DELIVERING PHARMACEUTICAL CARE SINCE 2008

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QUICK UPDATES

MEDS ON NATIONAL SHORTAGE

Hospice-related drugs currently on backorder:

- Docusate/Silace liquid
- Haloperidol tablets (0.5mg, 1mg, 2mg)
- Morphine for IV infusion/CADD pump

However, we offer therapeutic alternatives or compounds in order to provide our hospices with uninterrupted service, and our patients with continued care.

TEAM MEMBER SPOTLIGHT

ERIKA AREVALO, PHARM.D

My name is Erika, and I am currently working as a compounding pharmacist at Creative Compounding Pharmacy. I grew up in Orange County and went to pharmacy school in the beautiful state of Oregon at Pacific University. In my free time, I love to take advantage of the sunshine and go on walks with my new puppy, Nacho. I also like to go out to breweries with my family, friends or coworkers.

In the short time I've been working at Creative Compounding Pharmacy, I have enjoyed working with my fellow technicians and pharmacists, as well as helping patients get their medication concerns or questions answered. I look forward to growing with the pharmacy and collaborating with the Home Care-Rx pharmacy team and hospice nurses.

MICHELLE GONZALEZ

Hi, my name is Michelle Gonzalez and I am a Clinical Services Manager at Care-Rx Health. Recently, I became a wife! My husband and I live in Irvine along with my fluffy dog Bella. Some of my hobbies include working out in the early mornings, shopping, and traveling.

I have worked in the Pharmaceuticals Industry for about thirteen years now, and have held many different positions in various pharmacy settings; I have learned so much from each environment. I owe a lot of my success to my mother, following her footsteps in learning pharmacy. I am a driven, motivated and competitive individual. My strengths are in communication and being open-minded. As a Clinical Service Manager, I get to provide services to specialty patients and market for both Home Care-Rx and Creative Compounding Pharmacy.

I am privileged to have been able to join the team. I enjoy working for this company and love working with my coworkers and teammates.

"We are what we repeatedly do. Excellence, then, is not an act, but a habit." - Aristotle

CDC'S SOLUTIONS TO THE LOOMING TUBERCULOSIS (TB) TEST SHORTAGE

Our efforts to screen and treat latent tuberculosis (TB) has brought its incidence in the U.S. at an all-time low. Purified-protein derivative (PPD) testing is used to identify individuals with latent or active TB. However, Par Pharmaceuticals has warned the Centers for Disease Control and Prevention (CDC) that they expect an interruption in the supply of the PPD product Aplisol® starting some time between June and November 2019. The timeframe for production issues could change. The overall duration of the shortage is expected to last 3 to 10 months.

Most cases of TB in the U.S. are diagnosed using a combination approach that includes:

- One of these two TSTs. Currently, Aplisol and Tubersol® (Sanofi Pasteur SMD) are the two FDA-approved PPD tests used for tuberculin skin tests (TSTs) in the U.S.
- Interferon-gamma release assay (IGRA) blood tests
- Additional tests such as chest X-ray and bacterial cultures to distinguish between latent and active TB

Given the looming shortage of Aplisol, the CDC recommends these strategies to address the planned interruption in the supply of Aplisol:

1. **Substitute IGRA blood tests for TSTs.** Be aware that neither PPD tests nor IGRA tests can differentiate between latent and active TB
2. **Substitute of Tubersol for Aplisol for skin testing.** Not that although concordance between TB tests is high, switching between tests could lead to some individuals testing negative after an initial positive test and vice versa. A change from a negative to a positive result may not represent a true infection. Physicians should evaluate the patient's risk for TB and risk for reactivation of disease before deciding about repeat testing or treatment.
3. **Being more selective as to who is tested for TB.** Testing only in at-risk individuals, which includes:
   - Individuals with recent contacts exposed to TB
   - Individuals born in or with frequent travel to countries with high rates of TB
   - Individuals who currently or in the past have lived in large group settings (ex. homeless shelters or correctional facilities)
   - Immunocompromised individuals
   - Children who fall into one of the previous groups, especially children younger than age 5 years
4. **Further reductions in screening for low-risk individuals.** If considering any large-scale reductions in testing, it should be done in consultation with public health and occupational health specialists.

The impending shortage of Aplisol may result in some changes to routine practice in screening for TB, but it should not stop the healthcare team from finding and testing individuals at high risk for TB. Testing may not be needed when the likelihood of TB exposure is low, and annual testing of healthcare providers is not recommended unless they have been exposed to TB.

IS IT A TRUE PENICILLIN ALLERGY?

