U.S. Department of Veterans Affairs
Veterans Health Administration
Pharmacy Benefits Management (PBM) Services
Clinical Pharmacy Practice Office (CPPO)

Clinical Pharmacist Practitioner (CPP) Role in Antimicrobial Stewardship Program (ASP)
June 2021

Executive Summary

This Fact Sheet highlights the critical role of the Clinical Pharmacist Practitioner (CPP) in improving appropriateness of antimicrobial use to combat antimicrobial resistance, improve clinical care, reduce adverse events and lower costs, through coordinated and consistent implementation of effective ASP.

Key Takeaways

- A *strong* Antimicrobial Stewardship Program (ASP) encompasses two major elements:
    1. Infectious Disease (ID) CPP(s) actively engaged in day-to-day patient care interventions, including but not limited to: engaging and educating in ASP, prospective audit and feedback (PAF), antimicrobial restrictions, ID consult services, pharmacokinetic (PK) services, and intravenous to oral antimicrobial conversion.
    2. ASP Program Manager(s) who has the skillset to assemble, assess, measure, and analyze antimicrobial use (AU) data and lead initiatives that are ASP priorities, including: establish and analyze AU data, quality assurance (QA)/quality improvement (QI) projects, medication use evaluations (MUEs), and implementation of local ASP initiatives.
- ASP Pharmacy Champions spend a predominant amount of their time on inpatient ASP. Other core responsibilities may include: ID consult service, outpatient parenteral antimicrobial therapy (OPAT), Emergency Department (ED) ASP, community living center (CLC) ASP, and outpatient ASP.
- Thoughtful evaluation of each practice site's ASP staffing and training can be accomplished through utilization of the Antimicrobial Stewardship Taskforce's (ASTF's) resources.
- Outpatient ASP is essential to manage antimicrobial prescribing throughout the VHA continuum of care. Barriers to implementation include lack of adequate FTE and IT support to complete outpatient initiatives; time constraints; inability to intervene in real-time; and limited access to outpatient antimicrobial use data.
- Documentation of ASP interventions is an important component of the ASP process; however, time limitations are a significant barrier to consistent documentation of ASP interventions in CPRS.
- VHA ASPs share antimicrobial use data for benchmarking purposes through the National Healthcare Safety Network Antimicrobial Use Option, as recommended by VHA Directive 1031, Antimicrobial Stewardship Programs (ASP).
- A future focus of CPPO may include standardization of ASP's functional statements that includes outlining the minimal ASP requirements.

Background

Antimicrobial resistance is an emerging national and global threat. The National Action Plan to Combat Antibiotic Resistance (2015), the Joint Commission (TJC) 2017 standards on Antimicrobial Stewardship for Hospitals and Nursing Centers (otherwise known as community living centers or CLCs) and the 2020 Antimicrobial Stewardship in Ambulatory Health Care are regulatory requirements which attempt to combat this crisis by ensuring healthcare facilities implement processes to improve the appropriateness of antibiotics. Multi-disciplinary Antibiotic Stewardship Programs (ASPs) are an effective approach to fight against antibiotic resistance and serve to mitigate unintended consequences such as *Clostridium difficile* (*C. difficile)* infections and other adverse events that result from inappropriate antibiotic use.

In 2014, VHA Directive 1031 on Antimicrobial Stewardship Programs established a requirement for an ASP multidisciplinary team, with designated core Physician and Pharmacy Champions. In 2019, VHA Directive 1031, Antimicrobial Stewardship Programs (ASP) was updated to include several new elements, including: a mandate that all VA medical centers with ≥ 30

beds shall enroll in the CDC NHSN AU (National Health Safety Network Antimicrobial Utilization) Module and that each center's designated ASP Physician and Pharmacist Champion's names and contact information be uploaded to the ASTF SharePoint site by January 2020. This directive created a need for facilities to identify Clinical Pharmacist Practitioner (CPP) and Clinical Pharmacists (CP) with ASP or Infectious Diseases (ID) training to have dedicated and protected time for ASP activities.

