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# Managing Clinical Programs in Pharmacy at an Academic Medical Center in the United States

## Gestión de programas clínicos en farmacia en un hospital docente de los Estados Unidos

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## Abstract

Managing clinical pharmacy programs requires communication, coordination, and organization to provide the best possible care to patients and to support staff members. While different areas of pharmacy have slight variations in management style, there are core concepts that all clinical managers should address. These include training, staff evaluation and support, assessment and improvement of policies and processes and research. Standardized training performed by high performing members of staff is essential in providing the framework for strong employees and clinical pharmacists. Routine communication, evaluation, and discussion of reward and promotion will provide support to staff and recognition of high-quality work. Continued evaluation and improvement of policies and processes will bring attention to areas of improvement and how the change can be agreed upon and implemented. Research is necessary to advance the healthcare practice and improve patient outcomes. Managers and administrators should tailor their approach based on what is best for their practice setting, institution, and staff to promote strong and capable pharmacists, policies, and workflow to provide the best possible care to patients.

**KEYWORDS**
Pharmacy; Pharmacy service, hospital; Delivery of health care; Program evaluation; Pharmacy administration.

## Resumen

La gestión de los programas de Farmacia Clínica requiere comunicación, coordinación y organización para brindar la mejor atención posible a los pacientes y apoyar a los profesionales de los servicios de farmacia. Si bien existen ligeras variaciones entre los estilos de gestión de los diferentes ámbitos de la farmacia hospitalaria, existen algunos conceptos básicos que todos los gestores clínicos deben abordar. Estos incluyen formación, evaluación y apoyo al personal, evaluación y mejora de políticas y procesos, e investigación y docencia. La formación reglada impartida por personal cualificado es esencial para proporcionar un marco de actuación sólido encaminado a fortalecer las competencias del personal en general y de los farmacéuticos clínicos en particular. La comunicación, evaluación y discusión continuas sobre recompensas y promociones sirven para intensificar el apoyo al personal y reconocer la excelencia profesional. La evaluación y mejora continuas de políticas y procesos ayudan a identificar posibles áreas de mejora y a consensuar e implementar los cambios necesarios. La investigación es necesaria para optimizar la atención sanitaria y mejorar los resultados en salud. Los gerentes y responsables hospitalarios deben adaptar sus métodos de trabajo en función de las necesidades de su práctica asistencial, de las características de la institución en la que trabajan y de los profesionales que ejercen sus funciones en ella. De este modo, podrá promoverse el desarrollo de profesionales farmacéuticos, políticas y rutinas de trabajo que permitan ofrecer a los pacientes la más alta calidad asistencial.

**PALABRAS CLAVE**
Farmacia; Servicio de farmacia, hospital;
Prestación de servicios de salud; Programa de evaluación;
Administración de farmacia.

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## Introduction

Clinical pharmacy is constantly evolving to provide the best possible care for patients and meet the changing landscape of healthcare. The concept of clinical pharmacy has been discussed for decades as a shift from a product-centered to patient-centered model[1-3]. This model promotes highly qualified and experienced pharmacists to optimize medication therapy and disease state prevention[4-6]. Their well-rounded knowledge of pharmacokinetics/pharmacodynamics, clinical trials and guidelines, patient-specific variables, and insurance coverage make them a reliable source of information and recommendations[4]. The presence and impact of clinical pharmacists has extended to the inpatient, community, and ambulatory care settings. While each arena of pharmacy oversees clinical pharmacy programs with some variability, there are core concepts that must be upheld to effectively manage programs and staff. These areas include training, evaluation of staff, evaluation and improvement of policies and processes, and research. This review will predominantly address the management of inpatient clinical pharmacy programs, with a focus in critical care.

