Optimizing Experiential Layered-Learning: Advancing Preceptor Development
Target Audience: Pharmacists
ACPE#: 0202-0000-18-002-L04-P
Activity Type: Application-based
Disclosures

Suzanne Higginbotham has no disclosures related to content of this presentation.
Rebekah Jackowski has no disclosures related to content of this presentation.
Alex C. Varkey has no disclosures related to this presentation.

The American Pharmacists Association is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education.
Learning Objectives

At the completion of this application-based activity, participants will be able to:

• Describe pharmacy practice models that successfully meet the educational needs of various levels of learners
• Identify strategies to match learning activities with teaching goals and objectives to address learner’s needs and support clinical skill development
• Explore opportunities to increase the accessibility, quality, quantity, and variety of learning opportunities for different levels
1. Assessment Question

1. What is one way to manage expectations of different learners?
   A. Make sure there is space for each learner
   B. Create a syllabus for the learning environment
   C. Ensure there is a preceptor for each learner
   D. Ask for feedback from your learners
2. The Layered Learning model most closely mimics the:
   A. Teacher-scholar model
   B. Medical clinical teaching model
   C. Model-based learning
   D. Flipped classroom model
3. What are the benefits of a layered-learning model as it relates to an institution's strategic plan?

A. May help bolster research/academic efforts
B. May increase frequency of pharmacy's interactions with patients
C. Provides a high-quality active learning experience for learners - boosting institution's favorability as a future employer
D. All of the above
Introduction to Layered Learning
Medical Teaching Models

- Clinical teaching model involving attending or oversight physician, medical fellow, medical resident, and/or medical student

- Various learning models/concepts
  - Peer Teaching
  - Resident-As-Teacher
  - Near-Peer
  - Peer to Peer
  - Hospital Huddles

Layered Learning Concept

- First cited as a concept by The University of North Carolina (UNC) Eshelman School of Pharmacy and UNC Hospitals
- Models the framework of clinical medical environment with various degrees of learners
- Goal of enhancing patient care and educational opportunities for resident and student learners
- Piloted in an inpatient environment and extrapolated out to a variety of practice settings

http://connect.ashp.org/browse/blogs/blogviewer?BlogKey=1ff0f0a1-dd0b-46c3-81f6-b5c9f1e0e95&ssopc=1 accessed January 2, 2018
Community Setting
Suzanne Higginbotham, PharmD, BCACP, CTTS
Reflection:

What is your current layered learning model at your practice site?
Develop a passion for learning. If you do, you will never cease to grow.

~Anthony J. D’Angelo
Duquesne University Pharmacy
Duquesne University Pharmacy

- Community pharmacy owned and operated by Duquesne University in Pittsburgh, PA
- Opened in December 2010
- Located in the Hill District community
  - Community where no pharmacy existed prior in past 10 years
    - ~40% of residents have an annual income that was below the poverty level
Services Offered

- Traditional dispensing services
- Mission and charity based work with mobile health unit
- Medication therapy and disease state management
- Vaccine and travel health consults
- Point of care testing and screenings
- Group wellness and classroom sessions
New Community Pharmacy Model

- Reframes traditional community dispensing model to establish service-based pharmacy teams that integrate with interdisciplinary patient care teams to coordinate efforts more efficiently
Why Incorporate Layered Learners

- Improves quality of clinical patient care services
- Increase capacity for patient care
  - Used as “Care Extenders”
- Provides educational opportunity for advanced training of resident and student pharmacists
Our Layered Learners

1 IPPE

2 APPEs

2 PGY1 Residents

1 PGY2 Resident

2 Clinical Pharmacists
Workflow

Dispensing
- Pharmacist
- PGY1
- APPE
- IPPE

MTM/DSM
- Pharmacist
- PGY1/2
- APPE

Screenings
- PGY2
- PGY1
- IPPE

Classes
- PGY2
- PGY1
- APPE
Workflow

- Dedicated scheduler for patient appointments and events
- Accept walk-ins
- Divide and conquer technique
- Mastering the art of patient work-up and preparation
Daily and Operational Functions

- Pharmacist
  - Oversees all learners and facilitates training opportunities
- PGY2 Resident
  - Facilitates PGY1 training and education with preceptor
- PGY1 Resident
  - Facilitates student education and training
- APPE
  - Direct patient care and point of care testing
- IPPE
  - Intake, vital collection, and dispensing services
Core Educational Activities

