

## DRAFT ASHP-SIDP Joint Statement on the Pharmacist’s Role in Leading Antimicrobial Stewardship Efforts

### Position

1 The American Society of Health-System Pharmacists (ASHP) and the Society of Infectious  
2 Diseases Pharmacists (SIDP) jointly believe that all pharmacists have a responsibility to promote  
3 antimicrobial stewardship (AMS) and should feel empowered to optimize antimicrobial use.  
4 Further, pharmacists trained in infectious diseases (ID) and/or AMS have a responsibility to lead  
5 or co-lead AMS programs (ASPs), as well as advocate for AMS efforts within the community.  
6 Pharmacists can influence antimicrobial prescribing to improve patient outcomes, attenuate or  
7 reduce antimicrobial resistance, reduce antimicrobial-related adverse events, and encourage  
8 cost-effective care. ASHP and SIDP jointly believe that appropriate ID and AMS training is  
9 essential to equip pharmacists with the necessary tools to successfully advocate for appropriate  
10 antimicrobial use, educate the public, and empower all pharmacists to engage in AMS efforts.

### Background

11 Pharmacists have been at the forefront of the creation, development, and advancement of  
12 AMS for decades. Over the past several years, national accrediting bodies, regulatory agencies,  
13 and quality-assurance organizations recognized the importance of AMS by adopting ASP  
14 minimum standards into quality criteria.<sup>1-5</sup> Pharmacists’ knowledge, experience, and  
15 importance for leading ASP implementation efforts were specifically recognized in 2018, when  
16 “drug expertise” was changed to “pharmacist expertise” as a Centers for Disease Control and  
17 Prevention (CDC) Core Element for Hospital Antimicrobial Stewardship Programs.<sup>6</sup> Additionally,  
18 the scope of AMS efforts was expanded beyond acute care settings to include critical access  
19 hospitals, resource-limited settings, long-term care facilities, and outpatient settings, such as  
20 primary care clinics, emergency departments, dental clinics, retail health clinics, outpatient  
21 specialty clinics, and urgent care clinics.<sup>7-10</sup>

22 AMS is a joint effort by all healthcare providers and should be guided by the knowledge  
23 and expertise of ID- and/or AMS-trained pharmacists. ASHP and SIDP previously published

---

This draft statement is intended for review purposes only; it is not official ASHP or SIDP policy. This document may not be reproduced, circulated (except for review purposes), or quoted without prior written permission from ASHP and SIDP. Copyright © 2022, American Society of Health-System Pharmacists and Society of Infectious Diseases Pharmacists. All rights reserved.

24 separate statements on the pharmacist's role in AMS.<sup>11,12</sup> In addition, ASHP and SIDP both  
25 endorsed evidence-based guidelines published by the Infectious Diseases Society of America  
26 and the Society for Healthcare Epidemiology of America for implementation and measurement  
27 of antibiotic stewardship interventions in inpatient populations.<sup>13</sup> This current statement is a  
28 combined effort to incorporate and expand upon the prior statements, with emphasis on the  
29 evolving roles and responsibilities of pharmacists as AMS leaders following recent regulatory,  
30 scientific, and practice-based advances. While the recommendations set forth in this statement  
31 are important to begin AMS efforts, ASHP and SIDP encourage accrediting bodies and  
32 organizations to develop and employ objective quality metrics for every practice setting,  
33 including process and outcome quality metrics. Additionally, ASHP and SIDP jointly support the  
34 expansion of AMS in pharmacy education, postgraduate training in ID, and AMS certification to  
35 develop an adequate supply of pharmacists trained to deliver these essential services. ASHP  
36 and SIDP also jointly support expanded federal assistance and funding of additional  
37 postgraduate year two (PGY2) ID pharmacy residency training programs, to support the  
38 expansion of AMS across healthcare settings. The following adaptable framework aligns with  
39 national AMS guidance and standards and provides an overview of the evolving roles and  
40 responsibilities of pharmacists as AMS leaders.