Up to 10% of all U.S. patients self-report some type of allergic reaction to a penicillin (PCN) class antibiotic, making penicillin allergy one of the most commonly reported medication allergies. However, large-scale studies have found that about 80%-95% of these patients have negative PCN allergy skin tests and are able to safely receive penicillins. The large discrepancy can be attributed to unreliable clinical history and the incorrect differentiation between adverse effects and a true IgE-mediated reaction.

Adverse drug reactions (ADRs) may be broadly divided into Type A and Type B reactions; the key differences of each are listed in Table 1 below.

Table 1. Comparison of Type A and Type B adverse drug reactions

Type A	Type B
Side effects	Hypersensitivity reactions
85-90% of all ADRs	10-15% of all ADRs
Dose and exposure dependent	Mediated by immunologic mechanisms
Can affect any individual	Occur in a susceptible subgroup of patients
Signs and symptoms predictable from drug's pharmacological actions (i.e. diarrhea w/ antibiotic use)	Signs and symptoms not predictable from the drug's pharmacologic actions

Penicillins are known to cause a specific Type B reaction called Type I IgE-mediated, immediate-type hypersensitivity reaction directed toward the beta-lactam ring in addition to less serious allergic reactions. Less than 1% of the population actually has an IgE-mediated reaction to penicillins, and nearly 80% of these patients lose their sensitivity after 10 years. True IgE-mediated allergic reaction symptoms tend to occur immediately or within one hour of administration due to a specific immunological mechanism. Symptoms can include, but are not limited to, urticaria, angioedema, shortness of breath, and anaphylaxis.

A common clinical question is whether these individuals can safely receive structurally-related antibiotics [i.e., beta-lactams (cephalosporins, carbapenems) and monobactams]. Numerous studies have shown that cephalosporins, especially the later generations, can be safely tolerated in most patients despite a penicillin allergy. They have also demonstrated that risk of cross-reactivity is even lower with carbapenems (Table 2). No serious cross-reactions have been reported with monobactams, which lack the beta-lactam ring associated with IgE-mediated reaction.

However, there are some reports of cross-reactivity involving rashes, which may be explained by agents having similar side-chains.

Table 2. Structurally-related antibiotics and the risk of cross-reactivity between structurally-related antibiotics and penicillins

Beta-lactam	Cross-reactivity risk (%)
Cephalosporins	1-8% (risk highest with 1st and 2nd generations and lower with 3rd and 4th generations)
Carbapenems	≤ 1%
Aztreonam	Negligible

Oftentimes, suboptimal antibiotics are ordered for patients who are labeled as "penicillin-allergic". However, this practice not only puts patients at risk for insufficient coverage, it is also associated with a greater burden of antibiotic exposure for the environment and higher risk for antibiotic resistance. To decrease the unnecessary use of these antibacterials, consider careful evaluation of the patient for true IgE-mediated PCN allergy by conducting a thorough history and physical before considering alternative therapy. A beta-lactam will likely be tolerated in patients who describe a PCN allergy that occurred over 10 years ago and/or did not include features of an IgE-mediated reaction.

Algorithm 1. Approach to patient with past PCN reaction requiring antibiotics

Based on drug allergy history and review of medical records, classify past PCN reaction			
Not allergic Reaction was an adverse effect/intolerance (i.e. N/V/D, stomach upset, etc.) OR Patient never took PCN, but has family members w/ PCN allergy	**Serious types of delayed reactions** (types II, III, IV) SJS, TEN, AIN, DRESS, drug-induced organ injury or cytopenias, hemolytic anemia, serum sickness	Past reaction was **mild, without features** of an IgE-mediated reaction Maculopapular eruptions (with or without itching)	Past reaction was **severe, having features** of an IgE-mediated reaction Anaphylaxis, wheezing, throat/mouth swelling, low BP, hives
Treatment options: PCNs and any related meds	**Treatment options:** Aztreonam or an unrelated (non-beta-lactam) antibiotic **Avoid:** PCNs, cephalosporins, and carbapenems	**Treatment options:** A third-, fourth-, or fifth-generation cephalosporins, a carbapenem, aztreonam, or an unrelated antibiotic	**Treatment options:** Aztreonam or unrelated antibiotic

LUNCH & LEARN

Home Care-Rx's very own pharmacists travel to present nurses with educational tools such as:

- Home Care-Rx pharmacy operations
- PCA/CADD pump in-services
- Pain management bootcamp (methadone dosing, opioid conversions)
- Management of common hospice symptoms

Please contact our pharmacy for more information

MEDICAL DISCLAIMER

The content is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Always seek the advice of your physician or other qualified health provider with any questions you may have regarding a medical condition. Never disregard professional medical advice or delay in seeking it because of something you have read on this newsletter.

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We are open to any suggestions and feedback that you may have. Please email tnguyen@carerxhealth.com with topics you would like to read or learn about.