

# Evaluating the Educational Impact of a Graduate Program in Health-system Pharmacy Administration

By

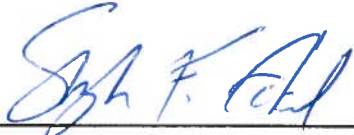
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Senior Honors Thesis  
UNC Eshelman School of Pharmacy (PharmD Program)  
University of North Carolina at Chapel Hill

April 9, 2017



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**Abstract** (AJHP max: 250 words)

**Background/Purpose:** In 2006, the 2-year combined Masters of Science (MS) in pharmaceutical sciences with specialization in health-system pharmacy administration (HSPA) and Health-System Pharmacy Administration residency program was re-established as a partnership between the University of North Carolina at Chapel Hill (UNC) Eshelman School of Pharmacy and local academic medical centers to address the lack of leaders within health-system pharmacy in the state of North Carolina. The objective of this study is to assess how graduates and their employers perceive the MS degree component of the HSPA/MS residency program and its ability to promote relevant outcomes, including fulfillment of the four outcomes and ten identified core competencies of the program.

**Methods:** An electronic survey was used to poll UNC MS program alumni as well as their first supervisor out of HSPA training. Supervisors were asked to compare UNC MS alumni to non-masters trained administrative pharmacists that they had also supervised.

**Results:** UNC MS alumni were found to be statistically superior to non-masters trained alumni in three of four outcomes and eight of ten outcomes. The majority of alumni indicated that they were more likely (57.9%) to remain within the state of NC within the next five years. Supervisors surveyed indicated that they were more likely (80%) to hire MS-trained pharmacists for administrative positions.

**Conclusion:** Didactic training in the form of a master's degree as a part of comprehensive HSPA residency training is important to develop/supplement core skills and knowledge obtained through the experiential program.

## **Background**

The first administrative graduate degree program at the University of North Carolina Hospitals (UNCH) was started in 1967 as a two-year residency-training program paired with a Master of Science (MS) degree through the school of pharmacy at the University of North Carolina at Chapel Hill (UNC). However, in 1997 the graduate degree program (and associated residency) was ceased due to decreased interest in pharmacy administration compared to clinical pharmacy as a career pathway and the nationwide push for the Doctor of Pharmacy (PharmD) to become the entry-level degree for practicing pharmacists.

In 2005, the ASHP Foundation Scholar-in-Residence released a report outlining results from a survey revealing that a significant gap in pharmacy leadership was expected within 5-10 years following the report. The results of this survey showed 79.5% of Pharmacy Directors (n = 517) and 76.5% of Pharmacy Middle Managers (n = 489) planned to leave their current position, whether for another position or retirement. Of the Pharmacy Directors surveyed, 56.2% believed that there was not someone who they knew and considered qualified to recommend as a replacement. This survey also worked to identify reasons why pharmacists would not want to enter leadership positions, with 58.6% of Current Pharmacy Practitioners (n = 290) and 43.2% of Student Pharmacists (n = 776) identifying having to give up clinical practice as one of the reasons they are not likely to consider a leadership position.<sup>1</sup>

During this time, the UNC Eshelman School of Pharmacy leadership team dialogued with health-system pharmacy leaders within the state about their perspectives on whether there were pharmacists trained and ready to take over their positions if they were vacated. The results of these discussions led to the re-establishment in 2006 of the 2-year combined MS in pharmaceutical sciences with specialization in health-system pharmacy administration (HSPA), the existing graduate degree at the UNC Eshelman School of Pharmacy. This program began with a collaboration between the UNCH, Duke University Health System (DUHS), and Wake Forest Baptist Health (WFBH), who each developed an ASHP-accredited Health-system Pharmacy Administration (HSPA) residency program. In 2011 and 2016,

Mission Hospitals (MH) and Moses H. Cone Memorial Hospital (MHC), respectively, recruited their first resident to the program. Since 2006, the program has grown to a total of 9 graduate students per year between the five practice sites. The program balances clinical and administrative experiences, with the first year being an ASHP-accredited PGY1 Pharmacy Practice Residency that prepares one for patient care activities. Additionally, the ASHP-accredited PGY-2 HSPA residency program prepares residents to take managerial and leadership positions within health-systems. The experiential education of the residency program is paired with the didactic coursework of the MS degree, providing a robust training environment.