The Veterans Health Administration (VHA) also responded to the need for Antimicrobial Stewardship by the creation of the VHA National Antimicrobial Stewardship Task Force (ASTF) in 2011, a multi-disciplinary group that is co-led by the National Infectious Diseases Service, and VHA Pharmacy Benefits Management. The purpose was to develop, deploy and monitor a national-level strategic plan for improvements in antimicrobial therapy management. Through collaboration with VHA ASP Physician and Pharmacist Champions, ASTF has been able to support the development and expansion of ASPs within VHA. ASTF workgroups, supported by facility volunteers have established and diffused ASP initiatives and tools to support local efforts, to educate providers and patients, and facilitate compliance with VA and non-VA requirements. These include:

- Monthly educational webinars on current ID and ASP topics, and educational slide sets and flyers for patients and clinicians
- Sample policies, campaigns and initiatives such as the *Staphylococcus aureus* Bacteremia Bundle, Avoidance of Dual-Anaerobic Therapy, Skin and Soft Tissue Infection Therapy Guidance, Intravenous to Oral Antimicrobial Conversion, Anti-Methicillin Resistant *Staphylococcus aureus* and anti-broad spectrum gram-negative antibiotic de-escalation, Pneumonia Duration of Therapy, Urinary Tract Infection (UTI) and Asymptomatic Bacteriuria (ASB) Guidance.
- Tools and documents to support ASP development logistics, including: workload guidance and recommendations on skills and knowledge needed for VA ASP Champions
- Links to data tools to monitor antimicrobial use developed by the ASTF that allows comparison with like facilities, as well as links to VA and non-VA requirements related to ASP
- Recent ASTF/MEDSAFE Antimicrobial Medication Use Evaluations that were implemented at participating VHA facilities include: Pneumonia and Duration of Therapy (2014), urinary tract infections and asymptomatic bacteriuria (2015), Acute Respiratory Tract Infections (2016), Uncomplicated Skin/Soft Tissue Infections (2017), and Vancomycin Initiation and Continuation (2018)

The ASP SME CPPO Workgroup was developed in 2019 with plans to assess, analyze, and characterize the current state of strong ASP practices within the VHA. The first step towards this goal was through the development of a Query Tool to analyze variations in practices of workgroup members and to develop a desired state of practice for ASP CPSs and ASP Pharmacy Champions.

Role of the CPP in Antimicrobial Stewardship

The VA CPP is an Advanced Practice Provider who is authorized, under a scope of practice, to autonomously prescribe and provide comprehensive medication management services in a variety of practice settings as described in VHA Handbook 1108.11, Clinical Pharmacy Services. After careful review of the CPP qualifications, training, and competency, the CPP SOP is approved at the facility level with oversight by the Executive Committee of the Medical Staff. The ASP CPP serves to improve appropriateness of antimicrobial use by performing essential comprehensive medication management services in conjunction with a dedicated Physician ASP Champion, ideally with specialized training in ID and/or ASP. A *strong* ASP encompasses two major elements:

1. ID CPP(s) actively engaged in day-to-day interventions in patient care, including: engaging and educating CPPs in ASP, PAF, ID consult service, PK services, and intravenous to oral antimicrobial conversion;
2. ASP Program Manager(s) who has the skillset to assemble, assess, measure, and AU data and lead initiatives that are ASP priorities, including: establish and analyze AU data, QA/QI projects, MUEs, and implementation of local ASP initiatives.

Characteristics of current CPPs in the ASP practice area that were sampled were found on average to be comprised of 0.9 FTE ASP Pharmacy Champion FTE and 0.5 FTE ASP Physician Champion FTE managing the antimicrobial pharmacotherapy of approximately 260 inpatients. Recommended minimum staffing requirements were established in VHA Directive 1031. (Table 1)

Table 1. Minimum FTE by Medical Facility Complexity Level.

Position Title	1a and 1b	1c and 2	3	Additional Staffing for CLC
Infectious Diseases Physician Antimicrobial Stewardship	0.50	0.25 – 0.5	0.25 – 0.375	See below*
Clinical Pharmacist – Antimicrobial Stewardship	1.5 – 4.0	1.0 – 2.0	0.25 – 0.5**	0.0 – 0.25**
Nurse Practitioner and/or Physician Assistant – Antimicrobial Stewardship	0.5	0.5	0.0 – 0.25	See below*

*For this case, no specific recommendations were made by the Infectious Diseases Field Advisory Committee and the FTE for the positions is left to the discretion of the VA medical facility

**The ASTF and PBM CPPO created and validated a staffing calculator for ASP in VA medical facilities.

***Funded research is encouraged but is in addition to FTE defined by clinical need

Recommended Education/Training/Certification

The ASP CPP should be trained and engaged in the day-to-day assessment of patients on antimicrobial agents, along with longitudinal tracking of outcomes related to the ASP as described in the following monitors:

