



RESTRICTION CRITERIA FOR ANTIMICROBIAL USE

Northwestern Medicine Antimicrobial & Diagnostic Stewardship Program

Restricted use criteria are based on susceptibility data, treatment recommendations from clinical teams, and guidance from the Infectious Disease Society of America (IDSA).

Any use of restricted antimicrobials outside of specified criteria may be subject to review by the Antimicrobial and Diagnostic Stewardship Program (ADSP). Additional restricted use criteria may be applied at some NM locations, these criteria are provided in Appendix A. The following outlines the review process:

- In case of antimicrobial use questions or clinical urgency/emergency, a prescriber may contact the Infectious Diseases (ID) team and/or ADSP pharmacist directly. Please see Appendix C for contact instructions by site.
- ID/ADSP pharmacist will review patient cases and contact primary team if use appears to fall outside of the restricted drug criteria or ID consultation is required.
- If the primary clinical team feels the selected agent may still be beneficial & plans to continue use, the following outlines the escalation pathway for review and use justification:
 - Formal ID Consult (if not already completed)
 - Local ADSP medical director
 - System P&T Committee Chair
 - Local Chief Medical Officer

Note: Use criteria generally refers to appropriate EMPIRIC use when initiating these agents. When available, antimicrobial therapy should be adjusted as appropriate based on organism identification and susceptibility results. Restricted agents should only be utilized if narrower spectrum agents are resistant or otherwise inappropriate. Please refer to treatment guidance available on adsp.nm.org for selection of appropriate empiric and definitive therapy recommendations. Continuation of these agents from outpatient use may be acceptable, ADSP/ID consult is encouraged.

NON-FORMULARY ANTIMICROBIAL AGENTS – Refer to Appendix B

Non-formulary antimicrobial agents must go through the non-formulary request process regardless of indication/ordering service.

ANTI-INFECTIVE SHORTAGES

When an anti-infective agent is unavailable or in severely limited supply, ADSP/ID pharmacist team may alter the NM formulary restrictions temporarily and notify clinical teams of alternative agents for specific indications.

Restricted Antimicrobials – Use requires approval via shared decision-making with ADSP and/or ID consult along with primary team. Use requires an ID consult order within 24hr of initiation or ADSP approval when ID consult is not available.			
Cefiderocol	Ceftaroline	Ceftazidime/avibactam	Ceftolozane/tazobactam
Dalbavancin	Fidaxomicin	Imipenem/relebactam	Meropenem/vaborbactam
Polymyxins – Intravenous (Colistin & Polymyxin B)	Sulbactam/durlobactam	Tigecycline	

Indication-specific Restricted Antimicrobials – Use should be limited to outlined indications which reflect best practices & optimal use of each agent. Contact ADSP with any questions.

Amphotericin B Deoxycholate (conventional)	Aztreonam	Baloxavir	Cefoxitin
Daptomycin	Ertapenem	Fosfomycin	Imipenem
Isavuconazole	Letermovir	Linezolid	Maribavir
Meropenem	Micafungin	Oxacillin/Nafcillin	Posaconazole
Remdesivir	Voriconazole		

Restricted Medication	Approved Indications for Use
Amphotericin B Deoxycholate	<p>Restricted to irrigation, intrathecal administration, or special intraocular uses. Rare use via inhalation per the lung transplant protocol is permitted, although current guidance supports liposomal formulations.</p> <p>Conventional amphotericin B is not to be used for intravenous treatment.</p> <p>For intravenous treatment with an amphotericin B product, liposomal amphotericin B (AmBisome®) should be used when appropriate.</p>
Aztreonam	<p>Restricted to patients with severe allergic reactions to first-line penicillins and cephalosporins for coverage of Gram-negative pathogens who cannot safely receive first-line agents.</p> <p>For patients with documented Beta-lactam allergy: see NM Allergy Considerations before prescribing an alternative agent.</p> <p>Note: Use of this agent as combination therapy along with ceftazidime/avibactam for Metallo-beta-lactamase (e.g., NDM, VIM, IMP) producing Gram-negative infections may be appropriate.</p>
Baloxavir	<p>Inpatient: Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Use requires ID consult order within 24hr of initiation or ADSP approval when ID consult is not available.</p> <p>NMH Emergency Department (ED) only: Not restricted and acceptable for patients who present with influenza-like illness, but who have been symptomatic for 48 hours or less and have a positive influenza test result.</p>
Cefiderocol	<p>Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Use requires ID consult order within 24hr of initiation or ADSP approval when ID consult is not available.</p> <ul style="list-style-type: none"> Reserved for treatment of MDR Gram-negative bacilli, including Enterobacterales and lactose non-fermenters (<i>P. aeruginosa</i>, <i>A. baumannii</i>, and <i>S. maltophilia</i>) who have limited or no alternative treatment options or have failed alternative treatment options. For multidrug-resistant <i>A. baumannii</i>, combination therapy with cefiderocol should be considered for these cases until further clinical data becomes available. Given the mortality data (e.g., worse outcomes with <i>A. baumannii</i> compared to best available therapy in CREDIBLE-CR trial) and the notable discordance between available susceptibility testing