The MS program includes course work in advanced topics including human resource management, health-systems financial management, medication safety, quality improvement, and health-system pharmacy operations offered by the UNC Eshelman School of Pharmacy. Students are also required to complete a supervised project in health-system pharmacy (i.e., thesis substitute) in addition to passing a final written comprehensive examination to successfully graduate from the degree program. The program is structured to achieve the stated outcomes of the MS program: to prepare graduate students to be pharmacy practitioners, leaders and innovators, managers, and life-long learners. These are coupled with the identified core competencies of the MS program as defined in Table 1. All courses and activities are geared toward demonstrating proficiency in these.

As of the 2017 ASHP Resident Matching Program statistics, there were 40 programs with a total of 65 positions that offer a 2-year combined HSA/Masters residency program.<sup>2</sup> However, there is no standard degree offering between all programs, as some offer a MS, Masters of Public Health (MPH), Masters of Healthcare Administration (MHA), or Masters of Business Administration (MBA). There are varying degrees of flexibility, control, and classes geared toward Health-system pharmacy across these different graduate degrees. The objective of this study is to assess how graduates and their employers perceive the MS degree component of the HSPA/MS residency program and its ability to promote

relevant outcomes, including fulfillment of the four outcomes and ten identified core competencies of the program.

## **Methods**

### *Study Design and Participants*

This cross-sectional study utilized an electronic survey to gauge perceptions of the MS degree component of the HSPA/MS residency program. Both alumni and their first direct supervisor post-graduation were identified to provide survey responses for programmatic evaluation purposes. UNC Institutional Review Board (IRB) approved all study procedures. Due to the close-knit nature of the program and alumni, the recruitment target was all graduates of the program at time of study recruitment, twenty-four alumni and twenty-four direct supervisors.

### *Recruitment of Participants*

The alumni data was already available through previously obtained data for the purposes of internal programmatic improvement by the Office of Strategic Planning and Assessment (OSPA) within the UNC Eshelman School of Pharmacy. Each alumni was asked to submit their direct supervisor post-graduation in order to recruit them to participate in the alumni version of the survey.

### *Survey Design*

The alumni and supervisor surveys were both quantitative and qualitative utilizing closed-ended questions, Likert-scale ratings, and open-ended questions. Qualtrics (Provo, UT) was used for creation and distribution via email of the electronic survey. Alumni were asked to provide demographic information about practice setting, salary range, professional organization involvement, and future career plans. Alumni were asked 5-point Likert scale questions regarding the MS program preparing and developing the alumni to fulfill the identified outcomes and core competencies. Additionally, alumni were asked open-ended questions about the top three skills and experiences obtained during the MS degree and the top three that they wished the MS training had included (Appendix A). Supervisors were

asked to use the same 5-point Likert scale to score the employee being/exhibiting the outcomes and core competencies, as well as the scale to compare the employee to administrative pharmacists that the respondent had supervised without masters-level training (Appendix B). No demographic data was collected from the supervisor survey.

*Data Analysis*

Aggregated alumni self-scoring based on the outcomes and core competencies were compared to supervisor scoring utilizing chi-square analysis. Supervisor scoring of alumni compared to non-MS trained direct reports were also aggregated and compared using Wilcoxon rank-sum tests. STATA (StataCorp LLC; College Station, Texas) was used to calculate the median, interquartile range (IQR), and Wilcoxon rank-sum for this data.

**Results**

Nineteen alumni (91% response rate) and 15 supervisors' (61% response rate) answers were available for analysis. Demographic information about the alumni who responded to the survey is shown in Table 2. Of note, other options were available to choose from within the survey for degrees, practice settings, and current positions, but none were selected. Also, at the time of this survey, two respondents were pursuing other post-graduate training.

Table 1. Outcomes and Core Competencies of the Masters of Science in Pharmaceutical Sciences with a Specialty in Health-system Pharmacy Administration

Outcomes & Core Competencies of the Masters of Science in Pharmaceutical Sciences with Specialization in Health-system Pharmacy Administration	
<b>Outcomes</b>	<p>To prepare graduate students to be...</p> <ul style="list-style-type: none"> <li>• <b>Pharmacy practitioners</b> who implement high-quality, team-based, patient-centered pharmacy services;</li> <li>• <b>Leaders and innovators</b> who embrace opportunity, recognize need, and create solutions to advance health-system pharmacy practice, patient care, and the overall delivery of health care; and</li> <li>• <b>Managers</b> who communicate, delegate, motivate, plan, acquire and allocate resources, monitor progress and create environments that enable the advancement of pharmacy services; and</li> <li>• <b>Lifelong learners</b> who continually strive for positive impact both personally and professionally.</li> </ul>
<b>Core Competencies</b>	<ul style="list-style-type: none"> <li>• <b>In-depth knowledge, understanding, and application of core principles, content, and skills unique to health systems pharmacy administration:</b> to demonstrate an in-depth understanding of health care and the principles and practice of pharmacy to advance human health and health systems.</li> <li>• <b>Accessing and Analyzing Information:</b> to identify, locate, critically evaluate, and process information to arrive at an informed opinion; identify the important information and be able to say “here is what we need to do about it”.</li> </ul>

