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**Penicillin Skin Testing**

After a **negative skin test and a successful full dose oral challenge**, patients can receive antibiotics in the penicillin class, and are no longer considered penicillin allergic.

PST is a useful **antimicrobial stewardship tool**. Patients who have penicillin allergies listed in their records typically receive alternative antibiotics that are more broad-spectrum than necessary to treat their infection, which can increase risks of developing a multidrug resistant infection, toxic side effects and drug costs.<sup>2</sup>

Penicillin allergies have been associated with increased risk of developing the following infections while inpatient:<sup>5,6</sup>

- Methicillin-resistant *Staph aureus* (MRSA)
- Vancomycin-resistant *Enterococcus* (VRE)
- Clostridium difficile*

Having an allergy to any antimicrobial has also been associated with an increased length of hospital stay and worse clinical outcomes.<sup>4</sup>

In summary, **penicillin allergies can be reassessed and select patients should be ruled out via PST** to allow providers to prescribe preferred antimicrobial agents and can lead to better patient outcomes.

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# Pharmacy Focus

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## Formulary Update

### Caplacizumab-yhdp (Cablivi®)

Caplacizumab-yhdp is indicated for the treatment of adult patients with acquired thrombotic thrombocytopenic purpura (aTTP) in combination with plasma exchange (PE) and immunosuppressive therapy. This is **restricted to Luckow**.

### Empagliflozin (Jardiance®)

Empagliflozin is indicated to reduce the risk of cardiovascular death in adults with type 2 diabetes mellitus who have known cardiovascular disease, heart failure or chronic kidney disease. This medication is also indicated as an adjunct to diet and exercise to lower blood sugar in adults with type 2 diabetes mellitus.



**Question:** Should aspirin be used for primary prevention of atherosclerotic cardiovascular disease (ASCVD)?

**Response:** Low-dose (81mg) aspirin has been used for decades for preventing ASCVD.<sup>1</sup> Aspirin works by irreversibly inhibiting platelet function to reduce risk of atherothrombosis, but comes with an increased risk of bleeding, especially in the gastrointestinal (GI) tract.<sup>2</sup> According to the 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease, **aspirin continues to be used for secondary prevention** of ASCVD and is clinically appropriate in this setting. However, it **should not be used in the routine primary prevention** of ASCVD due to the lack of benefit seen in recent studies.<sup>1</sup>

### CONSIDER ASPIRIN FOR PRIMARY PREVENTION:

In patients with calculated **ASCVD risk score of at least 10%**  
AND

**Aged 40-70 years** who are not at increased risk of bleeding  
**Patients aged >70 years** IF they have:

- Strong family history of premature myocardial infarction
- Inability of patient to achieve lipid, blood pressure, or glucose goals
- High coronary artery calcium score

**Risk-enhancing factors for ASCVD** that are not calculated into the ASCVD risk score can be incorporated into decision-making, as these increase risk of ASCVD even though they are not part of the ASCVD risk calculator (Table 1). **Avoid aspirin for primary prevention in patients at risk of bleeding**, as listed in Table 2.

**Table 1: Risk-enhancing factors for ASCVD**

1. Family history of premature ASCVD (males <55 years & females <65 years)
2. Primary hypercholesterolemia <ul style="list-style-type: none"> <li>a. LDL-C 160-189 mg/dL</li> <li>b. Non-HDL-C 190-219 mg/dL</li> </ul>
3. Chronic kidney disease <ul style="list-style-type: none"> <li>a. eGFR 15-59 mL/min per 1.73 m<sup>2</sup> with/without albuminuria</li> <li>b. Not treated with dialysis or kidney transplantation</li> </ul>
4. Metabolic syndrome
5. Women with preeclampsia
6. Women with premature menopause (before age 40)
7. Inflammatory disease (psoriasis, rheumatoid arthritis, HIV)
8. Ethnicity <ul style="list-style-type: none"> <li>a. Asian Americans, Hispanic/Latino Americans, Blacks</li> <li>b. Native American/Alaskan populations have higher ASCVD rates vs. non-Hispanic whites</li> </ul>
9. Persistently elevated triglycerides (≥175 mg/dL)

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## Penicillin Skin Testing

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PGY1 Pharmacy Resident

**Ten percent of the United States population report having an allergy to penicillin.** However, when evaluated, **less than 1% are truly allergic** to penicillin.<sup>1</sup> Patient allergies can change over time and 80% of patients who experienced an immediate hypersensitivity to penicillin will no longer be allergic after 10 years.<sup>2</sup> Patients may be inappropriately labeled as penicillin allergic and as a result will have restrictions on what antimicrobial agents they can receive.

