

Next Generation Education & Training:

Session IV

The Past

Joseph T. DiPiro, PharmD, FCCP, FAAAS
Professor Emeritus
Virginia Commonwealth University

Advances in Pharmacy Education and Training over 50 years

- University funding of early clinical pharmacists
- Expansion of patient-focused (clinical) services and scope of practice
- Conversion to all-PharmD
- Residencies and Fellowships, Board Certification
- Development of the Pharmacist Practice Model (PPMI), Pharmacists' Patient Care Process (PPCP) and Entrustable Professional Activities (COEPA)

What Was Missing in Past Education

- Patient care focus
- Emphasis on teaching professionalism and leadership
- Definition of practice models
- Cultural learning
- Understanding of payment / reimbursement models
- Understanding of health disparities and SDOH
- Consideration of sustainability and environmental impact
- Technology training

What Not to Leave Behind

- A strong foundation in sciences
- Willingness to change and enhance our education and training to improve care and develop our profession
- Emphasis on post-graduate training and life-long learning
- Pharmacists being responsible, professional, and committed to the good of the public and society
- “Trusted” healthcare professional

Background Factors Influencing Need for Change in the Future

- Medication problems for patients
- Concerns about access to medicines and consumer cost
- Prevalence of chronic disease
- National and state medication expenditure
- Focus on value-based payment
- Aging population and national demographic changes
- Pharmacists' role in public health & disease prevention
- Technology and AI
- Workplace wellbeing

Pharmacists Connected to Important Societal Issues

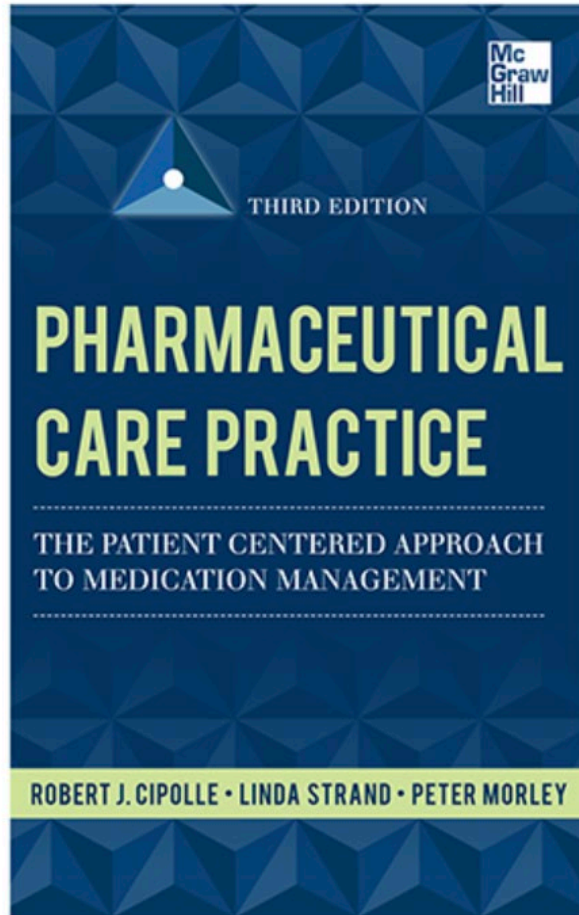
- Medication expense
- Need for primary care
- Health equity and access
- Pandemics / vaccines / disease prevention
- Substance use disorders
- Obesity
- Reproductive choices
- Chronic diseases
- Mental health

Next Generation Education & Training: Present

Melissa Somma McGivney, PharmD, FCCP, FAPhA

Associate Dean for Student Success and Professional Initiatives

Our Profession's Journey Toward Replicable, Sustainable, and Scalable Patient Care Services



1990: Pharmaceutical Care Defined



2003: Medicare Prescription Drug, Improvement, and Modernization Act (MMA) - Medication Therapy Management (MTM)