- **Critical Thinking/Problem Solving:** to take an issue or a problem, learn about it, understand it, examine other ways of thinking about it, bring it all together and frame it, come up with creative solutions and new ideas (important characteristics of critical thinker: asks really good questions, is curious, approaches problems as learners not knowers).
- **Communication:** to develop and express ideas and thoughts clearly and concisely in a way that fosters understanding, inspires, and creates focus; communicate effectively in written and oral form.
- **Collaboration and Influence:** to work effectively with others and understand and respect differences; create networks and groups who work together toward a common goal.
- **Adaptability:** to change (or be changed) to fit new surroundings and ideas; being willing and able to adapt your behavior (adaptability is a two part process that combines flexibility and versatility. Flexibility is your willingness to adapt-this is your attitude; versatility is your ability to adapt-this is your aptitude).
- **Initiative:** to be self-directed, take initiative to seek out new opportunities, ideas, and strategies; and find creative solutions.
- **Curiosity and Inquisitiveness:** to demonstrate a drive to learn and understand more in an effort to improve or make something better; the habit of curiosity is a constant wonder of how something might be improved or even reinvented and then coming up with creative solutions; curiosity enables life-long learning.
- **Professionalism:** to uphold the highest standards of professional and ethical behavior and act appropriately, thoughtfully, and with integrity at all times.
- **Innovation:** Ability to create and implement new technologies, services, programs, etc, to meet the pharmacy needs of today and tomorrows health systems.

Table 2. Demographic Information about Alumni Respondents.

Demographic Information about Alumni Respondents (N = 19)		
Degree(s) Prior to Residency	Bachelor of Science (BS)	9 (47.4%)
	Doctor of Pharmacy (PharmD)	19 (100%)
Practice Setting(s)	Academia	2 (10.5%)
	Hospital	16 (84.2%)
	Other	2 (10.5%)
Current Position	Manager	7 (36.8%)
	Assistant/Associate Director	5 (26.3%)
	Director	3 (15.8%)
	Other	2 (10.5%)
Current Salary Range	< \$50,000/Not Reported	2 (10.5%)
	\$100,000 - \$124,999	8 (42.1%)
	\$125,000 - \$149,999	8 (42.1%)
	> \$150,000	1 (5.3%)
Duration in Current Position	≤ 6 months	3 (15.8%)
	7-12 months	8 (42.1%)
	12-18 months	2 (10.5%)
	> 18 months	6 (31.6%)
Is Current Position the Same as First Post-Residency?	Yes	7 (36.8%)
	No	8 (42.1%)
Certification(s)	Board of Pharmacy Specialties (BPS)	10 (52.6%)
	Other (Admin/Health-system Certification)	9 (47.4%)
Professional Membership(s)	AACP	1 (5.3%)
	ACCP	4 (21.1%)
	APhA	2 (10.5%)
	ASHP	18 (94.7%)
	NCAP (State Association)	6 (31.6%)
	Other(s)	6 (31.6%)
Were you a Resident of NC before Pharmacy School?	Yes	6 (31.6%)
	No	13 (68.4%)

The five point Likert Scale used throughout the survey is provided in Table 3. The results from the alumni comparison (alumni self-scoring compared to supervisor scoring of alumni) is shown in Table 4, which showed no significant differences between alumni self-scoring and the supervisor scoring of the alumni.

Table 3. Five-point Likert Scale

Scale	
Strongly Agree	2
Agree	1
Neither	0
Disagree	-1
Strongly Disagree	-2

Table 4. Alumni self-scoring compared to supervisor scoring of program outcomes and core competencies