Restricted Medication	Approved Indications for Use
	methods, interpretation of testing results should be approached cautiously for these organisms in critically ill patients.
Cefoxitin	Restricted to patients with documented non-tuberculous mycobacteria (<i>M. fortuitum</i> , <i>M. chelonae</i> , <i>M. abscessus</i>) or those recommended via ID consultation. May be considered for surgical prophylaxis when necessary.
Ceftaroline	Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Use requires ID consult order within 24hr of initiation or ADSP approval when ID consult is not available. NMH Medical Intensive Care Unit (MICU) Only: ID Consult is not required for treatment of MRSA pneumonia. An Infectious Disease consult is recommended.
Ceftazidime-avibactam	Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Use requires ID consult order within 24hr of initiation or ADSP approval when ID consult is not available. Note: Avoid use when other first-line options are available to treat cystitis caused by highly resistant Gram-negative organism in hemodynamically stable patients.
Ceftolozane-tazobactam	Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Use requires ID consult order within 24hr of initiation or ADSP approval when ID consult is not available. <ul style="list-style-type: none"> Recent history or definitive difficult to treat (DTR) <i>Pseudomonas aeruginosa</i> infection with known resistance or intolerance to all other beta-lactams, fluoroquinolones, and aztreonam May be considered for definitive ESBL infections with resistance to first-line agents and known susceptibility to ceftolozane/tazobactam
Dalbavancin	Inpatient: Restricted to patients with a suspected or confirmed severe infection caused by a Gram-positive organism when first-line or alternative options are not available, and: <ul style="list-style-type: none"> Inpatient Use - patients presenting with ABSSTI or deep-seated Gram-positive infections, without alternative therapeutic options. Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection AND will facilitate transitions of care. The patient must be seen by the ID consult service prior to therapy initiation Note: Use should be reserved as a last-line option for those without alternative therapeutic options. Emergency Department: Restricted to patients presenting with ABSSTI who are clinically stable and otherwise ready for discharge (no ID consult required, but is recommended). If treating infections other than severe ABSSTI, use of this agent must be approved by the ID consult service prior to initiation. Outpatient Use: Restricted to use in Infectious Diseases clinic for patients presenting with ABSSTI or deep-seated Gram-positive infections
Daptomycin	Restricted to treatment of suspected or confirmed MRSA or VRE infections for which first line therapy (e.g., vancomycin) is not susceptible or tolerated by the patient due to allergy or acute kidney injury. In many cases, vancomycin dosing may be adequately managed by pharmacy to mitigate risk of AKI – please consult your pharmacist for recommendations. ID consultation is strongly recommended for severe MRSA or VRE infections such as endocarditis for antibiotic dosing and management. Note: Avoid use for respiratory infections as this agent is inactivated by pulmonary surfactant.
Ertapenem	Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Use requires ADSP approval and/or ID consult order within 24hr of initiation.