### **Responsibilities of leadership**

41 The CDC Core Elements and The Joint Commission's new and revised AMS requirements  
42 highlight the critical role of leadership support in the success of ASPs.<sup>2,6,8,9</sup> Pharmacy and  
43 health-system leadership can facilitate the success of AMS in a variety of ways, including but  
44 not limited to:

- 45 1. Establishing AMS as an organizational priority, demonstrated through support and ASP  
46 establishment.
- 47 2. Allocating dedicated resources (e.g., protected time, support for training and education,  
48 technology support, financial resources) focused on ASP management, including  
49 adequate pharmacist and key support personnel full-time equivalents, in line with  
50 available staffing guidance.

- 51 3. Appointing a pharmacist and/or physician who is qualified through education, training,  
52 or experience in ID and/or AMS as the leader(s) of the ASP. If unavailable, leaders  
53 should provide resources necessary to train current practitioners.
- 54 4. Prioritizing and ensuring accountability by including AMS activities and outcomes in  
55 health-system and pharmacy department quality and patient safety metrics and  
56 incorporating or incentivizing AMS-related performance in performance reviews.
- 57 5. Facilitating integration and collaboration among all stakeholders responsible for AMS,  
58 including but not limited to the infection prevention and control program, microbiology  
59 laboratory, information technology, the medical staff, nursing services, and  
60 multidisciplinary committees.
- 61 6. Optimizing daily practice models to ensure a consistent team approach to AMS  
62 endeavors.
- 63 7. Acting on improvement opportunities identified by ASPs.

#### 64 **Responsibilities of pharmacists**

65 Pharmacists' AMS responsibilities include promoting the optimal use of antimicrobial agents;  
66 tracking, analyzing, and reporting antimicrobial data; and educating healthcare professionals,  
67 patients, and the public. Qualified pharmacists, through education, training, or experience in ID  
68 and/or AMS, are the ideal leaders or co-leaders for ASPs. Pharmacist leaders of ASPs should not  
69 only lead by example but also empower the pharmacy team to address AMS interventions for  
70 their patients. A team approach to daily AMS activities can improve program efficiency by  
71 expanding the reach of the program to all patients.

#### **Promoting optimal use of antimicrobial agents**

72 **Actions.** The implementation of specific actions promotes optimal use of antimicrobial agents.  
73 Actions may vary based on the setting, patient population, and available resources; however,  
74 several interventions are considered priority interventions for hospital ASPs. Examples of  
75 actions may include but are not limited to the following.

- 76 1. Prospective audit and feedback (PAF).

77 a. As a priority intervention of hospital ASPs, PAF entails external review of  
78 identified patients and intervening to optimize management.<sup>6</sup> PAF can be labor-  
79 intensive; therefore, pharmacy teams must work to optimize existing  
80 infrastructure and clinical decision support software to identify and prioritize  
81 patients needing intervention. PAF should target both empiric and definitive  
82 therapy regimens to optimize prescribing and teach best practices in both phases  
83 of antimicrobial decision-making.

84 i. Examples of PAF actions:

- 85 1. Medication safety review, including dose optimization; laboratory  
86 monitoring; and antimicrobial drug, food, and host interactions.
- 87 2. Duplicative antimicrobial therapy, such as dual anaerobic  
88 coverage.
- 89 3. Duration of therapy recommendations.
- 90 4. De-escalation of broad-spectrum antimicrobials to more narrow-  
91 spectrum regimens.
- 92 5. Drug-bug mismatch, which includes empiric therapy that does not  
93 appropriately target the suspected source or pathogen of  
94 infection or definitive therapy that does not target the isolated  
95 pathogen(s).
- 96 6. Recommending formal ID consultation for complex infections that  
97 may exceed AMS capabilities or for which mortality benefit has  
98 been demonstrated (e.g., *Staphylococcus aureus* bacteremia).
- 99 7. Syndrome-specific review for common infections (see treatment  
100 interventions, guidelines, and protocols specific to the treatment  
101 setting below).
- 102 8. Pharmacist-specific actions:
  - 103 a. Intravenous to oral (IV-to-PO) interchange.
  - 104 b. Dose optimization and renal dose adjustment.
  - 105 c. Pharmacokinetic monitoring.

