

Entry-level Competencies Needed for Pharmacy Practice in Hospitals and Health-Systems

Based on the work of a joint ASHP-ACPE Task Force

Fall 2010



Introduction

Both pharmacy education and pharmacy practice continue to evolve. The practice needs in hospitals, specifically the readiness of entry-level pharmacists has been a growing concern of many pharmacy leaders for some time. Changes in pharmacy school curricula have resulted in graduates who possess good general clinical knowledge, but there have been reports that not all graduates are adequately prepared to enter practice or a residency in the hospital setting. In June 2009, a task force was formed jointly between ASHP and ACPE with a specific charge: to describe the competencies needed for entry-level practice in hospitals and health-systems and help identify gaps in the readiness of new pharmacy graduates. Members of the task force are listed in Appendix A. This document represents the competencies identified by that task force, along with their recommendations and suggestions for where competencies might best be included in the pharmacy school curriculum.

Process

The task force had extensive discussion regarding the competencies needed for entry-level practice in hospitals, resulting in a process for identifying specific competencies and developing recommendations on how they be achieved and assessed in the professional degree program. The key actions of the TF included:

- 1 The competencies that were viewed as being critical to success for an entry-level practitioner in a hospital position were identified. All comments were combined and grouped into common areas (Pharmacy Systems, Medication Safety and Quality, Clinical Applications, and Professional Practice).
- 2 A survey was developed to validate the importance of the competencies and determine if there were additional areas that needed to be addressed. The survey was sent to 2,445 hospital pharmacy directors and residency program directors. The results were analyzed and used to validate the competencies. The final list of competencies is presented in Appendix B.
- 3 A workshop was conducted at the American Association of Colleges of Pharmacy (AACP) Annual Meeting in July 2010, with the goal of gaining feedback on how the identified competencies should best be taught and assessed and where they should be addressed in the pharmacy curriculum.
- 4 Based on the collective work of the TF, specific recommendations were developed on how the competencies might be used to enhance and improve the readiness of new pharmacy graduates for hospital and health-system practice.

Results

Survey

The survey was sent to hospital pharmacy directors and/or residency program directors. The survey asked recipients to rate each competency on whether they expected a new graduate to possess the competency and rate the importance of the competency for their practice setting. Generally, there were three distinct groups of responses that the TF identified and discussed. Those that scored consistently very high were considered level I, and included statements 1, 3, 5, 6, 12, 14, 15, 17, 18, 19, 20, 21, 22, and 23. Those that scored lower were considered level II, and included competency statements 4, 7, 8, 11, 24, and 25. Those considered level III, were competency statements 2, 9, 10, 13, and 16. Even though there was some variation in the scores, the relative importance as rated by survey respondents and the TF, resulted in all 25 competency statements being retained.

Respondents also offered free-text comments on competencies that should be added, or where the statements could be improved. General comments related to the 'Pharmacy Systems' section suggested additional focus on professional advocacy, computerized prescriber order entry (CPOE), antineoplastic & other high-risk drugs, pharmacy calculations, narcotics control, and diagnostic related groups (DRGs) & healthcare common procedure coding system (HCPCS) billing codes. Comments on the 'Medication Safety and Quality' section suggested additional focus on root cause analysis (RCA) & failure mode and effects analysis (FMEA), risk management & reporting systems, "Just Culture" & shared accountability, medication utilization evaluations (MUEs), medication safety protocols & monitoring, awareness of how governmental & non-governmental organizations influence practice, and medication reconciliation. Comments on the 'Clinical Applications' section suggested focus on nutritional support, pediatrics, screening for ADRs & other adverse events, and evidence-based medicine. Comments on the 'Professional Practice' section suggested additional focus on leadership, emotional intelligence, time management skills, and health literacy skills.

Statistical analysis was also performed on the results, recognizing that there were limitations in the survey study design and sampling methodology. A Chi square and multivariate analysis were performed and generally found no statistical difference between responses from different hospital types, hospital sizes, pharmacy director vs. RPD, and those with residencies vs. those without.