2008: MTM Core Elements 2.0



2010: Patient Protection and Affordable Care Act



2014: JCPP Patient Care Process



2020: COVID-19 Pandemic



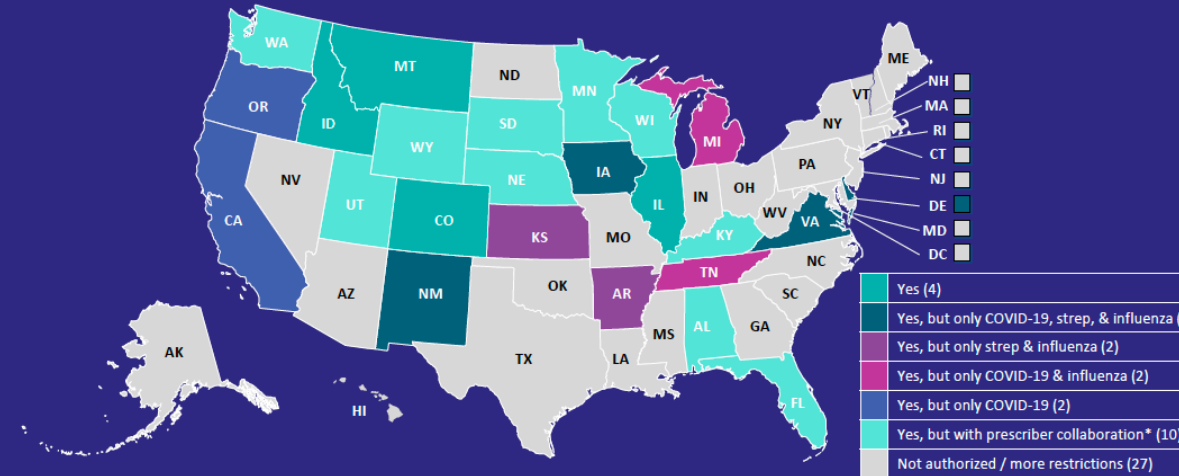
2024: 36 States with Medicaid Provider Status

COVID Changed Public Expectations

- Access of public health services
 - Vaccinations
 - Test to Treat
 - Prescribing for minor ailments and conditions
- Managing high specialty medications and treatments
 - Bedside to home
 - Managed care
- Application to Technology, Industry

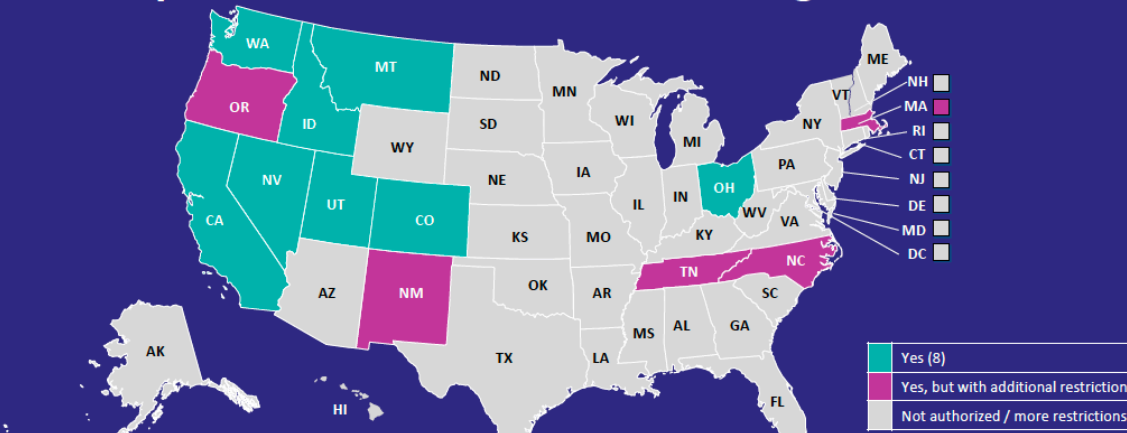


Can pharmacists test and treat for COVID-19, influenza, respiratory syncytial virus, or streptococcal pharyngitis via prescriptive authority, statewide protocol, or other means?*



