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Leadership Opportunities through MSHP

Written by: Patricia Dieso, PharmD, BCPS

Leadership opportunities within Maryland Society of Health-Systems Pharmacy (MSHP) provides pharmacists, student pharmacists, and pharmacy technicians with valuable pathways for professional growth, advocacy, and service. This organization plays a critical role in advancing the profession of pharmacy by supporting education, shaping healthcare policy, and promoting patient-centered care across communities.

One of the most impactful leadership opportunities involves serving on committees. Members can contribute to areas such as legislative affairs, continuing education, antimicrobial stewardship, membership engagement, ambulatory care and more. Through committee work, individuals gain experience in collaboration, strategic planning, and organizational decision-making while helping address important issues affecting pharmacy practice.

MSHP also offers elected leadership positions, including roles on boards of directors, committee chairs and co-chairs. These positions allow members to represent the interests of pharmacists throughout the state and influence the direction of the organization. Leaders often work closely with healthcare professionals, legislators, and community stakeholders to advocate for policies that improve patient care and expand the role of pharmacists in healthcare delivery.

MSHP offers many opportunities for students, early-career pharmacists, residents, and pharmacy technicians as well. Leadership positions and committee involvement create opportunities to build confidence and establish professional networks. Participation helps future leaders, such as yourself, strengthen communication, public speaking, and provide opportunities for growth.

Opportunities with MSHP extend beyond titles and positions. It involves a commitment to service, professional excellence, and lifelong learning. By becoming an active participant with MSHP, pharmacy professionals can shape the future of healthcare while developing personally and professionally. These experiences not only enhance individual careers but also strengthen the pharmacy profession's ability to meet the evolving needs of patients and communities across the state.

Start your service this year by joining a committee!

Cloxacillin versus cefazolin for methicillin-susceptible *Staphylococcus aureus* bacteremia – A summary of the CloCeBa Trial

Written by: Clara Ni, PharmD

Background

Anti-staphylococcal penicillins (ASPs) have historically been considered first line therapy for methicillin-susceptible *S. aureus* bacteremia. However, due to adverse effects associated with the ASPs, such as nephrotoxicity, cefazolin has increasingly been preferred due to better tolerability, less frequent dosing and retrospective observational studies suggesting it is comparable in efficacy.

Of course, retrospective observational studies are susceptible to selection bias. In addition, there has been some concern that in high inoculum infections, MSSA strains producing type A *blaZ* beta-lactamase have higher MICs to cefazolin which may result in treatment failure. ASPs may be preferred in these scenarios. Prior to CloCeBa, no randomized controlled trial was available that directly compared the efficacy and safety of cefazolin vs. an anti-staphylococcal penicillin for MSSA bacteremia.

Methodology

CloCeBa is a prospective, open-label, multicentre, non-inferiority trial conducted at 21 French hospitals.

Inclusion Criteria	Exclusion Criteria
● ≥18 years of age ● Hospitalized ● MSSA from blood culture	● Polymicrobial infection ● Receipt of anti-MSSA antibiotics for >72 hours prior to randomization ● Intravascular implant or any material suspected to be infected ● Planned antibiotic treatment exceeding 70 days ● Clinical signs suggestive of stroke within past month, brain abscess, meningitis ● eGFR <30 mL/min ● Goals of care specifying no escalation to intensive/life-sustaining treatment ● Projected life expectancy less than 90 days ● Type 1 or severe hypersensitivity reaction to beta-lactams ● Pre-existing coagulopathy and a prothrombin time less than 50% not due to anticoagulant treatment ● Requiring treatment with another antibiotic that could not be ceased or substituted by study treatment ● Pregnant

	• Breast-feeding

Cefazolin was dosed at 25-50 mg/kg q8 h (max 6g/day) as a 60 min IV infusion and renally dose adjusted. Cloxacillin was dosed at 25-50 mg/kg q4-6h (8-12g/day) as a 60 min IV infusion, and dose adjusted for chronic renal failure or impaired hepatic function. At least 14 days of antibiotics were recommended per protocol. Investigators were allowed to change antibiotics after the patient received 7 full days of the randomized therapy. All participants had a transthoracic echocardiogram within 7 days after randomization.