Outcome	Alumni		Supervisor		p
	Median	IQR	Median	IQR	
PHARMACY PRACTITIONER	1	(1 - 2)	2	(1 - 2)	0.099
LEADER AND INNOVATOR	1	(1 - 2)	1	(1 - 2)	1.000
MANAGER	1	(1 - 2)	1	(1 - 2)	0.953
LIFELONG LEARNER	2	(1 - 2)	1	(1 - 2)	0.682
Core Competency	Alumni		Supervisor		p
	Median	IQR	Median	IQR	
Accessing/Analyzing Info	2	(1 - 2)	2	(1 - 2)	0.236
Collaboration	2	(1 - 2)	1	(1 - 2)	0.180
Communication	2	(1 - 2)	1	(1 - 2)	0.287
Innovation	2	(1 - 2)	1	(1 - 2)	0.124
Critical Thinking	1	(1 - 2)	1	(1 - 2)	0.324
Adaptability	2	(1 - 2)	1	(1 - 2)	0.623
Initiative	1	(1 - 2)	1	(1 - 2)	0.536
Curiosity/Inquisitiveness	1	(1 - 2)	2	(1 - 2)	0.488
Professionalism	2	(1 - 2)	1	(1 - 2)	0.834
In depth knowledge	2	(1 - 2)	1.5	(1 - 2)	0.853

Results from the supervisor comparison (supervisor scoring of alumni compared to supervisor scoring of non-masters trained administrative pharmacists in similar practices) is shown in Table 5. This showed statistically significant superiority in the UNC alumni compared to non-MS trained administrative pharmacists in all outcomes and core competencies except Manager, Innovation, and Critical Thinking. The largest differences were seen in Pharmacy Practitioner (2 vs. 0;  $p = 0.0002$ ), Accessing/Analyzing Info (2 vs. 0;  $p < 0.0005$ ), Curiosity/Inquisitiveness (2 vs. 0;  $p = 0.0059$ ), and In-depth Knowledge (1.5 vs. 0;  $p < 0.0059$ ).



Table 5. Supervisors' Survey: Comparison between UNC-MS trained alumni compared to other administrative pharmacists in similar positions

Outcome	Supervisor – UNC		Supervisor – Non-Masters		p
	Median	IQR	Median	IQR	
PHARMACY PRACTITIONER	2	(1 - 2)	0	(0 - 1)	<b>0.0002</b>
LEADER AND INNOVATOR	1	(1 - 2)	1	(0 - 1)	<b>0.0081</b>
MANAGER	1	(1 - 2)	1	(0 - 1)	0.0744
LIFELONG LEARNER	1	(1 - 2)	0	(0 - 1)	<b>0.0008</b>
Core Competency	Supervisor – UNC		Supervisor – Non-Masters		p
	Median	IQR	Median	IQR	
Accessing/Analyzing Info	2	(1 - 2)	0	(0 - 1)	<b>&lt; 0.0005</b>
Collaboration	1	(1 - 2)	0	(0 - 1)	<b>0.0111</b>
Communication	1	(1 - 2)	0	(0 - 1)	<b>0.0334</b>
Innovation	1	(1 - 2)	1	(0 - 1)	0.0676
Critical Thinking	1	(1 - 2)	1	(0 - 1)	0.1007
Adaptability	1	(1 - 2)	1	(0 - 1)	<b>0.0232</b>
Initiative	1	(1 - 2)	1	(0 - 1)	<b>0.0046</b>
Curiosity/Inquisitiveness	2	(1 - 2)	0	(0 - 1)	<b>0.0059</b>
Professionalism	1	(1 - 2)	1	(0 - 1)	<b>0.0019</b>
In depth knowledge	1.5	(1 - 2)	0	(0 - 1)	<b>0.0059</b>

When looking at the next 5 years (Table 6), alumni were split between seeing themselves in a similar position (8, 42.1%) and a different position (9, 47.4%) with 2 (10.5%) having no preference. The majority of alumni saw themselves continuing to practice in North Carolina (11, 57.9%) compared to outside of North Carolina (5, 26.3%), with 3 (15.8%) having no preference.

Table 6. Alumni expectations within next 5 years

Question	Response	# (%)
Within the next 5 years, respondent expects to be...	...in a similar position.	8 (42.1%)
	...in a different position	9 (47.4%)
	No Preference	2 (10.5%)
	...within the state of NC.	11 (57.9%)
	...outside of the state of NC.	5 (26.3%)
	No Preference	3 (15.8%)

Supervisors were asked to score on the same 5-point Likert scale how masters-training affected willingness to hire a pharmacist for an administrative position. Twelve (80%) of supervisors indicated that they agreed or strongly agreed that they were more likely to hire a pharmacist that is masters-trained, which is presented in Table 7.

Table 7. Supervisor likelihood to hire Masters-trained pharmacists.