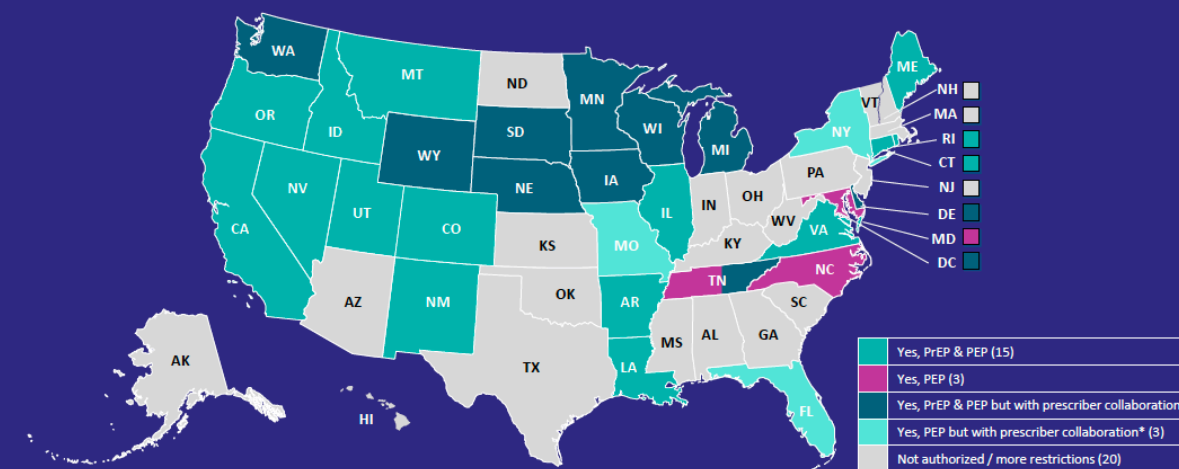
Updated November 2024
 *Limited to collaborative practice agreements or prescriber protocols that allow multiple patients and do not require past prescriber-patient relationship
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Can pharmacists furnish medications for opioid use disorder (MOUD) via prescriptive authority, statewide protocol, or collaborative arrangement?



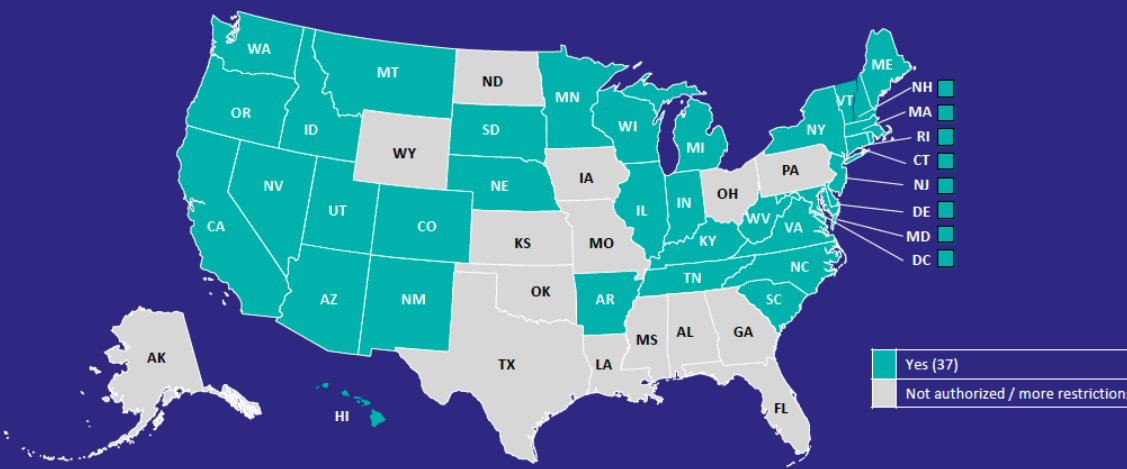
Updated June 2024
 Source: APhA Analysis of State Policies; DEA Mid-Level Practitioners Authorization by State
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Can pharmacists furnish HIV PrEP/PEP via prescriptive authority, statewide protocol, or other means?*