- Advanced Disease State Sessions
  - Pharmacist led
- Topic Discussions
  - Resident led
- Mini Grand Rounds
  - Resident led
- Journal club
  - Student led
- Patient Prep Sessions
  - Student led
Research and Administrative Activities

- Projects
  - Research
  - Patient care

- Administrative activities
  - Inventory
  - 340B
  - Scheduling and workflow
Rubrics and Assessment

- Formalized assessments for each type of learner
  - PharmEdPLUS® for APPE and IPPE
  - PharmAcademic® for residents
- Snapshot assessments
  - Supervisor
  - Peer to peer
  - 360 assessments
- Baseline, mid and final assessments
  - Skills
  - Knowledge
  - Clinical confidence
Challenges for Preceptors in a Layered Learner Model

- High turnover
  - Training time and orientation
- Varying baseline knowledge
- Balancing activities
- High number of employees to manage
- Space needs
- Year round rotational experiences needed
## Developing a Successful Model

<table>
<thead>
<tr>
<th>Challenge Faced</th>
<th>Process Improvement</th>
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<tbody>
<tr>
<td>Re-training every 5 wks.</td>
<td>Developed a training video and manual for APPE students</td>
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<tr>
<td>Varying baseline knowledges with APPE students</td>
<td>Developed a clinical skills and confidence assessment and grouped students into “teams”</td>
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<tr>
<td>Students/residents with short rotation blocks (not imbedded in full process of care)</td>
<td>Give meaningful, actionable tasks and refrain from “observation only”</td>
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</table>
Pearls for Building Effective Layered Learners

- Incorporate learners as **productive** members of the team
- Define contributions, roles, and responsibilities for each of the learners
- Teach the value of patient care in each segment of the patient care process (even if the learner is not directly involved)
- Seek feedback from layered learners on strategies that are effective and ways to improve processes
Quote from a Student

- “Collaborating with other students and resident pharmacists has allowed me to advance my training while we as a team can provide more expanded clinical patient care services. I have played a role in addressing many unmet patient needs while gaining the experience necessary to mold me into a competent future pharmacist.”
Quote from a Resident

▪ “Working in a layered learning environment has allowed me to become a better pharmacist by adapting to the level of experience that others have and being able to share clinical pearls.”

▪ “Working in a layered learning environment has allowed me to build my confidence by sharing my knowledge and skills with those less experienced and learning from those with a higher level of expertise.”
Quote from a Patient

“I love this model! The students have helped answer drug information questions for me and do a great job with testing my blood pressure and blood sugar. I feel like I have a team of pharmacy experts managing my medications and helping me with my diabetes.”
Ambulatory Care Setting

Rebekah M. Jackowski, PharmD, MPH
Reflection:

What is one challenge regarding layered learning at your practice site?
Midwestern University Multispecialty Clinic
Pharmacy Services
Midwestern University Multispecialty Clinic

- Midwestern University Clinics include the Multispecialty Clinic (MSC), Dental Institute, and Eye Institute
- Multispecialty Clinic houses several specialty clinics
  - Specialties include:
    - Family Medicine
    - Pharmacy Services
    - Podiatry
    - Osteopathic Manipulation
    - Speech and Language Therapy
    - Physical Therapy
    - Clinical Psychology
- All providers practicing in clinics are faculty on campus
- Located in Glendale, AZ
MSC Pharmacy Services: Services Offered

- Medication therapy and disease state management
  - Collaborative practice agreements
  - Point of care testing
- Medicare Annual Wellness Exams
- Education Classes
- Medication support to all providers and their patients within the Multispecialty Clinic
  - Family Medicine: 9 physicians, 1 PA
- Services may be provided via telephone, in person appointments with pharmacy team, or in person appointments with providers (co-visits)
- Pharmacy Services schedules their own patient appointments
  - Co-visits are scheduled through front desk clinic scheduling department
Pharmacy Services Daily Workflow

- In person appointments
  - Diabetes management
    - Device training
    - Diabetes education classes
    - Troubleshooting
  - Anticoagulation
    - INR point of care testing
  - Medicare Annual Wellness Exams
  - Prescription device training

- Provider co-visits
  - Scheduled ahead of time
    - Established Pharmacy Services patient
    - New referral
    - Consulted PRN