## Staffing model

Our institution, Brigham and Women's Hospital (BWH), is a 793-bed acute tertiary care academic medical center in Boston, a large city in the northeastern United States. The pharmacy department employs an integrated staffing model that incorporates pharmacists, clinical pharmacy specialists, and operational pharmacy specialists. Pharmacists are an integral part of many patients care teams, including all intensive care units (ICUs) and many non-ICU services. At BWH, our ICUs are split into medical, surgical, burn/trauma, neurosciences, thoracic, coronary care, cardiac surgery, and neonatal units. Examples of rounding non-ICU services include general medicine, general cardiology, heart failure, and solid organ transplant. All of these "unit-based" pharmacists, regardless of whether they are classified as "specialists", are responsible for rounding with the medical team to optimize patient-specific pharmacotherapy (i.e., medication selection, dose optimization, therapeutic drug monitoring, drug information, medication order verification and distribution, and response to medical emergencies)[3,6-10]. Our institution also has clinical pharmacists actively covering the emergency department, medication reconciliation and transitions of care, hematology and oncology, allergy, infectious disease, and hemostatic antithrombotic stewardship, in addition to centralized pharmacists that support operational areas (i.e., central pharmacy operations and dispensing, sterile products room, narcotics inventory and dispensing, infusion center, operating room, and post-anesthesia care unit). The vast majority of pharmacists at our institution are cross trained in clinical and operational areas to provide a more comprehensive understanding of the department and to assist with supporting colleagues and scheduling.

The complexity of the service and areas in which clinical pharmacists could be the most helpful were driving factors in the creation of our model, an idea illustrated in a 2012 AJHP practice report by Granko *et al.* and a 2016 ASHP practice guideline for hospital pharmacy[7,11]. Of note, the implementation of stewardship programs including hemostasis and anticoagulation, transitions of care, sedation optimization, immune globulin utilization, allergy, and infectious diseases have shown to improve patient outcomes and decrease costs[7,8,12-14]. It is important for program managers to be aware of new services being created at other institutions and assess for inclusion at their institution. While communication and routine evaluation are important with all things, it is especially important for newer consult and stewardship programs to assess impact, identify areas for improvement, and support staff. One such example at our institution was the creation and implementation of an aminoglycoside monitoring program. This is a pharmacy resident-operated program that evaluates and provides recommendations for all inpatients receiving aminoglycoside therapy. This program was then evaluated and found to have achieved a significantly higher number of patients who achieved optimal therapy[14]. This program has been sustained for almost two decades and is relied on heavily by providers of all disciplines at our institution. One reason for the continued impact of this initiative is that it was championed by a small group of passionate individuals. Not all initiatives are able to be implemented, l*et al.*one sustained, but chances of eventual and continuing success increase if there are champions to lead the efforts. Despite the obvious positive impacts that pharmacists can have in the inpatient setting, pharmacy managers should continuously strive to challenge their staff to continue to progress and avoid stagnation[15]. Incorporating items such as publications, specialty certifications, precepting of pharmacy students and residents, involvement in local, regional, or national committees, and giving educational talks at various levels into the career ladder structure may encourage staff to continue to grow. Along with self-advocacy, referring to position statements and executive summaries is invaluable (i.e., 2020 Critical Care Medicine position paper, 2020 Journal of the American College of Clinical Pharmacy position paper)[9,16].

## Training

Managers of clinical programs dedicate significant time to the betterment of current pharmacists; however, it is important to also foster the growth of pharmacy interns, students, residents, fellows, and other learners[9,16]. Our institution partners with the colleges of pharmacy in the city and host interns and students on rotations as part of their curriculum. Students and interns actively participate in the daily routine of the pharmacist under supervision, assist with research and quality improvement projects, and create inter and intra-professional presentations. To support preceptor development, clinical managers and senior staff provide support through continuing education, routine reassessment of rotation syllabi and expectations, and attendance of national conferences.

Pharmacy residency programs have been increasing in recognition and number and over the past years and will continue to expand[17,18]. Residency programs require strong leadership, structure, and standardized processes to facilitate a consistent and fair learning environment. Communication is imperative to ensure directors, coordinators, preceptors, and residents are in agreement on expectations throughout the year. To further support the success of the residents and program, our institution created a Residency Advisory Committee which comprises of residency preceptors, directors, and coordinators that meet monthly to discuss any pertinent aspects of the residency and address any issues that arise. Clinical managers participate in this committee and can serve as a mediator, problem-solver, or source of recommendation through expertise and experience.

Standardized training of new staff by high functioning members is essential in providing a strong framework. All new pharmacists and residents undergo an extensive training period when welcomed to the department. After initial orientation by the Human Resources department and electronic health record system training, new staff spend time training with various pharmacists in the department. When creating a training schedule, the manager's goal is to provide the staff member with exposure to many different areas of the department to foster interest in subspecialties, committees, precepting, and research, as well as provide the new staff member a foundational understanding of how the pharmacy department functions across several areas of the hospital. During the initial six to eight weeks of orientation, new employees are required to work through a training checklist that covers topics such as using the electronic health system to review patients and verify medication orders, central pharmacy workflow, medication distribution, controlled substance management, sterile products workflow, emergency medical response, and more. The training document undergoes annual re-evaluation and is updated based on feedback from trainers and trainees. This standardization ensures all important aspects of training are completed and new staff are exposed to different workflow and dispensing procedure even though the exact opportunity may not arise on the training shift.