Whole genome sequencing was performed on all MSSA isolates, and blaZ gene and type were identified. These results were not obtained until after the end of the trial and so were not used to guide patient care decisions.

The primary outcome was a composite endpoint in the intention to treat (ITT) population, consisting of:

1. Bacteriological success without relapse of bacteremia before day 90
2. Clinical success at day 90
3. Survival at day 90

Secondary efficacy and safety outcomes were also assessed. The non-inferiority margin was set at 12%. 139 patients were needed in each group to establish non-inferiority with a power of 80% and one-sided alpha risk 0.025.

Baseline Characteristics (ITT)	**Cefazolin (n=146)**	**Cloxacillin (n=146)**
Age, years (median)	66 (54-74)	67 (52-76)
Sex, Female	27%	27%
Charlson comorbidity score (SD)*	4.4 (3.2)	4.3 (3.0)
History of intravenous drug use	3%	2%
Immunosuppression	31%	26%
Corticosteroids	8%	5%
Cancer chemotherapy	16%	17%
Immunosuppressive therapy	8%	5%
SOT, HSCT, neutropenia	6%	2%
Presence of venous access at time of bacteremia diagnosis	26%	29%
Prosthetic joint	4%	12%
Other medical device	7%	12%
Infection focus at day 7[†]		
Bacteremia of unknown origin	30%	30%
Catheter-related infection	37%	36%
Skin and soft-tissue infection	18%	25%
Arthritis or osteoarthritis	21%	28%
Urinary infection	7%	5%

Respiratory infection	4%	5%
Infective endocarditis	6%	4%
Deep abscess	6%	11%
Treatments received after randomization		
Mean duration of allocated treatment, days (SD)	12.9 (8.2)	11.6 (6.5)
Mean total duration of antibiotic treatment, days (SD)	27.4 (19.6)	27 (19.5)
HSCT: hematopoietic stem cell transplant; SD: standard deviation; SOT: solid organ transplant *Data missing for one participant in the cloxacillin group. †Data missing for four participants in each treatment group		

Results

Cefazolin was non-inferior to cloxacillin in the primary composite endpoint, with a treatment difference of -1% (95% CI –11 to 9; p = 0.012). Cefazolin also had fewer serious adverse effects [-11% (95% CI -21 to -1; p = 0.036)] and lower rates of AKI [-11% (95% CI -18 to -6; p = 0.0002)].

70% of the 253 MSSA strains isolated had the *blaZ* gene. 33% of the *blaZ* genes were Type A. In the subgroup of patients with the *blaZ* type A gene, cefazolin could not be deemed non-inferior for the primary outcome [-12% (95% CI-34 to 12), p=0.52]. With only 30 or fewer patients in each arm of the subgroup analyses, the significance of this result should be cautiously interpreted.

This randomized controlled trial supports the existing observational studies that indicate cefazolin is a safe and efficacious alternative to ASPs for MSSA bacteremia. The clinical significance of the *blaZ* gene remains indeterminate.

Tacrolimus dosing and conversion considerations post-transplant

Written by: Bailey Conkey, PharmD; Christine Wolesensky, PharmD, MS; Bethany Lane, PharmD, BCTXP; Ian Booth, PharmD, BCTXP; Solid Organ Transplant Clinical Pharmacy Specialists, University of Maryland Medical Center

Solid organ transplant (SOT) is the gold standard for treatment of end stage organ disease. Advances in immunosuppression, particularly the development of calcineurin inhibitors including cyclosporine and tacrolimus, have resulted in improvements in graft rejection and survival.[1,2]

Tacrolimus is commercially available as immediate release (Prograf®; IR-Tac) and extended-release capsules (Astagraf XL®; ER-Tac), and an extended-release tablet utilizing MeltDose® technology (Envarsus®; LCP-Tac). [3,4,5] This technology results in controlled release of medication over 24 hours, resulting in improved bioavailability and lower peak concentrations. [4] Due to these favorable pharmacokinetics, LCP-Tac is preferred as initial therapy after kidney transplant.