- 106 d. Antimicrobial allergy management.
- 107 e. Other laboratory monitoring (e.g., MRSA nasal swab PCR
- 108 assay to encourage earlier de-escalation).
- 109 2. Treatment interventions, guidelines, and protocols specific to the treatment setting.
- 110 a. Collaboration within the pharmacy and therapeutics committee (or equivalent)
- 111 structure, which may include leading or co-leading an ID- or AMS-related
- 112 subcommittee, to develop treatment guidelines and protocols to optimize
- 113 antimicrobial prescribing is considered a priority AMS intervention.<sup>6</sup> High priority
- 114 should be given to developing antimicrobial-use policies for common infections
- 115 that result in optimal therapeutic outcomes while minimizing the risk of the
- 116 emergence of antimicrobial-resistant strains of microorganisms and toxicities to
- 117 patients. These efforts may include the development of targeted syndrome-
- 118 specific interventions, including diagnostic criteria, appropriate empiric and
- 119 definitive antimicrobial treatment recommendations, diagnostic and
- 120 microbiology data interpretation, antimicrobial therapy optimization, durations
- 121 of therapy, and transitions of care opportunities.
- 122 i. Examples of common or Joint Commission-required, facility-specific
- 123 treatment guidelines include, but are not limited to:
- 124 1. Pneumonia.
- 125 2. Urinary tract infections and asymptomatic bacteriuria.
- 126 3. Skin and soft tissue infections.
- 127 4. Surgical site infection prophylaxis.
- 128 3. Preauthorization.
- 129 a. Considered another priority intervention of hospital ASPs, preauthorization
- 130 requires prescribers to gain approval prior to, or for the continued use of, certain
- 131 antimicrobials, and is often performed by a pharmacist.<sup>6</sup>
- 132 b. Antimicrobials considered for preauthorization should be those that have a
- 133 spectrum of activity that suggests they should be conserved for more drug-
- 134 resistant organisms, have a higher propensity to cause harm, require more

- 135 intensive monitoring, or impose a high-cost burden where other suitable, cost-  
136 effective options are more readily available.
- 137 4. Information technology and clinical decision support.
- 138 a. Utilizing information technology enhances AMS efforts, and pharmacists should  
139 harness available resources to facilitate AMS activities. Activities include but are  
140 not limited to surveillance, utilization and outcome reporting and tracking, and  
141 the development of clinical decision support.
- 142 i. Clinical decision support can facilitate accurate diagnoses, treatment, and  
143 facilitate other AMS efforts by embedding education, order sets, or  
144 algorithms into the typical workflow.
- 145 5. Microbiology laboratory integration and diagnostic stewardship.
- 146 a. Pharmacists should collaborate with microbiology laboratory personnel to  
147 ensure that appropriate microbial identification and susceptibility test results are  
148 reported in a timely manner to best support optimal antimicrobial use. Areas of  
149 coordination include the following:
- 150 i. Implementation and optimization of rapid diagnostic testing when  
151 possible. Optimized processes for response may include direct calls or  
152 electronic messaging to the AMS or pharmacy teams to ensure timely  
153 follow-up and action.
- 154 ii. Evaluation, implementation, and communication of antibacterial susceptibility  
155 test interpretive criteria (e.g., antibiotic breakpoints) to impact AMS endeavors,  
156 including selective or cascade antimicrobial susceptibility reporting, which is  
157 considered a best practice.
- 158 iii. Diagnostic stewardship optimization, including optimal-use procedures  
159 and testing, reporting, and interpretation.
- 160 iv. Suggestions in microbiology or laboratory report (“nudges”) that  
161 discourage antimicrobial prescribing when it is inappropriate (e.g.,  
162 influenza, acute bronchitis, asymptomatic bacteriuria, absence of  
163 pathogens indicating opportunity for discontinuation, de-escalation, or  
164 escalation of antimicrobial therapy).

- 165 6. Formulary management.
- 166 a. Ensuring that appropriate antimicrobial agents are available, based on the needs
- 167 of the patient population, cost-effectiveness, and microbiological trends within
- 168 the facility.
- 169 b. AMS pharmacists play a crucial role in mitigating the impact of antimicrobial
- 170 drug shortages.