In order to uphold pharmacist licensure, one must obtain enough continuing education credits per year at a state level. Depending on the state, credit must be obtained in different categories (i.e. live, sterile compounding, non-sterile compounding, vaccination-related, and law)[6,16,18]. To aid with obtaining credits, promote life-long learning, and provide presentation opportunities for staff and residents, our department created a Professional Development Committee[18,19]. This committee works with the national Accreditation Council for Pharmacy Educators to oversee and accredit all department presentations that qualify for pharmacist licensure credit. The committee also disseminates out an annual survey to assess the clinical needs of the department and tailor presentation topics accordingly. The management of this committee is intensive and requires organized and driven members to provide the valuable departmental benefits.

An additional aspect of training and credentialing that is important for clinical pharmacy managers to promote is obtaining board certification. Obtaining board certification in a subspecialty of pharmacy is voluntary but it provides recognition to highly qualified and effective pharmacists and demonstrates clinical competence to the patients, employers, and other healthcare professionals[9,16-18]. Clinical managers at our institution highly encourage acquiring board certification for these reasons, and the majority of our staff pharmacists have obtained at least one specialty certification. In the United States, the Board of Pharmacy Specialties (BPS) is an accrediting body that provides certification after examination in a variety of specialties including critical care, cardiology, pharmacotherapy, oncology, and infectious diseases, among others[18].

## Evaluation of staff

It is essential for managers of clinical pharmacists to have a plan for scheduled evaluation. This plan should include a strategy for routine formalize feedback as well as a plan to address the need for informal feedback and other means of support. To assist with creating a standardized set of evaluation measures, the American College of Clinical Pharmacy (ACCP) published a guideline and set of recommended evaluation tools in 2017[19]. The domains addressed in this tool are direct patient care, pharmacotherapy knowledge, system-based care and population health, communication, professionalism, and continuing professional development. The domains are incorporated into the formalized annual evaluation process at our institution. We also highly encourage informal quarterly evaluation and discussion of goals, with more frequent meetings as requested. This format of formal and informal feedback assists with early identification of barriers or issues, recognition of accomplishments, and supporting growth in the profession[20].

An area of focus during evaluations should be career development and advancement. Managers of clinical pharmacists should address and identify an individual's goals and how they can facilitate those goals and support the pharmacist through the process. This may include providing opportunities for local/regional/national/international committee involvement, identification of research and publication opportunities, facilitating presentations to a variety of audiences, and advocating for more time in a unit or subspecialty of interest. One area for improvement in the realm of clinical pharmacy is with better defining advancement structure and reward for high quality work[20]. In 2009, an ACCP survey discovered that two-thirds of managerial responders did not have defined criteria for workplace advancement with the most commonly cited barriers being lack of understanding of clinical roles, financial limitations, and shortage of qualified pharmacists[20,21]. One method our institution has implemented to provide structure and reward is the creation of clinical specialist acknowledgement. Staff pharmacists are predominantly titled "senior pharmacist" or "clinical specialist" with the specialist title being a promotion-type transition awarded after a pharmacist meets a set of predefined peer-reviewed criteria as is rewarded with financial and scheduling incentive. These criteria are designed and reviewed by administrators and practice managers to demonstrate a pharmacist has displayed adequate work experience and certifications, clinical and operational excellence, policy and guideline development or update, precepting and mentorship, committee involvement, and research. Although financial limitations can be a barrier, providing recognition and reward is important to uphold staff satisfaction and provide a goal for staff to work toward.