The conclusion reached through the survey was that the competencies identified were generally accurate and that no major gaps were identified.

Workshop

The workshop was conducted by members of the TF and was attended by over 150 participants. The goal of the workshop was to share the competencies and have workshop participants identify whether each competency is best addressed during didactic courses, in practice labs, or practice experiences; and other possible learning or teaching methods and assessments that schools might wish to consider. A secondary goal of the workshop was to have participants identify any missing competencies that should be added, or any unnecessary competencies that should be removed; neither were identified.

Participants indicated that a) all 25 areas should be introduced in either didactic courses or practice lab experiences and then reinforced in IPPE/APPE rotations, and that b) preceptor assessments are critical for all 25 competency statements. Participants indicated that a small number of concepts could be addressed in IPPE rotations, but the majority should be covered during the APPE experiences. A summary of the participant findings are attached in Appendix C. The results of the workshop activities should be considered as a useful resource for schools of pharmacy seeking ways to ensure that all graduates achieve the health-system competencies.

Final Competency Statements

The competency statements identified by the TF and used for the survey and workshop are included in Appendix B. Slight modifications and improvements were made at each step of the process, but the intent of the competency remained throughout.

Recommendations

The TF made 10 recommendations to the ASHP and ACPE Boards of Directors, which included the following specific recommendations to schools of pharmacy, NABP, AACP, ASHP and ACPE:

Recommendations to Schools of Pharmacy:

- 1 Schools of Pharmacy curriculum committees should review the competencies as they evaluate and make decisions regarding course offerings.** The competencies should be of value to curriculum committees so that they might consider how well they are mastered by students at their school and where they best fit within the curriculum.
- 2 The competencies should be used by schools to evaluate their preparation of students, specifically for practice in hospitals and health systems.** The competencies might be used as a tool to evaluate the effectiveness of their curriculum. These competencies

might be used, for example, as a basis to survey practice sites where their graduates go for practice or residencies, to assess their overall readiness.

- 3 ***ASHP Best Practices* should be considered as an essential teaching resource at schools of pharmacy.** Many of the competencies noted are addressed within the guidelines and statements included within the *ASHP Best Practices* book. While some schools and experiential sites use the book or web resource in their teaching of students, it is not universal and many find that its use facilitates students being better prepared should they enter practice or residency training programs in hospitals and health-systems.
- 4 **Schools of Pharmacy should share the competencies with experiential instructors and preceptors.** The competencies should be useful when developing learning objectives and goals for experiential education rotations.
- 5 **Schools should make the competencies available to pharmacy students.** Students, especially those planning to enter practice in a hospital setting or enter a residency, would be able to use these competencies as they plan their classes and experiential site selection

Recommendation to NABP

- 1 **NABP should consider the competencies as part of the NAPLEX examination blueprint.**

Recommendations to AACP

- 1 ***ASHP Best Practices* should be promoted as an essential teaching resource at schools of pharmacy.** Many of the competencies noted are addressed within the guidelines and statements included within the *ASHP Best Practices* book. While some schools and experiential sites use the book or web resource in their teaching of students, it is not universal and many find that its use facilitates students being better prepared should they enter practice or residency training programs in hospitals and health-systems. The *ASHP Best Practices* book should be included in the AACP list of recommended texts for colleges and schools of pharmacy.
- 2 **The next revision of the AACP Standardized Surveys for Graduating Students, Faculty, Preceptors, and Alumni should ensure that the surveys adequately reflect the 25 competencies.**

Recommendations to ASHP

- 1 **The competencies should be shared with residency preceptors.** Residency preceptors would benefit from having access to the competencies list, helping them assess new residents entering their program and including remedial training where deficiencies are found.
- 2 **ASHP should make the competencies available to pharmacy students.** Students, especially those planning to enter practice in a hospital setting or enter a residency, would be able to use these competencies as they plan their classes and experiential site selection.
- 3 **Findings and recommendations of the Task Force should be shared and discussed at national meetings.** The AACCP workshop presented by Task Force representatives was well received, generated discussion on how schools might re-examine their curriculum content to make sure these competencies should be addressed, and resulted in favorable evaluations. Additional sessions with similar formats should be conducted at other meetings, with the hope of generating similar results.