- Phone management
  - SMBG
  - BP results
  - Home INR results
  - Prescription refills or questions
The Various Learners in Clinic

- APPE students completing their required ambulatory care rotations
  - 6 week blocks, 5 blocks total
- Fry’s/Midwestern University Community Pharmacy Resident completing a longitudinal ambulatory care rotation
- Other learners rotating through the clinic
  - Medical students
  - Clinical psychology students
  - Nurse practitioner students
  - Medical residents
Pharmacy Services Staff/Students

- 2 Ambulatory Care Pharmacists/Faculty
  - Each 0.5 FTE
  - Additional responsibilities on campus

- 1 Ambulatory Care Pharmacist/Faculty
  - 0.2 FTE
  - Additional responsibilities in Dental Institute Clinics and on campus

- 1 Community Pharmacy Resident
  - August-June
  - 1 day each week

- 4 APPE students each rotation block
  - 2 assigned to each of main faculty pharmacists
  - Students in clinic daily
  - August-April
  - 6 week blocks
Activities

Services

- Medication Management
- Anticoagulation Management
- Medicare Annual Wellness Exams
- Drug Information Support
- Others

APPE Required Assignments

- 4 SOAP Notes
- Journal Club Presentation
- Weekly Topic Discussion
- Weekly Reflection
- Provider Drug Update
- Clinic Noon Conference
Daily Workflow: Responsibilities

- APPE students and resident involved in all daily activities of the clinic
  - Pharmacist patient workload is assigned to students and resident
  - Resident role has changed over the course of the residency
- Medicare Annual Wellness Exams are pharmacist/resident only activity
Research and Administrative Activities

- Projects
  - Research:
    - Resident research project is conducted through community pharmacy site
    - Precepted by ambulatory care pharmacist/faculty member and RPD
    - Other research projects regarding clinic services are conducted by 2 main ambulatory care pharmacists
  - Patient care/New services:
    - New services usually start as a pilot phase
    - Residents are involved in this process
    - APPE students involved after pilot phase is completed
- Administrative activities:
  - Inventory
  - Reporting
Assessment

APPE Students

- School specific rubric
- Students are receive informal feedback daily from preceptor in clinic
- Formal evaluations are conducted by preceptor of record
  - Midpoint and final evaluations are completed for each student
- Baseline evaluation is an informal assessment with preceptor of record
  - Based on discussion and review of student portfolio

Resident

- PharmAcademic
- Goals and objectives identified by RAC prior to the start of each resident
- Informal feedback each day in clinic from preceptor
- Snapshots, Quarterly, and Summative evaluations completed formally
- Two preceptors discuss and one enters the evaluation into PharmAcademic
Challenge: Baseline Knowledge/Expectations

The Problem

- Students/Resident with different knowledge levels
- Students/Resident with different experience levels
  - Work
  - Rotations

Solutions

- Setting expectations
  - Syllabus
  - Open discussion day 1
    - Learner expectations
    - Preceptor expectations
    - Feedback method and frequency
- Review student portfolios week 1
Challenge: Balancing Activities/People

The Problem

- 3 pharmacists, 1 resident, 4 students
- Required assignments for students
- Required activities for all learners
- Level of skill needed for clinic activities
- Pharmacist-only patient care

Solutions

- Setting expectations
- Daily “huddle”
- Assigning specific activities to specific roles
- Adjusting schedule
  - Project time
Challenge: Space

The Problem

- Space!
- Technology
  - 6 computer stations
  - 4 phones with different numbers
  - 1 number with voicemail

Solutions

- Adjusting the schedule
  - Project time
- Assigning specific activities to specific roles
  - Managing appointment times with schedule
- Ensuring each phone has information with callback number and fax number listed
Pearls for Effective Layered Learning

- Set and manage expectations
- Define roles and responsibilities for each member of the team
- Continuous feedback
  - From learners
  - From co-workers
  - From patients
- Evaluate and adjust as needed
  - Be flexible
Hospital Setting

Alex C. Varkey, PharmD, MS, FAPhA
Reflection:
What is one thing you plan to do when you return home to implement or improve your layered learning model?
Houston Methodist Hospital

- 860 operating beds
- 78 operating rooms
- 1,479 affiliated physicians
- 7,395 employees
- 36,720 admissions
- 326,534 outpatient visits
- 72,399 emergency room visits