## Evaluation and improvement of policies and processes

Clinical managers oversee many aspects of clinical programs including the training, staff evaluation, research and mentioned in this review however a major day-to-day responsibility is the implementation, evaluation, and improvement of polices and processes[11]. Clinical managers sit on the vast majority of large interprofessional and intradepartmental committees within the institution. While ideas for institutional and departmental policy and process improvement may come from a multitude of sources, they all must obtain approval from at least one overseeing committee. Examples of some interprofessional committees include Pharmacy and Therapeutics (P&T), Diabetes Subcommittee of P&T, Drug Administration Guidelines Committee, Smart Pump Committee, Emergency Response Committee, Sepsis Task Force, Drug Safety Committee (reviews medication errors and medication use systems to facilitate system and policy changes), Medication Safety Committee (reviews individual medication safety reports to evaluate for system changes), and a committee to triage issues with medication order builds in the electronic health record. There is an additional host of intradepartmental committees including Peer Review Committee, Professional Development Committee, Residency Advisory Committee, and the Pharmacy Morbidity and Mortality Rounds Committee. This small sample of committees demonstrates how involved clinical managers are in policy and process oversight and how important it is for managers to delegate tasks to others in the department. The P&T Committee is a common presence in many institutions and literature has discussed the important of a pharmacy presence on the committee to facilitate formulary and guideline review[22]. Each committee requires different degrees of involvement and may change depending on the topic of review and institution. It is important for clinical managers to understand their role on the committee while also advocating for their department.

When the pharmacy department is tasked to create or update a policy or guideline, clinical managers are at an advantage to assist with identifying one or more individuals to update/create and implement the change. Especially for new staff and young pharmacists, clinical managers can assist with document creation, committee presentation, staff communication and education, and addressing questions or issues that arise. With regards to pharmacy staff education, we strongly encourage development of educational content within our online learning management system that can be assigned to applicable members of the department when applicable. Additionally, information is disseminated via departmental email and addressed during staff shift sign-off huddles that occur twice daily. In this role, clinical managers should be present as a support but should provide the pharmacy department member with adequate autonomy. After a process is implemented, initial and routine evaluation is important to identify if the change was effective and if any other areas of improvement can be addressed[23].

An example of how clinical managers can facilitate a quality improvement process through committee involvement and delegation is displayed by how our institution improved time to administration of sterile compounded first dose neonatal antibiotics. Neonatal intensive care unit (NICU) administration and pharmacy leadership were alerted to delays in the time to administration of first dose sterile compounded antibiotics. Pharmacy leadership identified the pharmacy resident on rotation at the time to assess the average time to complete each stage of the compounding and delivery process. After identification and assessment of barriers, a solution proposal was brought to the pharmacy department's internal committee for process improvement. Once the intervention was agreed upon, the resident and administrator provided staff training and education. After some time, the process was reevaluated and the time to complete certain steps in the compounding and delivery process were significantly shortened. These findings were presented to the process improvement committee, NICU leadership, and as a poster at a national conference. This example of process evaluation, improvement, and reevaluation is a great demonstration of how clinical managers can assist with process improvement and provide opportunities for pharmacy learners.

## Research

The American College of Clinical Pharmacy's definition of clinical pharmacy distinctly comments that clinical pharmacy has an obligation to participate in research and contribute to the ever-growing body of healthcare literature to improve patient outcomes[4,6]. Clinical managers are in an excellent position to identify research opportunities based on institutional and clinical necessity. These opportunities can then be filtered to staff members most equipped and motivated for the task. Clinical managers may remain on the research project as a source of expertise and senior guidance especially if the manager has interest and experience in this role. Many international organizations acknowledge the importance of research including the Society of Critical Care Medicine and the American College of Clinical Pharmacy through their position papers on clinical pharmacy services[16,23].

Our department is fortunate to foster an environment of research and is supported by a similar sentiment when working with other providers. Our preceptors are heavily involved with pharmacy-resident driven research and

provide opportunities for students. While a majority of the research is conducted within the department, many pharmacists regularly work with other providers within the institution. A few of our pharmacists also participate in research at a multi-institutional level and a select few contribute to the creation of international guidelines. A department with experienced researchers provides an invaluable support to newer pharmacists and residents to create a strong publication with meaningful outcomes. To provide the most benefit to the department, we have created a Peer Review Committee comprising of these well-published pharmacists and administrators. The goal of this committee is to review project design proposal, abstracts, posters, and platform presentations. By reviewing project design, clinical pharmacists can provide input to optimize the methods and selection of outcomes prior to the study team collecting data. By reviewing abstracts, posters, and platform presentations prior to conference submission and presentation, we can present the most meaningful product to best represent out department, institution, and profession.

## Conclusion

Managing clinical programs is a complex process and requires communication, coordination, and organization. Managers and administrators should tailor their approach based on what is best for their practice setting, institution, and staff. Adhering to the concepts of training, evaluation of staff, evaluation and improvement of policies and processes, and research, and will assist with maintaining effective policies and processes and supporting highly functioning satisfied clinical pharmacists. At the center of all, promotion of strong staff, policies, and workflow will provide the best possible care to patients.