Recommendations to ACPE

- 1 **ACPE should ensure that the competencies are addressed during the next revision of its Standards and Guidelines.** While the TF found many of the competency areas addressed in the current standards, this may not always be reflected in schools' curricula, resulting in gaps in what is being offered by the schools.
- 2 **When evaluating programs, ACPE should request evidence from schools showing how these competencies are being achieved by all graduates.**
- 3 **Findings and recommendations of the Task Force should be shared and discussed at national meetings.** The AACCP workshop presented by Task Force representatives was well received, generated discussion on how schools might re-examine their curriculum content to make sure these competencies should be addressed, and resulted in favorable evaluations. Additional sessions with similar formats should be conducted at other meetings, with the hope of generating similar results.

Appendix A

**Members of the ASHP-ACPE Task Force on
Identifying Entry-level Competencies Needed for
Pharmacy Practice in Hospitals and Health-Systems**

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Appendix B

Competencies Required for Entry-level Pharmacy Practice in Hospitals and Health-Systems

Pharmacy Systems

- 1 Describe the medication use process in health-systems, including how pharmacy impacts the safety of storage, prescribing, transcription, dispensing, administration and monitoring steps.
- 2 Describe the basic drug procurement process including drug selection, inventory management, backorders, recalls, handling of drug shortages and their relationship to safe, effective patient care.
- 3 Describe the integration and interface of clinical and distributive functions, including the synergy that translates into safe and effective medication therapy.
- 4 Outline the basic functionality of commonly used automated systems related to medication use (such as automated dispensing cabinets, computerized prescriber order entry systems, bar code medication administration systems, programmable infusion devices, and robotics), understanding their appropriate and safe use as well as unintended consequences.
- 5 Perform activities within a typical hospital drug distribution system, including order receipt, evaluation and review, and describe the appropriate roles of pharmacy technicians and pharmacists in these processes.
- 6 Demonstrate aseptic technique and describe processes and facilities needed to provide sterile compounded parenteral solutions, including the basic requirements of USP 797.
- 7 Describe the appropriate use of injectable medications, including intravenous, intrathecal, intraocular, intradermal and other routes. Description should include unique preparation techniques, concentration considerations, rates of administration, special infusion devices, and compatibility considerations.
- 8 In real or simulated scenarios, supervise pharmacy technicians in their work in medication preparation and delivery.

Medication Safety and Quality

- 9 Summarize current National Patient Safety Goals and articulate those goals that relate to medication use, pharmaceutical care and pharmacy's role in each.

- 10 Describe how organizations such as the Joint Commission strive to assure quality of health care through the accreditation process, giving examples of relevant standards related to safe and appropriate medication use.
- 11 Describe those national standards, guidelines, best practices, and established principles and process related to quality and safe medication use (e.g. storage of look-alike/sound-alike medications, high alert medications, storage of concentrated potassium in patient care areas, dangerous abbreviations, leading decimal points and trailing zeros, quality measure related to medications, etc.).
- 12 Given a real or simulated case of a patient transitioning from one care setting to another, effectively reconcile his/her medications and make appropriate communications to involved pharmacy providers.
- 13 Employ performance improvement techniques used in health systems and describe how they are used to improve the medication use process.

Clinical Applications

- 14 Given a drug information question, access appropriate drug information resources, including primary literature, and provide an accurate and credible answer. Present the answer successfully in both written and oral forms.
- 15 Given a real or simulated case requiring practical application of pharmacokinetic dosing principles for commonly used drugs that are rely on serum levels for dosing, determine the correct dose.
- 16 Make useful contributions to the establishment of medication use policies, criteria and maintenance of the formulary as a student member of the Pharmacy and Therapeutics Committee using an evidence-based approach to evaluation of the literature.

