Bridging the gap between student and independent practitioner

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Disclosures

• No financial conflicts of interest related to this presentation
• Treasurer and member of the ASHP Board of Directors. Opinions expressed during this presentation are my own and do not necessarily reflect the formal policy or position of any pharmacy professional organization.

Pharmacist Learning Objectives

1. Describe the basic history of post-graduate pharmacist training
2. Describe the role of residents in practice
3. Describe the training models for subspecialty practice
4. List possible implications for the future pharmacy practice model based on residency training programs.

Technician Learning Objectives

1. Describe the basic history of pharmacy technician training
2. Describe the role of pharmacy residents on pharmacy technician training and practice.
3. Describe emerging roles for technicians in support roles for pharmacy practice.
4. List possible implications for the future pharmacy practice model based on pharmacy training programs.

Audience participation

Raise your hand if you:
- Are a technician
- Are a student pharmacist
- Are a pharmacist
- Work in a hospital
- Do not work in a hospital
- Work in a pharmacy
- Work in or with the pharmacy profession

Accuracy vs. precision in our discussions around post graduate training

http://commons.wikimedia.org/wiki/File:Precision_versus_accuracy.svg
Post-graduate training

• Are we talking about evolution and progress of a profession?

• . . . . or are we talking about pharmacy as a service line?

• . . . . Or is it both? Or neither?

HSA Action Plan Opportunities

• Top Three Action List Priorities
  – Residency-trained pharmacists
  – Assigning initiation of medication reconciliation to appropriately trained pharmacy technicians to:
    • Capture admission and discharge medication histories for a reconciled personal medication list
    • Care coordinate patient assistance services for post-discharge medication use (e.g., ensuring patient access to affordable medications)
  – Provision of discharge counseling by pharmacists to include standardized process for hand-offs to next level of care (e.g., skilled nursing facility, home health)

Resource Centers

When and how does the transition from student to independent practitioner occur?

• Technically - - the day your license arrives.

• Reality - - this is a process and it takes some time.

• Applies to both pharmacists and technicians.

Pharmacist Training History

• To ensure we are as accurate and precise as possible . . . .

• Let’s talk about this in the context of health-system (hospital) based practice
Pharmacist training history

**Hospital Pharmacy**
- 1920s – hospital pharmacies started to become common
- 1930s/1940s – hospital pharmacy standards developed
- 1950s/1960s – P&T, formulary, IV admixture, centralized / decentralized services
- 1970s/1980s – clinical pharmacy development and evolution
- 1990s/2000s – hospitals >> health centers / health-systems

**Pharmacist Training (minimum)**
- 1920s – 3 years (graduate in pharmacy)
- 1930s – 4 years (BS or BS in pharmacy)
- 1960s – 5 years (BS or BS in pharmacy) PharmD programs started
- 2000s – PharmD

**Pharmacist Training (Residencies)**
- 1940s – hospital internships
- 1960s – 1st accredited residency programs
- 1970s – Board of Pharmaceutical Specialties formed
- 1980s – Hospital pharmacy, clinical pharmacy, and specialty pharmacy standards all in place
- 2000s – PGY1 and PGY2 terminology introduced


Technician training history

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- 1970s/1980s – clinical pharmacy development and evolution
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**Technician Training**
- 1970s – ASHP training guidelines created
- 1980s – ASHP standards for accreditation of training programs created
- 1990s – PTCB created
- 2000s – Pharmacy Practice Model Initiative

**Technician Education**
- PAI – Technicians enter workforce:
  - Complete ASHP Accredited program > > Complete certification exam > > Enter practice
- ~250 ASHP Accredited programs in the US
- Average enrollment ? ? ?
  - Let’s guess at 20/program
  - ~5,000/year graduate
- Growth (projected) of ~3,500/year . . . . .
  - Don’t forget about turnover . . .


Practice Advancement Initiative Progress

<table>
<thead>
<tr>
<th>Role of Technician</th>
<th>Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide IT support</td>
<td>44%</td>
</tr>
<tr>
<td>Provide support for quality improvement</td>
<td>21%</td>
</tr>
<tr>
<td>Tech testing tests</td>
<td>18%</td>
</tr>
<tr>
<td>Distribution tasks</td>
<td>69%</td>
</tr>
<tr>
<td>Initiation of medication reconciliation</td>
<td>11%</td>
</tr>
</tbody>
</table>


Audience participation

- How many pharmacy technicians are in the US workforce as of 2014?
  A. 250,000
  B. 375,000
  C. 500,000
  D. 750,000
### Workforce statistics

**Technicians**

<table>
<thead>
<tr>
<th>Practice Area</th>
<th>2014</th>
<th>2024</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>269,300</td>
<td>290,500</td>
<td>21,200</td>
</tr>
<tr>
<td>Hospital</td>
<td>62,100</td>
<td>70,900</td>
<td>8,800</td>
</tr>
<tr>
<td>Other</td>
<td>41,100</td>
<td>45,800</td>
<td>4,700</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>372,500</td>
<td>407,200</td>
<td>34,700</td>
</tr>
</tbody>
</table>


