for point-of-care risk assessment (i.e. [PEN-FAST](#))

**How will the allergy test be done?** The type of test will vary depending on the degree of risk the provider has identified:

- Skin Test (if negative - Oral Challenge will follow)
- Or Oral Challenge



# Types of Penicillin Challenges

Skin Testing	Oral Challenge
Medium to high risk patients	Low risk patients
Allergist or specially trained Pharmacist administer skin prick and intradermal test	Nurse administers a dose of amoxicillin PO
If positive → testing STOPS	Done after a negative skin test May be done as an initial allergy test on select low risk patients
If negative → Oral Challenge may be ordered to complete the allergy testing process	Oral Challenge may be ordered as a 'direct challenge' (skipping skin testing)



# Facts about Penicillin Allergies

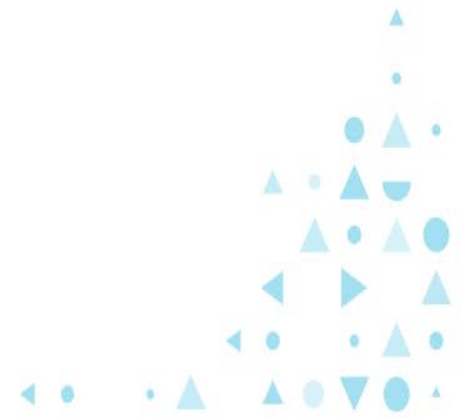
- Drug **side effects** (e.g. intolerances) may mimic the presentation of a true drug allergy, thus mistakenly labelling the patient with an allergy
- Most people outgrow penicillin allergies
- 80% of patients outgrow an IgE mediated penicillin allergy after 10 years of initial reaction



# Penicillin Allergy Testing

## Indications

- To reduce healthcare-associated infections and optimize anti-infective treatments for our patients
- To facilitate an urgent change in management e.g. a patient presenting with sepsis requiring a penicillin-specific antibiotic, but has a documented allergy to penicillin





# Penicillin Allergy Testing

## Contraindications

- Vasculitis
- Previous Stevens–Johnson syndrome (SJS)
- Previous Toxic epidermal necrolysis (TEN)
- Previous Drug Rash with Eosinophilia and Systemic Symptoms (DRESS)
- Previous acute generalized exanthematous pustulosis (AGEP)
- Patient refusal

*Special considerations:*

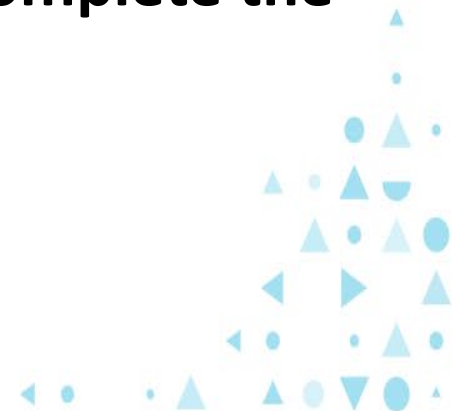
- severe illness or pregnancy



# Elective Penicillin Allergy Testing:

## The process

- Elective penicillin allergy testing will only occur on **weekdays**
- If your patient has a penicillin allergy, a specially trained pharmacist or allergist will screen your patient for eligibility on **Mondays or Tuesdays**
- If the patient consents, these specialized clinicians will consult the nurse to discuss any barriers to testing (as required), provide patient teaching, and **complete the appropriate PPO**



# Elective Penicillin Allergy Testing: The Process

The allergist will start the allergy testing process with a skin test (or less often with an oral challenge).

**IF YOU RECEIVED THIS FACSIMILE IN ERROR, PLEASE CALL 604-875-4077 IMMEDIATELY**

<b>Vancouver Coastal Health</b> VA: VGH / UBCH / GFS VC: BP / Purdy / GPC	<b>Oral Challenge Administered by Nurse</b>
	ADDRESSOGRAPH
<b>ORDERS</b> COMPLETE OR REVIEW ALLERGY STATUS PRIOR TO WRITING ORDERS	
<b>PENICILLIN ALLERGY TESTING: DIRECT ORAL CHALLENGE</b> <small>(items with check boxes must be selected to be ordered)</small>	
<small>(Page 1 of 1)</small>	
Date: _____ Time: _____	
This pre-printed order is restricted for use by Allergy & Immunology Physicians, or Physicians and Clinical Pharmacists with specialized training in penicillin skin testing and oral challenges.	
Designated allergist to discuss allergy testing with patient and document in history notes prior to administration of direct oral challenge	
<b>MEDICATIONS:</b> <input type="checkbox"/> Penicillin Oral Challenge (for patients with low risk of reaction)	
	Time Processed RN Initials Comments