Despite increasing use, LCP-Tac remains non-formulary at some institutions, making familiarity with dose conversions between formulations essential. If a patient is unable to take capsules or tablets, tacrolimus may be administered as a suspension (compounded product), intravenously (IV), or sublingually (SL).[3] The IV formulation is generally avoided due to risks of nephrotoxicity and challenging pharmacokinetics.[3-6] For SL administration, IR-Tac capsules can be opened and the contents placed under the tongue, allowing for full absorption of one capsule before placing subsequent capsules.[3,7] A list of common conversions can be seen in table 1.

Table 1. Common conversions between tacrolimus formulations

Tacrolimus Formulation	Dosing Conversion	Timing of new dose after conversion
IR-Tac → LCP-Tac	LCP-Tac dose = IR-Tac total daily dose x 0.8	Take the evening dose of IR-Tac and start LCP-Tac the next morning
LCP-Tac → IR-Tac	IR-Tac total daily dose = LCP-Tac dose x 1.25	Start IR-Tac dose at time the next dose of LCP-Tac is due
IR-Tac PO capsules → IR-Tac suspension	IR-Tac capsules = tacrolimus suspension	Start the new IR-Tac formulation/dose at time the next IR-Tac dose is due
IR-Tac PO → IR-Tac SL	IR-Tac SL = IR-Tac PO x 0.5	
IR-Tac SL → IR-Tac PO	IR-Tac PO = IR-Tac SL x 2	

IR-Tac, immediate-release tacrolimus; LCP-Tac, extended-release tacrolimus; PO, by mouth; SL, sublingual

Tacrolimus therapy is monitored using trough levels and are used to approximate total drug exposure.[6,8] Troughs should be drawn at 12 hours post-dose for IR-Tac and 24 hours for LCP-Tac. IR-Tac is absorbed

primarily in the proximal small intestine, while LCP-Tac exhibits more distal intestinal absorption. Thus, absorption may be affected differently in patients with intestinal obstruction or bowel resection.

Diarrhea is a common issue among SOT recipients and can significantly impact drug levels, resulting in elevated levels. This is due to the loss of intestinal epithelial cells in which tacrolimus normally undergoes CYP3A4 metabolism and efflux via P-glycoprotein.[9] Tacrolimus is eliminated primarily via the biliary route; therefore, despite its nephrotoxic potential, drug levels are not expected to rise in the setting of renal dysfunction.[3] Tacrolimus is extensively metabolized by CYP3A4/5; therefore, clinically significant drug-drug interactions (DDIs) are common and may necessitate dose adjustment.[3]

While tacrolimus remains the gold standard agent for maintenance immunosuppression in SOT, carefully balancing adverse effects (AEs) is imperative. Common AEs include hyperkalemia, hypertension, new onset diabetes, nephrotoxicity (both acute and chronic) and neurotoxicity. Additionally, infections, lymphomas, and other malignancies also require close monitoring post-transplant.

Understanding formulation-specific pharmacokinetics, appropriate conversion strategies, monitoring principles, DDIs, and toxicity profiles is essential to optimize medication efficacy while minimizing AEs. Careful management of clinical factors impacting tacrolimus can help minimize toxicity while preserving favorable long-term graft outcomes.

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Legislative Day 2026

The Maryland pharmacy community meets in Annapolis every year in mid-February to encourage support for or opposition to current bills being considered by the state legislature. As of early March, more than 1600 bills in the House and 900 bills in the Senate had been introduced during the 2026 legislative session. Though only a small fraction of those have the potential to impact the practice of pharmacy in Maryland, the effort to identify and research the two or three with the largest potential effect is a monthslong effort undertaken by representatives of the several organizations that make up the Maryland Pharmacy Coalition (MPC).

One of the organizations comprising MPC is MSHP, and the Legislative Affairs committee serves as the MSHP representative to MPC. In this role, we act as the voice of MSHP and share any pertinent updates or concerns with the MSHP Board of Directors.