- 1,026 births
- >12,406 international encounters from 84 countries
- 36 ACGME-accredited (plus 7 non-ACGME) residency programs with 262 ACGME residents and 6 non-ACGME residents
Houston Methodist (HM)
ICARE Values

- Integrity
- Compassion
- Accountability
- Respect
- Excellence
Pharmacy by Numbers - HMH

- 10 million doses dispensed annually
  - 25,000+ doses dispensed per day

- 10 Pharmacy Areas:
  - Central Pharmacy
  - FICU Satellite (Fondren 3<sup>rd</sup> Floor)
  - OPC 22 Oncology Satellite Pharmacy
  - 6 OR Satellites
  - ED Satellite (opened July 5, 2017)
  - North Tower (June 2018) will create two additional pharmacy locations
Pharmacy Staffing Model - HMH

- Clinical Specialist Model → Comprehensive Model

- Clinical Pharmacy Specialists (career ladder established early 2000s)
  - Clinical Pharmacy Specialist I – PGY1 trained or equivalent experience
  - Clinical Pharmacy Specialist II – PGY1 and PGY2 trained or equivalent experience
  - Clinical Pharmacy Specialist III – PGY1, PGY2 trained (or equivalent experience) and BCPS certification

- Staff Pharmacists (career ladder established 2017)
  - Staff Pharmacist I: distribution coordination; order verification
  - Staff Pharmacist II: combined basic clinical responsibilities and distribution coordination (2018)

- Pharmacy Technicians (career ladder established 2010)
  - Tech I: basic distribution functions
  - Tech II: Sterile compounding, operate in multiple operations areas
  - Tech III: Tech-Check-Tech; medication histories in ED; technician assignment coordination
HMH Investment in Pharmacy Education

- Advanced Pharmacy Practice Experiences and Introductory Pharmacy Practice Experiences – over 200 students annually including international (LAU)
- Longitudinal Advanced Pharmacy Practice Experiential Program (LAPPE) (8)
- Pharmacy Residency Program (est. 1987)
  - PGY1 Pharmacy (6)
  - PGY1 International Residency (2)
  - PGY1/2 Health-System Pharmacy Administration (4)
  - PGY2 Critical Care (2)
  - PGY2 Infectious Diseases (1)
  - PGY2 Internal Medicine (1)
  - PGY2 Oncology (2)
  - PGY2 Solid Organ Transplant (2)
### RIME Model

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Reporter</strong></td>
<td>Learner is able to extract data (from EHR, other healthcare professionals, monitors, etc.) and report information to preceptor and other interested parties accurately in an increasingly organized manner. Resident makes effort to ensure information is both complete and accurate.</td>
</tr>
<tr>
<td><strong>Interpreter</strong></td>
<td>Learner interprets data and is able to express what the metrics show about current department performance or patient presentation. Learner is demonstrating the capacity to providing fundamentally sound, well informed and well considered recommendations while understanding the limitations of one's knowledge.</td>
</tr>
<tr>
<td><strong>Manager</strong></td>
<td>Learner incorporates evidence-based strategies and recommendations consistently where appropriate. When participating in activities, learner actively participates in discussion, making accurate assessments and recommendations when provided an opportunity. The learner is gaining more independence in his/her actions related to department needs.</td>
</tr>
<tr>
<td><strong>Expert/Educator</strong></td>
<td>Learner demonstrates an expert level understanding of unique situations where application of didactic approaches may be inadequate or inappropriate. The learner develops and implements innovative / novel pharmacy plans based upon primary (and at times tertiary) literature evaluation and expert level knowledge of a process, implements solutions, and then continuously monitors to identify successes and determine areas for improvement. Also demonstrates ability to self-monitor and self-assess and learn from outcomes / experience.</td>
</tr>
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Goals of Layered Learning: From a Hospital Pharmacy Director’s Perspective

- Everyone is working at the top of their license
- Everyone knows their role
- Everyone is being productive
Considerations / Advantages with Layered Learning

- More connections per patient / More patient connections
  - Studies have shown improved outcomes (UNC)
- Data collection / Pharmacy research can become more robust
  - Taught by preceptor; conducted by learners (primarily students, with resident support)
- Provides high-quality active learning experience for learners
- Allows for greater synergy towards strategic action plans
Layered Learning Instituted at HMH