### Tracking and reporting

171 Tracking and reporting antimicrobial use and resistance, the impact of interventions, process,

172 and outcome measures are cornerstones of measuring and disseminating the impact of ASPs

173 and identifying opportunities for improvement.<sup>2,6-9</sup> ASHP and SIDP believe it is important for

174 hospitals to electronically submit antibiotic use data to the National Healthcare Safety Network

175 (NHSN) Antibiotic Use and Antibiotic Resistance (AUR) measure and support required

176 reporting.<sup>4</sup> ASHP and SIDP recommend the following:

- 177 1. ASP leaders should determine key measures to track and work with hospital, clinic, and
- 178 healthcare system leadership to identify resources to obtain, analyze, and report data.
- 179 2. Pharmacists should lead the efficient and accurate tracking of selected measures and
- 180 dissemination of programmatic strategies, achievements, and opportunities. Routinely
- 181 reporting these measures and programmatic evaluations at the local, regional, or
- 182 national level increases awareness, leads to accountability, advances patient care, and
- 183 encourages judicious use of antimicrobials. Examples of each of these measures include
- 184 but are not limited to the following:
- 185 a. Antimicrobial use measures:
- 186 i. Standardized antimicrobial administration ratio (SAAR)
- 187 ii. Days of therapy (DOT) per 1000 patient days or 1000 days present
- 188 iii. Defined daily dose (DDD) per 1000 patient days or 1000 days present
- 189 iv. Cost or cost per patient days or days present
- 190 b. Process measures:
- 191 i. Guideline adherence

- 192                   ii. Appropriate antimicrobial selection
- 193                   iii. Time to optimal antimicrobial therapy
- 194                   iv. Medication use evaluations
- 195           c. Outcome measures:
- 196                   i. *Clostridioides difficile* infection
- 197                   ii. Antimicrobial resistance
- 198                   iii. Antimicrobial-related adverse effects
- 199                   iv. Clinical success or failure
- 200                   v. Hospital readmission
- 201                   vi. Mortality
- 202           3. Pharmacist leaders of ASPs should collaborate with microbiology personnel for
- 203               antibiogram development, reporting, and tracking at least annually. Antibiogram reports
- 204               should follow current best practice recommendations.<sup>14,15</sup>

### **Education and training for pharmacists involved in AMS**

- 205   Pharmacists qualified through education, training, or experience in ID or AMS have the
- 206   knowledge, skills, and confidence to promote AMS in a variety of settings. In addition to having
- 207   ID knowledge, training specific to AMS is crucial to the development of a robust and sustainable
- 208   ASP. ASHP and SIDP recommend the following regarding and training for pharmacists involved in AMS.
- 209           1. Pharmacy leaders of ASPs should have AMS-specific education or substantial experience
- 210               in the field.
- 211                   a. Examples include a PGY2 ID residency or ID fellowship with clinical AMS
- 212                       experience, or successful completion of an AMS certificate program appropriate
- 213                       to the practice setting. ASHP and SIDP recognize that factors in some settings
- 214                       may require pharmacists without such training to assume AMS responsibilities.
- 215                       Support for AMS-specific training and education should be supported by
- 216                       pharmacy and hospital leadership.
- 217                   b. Accrediting, regulatory, and quality assurance organizations should incorporate
- 218                       qualification standards and pharmacy expertise into their regulatory framework.

- 219 c. Federal support of PGY2 ID pharmacy residency training programs is needed to  
220 ensure a highly trained workforce and support the expansion of AMS across  
221 healthcare settings.
- 222 2. All pharmacists involved in AMS should participate in continuing education related to  
223 AMS, as part of credentialing maintenance, state licensure, or professional  
224 development.
- 225 a. Pharmacy leaders of ASPs are encouraged to obtain board certification in ID (i.e.,  
226 BCIDP) and maintain up-to-date knowledge with emerging AMS initiatives.
- 227 3. General AMS education should be embedded within the curricula of colleges of  
228 pharmacy.
- 229 a. Interprofessional AMS-related activities, including pharmacy, medical, nursing,  
230 dental, and other healthcare professions, are encouraged. AMS education topics  
231 may include the following:
- 232 i. Goals and principles of AMS.
- 233 ii. Appropriate treatment of common infectious diseases.
- 234 iii. Pharmacy-related interventions.
- 235 iv. Patient counseling.