Restricted Medication	Approved Indications for Use
	NMH & LFH Only: Restricted to a single dose prior to discharge in patients who are to receive therapy as home parenteral antibiotic therapy. Meropenem is preferred inpatient therapy targeting ESBL producing pathogens.
Fidaxomicin	Recurrence or Continuation of home therapy for CDI: Not restricted, ID consultation recommended Inpatient initiation for non-fulminant CDI cases: Restricted to patients in which ID/ADSP physicians and pharmacists OR Gastroenterology consult along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Use requires any of the following within 24hr of initiation: GI approval, ID consult order, or ADSP approval when ID consult is not available. Note: Prior to new initiation, outpatient insurance coverage of this agent should be verified.
Fosfomycin	Restricted to treatment of cystitis (lower urinary tract infection) when <i>E. coli</i> is suspected or confirmed based on pathogen detection
Imipenem	Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Note: May be considered for infections of the central nervous system or those caused by specific pathogens including <i>Nocardia</i> spp. and non-tuberculous mycobacterium (NTM).
Imipenem-Relebactam	Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Use requires ID consult order within 24hr of initiation or ADSP approval when ID consult is not available. Note: Avoid use when other first-line options available to treat cystitis caused by highly resistant Gram-negative organism in hemodynamically stable patients.
Isavuconazole	Prophylaxis: Restricted to antifungal prophylaxis among highly immunocompromised patients such as stem cell and solid organ transplant patients. Treatment: Restricted to probable or definitive invasive mucormycosis or aspergillosis in patients who cannot tolerate or are not improving with first line-agents or liposomal amphotericin B treatment.
Letermovir	Restricted to prophylaxis of CMV infection and disease in the following patient populations: <ul style="list-style-type: none"> • Allogeneic hematopoietic stem cell transplant recipients that are CMV-seropositive (donors or recipients), OR • Solid organ transplant recipients who are high-risk (CMV D+/R-), for continuation of outpatient therapy or initiation when ID physicians and pharmacists, in collaboration with transplant team, determine that this agent is optimal for a specific patient. Note: Prior to new initiation, outpatient insurance coverage of this agent should be verified.
Linezolid	Restricted to treatment of suspected or confirmed MRSA or VRE infections for which first line therapy (e.g., vancomycin) is not susceptible or tolerated by the patient due to allergy or acute kidney injury. In many cases, vancomycin dosing may be adequately managed by pharmacy to mitigate risk of AKI – please consult your pharmacist for recommendations. ID consultation is strongly recommended for severe MRSA or VRE infections such as endocarditis for antibiotic dosing and management. Note: Empiric initiation for suspected or confirmed MRSA pneumonia is reasonable in critically ill patients or with clinical risk factors with potential for decompensation.
Maribavir	Restricted to treatment of resistant or refractory CMV infection and disease in the following patient populations: <ul style="list-style-type: none"> • Allogeneic hematopoietic stem cell transplant recipients that are CMV-seropositive (donors or recipients) OR Solid organ transplant recipients, for continuation of outpatient therapy or initiation when ID physicians and pharmacists, in collaboration with transplant team, determine that this agent is optimal for a specific patient.

Restricted Medication	Approved Indications for Use
Meropenem	Restricted to patients with recent history or confirmed positive blood, lower respiratory (BAL), or other clinically significant culture with an ESBL-producing pathogen May consider use in hemodynamically unstable, critically ill ICU patients who fail to respond to 24-48hr of first-line therapy (e.g., cefepime, piperacillin/tazobactam); ID consult recommended for these scenarios.
Meropenem-vaborbactam	Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Use requires ID consult order within 24hr of initiation or ADSP approval when ID consult is not available. Note: Avoid use for DTR <i>Pseudomonas aeruginosa</i> with resistance to meropenem, as this agent is unlikely to be active. Avoid use when other first-line options available to treat cystitis caused by highly resistant Gram-negative organism in hemodynamically stable patients.
Micafungin	Restricted to the following: <ul style="list-style-type: none"> • Suspected or confirmed candidiasis or candidemia in patients with recent azole exposure, critical illness, or high risk of <i>C. glabrata</i>, <i>C. krusei</i>, OR <i>Candida</i> isolates that have documented microbiologic resistance to fluconazole. ID consult recommended. • Patients with neutropenic fever who remain febrile despite broad spectrum antibiotic therapy > 72 hours. • Alternative therapy in patients unable to tolerate or absorb oral azole antifungals, or among patients at risk of drug interactions/additive toxicity with azole antifungals • Documented or suspected aspergillosis who are refractory or intolerant to azole therapy or liposomal amphotericin B. Note: Micafungin should not be used for fungal urinary tract infections as this drug is not excreted in the urine.
Oxacillin/Nafcillin	Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Primary indication should include deep-seated infections (e.g., infective endocarditis with large bacterial burden) or CNS involvement caused by MSSA. May consider use to facilitate transitions of care and ease of administration.
Polymyxins (Colistin & Polymyxin B) – Intravenous	Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Use requires ID consult order within 24hr of initiation or ADSP approval when ID consult is not available. Note: For systemic infections, polymyxin B is preferred, avoid use of intravenous colistin for systemic infections outside of the urinary source. Avoid use of intravenous polymyxin B for urinary infections. Note: Inhaled colistin OR polymyxin B is reasonable for pulmonary infections when appropriate in hemodynamically unstable patients with suspected or confirmed resistant Gram-negative pathogens. <ul style="list-style-type: none"> • For questions related to agent selection & dosing please contact ADSP for ID PharmD consult
Posaconazole	Prophylaxis: Restricted to antifungal prophylaxis among highly immunocompromised patients such as stem cell and solid organ transplant patients. Treatment: Restricted to probable or definitive invasive fungal infections. ID consultation is recommended.
Remdesivir	Treatment for Severe COVID-19: <ul style="list-style-type: none"> • Hypoxemic with SpO2 < 94% on room air or requiring new supplemental oxygen Treatment for Mild-Moderate COVID-19 among patients at high-risk for disease progression: <ul style="list-style-type: none"> • Immunosuppressed patients meeting any of the following definitions: <ul style="list-style-type: none"> ○ ≥ 20 mg/day prednisone or equivalent for at least two weeks ○ Solid organ transplant receiving immunosuppressive medications ○ Cancer patients receiving chemotherapy or those with a hematologic malignancy