- Rotation experiences
  - Acute Care Cardiology
  - Drug Information

- Longitudinal Learning Experiences
  - LAPPE Program
  - MILE Program
    - PGY1/PGY2 HSPA Program (Management)
Acute Care Cardiology Rotation

Preceptor – serves as primary facilitator of optimizing therapy on physician consult service; leads topic discussions

Resident – helps precept student and double-checks education notes; also manages all pharmacy consults for unit patients

Student – serves as lead on medication teaching
LAPPE Program (2015)

- Started with a PGY1/2 Administrative Resident project
- Applicants from all Texas schools and colleges of pharmacy
  - Current LAPPE students help with selection of future LAPPE program students
- Structure of rotations
  - Hospital Ops → Internal Medicine → 2 clinical rotation electives → 1 management elective (Drug Information, Medication Safety, Operations Management)
  - Assist with resident projects (LAPPE Program in Fall)
    - Has allowed for overall pharmacy research to be more robust at HMH
LAPPE Program (2015)

- Benefits
  - Decrease orientation time
  - Create longer timelines for greater productivity – more effective ‘layers’
  - Improve preceptor satisfaction
  - Residency recruitment (2 graduates have matched with HMH residencies)
Drug Information Rotation

- **Preceptor** (Joshua Swan, PharmD, MPH and Mike Liebl, PharmD)
- **Fellows**
  - Journal club
  - Research training
  - Formulary management* (OBJ R2.1.1)
  - Patient education
  - HHS shadowing†
  - DIC questions
  - ED medication histories

PGY1 resident is first-line preceptor for these APPE intern activities (OBJ R4.2.1 & R4.2.2)

*Resident will prepare a drug monograph, class review, treatment guideline, protocol, Pharmacy and Therapeutics Newsletter, or order set
†LAU interns only, not Texas interns

APPE, advanced pharmacy practice education rotations; DIC, drug information center; ED, emergency department; HHS, hospital-health system; OBJ, American Society of Health System Pharmacists residency training objectives
MILE Program

- Methodist Intern Longitudinal Experiential Program
- Students recruited during second semester of P1 Year
- During P2 year:
  - Work in medication distribution operations
- P3 Year:
  - Acquire medication histories and assist clinicians/residents
  - Perform CQI projects
- P4 Year:
  - Conduct advanced clinical protocol management, medication education, and discharge counseling under clinician/resident oversight
- Research project completed annually with administrative resident serving as project preceptor
MILE Reporting Structure

- Lead Operations Manager
- PGY1/PGY2 HSPA Residents
- Lead APPE Level Student leads all other interns including other P4 interns

MILE Program

- Linda Haines, MILE Program Director
- Pei Jen Lin and Sunny Bhakta, MILE Program Coordinators

- P4 Lead Intern
  - P4 Interns
  - P3 Lead Intern
    - P3 Interns
    - P2 Lead Intern
      - P2 Interns
      - P4 Lead Intern
Layered Learning Experiences – MILE Program

- **Research Projects**
  - Interns conduct research projects annually; administrative residents serve as project advisors/preceptors with program director oversight

- **Longitudinal Projects**
  - Controlled Substance Monitoring Program managed by administrative residents; interns serve as data collection/interpretation resources for report generation. Administrative Specialist over Controlled Substances serves as oversight

- **Administrative Residents**
  - Management of MILE Program Interns conducted by HSPA residents
    - Work schedules, vetting of residency projects, topic discussions, mentorship/focal point review (FPR) commentary, etc.
    - Program Director officially serves as their manager in HR system and involved in FPR, but utilizes administrative interns to carry out daily responsibilities
Challenges

- “Entry-level” activities are not always thought of as engaging
  - Cannot underestimate importance of these tasks
- Thin line between providing engaging learning experience and focusing solely on productivity
  - May need to quantify how much is ‘too much’
- External stakeholders need to be bought-in
  - ‘Are you getting paid to teach, or are you getting paid to care for patients?’
- Learner turnover
  - They aren’t here forever – need to create seamless structures for hand-offs
Future steps - HMH

- Parts of a whole
  - Some service lines and areas have adopted this learning model, others have not yet
  - Continually looking for more opportunities to implement to further department influence, outcomes, and overall strategic plan

https://goo.gl/images/WEXaR3
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