This year represented another strong showing for pharmacists from across the state and pharmacy students from all three of our schools of pharmacy: Notre Dame, University of Maryland, Baltimore and University of Maryland, Eastern Shore. We conducted approximately 150 meetings with legislators and their offices over the course of a single morning, covering every legislative district in the state. This effort would not have been possible without many hours of organization and communication led by Laura Aguwa (on behalf of the Maryland Pharmaceutical Society) and Shawnae Grant (on behalf of the students at Notre Dame).

MPC selected three bills to be the focus of our advocacy efforts, with all bills being supported:

- HB637/SB385 - Public Health - Recommendations for Immunizations, Screenings, and Preventive Services - Pharmacist Administration and Required Health Insurance Coverage (The Vax Act)
    - Would change basis for vaccine recommendations from federal organizations to the Maryland Secretary of Health
    - Does not affect vaccine reimbursement; all recommended vaccines will continue to be available to patients at no cost
- HB1150/SB506 - Health Occupations - Pharmacists - Minor Conditions and HIV Prevention and Treatment
    - Would allow pharmacists to test-and-treat minor respiratory, dermatologic, and other conditions, as well as PrEP and PEP management of HIV
    - Current version focuses on expanding prescriptive authority, does not address reimbursement
- HB838/SB562 - State Board of Pharmacy - Prescriber-Pharmacist Agreements - Treatment of Opioid Use Disorders
    - Would allow pharmacists to participate in drug therapy management agreements (DTMAs) for opioid use disorder (OUD)
    - Current DTMA regulations prohibit pharmacist from managing medications that are controlled dangerous substances (CDS), primary OUD therapies are all CDS

The 2026 Maryland legislative session began on January 14th and is scheduled to end on April 13th. Until then, MPC will continue to monitor the progress of the above and several other bills. While the duration of the session is certainly a period of heightened activity for our committee, our work continues year-

round! We hope you will consider joining the Legislative Affairs committee and our efforts to push forward the practice of pharmacy in Maryland via legislative advocacy.

2026 Childhood Vaccine Schedule Updates

Written by: LaTeasha Houston, Pharm D., BCACP

The 2026 updates to the U.S. childhood immunization schedule represent a notable shift in national vaccine policy that reflects an increased emphasis on individualized clinical decision-making. These changes were initiated following a presidential memorandum issued on December 5, 2025, directing the Department of Health and Human Services and the Centers for Disease Control and Prevention to evaluate the U.S. immunization schedule in comparison with those of peer developed nations. The resulting assessment, including data from 20 countries, identified the United States as a global outlier in both the number of diseases targeted and the total number of recommended vaccine doses. Through analysis of this data it was determined that other nations achieved comparable or improved child health outcomes through strategies emphasizing public trust, education, and voluntary uptake rather than regulatory mandates.

A key feature of the 2026 update is the reclassification of certain vaccine recommendations within the existing three categories: routine immunization for all children, vaccination for high-risk populations, and shared clinical decision-making. The changes reflect a shift toward individualized care and recognizes variability in patient risk profiles and preferences. COVID-19 and influenza vaccines have been moved into the shared clinical decision-making category, requiring clinician-patient discussions to guide use. Respiratory syncytial virus (RSV) vaccination is now recommended primarily for high-risk populations. Hepatitis A and B vaccines have been reclassified to either high-risk or shared decision-making categories depending on clinical context and the human papillomavirus (HPV) vaccination schedule has been simplified from a two-dose regimen to a single-dose recommendation. Concurrently, policy changes from the Centers for Medicare & Medicaid Services (CMS) have altered the landscape of immunization quality reporting. For 2026, CMS has removed pediatric, adolescent, and prenatal immunization measures from the Child and Adult Core Sets. Although states may continue to report these metrics voluntarily, their removal from standardized reporting frameworks may impact the consistency and transparency of national immunization data.