Question	Response	# (%)
I am more likely to hire a pharmacist for an administrative position with a Master's degree.	Strongly Agree	3 (20%)
	Agree	9 (60%)
	Neither Agree nor Disagree	2 (13%)
	Disagree	1 (7%)
	Strongly Disagree	0

## **Discussion**

This study demonstrates that the UNC MS program is meeting its goal of training and preparing students to be successful in the outcomes and core competencies established for the program. From our evaluation of the available literature, this is the first attempt to quantify the impact of the graduate training component of a HSPA/MS residency training program. The fact that there was no significant difference in how the alumni self-scored their preparation from the MS program as to how their direct supervisor scored them exhibiting those qualities demonstrates that the program has been successful at teaching these skills.

When examining the supervisor scoring between UNC MS-trained alumni and non-masters trained administrative pharmacists, the UNC MS-trained alumni were found to be superior in all outcomes except for "Manager." However, it could be argued that the reason that a non-masters trained pharmacist might be hired into an administrative position would be their ability to be a strong manager. Additionally, the UNC MS-trained alumni were found to be superior to administrative pharmacists supervised without masters-level training within all of the core competencies except "Innovation" and "Critical Thinking." Of note, none of the 3 non-statistically significant items were ranked lower than "Agree" on average by alumni or their direct supervisors. While the alumni may not be significantly better than non-masters trained comparators, they are still exhibiting these values. The large difference in median scoring between Accessing/Analyzing Information, In-depth Knowledge, and Curiosity/Inquisitiveness show some of the clear benefits of the MS degree in educating future leaders in health-system pharmacy administration. Developing these outcomes and competencies occur through the organization and selection of courses, as well as in the manner in which they are taught. Having the ability to tailor the content for Health-system pharmacy practice and utilizing faculty members who practice in this setting demonstrate the ability to meet these desired outcomes and core competencies.

Of note, it appears that the MS/HSPA program does contribute to the recruitment and retention of pharmacists within the State of North Carolina since only 6 respondents (32%) were a resident of NC before pharmacy school and 11 (58%) planning to remain in NC for at least the next 5 years, over an 80% increase. Of note, the six alumni who reported that they were residents of NC prior to pharmacy school indicated that they also plan to remain in NC over the next 5 years. This is an encouraging result due to the investment that the UNC Eshelman School of Pharmacy, thus the State of North Carolina, contributes to the education of these trainees. It also demonstrates the impact that a school of pharmacy, by starting one of these programs, can have in assisting with a stable base of leaders in health-system pharmacy.

Supervisors indicating that they are more likely to hire a pharmacist with masters training for an administrative position as a promising outcome for the future of combined experiential-didactic HSPA training programs. This demonstrates that there is a strong potential for employment, since these people are delaying entering into the workforce by 2 years.

#### *Strengths, Limitations, and Potential Bias*

With a small targeted population and strong connection/investment in the program, we were able to have a high response rate with 79% of alumni and 62.5% of supervisors. Due to the truly integrated nature of the program, it is hard to precisely delineate skills gained didactically versus experientially. Since we only asked supervisors to compare to non-masters trained administrative pharmacists, we eliminated potential bias that could be introduced by comparing different HSPA/MS program graduates to each other. We did not ask demographic questions about the non-masters trained comparator pharmacist(s) to which each supervisor compared the UNC MS-trained alumni. There was no specification that the non-masters pharmacist comparator had to be similar to the UNC MS-trained alumni outside of being directly supervised by the same person and being in an administrative role.

Additionally, we did not gather demographic information about the supervisors, such as if they were MS-trained, which could have influenced their answers.

### *Future Study*

Since the start of the study, an additional 15 pharmacists have graduated from the training program across the 4 sites (first MCH resident to graduate in 2018), with 8 more to graduate in May 2017. Future study could be completed incorporating these new graduates as well as graduates at other sites outside of North Carolina that have similar HSPA/MS programs with a strong didactic curriculum housed within a school of pharmacy. Since the degree program is subsidized by the UNC Eshelman School of Pharmacy, one potential area of future research could include a deeper look at financial impact of graduates to their local and state economies. Comparisons in salary, position, length in current position, and expected position/location in the next 5 years could also be drawn by surveying graduates of other residency programs, to determine if there is any differences in residency training to HSPA/MS residency training.

### **Summary/Conclusion**

Overall, alumni and supervisors indicated that UNC MS alumni were achieving the outcomes and core competencies of the program, and in most cases were superior to non-masters trained administrative pharmacists. Our survey analysis showed that there was no significant difference between alumni self-scoring and direct supervisor scoring of ability to demonstrate the outcomes and core competencies of the MS degree. Supervisors scored UNC MS-trained pharmacists significantly higher in all but three outcomes and core competencies (Manager, Innovation, and Critical Thinking). While this was a small study, it demonstrates that there is value to those desiring to be administrative pharmacists to consider masters training as part of a comprehensive training program.