**Penicillin skin testing (PST)** can rule out penicillin allergies in select patients who have a history of **an immediate IgE mediated hypersensitivity** to penicillin.<sup>2</sup>

PST involves four steps, prepared by a pharmacist and administered by an allergist:

1. initial scratch test
2. intradermal test
3. oral amoxicillin challenge at a test dose (25 mg)
4. oral amoxicillin challenge at full dose (250 mg)

The scratch and intradermal tests **use PENICILLIN with both POSITIVE and NEGATIVE CONTROLS:**

- **positive control:** histamine is used to ensure the patient is capable of mounting a histamine response
- **negative control:** saline is used to determine that a negative result is in fact negative
- **penicillin** is administered as both the major (benzylpenicilloyl polylysine) and minor (penicillin G) determinants.<sup>3</sup>
- **rescue** medications are available throughout the test.

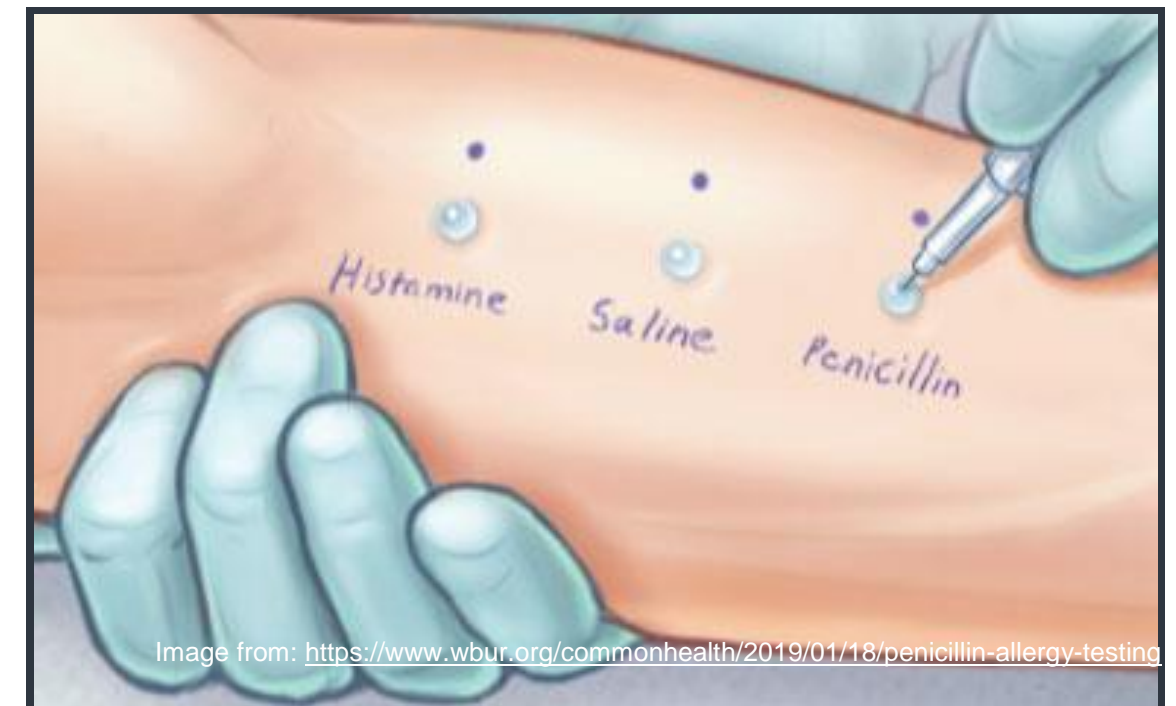
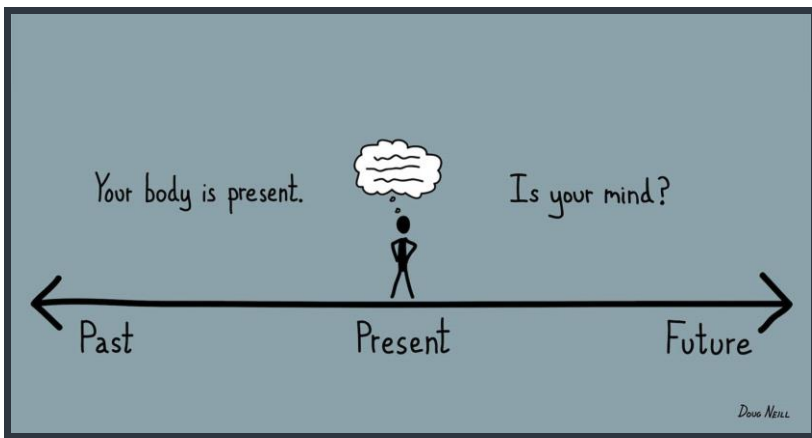


Image from: <https://www.wbur.org/commonhealth/2019/01/18/penicillin-allergy-testing>

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# Mindfulness for the Clinician

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Many of us have heard the term 'mindfulness' as it has been the buzz word in many articles about de-stressing and being aware of your surroundings - but what exactly does that mean? What does it mean to you? How can we use it in our practices?