**IF YOU RECEIVED THIS FACSIMILE IN ERROR, PLEASE CALL 604-875-4077 IMMEDIATELY**

<b>Vancouver Coastal Health</b> VA: VGH / UBCH / GFS VC: BP / Purdy / GPC	<b>Test done by Allergist or Specially Trained Pharmacist</b>
	ADDRESSOGRAPH
<b>ORDERS</b> COMPLETE OR REVIEW ALLERGY STATUS PRIOR TO WRITING ORDERS	
<b>PENICILLIN ALLERGY TESTING: SKIN TEST</b> <small>(items with check boxes must be selected to be ordered)</small>	
<small>(Page 1 of 1)</small>	
Date: _____ Time: _____	
This pre-printed order is restricted for use by Allergy & Immunology Physicians, or Physicians and Clinical Pharmacists with specialized training in penicillin skin testing and oral challenges.	
Designated allergist to discuss allergy testing with patient and document in history notes prior to administration of skin test	
<b>MEDICATIONS:</b> <input type="checkbox"/> Penicillin Skin Test Kit (for patients with medium to high risk of reaction)	
	Time Processed RN Initials Comments

These PPOs are faxed to pharmacy



# Elective Penicillin Allergy Testing: Nursing Role and **Skin Testing**

- The allergist will check-in with the primary nurse to verify patient status is unchanged
- Routine **safety checks** are completed, and emergency medications are accessible
- Allergist or trained Clinical Pharmacist to complete baseline exam and observe for signs of anaphylaxis after test
- The nurse reviews/updates patient chart as required
  - If skin test is negative, an [Oral Challenge PPO](#) will likely be ordered as the patient is now considered *Low Risk* to undergo an oral challenge



# Elective Penicillin Allergy Testing: Nursing Role and the Oral Challenge

- The nurse chooses a time prior to 1100 on Friday morning to administer the oral challenge, allowing an hour for monitoring
- Ensures baseline **skin** assessment and VS are completed
- Reinforce patient teaching that was provided by Allergist/Clinical Pharmacist (e.g. 1-pager “[Do you have a Penicillin Allergy?](#)”)

Continued.....



# Elective Penicillin Allergy Testing: Nursing Role and the Oral Challenge

## MONITORING:

- Nurse stays with patient for 15 minutes after administration to observe for any signs/symptoms of anaphylaxis
- Nurse returns to reassess patient after 30 and 60 minutes post administration (see 'Documentation')
- **Teach patient** to alert nurse if signs/symptoms arise



## Criteria for Anaphylaxis Management:

Patient presents with sudden or delayed symptoms of either one of the following two systems:

**Cardiovascular:** Hypotension more than 30% decrease from baseline after exposure to penicillin

**Respiratory:** Dyspnea, wheeze, cough, stridor, or hypoxia

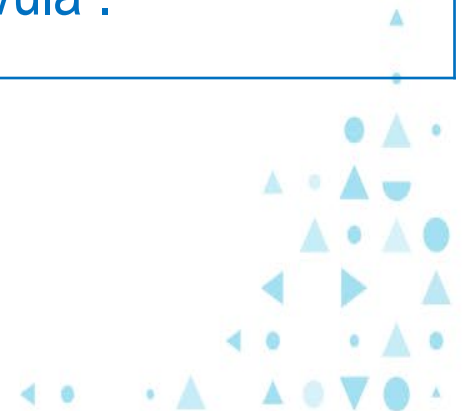
**\*Or\***

Involvement of both of the following systems:

**Gastrointestinal:** Abdominal pain, emesis, diarrhea;

**Skin/Mucous Membranes:** Generalized hives, pruritus, flushing, swelling of lips, tongue or uvula .

\*Review: [Anaphylaxis: Initial Emergency Management](#) on SHOP



# Elective Penicillin Allergy Testing: Documentation

## Nurse

- (Oral Challenge) Documents baseline skin assessment/VS
- (Oral Challenge) Documents skin assessment/VS at 15, 30, 60 minutes post test

## Allergist/Clinical Pharmacist

- Updates Allergy Documentation Form as necessary
- Allergy form is faxed to pharmacy per usual unit process
- Provide updated information to patient regarding their updated allergy status as required

## Clinical Pharmacist

- Updates PharmaNet as appropriate
- May leave a letter to be faxed to GP office on the chart







For more information, or any additional questions, please consult your Clinical Nurse Educator and/or Nurse Clinician.

Alternatively, you may connect with:

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