## References

1. White SJ. Will there be a pharmacy leadership crisis? An ASHP Foundation scholar-in-residence report. Am J HealthSyst Pharm. 2005; 62:845-55
2. Summary of Programs and Positions Offered and Filled in Phase I of the 2017 Match. (2017, March). Retrieved from: <https://www.natmatch.com/ashprmp/stats/2017summpos1.html>

## **Appendix A – Alumni Survey**

### Default Question Block

The purpose of this survey is to evaluate the Master of Science in pharmaceutical sciences with specialization in health-system pharmacy administration program. Your responses will enable us to better understand the impact of our program and will be used to inform changes to the graduate program.

Responses to this survey are anonymous. All results will be collected, de-identified, and provided to school leadership in aggregate form by the school's Office of Strategic Planning and Assessment. If you have any questions, please contact Evan Colmenares at [evan\\_colmenares@unc.edu](mailto:evan_colmenares@unc.edu) or Dr. Jacqui McLaughlin at [jacqui\\_mclaughlin@unc.edu](mailto:jacqui_mclaughlin@unc.edu)

This survey will take approximately 10 minutes to complete.

Please indicate your prior degree(s) upon entering the UNC Eshelman School of Pharmacy Pharmaceutical Sciences graduate program (select all that apply):

- Bachelor of Arts (BA)
- Bachelor of Science (BS)
- Master of Arts (MA)
- Master of Science (MS)
- Master of Public Health (MPH)
- Doctor of Pharmacy (PharmD)
- Doctor of Philosophy (PhD)
- Doctor of Medicine (MD)
- Other

Please indicate your current or most recent annual salary range (optional):

- <\$50,000
- \$50,000 - \$74,999
- \$75,000 - \$99,999
- \$100,000 - \$124,999
- \$125,000 - \$149,999
- >\$150,000

Please indicate your current work setting (select all that apply):

- Academia
- Government
- Nonprofit research institute
- Pharmaceutical industry
- Hospital
- Other, research-related (please describe)
- Other, not research-related (please describe)

What best describes your current position:

- Director of Pharmacy
- Assistant or Associate Director of Pharmacy
- Manager
- Team Lead
- Clinical Pharmacist
- Clinical Professor
- Assistant or Associate Clinical Professor
- Fellow
- Student
- Other (please describe):

Approximately how many years have you been in your current position:

Is this your first post-residency pharmacy position?

- Yes
- No



Please indicate the percent of time that you spend on each of the following:

Research	<input type="text" value="0"/>
Teaching/training	<input type="text" value="0"/>
Clinical - inpatient	<input type="text" value="0"/>
Clinical - outpatient	<input type="text" value="0"/>
Project management	<input type="text" value="0"/>
Business operations (finance, marketing, etc)	<input type="text" value="0"/>
Other <input type="text"/>	<input type="text" value="0"/>
<b>Total</b>	<b>0</b>

**SECTION II:** Training Experiences - please consider your MS program training **SEPARATELY** from your residency training.

Prior to starting the program did you have experience working as a technician or intern in a hospital pharmacy (*Note: do not count rotations during pharmacy school*)?

- Yes
- No

Consider the master's portion of the program (classes, etc.) for the following items:

The **MS program** prepared me to be a...

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
PHARMACY PRACTITIONER who implements high-quality, team-based, patient-centered pharmacy services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LEADER and INNOVATOR who embraces opportunity, recognizes need, and creates solutions to advance health-system pharmacy practice, patient care, and the overall delivery of healthcare	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MANAGER who communicates, delegates, motivates, plans, acquires, and allocates resources, monitors progress, and creates environments that enable the advancement of pharmacy services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LIFELONG LEARNER who continually strives for positive impact both personally and professionally	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The **MS program** prepared me for my professional obligations in the following areas:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Accessing and analyzing information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Innovation of new technologies, services, programs, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Critical thinking and problem solving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to be self-directed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adaptability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Initiative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Curiosity and inquisitiveness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professionalism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In depth knowledge of core content and principles unique to health-systems pharmacy administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please list the **top three skills** or experiences obtained during your MS training that you consider most critical to your career success (do not include postdoctoral positions):

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Please list the **top three skills** or experiences you wish your MS training had included but did not:

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Consider the residency portion of the MS/Residency program for the following items:

The **residency program** prepared me to be a...