Updated November 2024
 *Limited to collaborative practice agreements or prescriber protocols that allow multiple patients and do not require past prescriber-patient relationship

Can pharmacists furnish hormonal contraceptives via prescriptive authority, statewide protocol, or other means?*



Updated June 2024
 Source: APhA Analysis of State Policies; Birth Control Pharmacist Pharmacist Prescribing of Hormonal Contraception

Community Pharmacy Closures and Workforce

CBS EVENING NEWS

Independent drugstore closures threaten to turn communities into "pharm

CBS Evening News

As Rite Aid collapses, customers and other pharmacies bear the impact



JACK TROY | Friday, May 16, 2025 5:00 a.m.

[Go Ad-Free Today!](#)

Out of Business

The biggest pharmacy benefit managers are profiting by systematically underpaying independent drugstores, creating

CVS responds quickly after pharmacists frustrated with their workload don't show up

It's one of the latest examples of U.S. workers' being fed up enough to take action – but the pharmacists weren't demanding raises, only more workers to help them.



Students are looking to be **INSPIRED**

- Making a difference
- Caring for those around them
- Healthy environment
- Mental health awareness
- Growth opportunity



ACPE Standards 2025

6 Required Elements of the Didactic Doctor of Pharmacy Curriculum

- **Healthcare Systems:** “examination of US health Systems and contemporary reimbursement models in which patient-centered and/or population-based care is provided and paid for...”
- **History of Pharmacy:** “exploration of the evolution of pharmacy as a distinct profession, the transition from a focus on the drug to a focus on the patient and therapy (including pharmacist-provided patient care), and major milestones and contributors in the evolution of pharmacy.
- **Pharmacy Law and Regulatory Affairs:** “Federal and appropriate state-specific statutes...”
- **Patient Assessment:** “evaluation of patient function and dysfunction through the performance of tests and assessments leading to objective (e.g., physical assessment, health screening, and lab data interpretation) and subjective (patient interview) data important to the diagnosis and provision of care.
- **Pharmacotherapy:** “evidence-based clinical decision making, therapeutic treatment planning (including diagnosing and prescribing)...”
- **Public Health:** “exploration of population health management strategies, national and community-based public health programs, and implementation of activities that advance public health and wellness.”

Shared Responsibility

Education

- Recruitment
- ACPE Standards
- IPPE/APPE
- EPA's
- Adaptation from COVID
- Post-graduation employment

Practice

- Transition from dispensing
- Specialty drugs
- Expanded pharmacist roles
 - Testing, Treatment
 - Prescribing
- Payment for service
- Access to care
- “Islands of Excellence”
- Pharmacist positions

Partnerships

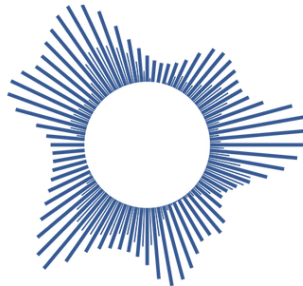
Academia- Community Transformation ACT Pharmacy Collaborative