### Technician Training Programs

<table>
<thead>
<tr>
<th>Year/Total responses of 1 or greater</th>
<th>2013 (187 responses)</th>
<th>2014 (211 responses)</th>
<th>2015 (218 responses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduates per year</td>
<td>6202</td>
<td>9221</td>
<td>14834</td>
</tr>
</tbody>
</table>

Do you plan on expanding the capacity of your program to train an increased number of students in the future? (238 responses)

- Yes — 78.6%
- No — 21.4%

Courtesy of Janet Silvester, ASHP Accreditation Services

### Technician training capacity

- At 10% turnover of technicians – capacity about right
  ~400,000 technicians and capacity of ~40,000

- But at 20%, only about half of what the market needs

- Remember that in 2015 there were only ~15,000 technician graduates

### The technician education and training “Gap”

- How do we provide adequate advancement of the technician workforce to accomplish the goals of the pharmacy service line?


AACPR REPORTS

Report of the 2013-2014 Professional Affairs Standing Committee: Advancing the Pharmacy Profession Through Pharmacy Technician and Pharmacy Education Partnerships

- Morris A. Mobley Smith, Chair,* Cynthia J. Boyle,* Jan M. Kentner,* Janet Liles,* Linda Garcia-Medrano,*
- Elizabeth M. McAvoy,* Janet Serviss,* Nancy T. Williams,* Ursula R. Bradley-Binks*


### Residents providing technician education?

- Need to make up the gap in education for technicians entering workforce

- Residents have outcomes related to supervising and working with technicians

- Might this be a solution??
Pharmacy residents in practice

- Expand/create services
- Complete projects
- Direct patient care
- Education
- MUE
- Allow for extended hours
- ADR/Med Error reporting

Residents in our pharmacy practice model

- Pharmacist workforce in 2020: Implications of requiring residency training for practice
- Pharmacy residency and the medical training model: Is pharmacy at a tipping point?

RESIDENT TRAINING MODELS: SUPPLY AND DEMAND

Audience participation

- How many pharmacists are in the US workforce as of 2014?
  A. 100,000
  B. 280,000
  C. 475,000
  D. 600,000

Workforce statistics

<table>
<thead>
<tr>
<th>Practice Area</th>
<th>2006</th>
<th>2014</th>
<th>2024</th>
<th>Growth (decline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>155,000</td>
<td>188,100</td>
<td>184,400</td>
<td>(3,700)</td>
</tr>
<tr>
<td>Hospital</td>
<td>63,000</td>
<td>71,100</td>
<td>82,000</td>
<td>10,900</td>
</tr>
<tr>
<td>Other</td>
<td>22,000</td>
<td>37,900</td>
<td>39,800</td>
<td>1,900</td>
</tr>
<tr>
<td>Total</td>
<td>240,000</td>
<td>297,100</td>
<td>306,200</td>
<td>9,100</td>
</tr>
</tbody>
</table>

HRSA Estimated Supply

<table>
<thead>
<tr>
<th>Supply</th>
<th>Pharmacists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated supply</td>
<td>264,100</td>
</tr>
<tr>
<td>Total supply</td>
<td>91,200 (55%)</td>
</tr>
<tr>
<td>Estimated demand</td>
<td>264,100</td>
</tr>
<tr>
<td>Total demand</td>
<td>42,300 (15%)</td>
</tr>
</tbody>
</table>

www.data.bls.gov Accessed 12/16/16
Johnson TJ. Am J Health-Syst Pharm. 2008; 65:166-70

Projections from 2002

Table 2. Projected Need for Pharmacists*

<table>
<thead>
<tr>
<th>Service Type</th>
<th>No. Pharmacists Employed in 2001</th>
<th>No. Pharmacists Needed in 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order fulfillment</td>
<td>136,400</td>
<td>100,000</td>
</tr>
<tr>
<td>Primary services</td>
<td>30,000</td>
<td>165,000</td>
</tr>
<tr>
<td>Secondary and tertiary services</td>
<td>18,000</td>
<td>130,000</td>
</tr>
<tr>
<td>Indirect and other</td>
<td>12,300</td>
<td>22,000</td>
</tr>
<tr>
<td>Total</td>
<td>196,700</td>
<td>417,000</td>
</tr>
</tbody>
</table>

*Adapted from reference 13, with permission.

Johnson TJ. Am J Health Syst Pharm. 2008; 65:166-70

RESIDENCY GROWTH: EMPLOYER DEMAND SIDE

Growth in positions

- ~1,000/year new positions (growth)
- 2.5% turnover (retirement, part-time, leave practice, etc.) ~7,500/year
- 8,500 total each year – all practice settings
- ~4,000/year – health-system

Residency graduate demand

- So how many residency graduates does the market need??
  - ~4,000/year in hospital/health-system as base number
  - If ~20% are specialist – then ~800 PGY2 grads
  - If ~40% are specialist – then ~1600 PGY2 grads
  - Are the rest PGY1 graduates? ~2400-3200
- Other settings?? Another 1000??