### **Pharmacists as AMS educators**

- 236 Pharmacists involved in AMS have an obligation to provide accurate, up-to-date information  
237 about AMS to a variety of audiences, including physicians, nurses, physician assistants, dentists,  
238 other healthcare professionals, patients, caregivers, and the public. Specific activities may  
239 include but are not limited to the following:
- 240 1. Tailoring AMS education to the target audience to optimize the effectiveness and  
241 sustainability of AMS education through appropriate communication methods (e.g.,  
242 handshake stewardship, case-based teaching, newsletters). Examples would include the  
243 following:
- 244 a. Providing competency-based, provider-focused education and training on the  
245 practical applications of AMS, including leading AMS education at clinical

- 246 conferences and other types of formal educational forums for health  
247 professionals.
- 248 b. Providing exposure to AMS practices through experiential and didactic training  
249 for practicing health-system pharmacists, students, residents, fellows, and other  
250 multidisciplinary trainees and colleagues.
- 251 2. Leading and collaborating on the development of national guidelines or guidance  
252 documents for antimicrobial monitoring, and collaboration in the development of  
253 national guidelines or guidance documents for the management of infections, to  
254 promote AMS principles.
- 255 3. Leading and collaborating on research and quality improvement projects. Analysis and  
256 sharing of results advance the field, demonstrate value, and help determine how to  
257 optimize AMS implementation and effectiveness.
- 258 4. Involvement in public health education, advocacy, and awareness programs aimed at  
259 promoting AMS, including topics such as promoting prudent use of antimicrobials,  
260 indicating when antimicrobials have a role (e.g., viral vs. bacterial infections), and the  
261 untoward consequences of antimicrobial overuse.

## 262 **Conclusion**

263 ASHP and SIDP jointly believe that while ID and/or AMS pharmacists have a responsibility to  
264 lead or co-lead ASPs, all pharmacists have a responsibility to promote AMS efforts. The  
265 pharmacist's ability to lead or co-lead AMS efforts can be recognized through clinical endeavors  
266 focused on optimizing antimicrobial utilization and collaboration with key support groups in all  
267 settings where antimicrobials are prescribed. ASHP and SIDP also jointly believe that AMS  
268 pharmacists have the expertise and skills optimize antimicrobial use at the patient level and to  
269 advance the field on a broader scale, including national guideline development and AMS  
270 research endeavors.