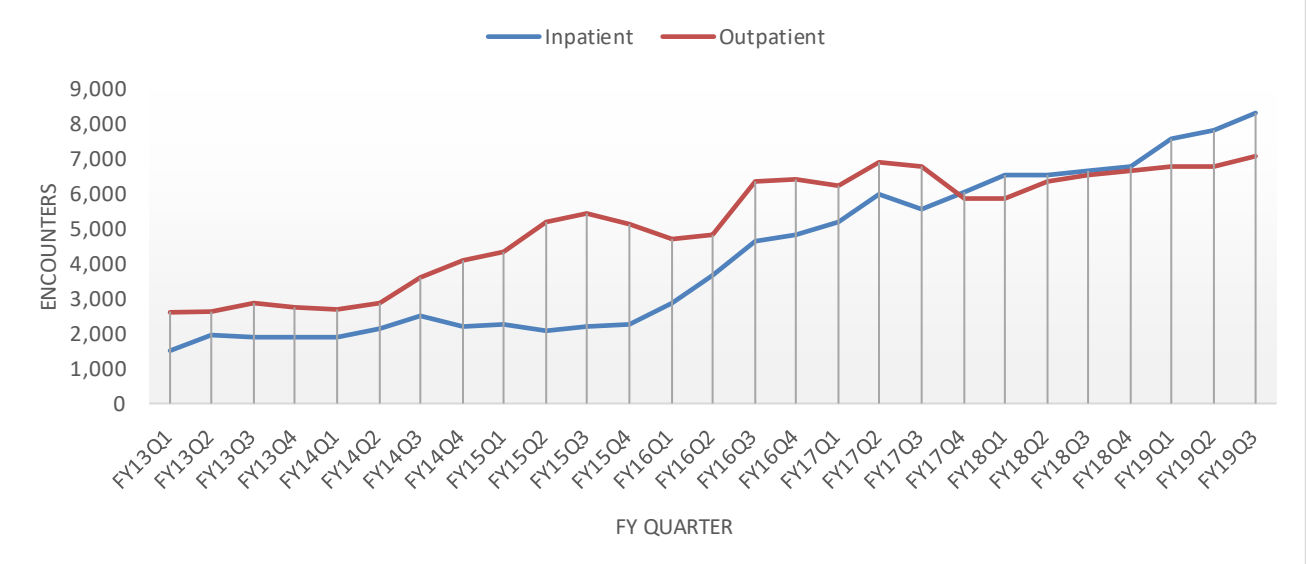
- Received specialized training and/or certification in ID or ASP
- Ability to document successful competency in ASP and ID using a standardized competency assessment tool.
- Ability to track and report on ASP outcomes related to interventions and education, antibiotic use data, and other quality/continuous improvement metrics
- Provide effective education to staff and patients on the importance of appropriate antibiotic use and antimicrobial resistance

Specialized Infectious Disease training allows for further development of ASP ideologies, quality improvement practices and advancements in appropriate use of antimicrobials along with attaining the skillset necessary to provide effective communication and education to patients and other healthcare professionals. In addition to specialized residency or fellowship training, several organizations offer certificate programs in Antimicrobial Stewardship that can provide foundational knowledge in both common infectious diseases and the mechanics of leading a stewardship program, particularly in smaller facilities. For those pharmacists enrolled in a program, the VA has a site to track enrollment and projects to help track this training within VA. In a letter from 2013, the acting Deputy Undersecretary for Health Operations and Management, facility directors were directed to support and fund training of pharmacists in their facilities for a stewardship certificate program. ASP Pharmacy Clinicians also maintain an active role in academia and research. Many VAMCs are affiliated with a large, academic medical center where ASP Pharmacy Clinicians maintain active faculty appointment and/or are involved in teaching and research.

Current Assessment of Clinical Pharmacist Practice in Antimicrobial Stewardship

Nationwide, CPPs are integrated into care teams throughout VHA, delivering care through a variety of modalities, including: face-to-face, phone, and virtual care. Under the VHA Directive 1031, all VHA sites are required to have an ASP Pharmacy Champion, defined as a facility-designated clinical pharmacist/clinical pharmacy specialist assigned to co-lead the ASP with the ASP Provider Champion. At this time, 168 ASP Pharmacy Stewardship Champions are actively engaged in the optimization of antimicrobial prescribing across the VHA. Interventions by ASP Pharmacists are captured utilizing the chart note, and at some facilities these interventions are also captured utilizing antimicrobial surveillance software, spreadsheets, and other databases. The frequency of documentation utilizing Pharmacists Achieve Results with Medications Documentation (PhARMD) Tool has exponentially increased since FY16, with 127,365 PharmD Tool ASP interventions documented in FY18 by all VHA CPPs. There also continues to be a steady increase in the number of ASP encounters in both the inpatient and outpatient setting with over 51,000 encounters in FY18, compared to only 22,077 encounters by CPPs in FY14. (Figure 1)

Figure 1. VHA Pharmacist Infectious Disease Encounters, FY13 – FY19.*



*These encounters are not exclusive to ASP. These encounters also include: HIV, HIV Pre-exposure Prophylaxis, Hepatitis C, etc.