Unite



Mobilize

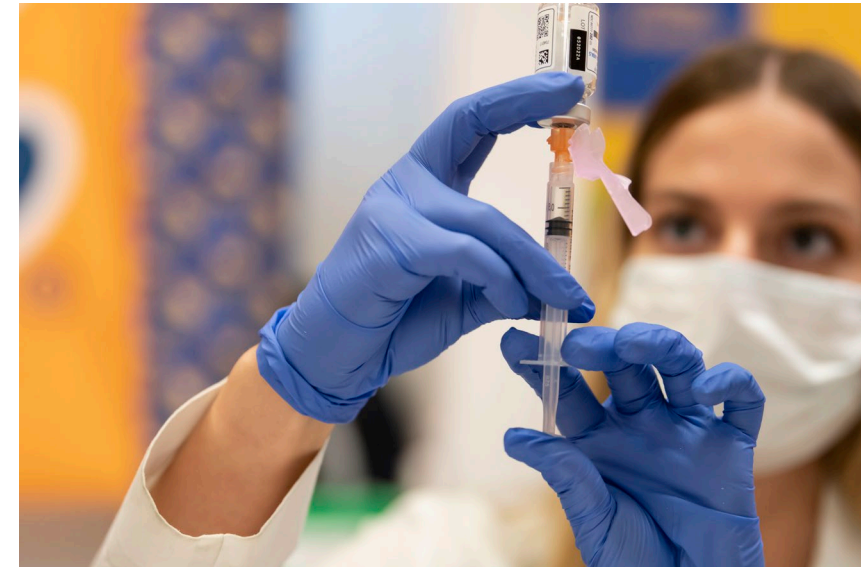


Amplify

American Association of
Colleges of Pharmacy **AACP**

Preparation for the Future

- Students as...
 - LEADERS
 - CHANGE AGENTS
- Experiencing the FUTURE of practice NOW
 - Interprofessional practice
 - Community-connected care
 - Technology-enabled care
 - Hybrid models of care
 - Clinical decision-making responsibilities
 - Engagement with payment models for care
 - Advocacy experience
 - Career coaching





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Next generation education & training programs for Future Pharmacists that are adaptable as the environments change

Al Carter, PharmD, MS, RPh
Executive Director, NABP

May 29, 2025

NABP Mission Statement

NABP is the independent, international, and impartial association that assists its member boards in protecting the public health.

Vision Statement

Innovating and collaborating today for a safer public health tomorrow

NABP Purpose

Founded in 1904, the purpose of the Association is to provide for interstate and interjurisdictional transfer in pharmacist licensure, based upon a uniform minimum standard of pharmacist education and uniform legislation, and to improve the standards of pharmacist education, licensure, and practice by cooperating with state, national, and international government agencies and associations having similar objectives.

Innovating and collaborating today...

Our desire to collaborate for a safer public tomorrow is our motivation.

What motivates us (in no particular order):

1. The Welfare of Our Patients
2. Lack of Patient Access/Healthcare Inequities
3. Pharmacist Competency Standardization
4. Standard Model that promotes access to safe pharmacist practice

“Innovating
and
collaborating
today for a
safer public
health
tomorrow”



NABP
National Association of
Boards of Pharmacy

Licensure Rates

AACP-ACPE-NABP Task Force to Address Rates of Licensure

Exams Taken								
NABP First attempts all graduates*** (as of Jan 26, 2024)	Taken NAPLEX	% Taken	Not Taken NAPLEX (NABP Verified - Taken NAPLEX)	% Not Taken (not taken/NABP Verified e-profiles)	Taken NAPLEX in Confer Year	% Taken in Confer Year	Taken NAPLEX outside Confer Year	% Taken Outside Confer Year
	14,009	98.1%	274	1.9%	13,205	92.5%	804	5.65%
14,013	14,044	97.2%	409	2.8%	13,256	91.7%	788	5.48%
13,267	13,371	97.1%	406	3.0%	12,548	91.1%	823	5.92%
11,537	12,229	96.7%	420	3.3%	11,538	91.2%	691	5.48%
	10,467	92.6%	842	7.5%	10,466	92.5%	1	-0.05%
***Available at: https://nabp.pharmacy/wp-content/uploads/NAPLEX-Pass-Rates.pdf								

Concerns:

- State Licensure Requirements:** Certain states require licensure within a certain number of years or additional coursework and training after that specific time to sit for national examinations.
- Identify Reasons for Opt-Outs:** Investigate why graduates are choosing not to take the NAPLEX exam.
- Develop and Implement Strategies:** Create strategies to encourage graduates to take the exam and pursue licensure, regardless of their immediate career plans.



Pharmacy Law Jurisprudence

MPJE Challenges

Pharmacy practice and distribution of prescription drugs including controlled substances (CS) is among the most highly regulated practices across the United States. Pharmacists are responsible for ensuring the safe delivery and security of the last leg of the prescription drug supply chain.