## References

1. The Joint Commission. Approved: New Antimicrobial Stewardship Standard (2016). Joint Commission Perspectives. Available at: [https://www.jointcommission.org/-/media/enterprise/tjc/imported-resource-assets/documents/new\\_antimicrobial\\_stewardship\\_standardpdf.pdf](https://www.jointcommission.org/-/media/enterprise/tjc/imported-resource-assets/documents/new_antimicrobial_stewardship_standardpdf.pdf) [accessed 14 Oct 2022].
2. The Joint Commission. New and Revised Requirements for Antibiotic Stewardship. R<sup>3</sup> Report. 2022; 35:1-5. Available at: [https://www.jointcommission.org/-/media/tjc/documents/standards/r3-reports/r3\\_antibioticstewardship\\_july2022\\_final.pdf](https://www.jointcommission.org/-/media/tjc/documents/standards/r3-reports/r3_antibioticstewardship_july2022_final.pdf) [accessed 14 Oct 2022].
3. Centers for Medicare & Medicaid Services. Center for Clinical Standards and Quality/Quality, Safety & Oversight Group. QSO-22-20-Hospitals: Infection Prevention and Control and Antibiotic Stewardship Program Interpretive Guidance Update. Available at: <https://www.cms.gov/files/document/qso-22-20-hospitals.pdf> [accessed 14 Oct 2022].
4. Centers for Medicare & Medicaid Services. Medicare Program; Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long-Term Care Hospital Prospective Payment System and Policy Changes and Fiscal Year 2023 Rates; Quality Programs and Medicare Promoting Interoperability Program Requirements for Eligible Hospitals and Critical Access Hospitals; Costs Incurred for Qualified and Non-Qualified Deferred Compensation Plans; and Changes to Hospital and Critical Access Hospital Conditions of Participation. 87 Fed. Reg. 48780 (Aug. 10, 2022). Available at: <https://www.federalregister.gov/d/2022-16472> [accessed 14 Oct 2022].
5. National Quality Partners. National Quality Partners Playbook: Antimicrobial Stewardship in Acute Care: A Practical Playbook. Available at: [https://www.qualityforum.org/Publications/2016/05/National\\_Quality\\_Partners\\_Playbook\\_Antibiotic\\_Stewardship\\_in\\_Acute\\_Care.aspx?utm\\_source=internal&utm\\_medium=link&utm\\_term=ABX&utm\\_content=Playbook&utm\\_campaign=ABX9](https://www.qualityforum.org/Publications/2016/05/National_Quality_Partners_Playbook_Antibiotic_Stewardship_in_Acute_Care.aspx?utm_source=internal&utm_medium=link&utm_term=ABX&utm_content=Playbook&utm_campaign=ABX9) [accessed 14 Oct 2022].
6. Centers for Disease Control and Prevention (CDC). Core Elements of Hospital Antibiotic Stewardship Programs. Available at: <https://www.cdc.gov/antibiotic-use/core-elements/hospital.html> [accessed 14 Oct 2022].
7. Sanchez GV, Fleming-Dutra KE, Roberts RM et al. Core Elements of Outpatient Antibiotic Stewardship. *MMWR Recomm Rep*. 2016; 65(No. RR-6):1–12.
8. Centers for Disease Control and Prevention (CDC). Implementation of Antibiotic Stewardship Core Elements at Small and Critical Access Hospitals. Available at: <https://www.cdc.gov/antibiotic-use/core-elements/small-critical.html> [accessed 14 Oct 2022].
9. Centers for Disease Control and Prevention (CDC). Core Elements of Antibiotic Stewardship for Nursing Homes. Available at: <https://www.cdc.gov/antibiotic-use/core-elements/nursing-homes.html> [accessed 14 Oct 2022].
10. Centers for Disease Control and Prevention (CDC). The Core Elements of Human Antibiotic Stewardship Programs in Resource-Limited Settings: National and Hospital

Levels. Available at: <https://www.cdc.gov/antibiotic-use/core-elements/resource-limited.html> [accessed 14 Oct 2022].

11. ASHP Statement on the Pharmacist's Role in Antimicrobial Stewardship and Infection Prevention and Control. *Am J Health-Syst Pharm*. 2010; 67:575–7.
12. Heil EL, Kuti JL, Bearden DT et al. The Essential Role of Pharmacists in Antimicrobial Stewardship. *Infect Control Hosp Epidemiol*. 2016; 37(7):753-4.
13. Barlam TF, Cosgrove S, Abbo LM et al. Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America. *Clin Infect Dis*. 2016; 62(10): e51–e77.
14. Clinical and Laboratory Standards Institute (CLSI). CLSI supplement M100. Wayne, PA: CLSI; 2022.
15. The European Committee on Antimicrobial Susceptibility Testing. Breakpoint tables for interpretation of MICs and zone diameters, version 12.0, 2022.

### Authors

Curtis D. Collins, PharmD, MS, BCIDP, FASHP; Lisa E. Dumkow, PharmD, BCIDP; Wesley D. Kufel, PharmD, BCIDP, BCPS, AAHIVP; Cynthia T. Nguyen, PharmD, BCIDP; and Jamie L. Wagner, PharmD, BCPS (authors listed in alphabetical order by surname)

The authors wish to disclose the following potential conflicts of interest below within the last 12 months: Dr. Collins reports service with the National Quality Forum and the Board of Pharmacy Specialties and a consulting arrangement with ASHP Consulting. Dr. Kufel received a research grant from Merck & Co.