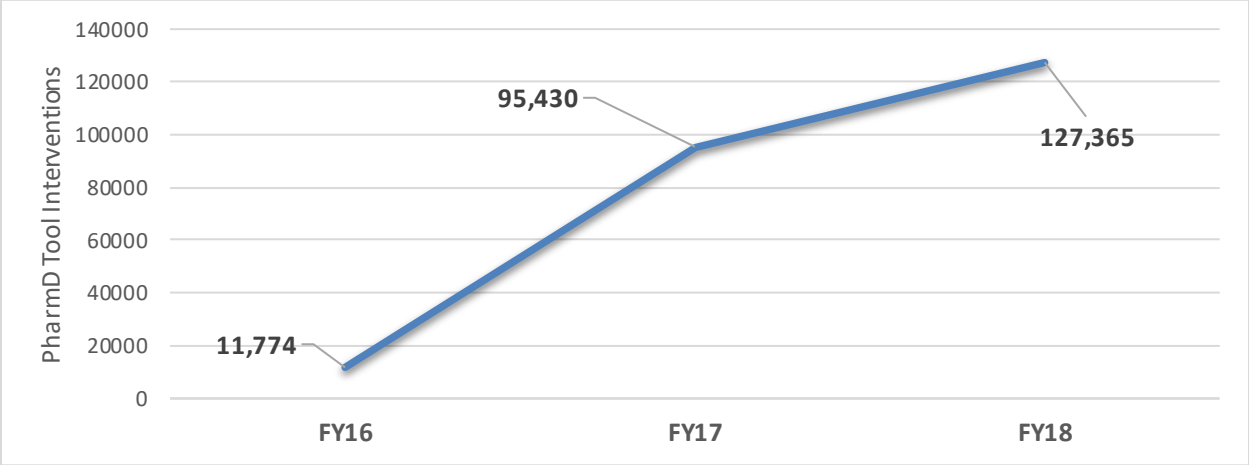
ASP Champion responsibilities include, but are not limited to: inpatient antimicrobial stewardship, ID consult service, outpatient parenteral antimicrobial therapy (OPAT), outpatient antimicrobial stewardship, CLC antimicrobial stewardship, Emergency Department stewardship, and travel patients.

ASP Pharmacy Champions are engaged in the implementation of facility level inpatient and outpatient stewardship interventions. Buy-in from key stakeholders is necessary for the growth of ASPs. To allow for efficient acceptance of ASP interventions, relationships with prescribers and other healthcare providers including nurses, pharmacists, microbiologists, infection preventionists, and leadership are essential. Documentation of these interventions to optimize antimicrobial drug selection, dose, route, frequency, duration, and indication are a core element of a successful ASP and also a method of communicating ASP interventions. (Figure 2) Frequency and methodology of ASP interventions varies among institutions.

Other essential components of a successful ASP include participation in the creation and dissemination of the facility antibiogram and restriction of specific antimicrobials to ASP and/or ID approval (e.g., fluoroquinolones, carbapenems, and other drugs directed at multidrug resistant organisms). Many ASP Pharmacy Champions also participate in VISN-level ASP Workgroups.

Reporting of antimicrobial use metrics through the NHSN AU Option allows for comparison of antimicrobial use data among similar facilities. Benchmarking of antimicrobial use data allows for identification of future ASP initiatives and goals.