- Gaps in how regulatory knowledge is assessed, which could potentially lead to variability in public safety protections from state to state.
- Many state-specific laws are similar, if not identical.
- Concerns over the administrative demands associated with existing options.
- Pharmacists seeking licensure in multiple states must sit for and pass multiple MPJEs, which has the potential to make it more difficult for qualified pharmacists to become licensed in multiple states.

Uniform MPJE Development Timeline



Q1 2024

Steering Committee Meeting
Jan 2024

Review June 2023 Report
from initial Steering
Committee meeting
Align on next steps



Q2/Q3 2024

Recruit Uniform MPJE
Review Committee (URC)

Initial URC Meeting
Draft Exam Blueprint /
Content Outline



2025

Practice Analysis
Content Outline Approved /
Posted / Memo
Item Development Workshop
URC Meeting
Pretest (Stats)
Standard Setting
Board Onboarding / Training



June 2026

LAUNCH

Uniform MPJE Content Outline

Uniform MPJE Content Domains		Examples
1.	Pharmacy and Pharmacist Practice	Scope of authority / practice for pharmacists and non-pharmacist personnel; Adulterated or misbranded medications; Federal regulatory standards
2.	Medication Use Process (Prescribing, Transcribing and Documenting, Dispensing, Administering, and Monitoring)	Reviewing drug orders (including CS), dispensing, and administration
3.	Regulatory Authority and Legal Obligations	Role of regulatory authorities, including authority, inspections, and discipline; CS; liability
4.	Pharmacy Operations	Personnel (credentials) and facility (including record keeping)

uMPJE Content Outline to be posted on NABP's website in May 2025.

UPJE Exam Development – *Key Takeaways*

Purpose: jurisprudence exam for use by the boards of pharmacy to consider candidate exam results for the purpose of licensure eligibility in participating jurisdiction(s).

- The Uniform MPJE is envisioned as an additional resource for boards, rather than a sole mandate.
- The UPJE is **not** a federal law exam (e.g., Federal Drug Law Examination (FDLE))
- The exam will be designed to assess knowledge of applicable “universal” laws and regulations to ensure pharmacist competency and to protect states’ public health and patient safety.
 - Candidates could be held accountable by the state board and subject to disciplinary action if they do not follow state-specific laws.

Pharmacist Interstate Privilege / License Portability

Pharmacist Interstate Privilege

Pharmacist Interstate Privilege enables full in-person practice and virtual practice in any participating privilege state

To obtain a Privilege, a pharmacist must:

- Hold an unencumbered license in their state of residence, that is also a privilege state
- Comply with CPE requirements of Resident state
- Pay a fee, including a state fee
- Pass a state or uniform law examination
- If an international graduate, must obtain FPGEC (waivers not eligible)
- Practice within laws and regulations of privilege/remote state
- Submit to an FBI Criminal Background Check conducted by their Resident state

State Requirements

- Fully participate in e-Profile and data sharing and integrated APIs
- Report all encumbrances on license in a timely fashion
- Licensees must graduate from ACPE accredited school, or hold FPGEC
- Agree to and share investigative information
- Alternative discipline programs ORDERED by the board is an encumbrance
- Unified language on encumbrances
- FBI background checks

How would it work in practice?

Kansas is a Privilege state

Iowa is a Privilege state

Missouri is NOT a Privilege state

Bill resides in Kansas and holds a Kansas license

Bill has the privilege to practice in person in Iowa, but must adhere to the laws and regulations of and practice within the pharmacist scope of practice within Iowa

To practice in person in Missouri, Bill must obtain a full Missouri license through eLTP

If You Build It, They Will Come...