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
PHARMACY PRACTITIONER who implements high-quality, team-based, patient-centered pharmacy services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LEADER and INNOVATOR who embraces opportunity, recognizes need, and creates solutions to advance health-system pharmacy practice, patient care, and the overall delivery of healthcare	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MANAGER who communicates, delegates, motivates, plans, acquires, and allocates resources, monitors progress, and creates environments that enable the advancement of pharmacy services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LIFELONG LEARNER who continually strives for positive impact both personally and professionally	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The **residency program** prepared me for my professional obligations in the following areas:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Accessing and analyzing information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Innovation of new technologies, services, programs, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Critical thinking and problem solving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to be self-directed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adaptability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Initiative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Curiosity and inquisitiveness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professionalism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In depth knowledge of core content and principles unique to health-systems pharmacy administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What additional certification(s), training, or education have you completed since completion of the MS program?

- Pharmacist-only board certification(s) (e.g., BCPS, BCACP)
- Multidisciplinary clinical certification(s) (e.g., AE-C, CDE, AAHIVE)
- Administration or Health-system certification(s)/training(s) (e.g. Lean, Six Sigma)
- Other

Which professional organizations are you currently a member of:

- American Association of Colleges of Pharmacy (AACP)
- American College of Clinical Pharmacy (ACCP)
- American Pharmacists Association (APhA)
- American Society of Health-system Pharmacists (ASHP)
- North Carolina Association of Pharmacists (NCAP)
- Practice area-specific organization (e.g., AHA, CPNP, HOPA)
- Other (please describe)

Have you participated on a committee or appointed/elected leadership position as a member of a state, regional, or national pharmaceutical organization?

- Yes
- No

### **SECTION III.** Program Impact

Was your first job after completion of the MS program what you expected to do when you entered the program?

- Yes
- No

How did your first job differ from what you expected when you entered the program?

In the next 5 years, do you see yourself:

- In a similar position
- In a different position
- I have no preference of position

Were you considered a resident of the state of North Carolina when you started pharmacy school?

- Yes
- No

In the next 5 years, do you see yourself:

- At a health-system in North Carolina
- At a health-system outside of North Carolina
- Having no preference of geographic location

Which of the following do you currently precept or mentor (select all that apply):

- Student pharmacists - IPPE or shadowing
- Student pharmacists - APPE
- PGY1 Residents
- PGY2 Residents
- Other pharmacy practitioners
- Other (please describe)

*This is the final page of the survey*

**SECTION IV. Program Recommendations**

Please indicate your level of agreement with the following statements:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Interdisciplinary training should be a part of the graduate training experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional development (e.g., leadership, team building, exposure to various roles within professions) should be a part of the graduate training experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please provide any additional recommendations that you have for improving the **MS program** to improve it for future students:

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Please provide any additional recommendations that you have for improving the **Residency program** to improve it for future students:

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## **Appendix B – Supervisor Survey**

## Default Question Block

We would like your feedback on the graduate that you hired from the UNC Eshelman School of Pharmacy's combined Health-system Pharmacy Administration/MS degree program.

Thank you for participating in our study, **Understanding supervisors' perceptions of a training program in health-system pharmacy administration**. As part of this study, we are asking our MS alumni's supervisor (either first supervisor after graduation or current supervisor) to share their perceptions on the alumni as it pertains to the outcomes and core competencies of the MS program.

Please note, your responses will remain confidential, only be seen by the research team, and will not be shared except in an aggregated form. Data will not be stored in a manner where an individual's response can be identified.

If you have any questions about the study, please do not hesitate to contact any of us.

Thank you,

Evan Colmenares, PharmD Candidate 2017 (ewc@unc.edu)

Stephen Eckel, PharmD, MHA (Stephen.Eckel@unchealth.unc.edu)

Jacqui McLaughlin, PhD (jacqui\_mclaughlin@unc.edu)

### Consent to Participate in a Research Study

**Title of Study:** Understanding supervisors' perceptions of a training program in health-system pharmacy administration

**Principal Investigator:** Evan Colmenares

**Faculty Advisor:** Stephen Eckel, PharmD, MHA

**What are some general things you should know about research studies?** You are being asked to take part in a research study. To join the study is voluntary. You may refuse to join, or you may withdraw your consent to be in the study, for any reason, without penalty. Details about this study are discussed below. It is important that you understand this information so that you can make an informed choice about being in this research study.

**What is the purpose of this study?** The purpose of this research study is to collect data about health-system pharmacy administration (HSPA) program alumni's direct supervisor's perception of the training program.