Restricted Medication	Approved Indications for Use
Sulbactam-durlobactam	<p>Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Use requires ID consult order within 24hr of initiation or ADSP approval when ID consult is not available.</p> <ul style="list-style-type: none"> Reserved for treatment of <i>Acinetobacter baumannii-calcoaceticus</i> complex, primarily deep-seated infections including hospital-acquired bacterial pneumonia and ventilator associated bacterial pneumonia (HABP/VABP) based on current evidence. <p>Note: Avoid use when other first-line options available to treat cystitis caused by highly resistant Gram-negative organism in hemodynamically stable patients.</p>
Tigecycline	<p>Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Use requires ID consult order within 24hr of initiation or ADSP approval when ID consult is not available.</p> <p>Note: Avoid use for bloodstream infections.</p>
Voriconazole	<p>Prophylaxis: Restricted to antifungal prophylaxis among highly immunocompromised patients such as stem cell and solid organ transplant patients.</p> <p>Treatment: Restricted to probable or definitive invasive fungal infections. ID consultation is recommended.</p>

Appendix A. Additional restriction criteria: Site-specific use criteria

NM Location	Agent	Use Criteria
CDH Delnor Marianjoy	Amphotericin B, liposomal	Restricted to patients in which ID/ADSP physicians and pharmacists along with primary teams, in collaboration, determine that this agent is optimal for the treatment of the patient's infection. Use requires ID consult order within 24hr of initiation or ADSP approval when ID consult is not available.
CDH Delnor Lake Forest	Piperacillin-tazobactam	Pip/tazo usage criteria - adsp.nm.org

Appendix B. Non-formulary antimicrobial agents

- Anidulafungin
- Atazanavir/cobicistat (Evotaz)
- Bedaquiline
- Bezlotoxumab – Outpatient ID or GI clinic only
- Caspofungin
- Cefixime
- Clofazamine
- Delafloxacin
- Dolutegravir/rilpivirine (Juluca)
- Elvitegravir/emtricitabine/cobicistat/tenofovir disoproxil fumarate (Stribild)
- Emtricitabine/rilpivirine/tenofovir disoproxil fumarate (Complera)
- Eravacycline
- Lefamulin
- Moxifloxacin
- Omadacycline
- Oritavancin
- Palivizumab
- Peramivir
- Plazomicin
- Rezafungin
- Tedizolid

Appendix C. Contact information for local ADSP/ID Pharmacy Team

Please contact adsp@nm.org with any general or system-relevant questions. For urgent questions please contact local central pharmacy to coordinate with ADSP.

Site	Email
Northwestern Memorial Hospital (NMH)	Christie.bertram@nm.org William.moore@nm.org Erin.weslander@nm.org
Central DuPage Hospital (CDH)	Michael.dickens@nm.org Radhika.polisetty@nm.org Anna.Niedzwiecki@nm.org
Delnor Hospital (DH)	Jaime.Borkowski@nm.org
Huntley Hospital (HH)	Stephanie.chang@nm.org William.moore@nm.org
Lake Forest Hospital (LFH)	William.moore@nm.org
Kishwaukee Hospital (KH)	Jaime.Borkowski@nm.org
Marianjoy Rehabilitation Hospital (MJH)	Jaime.Borkowski@nm.org
McHenry Hospital (MCH)	Stephanie.chang@nm.org William.moore@nm.org
Palos Hospital (PH)	Aaron.oliver@nm.org Erin.Weslander@nm.org
Valleywest Hospital (VH)	Jaime.Borkowski@nm.org