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## Bibliography


1. Vora S, Cohen V. Implementing Clinical Services across a Large Health System. Am J Health Syst Pharm. 2007;64(5):460-3.
2. Elenbaas R, Rothen D. Clinical Pharmacy in the United States: Transformation of a Profession. American College of Clinical Pharmacy. 2009;74(9):177.
3. Pickette S, Muncey L, Wham D. Implementation of a standard pharmacy clinical practice model in a multihospital system. Am J Health Syst Pharm. 2021;6:751-6.
4. American College of Clinical Pharmacy. The Definition of Clinical Pharmacy. Pharmacotherapy. 2008;28(6):816-7.
5. Burke J, Miller W, Spencer A, Crank C, Adkins L, Bertch K, *et al.* Clinical Pharmacist Competencies. Pharmacotherapy. 2008;28(6):806-15.
6. American College of Clinical Pharmacy. Standards of Practice for Clinical Pharmacists. Pharmacotherapy 2014;34(8):794-7.
7. Granko R, Poppe L, Savage S, Daniels R, Smith E, Leese P. Method to determine allocation of clinical pharmacist resources. Am J Health Syst Pharm. 2012;60:1398-404.
8. Pedersen C, Schneider P, Scheckelhoff D. ASHP national survey of pharmacy practice in hospital settings: monitoring and patient education. Am J Health Syst Pharm. 2019;76:1038-58.
9. Lat I, Paciullo C, Daley M, MacLaren R, Bolesta S, McCann J, *et al.* Position paper on critical care pharmacy services (executive summary): 2020 update. Crit Care Med. 2020;48(9):1375-82. DOI: 10.1097/CCM.0000000000004438
10. Bond C, Raehl C. Clinical Pharmacy Services, Pharmacy Staffing, and Hospital Mortality Rates. Pharmacotherapy. 2007;27(4):481-93.
11. American Society of Hospital Pharmacists ASHP Guidelines: Minimum Standard for Pharmacies in Hospitals. Am J Health Syst Pharm. 2013;70(18):1619-30. DOI: 10.2146/sp130001
12. Traynor K. Employee medication program relies on clinical pharmacists. Am J Health Syst Pharm. 2007;64:2215-16.
13. Mann K, Wu J, Shah S. Implementation of a Pharmacist-Driven Detailed Penicillin Allergy Interview. Ann Pharmacother. 2020;54(4):264-70.
14. Greenwood B, Szumita P, Lowry C. Pharmacist-driven aminoglycoside quality improvement program. J Chemother. 2009;21(1):42-5.
15. Erstad B. Justification of the value of critical care pharmacists: still a work in progress? Am J Health Syst Pharm. 2020;77:1906-9.
16. Lat I, Paciullo C, Daley M, MacLaren R, Bolesta S, McCann J, *et al.* Position Paper on Critical Care Pharmacy Services: 2020 Update. Crit Care Med. 2020;48(9):e813-34. DOI: 10.1097/CCM.0000000000004437
17. American College of Clinical Pharmacy. Board of Regents Commentary Qualifications of Pharmacists Who Provide Direct Patient Care: Perspectives on the Need for Residency Training and Board Certification. Pharmacotherapy. 2013;33(8):888-91.
18. Shord S, Schwinghammer T, Badowski M, Banderas J, Burton M, Chapleau Ch, *et al.* Desired Professional Development Pathways for Clinical Pharmacists. Pharmacotherapy. 2013;33(4):e34-42. DOI: 10.1002/phar.1251
19. White A, Albertson B, Muncey L. Development and implementation of a clinical pharmacist training and assessment program. Am J Health Syst Pharm. 2012;69:278-81.
20. Lee M, Badowski M, Acquisto N. ACCP Template for Evaluating a Clinical Pharmacist. Pharmacotherapy. 2017;37(5):e21-9. DOI: 10.1002/phar.1927
21. Goodwin S, Kane-Gill S, Ng T. Reward and Advancement for Clinical Pharmacists. Pharmacotherapy. 2010;30(1):68-85.
22. Moore G, Kosirog E, Van de Griend J. Expansion of clinical pharmacist positions through sustainable funding. Am J Health Syst Pharm. 2018;75:978-81.
23. Leonard M, Thyagarajan R, Wilson A, Sekeres M. Strategies for success in creating an effective multihospital health-system pharmacy and therapeutic committee. Am J Health Syst Pharm. 2018;75:451-5.