Traditionally, changes to the vaccine schedule come via recommendations from the Advisory Committee on Immunization Practices (ACIP). This process includes prescheduled public meetings involving presentations about scientific data on vaccine safety, efficacy, disease epidemiology, and economic impact. The newly enacted changes instead came directly as a result of the presidential memorandum, thereby creating some distention amongst a regularly unified front in the scientific community. As it stands, the CDC's childhood vaccine schedule reflects the updated recommendations and the American Academy of Pediatrics has kept the recommendations from previous years undoubtedly causing some confusion amongst the general public.

These updates also present several potential implications for pharmacy practice and public health. For example, changing COVID-19 vaccine recommendations from "routine for all" to "shared decision-making" can contribute to level of access changes. Providers could choose to reduce or eliminate vaccine stocking all together due to uncertainty regarding reimbursement and demand, potentially limiting availability for pediatric populations. Additionally, decreased routine recommendation status may influence manufacturer pricing strategies, with potential downstream effects on federal programs such as the Vaccines for Children program and private insurance markets. Concerns also exist regarding

possible manufacturer withdrawal from the U.S. vaccine market and the risk of incomplete immunization data due to reduced reporting requirements. Federal agencies have indicated that insurance coverage will be maintained for all vaccines included on the CDC immunization schedule, even those no longer categorized as “routine for all.

In summary, the 2026 childhood immunization schedule updates reflect evolving federal priorities aimed at a transition toward more patient choice and less mandates. Pharmacists and other healthcare providers play a critical role in navigating these changes by facilitating patient education, addressing vaccine hesitancy, and engaging in shared clinical decision-making when appropriate. Clear communication regarding evolving recommendations and continued reliance on evidence-based guidance will be essential to maintaining public confidence in immunization practices. While this approach may enhance individualized care, it also introduces complexities that will require ongoing evaluation within the healthcare system.

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MSHP Educational Programming Committee Events and Opportunities

Written by: Maryam Moghimi, MS, PharmD, BCPS; Sania Ali, PharmD

The Educational Programming Committee would like to extend a thank you to everyone who attended the 2026 Spring Seminar. The event brought together pharmacists, residents, technicians, and students from across the state for a day of education, collaboration, and professional engagement. Attendees participated in ACPE-accredited sessions presented by pharmacy leaders and faculty members covering leadership, preceptor wellness, chronic kidney disease management, pharmacist standards of care, and advancement of technician roles through pharmacy technician product verification in health systems.
The seminar also featured a poster session showcasing innovative pharmacy-led research and quality improvement initiatives across health systems. Congratulations to the poster award recipients:

- **Jillian Johnson, PharmD, PGY1 Pharmacy Resident, University of Maryland Baltimore Washington Medical Center**, for the project *"Comparing the Efficacy and Safety of Split versus Front Loading Dosing Strategies of Phenobarbital in Hospitalized Patients with Alcohol Withdrawal Syndrome."*
- **Tawes A. Harper, PharmD, BCPS, BCCCP, CACP; Kevin McCoy, MD; Stefano Muscatelli, MD; Tony Rodriguez, PharmD, MS, BCACP; Thomas Sisca, PharmD, FCCP; Ross Jones, PharmD; Laura Jurisa, PharmD, BCPS; and Erin Era, PharmD, from University of Maryland Shore Regional Health**, for the project *"Evaluation of Efficacy and Safety of Oral Anticoagulants Prescribed After Total Hip Arthroplasty or Total Knee Arthroplasty: A One-Year Retrospective Review."*

MSHP is now seeking speakers for the 2026–2027 educational calendar, including the 2027 Spring Seminar, ID CE Dinner, and Spring Medication Safety Webinars. Students and residents are strongly encouraged to participate through presentations. The format can include 10-minute pearls, panel discussions, or one-hour or longer presentations. The upcoming Fall Seminar will also feature a Residency Showcase, offering students an opportunity to connect with residency programs from across the state and learn more about residency training opportunities.

For additional information, abstract submission details, or speaking opportunities, please visit MSHP Call for Speakers or contact the Educational Programming Committee leadership at:

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