Professional Practice

- 17 Demonstrate effective verbal and written communications to staff, patients and healthcare team members.
- 18 Demonstrate professional behavior (attitude, dress, appearance, etc.) in practice settings.
- 19 Given a real or simulated case, document appropriate therapeutic recommendations related to medication therapy.
- 20 Accurately triage multiple patient care priorities in times of high activity and workload.

- 21 Given a real or simulated case, respond to questions with the appropriate level of detail necessary to ensure proper patient care and communication with other relevant parties.
- 22 Given a real or simulated pharmacy-related problem, demonstrate effective problem solving skills.
- 23 Given a real or simulated case, demonstrate an appropriate level of clinical knowledge related to medications and therapeutics in making decisions or recommendations.
- 24 Analyze a recently published study.
- 25 Describe the impact of pharmacist involvement on medication safety and quality using appropriate literature.

Appendix C

Competencies for Hospital/Health-Systems Practice that Should be Achieved by all Graduates: Suggestions for Placement in the Curriculum, Assessment, Teaching Methods

Results of Task Force Workshop conducted at the 2010 AACP Annual Meeting:

Competency	Addressed in Curriculum			Type of Assessment			Possible Teaching/Learning Methods
	Didactic	Practice Lab	IPPE/ APPE	Exams	OSCE	Preceptor	
Pharmacy Systems							
1. Describe the medication use process in health-systems, including how pharmacy impacts the safety of storage, prescribing, transcription, dispensing, administration and monitoring steps.	X		IPPE/ APPE	X		X	Cases; Snapshot overviews; Shadowing; Student summaries to preceptors; Competitive internships; Electives; Tracks
2. Describe the basic drug procurement process including drug selection, inventory management, backorders, recalls, handling of drug shortages and their relationship to safe, effective patient care.	X			X		X	Competitive internships; Electives; Tracks; Cases with demos in APPE; Mgmt and law courses
3. Compare and contrast clinical and distributive functions, including how their effective interface can translates into safe and effective medication therapy.	X		APPE	X		X	Modeling by preceptors; Competitive internships; Electives; Tracks; EHR; Cases; Journal Club
4. Outline the basic functionality of commonly used automated systems related to medication use (such as computerized prescriber order entry systems, etc.) understanding their appropriate use as well as unintended consequences.	X		IPPE/ APPE	X		X	Problem-based learning (PBL); Competitive internships; Electives; Tracks; Shadowing
5. Perform activities within a typical hospital drug distribution system, including order receipt, evaluation and review, and describe the appropriate roles of pharmacy technicians and pharmacists in these processes.	X	X	IPPE/ APPE	X		X	Shadowing; Reflection; Competitive internships; Electives; Tracks

6. Demonstrate essential techniques and describe processes and facilities needed to provide sterile compounded parenteral solutions, including the basic requirements of USP 797.	X	X	IPPE/ APPE	X		X	Peer evaluation; Internship training; Culture glove finger tips after preparation
7. Describe the appropriate use of injectable medications, including intravenous, intrathecal, intraocular, intradermal and other routes. Description should include unique preparation techniques, concentration considerations, rates of administration, special infusion devices, and compatibility considerations.	X	X	IPPE/ APPE	X		X	A lot of practice lab experience; Most effective in P3 year
8. In real or simulated scenarios, supervise pharmacy technicians in their work in medication preparation and delivery.		X	IPPE/ APPE			X	Cases; Introduced in Mgmt courses
Medication Safety and Quality							
9. Summarize current National Patient Safety Goals and articulate those goals that relate to medication use, pharmaceutical care and pharmacy's role in each.	X		APPE			X	Introduce concepts in lecture, require application in APPE; Cases
10. Describe how organizations such as the Joint Commission strive to assure quality of health care through the accreditation process, giving examples of relevant standards related to safe and appropriate medication use.	X		IPPE			X	Introduce concepts in lecture, require application in APPE; Cases
11. Illustrate those national standards, guidelines, best practices, and established principles and process related to quality and safe medication use (e.g. storage of look-alike/sound-alike medications, high alert medications, storage of concentrated potassium in patient care areas, dangerous abbreviations, leading decimal points and trailing zeros, quality measure related to medications, etc.).	X	X	X IPPE	X	X	X	Med Safety course; Calculations course; In-service project while on rotation; Use simulation lab & group discussion; Problem solving activities and exams; Students facilitate discussion with hospital personnel;