Pharmacist Demand Indicator

<table>
<thead>
<tr>
<th>Setting</th>
<th>Demand Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>3.12</td>
</tr>
<tr>
<td>Institutional</td>
<td>2.83</td>
</tr>
</tbody>
</table>

As of December 2016

www.pharmacymanpower.com - Accessed 2/19/17

How does the technician workforce affect demand?

Training and retention for technicians are 2 key issues that drive pharmacist practice in all settings
**RESIDENCY GROWTH: STUDENT DEMAND SIDE**

- **Student Supply**
  - **Schools**
    - Enrollment
    - Residencies?
  - **136**
    - 63,460 Fall of 2015
    - ~15,800 per class
    - ~120 per class per school

  Attraction rates averaged 10.8% per class.

  [Accessed 1/15/17](http://www.aacp.org/about/Pages/Vitalstats.aspx)

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**ASHP Resident Matching Program 2007-2016 PGY1**

- # applicants
- # positions
- # matched

<table>
<thead>
<tr>
<th>Year</th>
<th># applicants</th>
<th># positions</th>
<th># matched</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>1091</td>
<td>1222</td>
<td>1612</td>
</tr>
<tr>
<td>2008</td>
<td>1300</td>
<td>1483</td>
<td>1769</td>
</tr>
<tr>
<td>2009</td>
<td>1541</td>
<td>1769</td>
<td>1873</td>
</tr>
<tr>
<td>2010</td>
<td>1356</td>
<td>1541</td>
<td>1951</td>
</tr>
<tr>
<td>2011</td>
<td>1801</td>
<td>2027</td>
<td>2173</td>
</tr>
<tr>
<td>2012</td>
<td>2027</td>
<td>2268</td>
<td>2413</td>
</tr>
<tr>
<td>2013</td>
<td>2268</td>
<td>2508</td>
<td>2694</td>
</tr>
<tr>
<td>2014</td>
<td>2508</td>
<td>2862</td>
<td>2915</td>
</tr>
<tr>
<td>2015</td>
<td>2862</td>
<td>3277</td>
<td>3277</td>
</tr>
<tr>
<td>2016</td>
<td>3277</td>
<td>3706</td>
<td>3706</td>
</tr>
</tbody>
</table>

- 99% fill rate 1157

**Applicants vs Positions PGY1**

- Courtesy of Janet Silvester, ASHP Accreditation Services

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**Applicants vs Positions PGY2**

- Courtesy of Janet Silvester, ASHP Accreditation

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**ASHP Accredited Pharmacy Residency Program Growth in Last 30 Years**

- Hospital
- Non-hospital
- Clinical
- Specialized

- 2,199
- 1861
- 105
- 0

- Courtesy of Janet Silvester, ASHP Accreditation Services
Residency graduate demand

- So how many residency graduates does the market need??
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Future of training programs

Current standard

- PGY1 = general practice or entry into PGY2
- PGY2 = specialty practice / academia
- Fellowships = research / academia

Future

- PGY3?

PGY3 Residencies

On one hand . . .

- Fills in the gaps in certain PGY2 programs
- Continues to build the competencies of pharmacists
- Relatively consistent with medical model
- Supports layered learning approach

On the other hand . . .

- Have we fully developed the PGY1/PGY2 model yet?
- Currently undefined value
- Isn’t that what fellowships are for?
- Graduates limited to only small number of locations?

Nephrology Career Path

PGY1 Residency

PGY2 Specialty Residency
  Internal Medicine/Ambulatory Care
  General Medicine Training & Research Experience

PGY3 Residency/Fellowship Nephrology
  Advanced Subspecialty Training & Clinical Research

Fellowships

Currently
• 49 programs (61 programs in 2015)
• 17 different specialties (25 in 2015)


PGY3 Residencies

• Likely the time for thoughtful conversation
• Market demand and supply should be considered
• What additional value does a PGY3 add to an overall residency program?
• Even if we started today, 2025 would be the earliest for this process to be in place

Questions for further discussion

• How do certifications fit into this discussion?
  – Critical mass?
  – Training programs?
  – Base certifications plus specialty certifications?
  – How do these tie into training programs?
  – How does this add value to the profession and the healthcare system?

Medicine and certifications

Maintenance of Certification 2.0 — Strong Start, Continued Evolution
Mira B. Irens, M.D., and Lois M. Novo, M.D., J.D., M.R.A

Boarded to Death — Why Maintenance of Certification Is Bad for Doctors and Patients
Paul S. Teirstein, M.D.

NEJM. 2015;372(2):104-6
NEJM. 2015;372(2):106-8

Nursing and credentialing


Summary

• Post-graduate pharmacist training has a long history and evolution
• Technician training and advancing technician skills are a key component of advancing pharmacist competencies
• Residents provide considerable value to an institution
• The next evolution of our profession is upon us