Figure 2. VHA CPRS PharmD ASP Interventions Documented, FY16 – 18



Outpatient Antimicrobial Stewardship Interventions

The nature of outpatient prescribing makes providing immediate feedback to providers challenging, as often the decision to prescribe antimicrobials has already been made prior to CPP involvement. TJC ambulatory health care organization standards will increase the focus on outpatient antimicrobial, with expectations including development of annual outpatient ASP goal(s). Some sites have implemented the ASTF/Academic Detailing Acute Respiratory Tract Infection Initiative, but other outpatient initiatives are possible. Potential outpatient ASP goals may include:

- Provider Education (including prescribing practices, scorecards, academic detailing)
- Initiatives targeting disease states, such as: sexually transmitted diseases, asymptomatic bacteriuria, *Clostridium difficile* infections, and skin/soft tissue infections
- Development of outpatient ASP order sets that support antimicrobial restrictions
- Incorporation of rapid molecular diagnostics
- Antimicrobial restrictions (e.g. fluoroquinolones)
- MUEs on targeted antimicrobials
- Allergy testing
- Increased availability of ASP services through e-consults and pagers
- ASP opportunities identified by surveillance software

Cost and Clinical Outcomes of Antimicrobial Stewardship Programs

In a VAMC systematic review by Filice et al., ASP interventions intended to optimize antimicrobial prescribing and/or reduce excessive antimicrobial prescribing were not found to significantly impact hospital length of stay, hospital readmission, or mortality. Interventions to increase ID guideline compliance were found to significantly reduce mortality. Total antimicrobial prescribing decreased by 24.7% utilizing persuasive ASP interventions (education, reminders, prospective audit and feedback, educational outreach) and 40.5% utilizing restrictive ASP interventions (requirement of ID expert approval of antimicrobials). This reduction in antimicrobial prescribing ranging from 24.7 – 40.5% of all prescribed antimicrobials is associated with significant cost-savings.

Conclusions and Recommendations

Antimicrobial resistance is a compelling global health crisis that requires implementation and sustainment of ASP initiatives, tracking and trending of results, and sharing of these results with key stake holders. The VA continues to combat inappropriate antimicrobial prescribing through coordinated and consistent implementation of effective ASP.

VHA has strived to implement and sustain strong practices within the ASP arena, with the clinical pharmacy specialists serving a very important role across the continuum of care from inpatient to outpatient. However, there continue to be opportunities related to further expansion of program goals. Expansion of inpatient ASPs could include formal ASP

responsibilities for CPPs. These rounding CPPs play a critical role in ASP by impacting prescribing practices at the time the prescribing decision is made. Expansion of outpatient ASPs could include formal ASP responsibilities of Academic Detailers.

Some barriers that have been identified include expansion of ASP CPP FTE, Information Technology (IT) Support, and lack of ancillary support staff. To assist in the expansion and sustainment of VA Antimicrobial Stewardship Programs, the updated VHA Antimicrobial Stewardship Directive 1031 offers staffing recommendations for ASP FTE based on facility acuity and size. A staffing calculator was applied by ASTF in collaboration with CPPO to develop suggested staffing guidance. These tools should be used to garner FTE to support ASP services within VA facilities. Furthermore, despite the importance of documenting ASP interventions, almost all respondents felt that there was lack of adequate time allotted to document ASP interventions.

Following the release of the inpatient TJC antimicrobial stewardship standards in January 2017, ASP resources were dedicated to inpatient ASP activities. Recommendations for outpatient expansion are evident, as TJC ambulatory health care organization standards requirements go into effect in January 2020. Thus, medical centers are encouraged to evaluate their outpatient ASP resources and policy needs to prepare. Future outpatient stewardship initiatives are encouraged in this vulnerable area.

Questions related to this guidance may be directed to the Clinical Pharmacy Practice Office (CPPO) at VHAPBH Clinical Pharmacy Practice Office (CPPO) ClinicalPharmacyPracticeOfficeCPPO@va.gov.

References

1. VHA Directive 1031, Antimicrobial Stewardship Programs
2. Barlam TF, Cosgrove SE, 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:e51.
3. Kelly A, Jones M, Echevarria K, et al. A Report of the Efforts of the Veterans Health Administration National Antimicrobial Stewardship Initiative. *Infection Control Hosp Epidemiol* 2017;1-8.
4. Filice G, Drekonja D, Greer N, et al. Antimicrobial Stewardship Programs in Inpatient Settings: A Systematic Review [Internet]. Washington (DC): Department of Veterans Affairs (US); 2013 Sep.
5. The Essential Role of Pharmacists in Antimicrobial Stewardship. Infect Control Hosp Epidemiol 2016. DOI: 10.1017/ice.2016.82
6. Sanchez GV, Fleming-Dutra KE, Roberts RM, Hicks LA. Core Elements of Outpatient Antibiotic Stewardship. MMWR Recomm Rep 2016; 65:1.
7. Fleming-Dutra KE, Hersh AL, Shapiro DJ, et al. Prevalence of Inappropriate Antibiotic Prescriptions Among US Ambulatory Care Visits, 2010-2011. JAMA 2016; 315:1864.