12. Given a real or simulated case of a patient transitioning from one care setting to another, effectively reconcile their medications and make appropriate communications to involved pharmacy providers.	X	X	APPE		X	X	Introduce concepts in intro course; PBL cases; Communication & therapeutics courses; Develop Care Plans
13. Employ performance improvement techniques used in health systems and describe how they are used to improve the medication use process.	X		APPE	X		X	Introduce concepts in intro course; Med Safety & Mgmt courses; DUE project; Explore in research elective
Clinical Applications							
14. Given a drug information question, access appropriate drug information resources, including primary literature, and provide an accurate and credible answer. Present the answer successfully in both written and oral forms.	X	X	APPE	X	X	X	DI rotation; Small group discussion; Topic debates; Journal clubs; Cases; Faculty evaluating student seminar present.
15. Given a real or simulated case requiring practical application of pharmacokinetic dosing principles for commonly used drugs that rely on serum levels for dosing, determine the correct dose.	X	X	APPE	X	X	X	Cases
16. Make useful contributions to the establishment of medication use policies, criteria and maintenance of the formulary as a student member of the Pharmacy and Therapeutics Committee using an evidence-based approach to evaluation of the literature.		X	IPPE/ APPE			X	Conduct mock P&T meeting; Address in Drug Lit course; Mgmt course; Create drug monograph; DI course & rotation; Advanced HC Systems course
Professional Practice							
17. Demonstrate effective verbal and written communications to staff, patients and/or healthcare team members.	X	X	APPE		X	X	Self assessment of videotape
18. Demonstrate professional behavior (attitude, dress, appearance, etc.) in practice settings.	X	X	IPPE/ APPE		X	X	Introduce concepts in intro course; Reinforce throughout curriculum and extracurricular activities

19. Given a real or simulated case, document appropriate therapeutic recommendations related to medication therapy.	X	X	APPE	X	X	X	Interdisciplinary MTM course; Cases; EMR; Peer evaluation; Modeled by preceptors
20. Accurately triage multiple patient care priorities in times of high activity and workload.			APPE			X	Reflection; Simulation lab; Discussion periods; Capstone experiences;
21. Given a real or simulated case, respond to questions with the appropriate level of detail necessary to ensure proper patient care and communication with other relevant parties.	X	X	APPE		X	X	Video clips of actual situations; Use simulation & manikins; Phone simulation; Include as part of "Clinical Skills Day" or ASHP clinical competition experiences
22. Given a real or simulated pharmacy-related problem, demonstrate effective problem solving skills.	X	X	APPE	X	X	X	Reflection; Peer assessment; Cases; SOAP exam; Include as part of "Clinical Skills Day"
23. Given a real or simulated case, demonstrate an appropriate level of clinical knowledge related to medications and therapeutics in making decisions or recommendations.	X	X	APPE	X	X	X	Include as part of "Clinical Skills Day" or ASHP clinical competition experiences; Cases; Group work & presentation; Use simulation & manikins
24. Analyze a recently published study.	X	X	APPE	X		X	Include as part of "Clinical Skills Day" or ASHP Clinical Skills Competition experiences; Part of self-directed & lifelong learning; PBL & TBL (Team-based learning)
25. Describe the impact of pharmacist involvement on medication safety and quality using appropriate literature.	X		APPE	X		X	Evaluation by staff in APPE; PBL & TBL; Portfolios; Root Cause Analysis (RCA) & Gap Analysis; Group discussion

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