**Mindfulness is "a mental state achieved by concentrating on the present moment,** while calmly accepting the feelings and thoughts that come to you, used as a technique to help you relax."<sup>1</sup> As pharmacists and healthcare professionals, it is easy to feel the stress of the world around us. Our professions have trained us to be incredibly skilled multitaskers. Between the phone calls, interruptions, managing daily activities, and interacting with patients and families, it can be difficult to suppress the feeling of being overwhelmed. **Being in a chronic state of overwhelming exhaustion, feelings of cynicism and detachment from the job, and a sense of lack of accomplishment can lead to something called "burnout."**<sup>6</sup>

Ah, *burnout!* Another buzz word that is common among healthcare providers and is associated with emotional exhaustion, difficulty concentrating, and decreased well-being. A study published in 2018 in the American Journal of Health-System Pharmacy evaluated burnout in health-system pharmacists and found that out of 329 pharmacists studied, 175 participants had scores indicating burnout.<sup>2</sup> That accounts for 50% of pharmacists experiencing burnout!<sup>2</sup> Another study released in January of 2020 was conducted in North Carolina to evaluate health-system based pharmacists. In this study, researchers found that 198 (55.5%) out of 357 pharmacists were at risk for burnout.<sup>3</sup> However, two factors were identified to **decrease the risk of burnout including being aware of burnout resources and working about 4-6 months with learners.**<sup>3</sup> We advocate well for our patients, but we need to advocate for ourselves and our well-being.

*But, I work in healthcare and burnout is bound to happen, right?* Actually, there are methods that we can use to become resilient to prevent burnout.<sup>6</sup> The practice of mindfulness asks us to cast aside our chaotic way of working and to organize our tasks to become **focused only on one thing at a time.**<sup>4,7</sup> Yes, just one thing at a time. Concentrating on one thing at a time seems impossible because we are constantly being interrupted and asked to shift our focus when a problem arises. However, to serve and care for our patients, we must also take care of ourselves both physically, emotionally, and mentally.<sup>2,6</sup> There are tools that we can use to become resilient and prevent burnout.<sup>2</sup> **Techniques to increase mindfulness include meditation, breathing exercises, getting a full night's sleep, and involvement in a relaxing activity.**<sup>4,5</sup> Luckily, we live in a world where there is access to many mindfulness tools including live classes, webinars, and phone apps.

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**Table 2: Avoid aspirin for primary prevention of ASCVD in patients with increased risk of bleeding including:**

History of gastrointestinal bleeding	Coagulopathy
Peptic ulcer disease	Chronic kidney disease
Bleeding from other sites	Concurrent use of nonsteroidal anti-inflammatory drugs (NSAIDs)
Age >70 years	Concurrent use of corticosteroids
Thrombocytopenia	Concurrent use of anticoagulants

To access an online ASCVD risk calculator:

<http://tools.acc.org/ASCVD-Risk-Estimator-Plus/#!/calculate/estimate/>

In summary, although the use of aspirin for the primary prevention of ASCVD is not routinely recommended, the decision to initiate therapy is complex and requires patient-specific benefit-risk assessment.

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**Tips to improve mindfulness:**<sup>7</sup>

- Practice breathing exercises. Focus on your breathing (inhale and exhale) for 10 minutes with your eyes closed sitting upright. If your mind becomes distracted, release that thought and focus on your breath.
- Become aware of distractions and take a moment to refocus yourself on the task at hand.
- If you find yourself rushing to complete a task, slow down, take a deep breath, and bring the focus back to yourself and the current task.
- When arriving early to a meeting, use the first two minutes to clear your mind and focus on your breathing. Notice each inhale and exhale and release any distractions.

**Tools to help with mindfulness:**

- Classes are available at The Valley Health System’s Dorothy B. Kraft Center available at <https://www.valleyhealth.com/events>
- ASHP has a 1.0 pharmacy CE available called “Mindfulness and Meditation for Pharmacists and Pharmacy Technicians” that expires in October 2021: <http://elearning.ashp.org/products/6851/mindfulness-and-meditation-for-pharmacists-and-pharmacy-technicians>
- ASHP offers free meditation to members through the app called Headspace that can found in the app store for Apple and Android users. <https://www.headspace.com/>
- WW (formerly Weight Watchers) also offers a version of Headspace free through the WW app if you are a member.

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