**How many people will take part in this study?** If you decide to be in this study, you will be one of approximately 50 people in this research study.

**What will happen if you take part in the study?** Your part in this study will last approximately 20 minutes. During this study, you will complete an online questionnaire. The questionnaire will ask you to rate the HSPA alumni on the core competencies and outcomes of the HSPA program.

**What are the possible benefits from being in this study?** Research is designed to benefit society by gaining new knowledge. You may not benefit personally from being in this research study.

**What are the possible risks or discomforts involved from being in this study?** We anticipate few risks in this study.

**How will your privacy be protected?** All of the data you provide will be stored in an encrypted file with access limited to the study staff.

**What if you want to stop before your part in the study is complete?** You can withdraw from this study at any time, without penalty.

**Will you receive anything for being in this study? Will it cost anything?** You will receive no monetary reward for participating in this study. There are no costs associated with being in the study.

**What if you have questions about this study?** You have the right to ask, and have answered, any questions you may have about this research. Contact the principal investigator listed above with any questions, complaints, or concerns you may have.

**What if you have questions about your rights as a research participant?** All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns, or if you would like to obtain information or offer input, please contact the Institutional Review Board at 919-966-3113 or by email to [IRB\\_subjects@unc.edu](mailto:IRB_subjects@unc.edu).

I Consent

**Please answer the following questions using the following Five-level Likert Scale:**

1 - Strongly Disagree

2 - Strongly Agree

3 - Neither Agree Nor Disagree

4 - Agree

5 - Strongly Agree

The employee/alumni is a...

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree

...**pharmacy practitioner** who implements high-quality, team-based, patient-centered pharmacy services.

...**leader and innovator** who embraces opportunity, recognizes need, and creates solutions to advance health-system pharmacy practice, patient care, and the overall delivery of healthcare.

...**manager** who communicates, delegates, motivates, plans, acquires and allocates resources, monitors progress, and creates environments that enable the advancement of pharmacy services.

...**lifelong learner** who continually strives for positive impact both personally and professionally.

The employee/alumni has/exhibits...

1 Strongly Disagree      2 Disagree      3 Neither Agree Nor Disagree      4 Agree      5 Strongly Agree

...in-depth knowledge, understanding, and application of core principles, content, and skills unique to health-systems pharmacy administration.

...the ability to access and analyze information.

	1 Strongly Disagree	2 Disagree	3 Neither Agree Nor Disagree	4 Agree	5 Strongly Agree
...critical thinking and problem solving skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...communication skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...collaboration and influence.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...adaptability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...initiative.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...curiosity and inquisitiveness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...professionalism.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...innovation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Have you supervised administrative pharmacists **without** masters-level training?

- Yes  
 No

When considering administrative pharmacists **without** masters-level training that you have supervised, this employee/alumni is **superior** because (s)he is a...

	1 Strongly Disagree	2 Disagree	3 Neither Agree Nor Disagree	4 Agree	5 Strongly Agree
... <b>pharmacy practitioner</b> who implements high- quality, team- based, patient-centered pharmacy services.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1 Strongly Disagree	2 Disagree	3 Neither Agree Nor Disagree	4 Agree	5 Strongly Agree
<p><b>...leader and innovator</b> who embraces opportunity, recognizes need, and creates solutions to advance health-system pharmacy practice, patient care, and the overall delivery of healthcare.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p><b>...manager</b> who communicates, delegates, motivates, plans, acquires and allocates resources, monitors progress, and creates environments that enable the advancement of pharmacy services.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p><b>...lifelong learner</b> who continually strives for positive impact both personally and professionally.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

When considering administrative pharmacists **without** masters-level training that you have supervised, this employee/alumni is **superior** because (s)he exhibits...

	1 Strongly Disagree	2 Disagree	3 Neither Agree Nor Disagree	4 Agree	5 Strongly Agree
<p>...in-depth knowledge, understanding, and application of core principles, content, and skills unique to health-systems pharmacy administration.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>...the ability to access and analyze information.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>...critical thinking and problem solving skills.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>...communication skills.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1 Strongly Disagree	2 Disagree	3 Neither Agree Nor Disagree	4 Agree	5 Strongly Agree
...collaboration and influence.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...adaptability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...initiative.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...curiosity and inquisitiveness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...professionalism.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...innovation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I am more likely to hire a pharmacist for an administrative position with a masters degree.

- 1 - Strongly Disagree
- 2 - Disagree
- 3 - Neither Agree Nor Disagree
- 4 - Agree
- 5 - Strongly Agree