- National License Portability
- Standard of Care Model
- Payer recognition (incentives) for pharmacists
- National Pharmacist Licensure Examination





Thank You

NASEM Workshop Session IV:

Next Generation Education & Training Programs

May 30, 2025

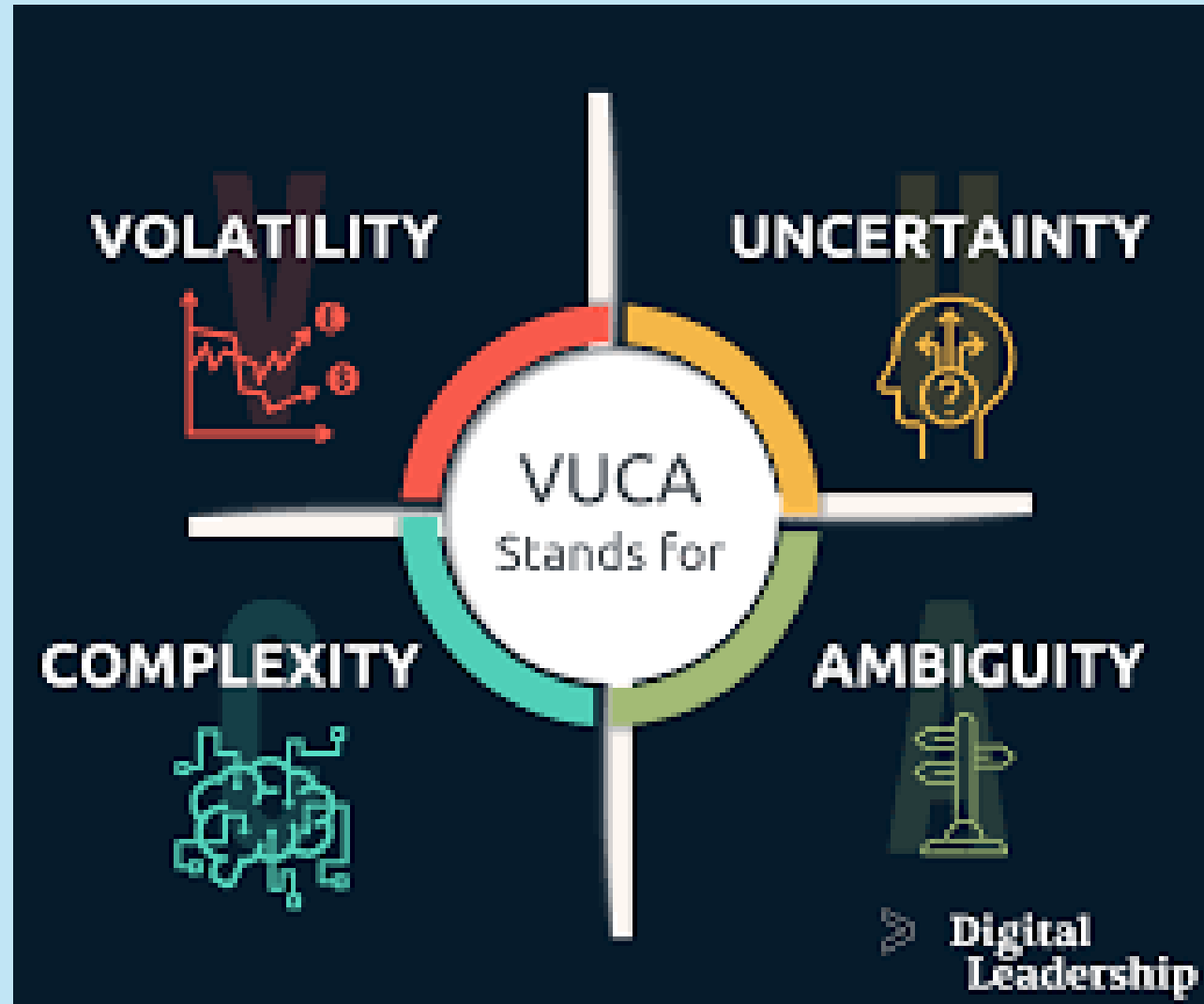
Marie Smith, PharmD, FNAP

Henry A. Palmer Endowed Professor – Pharmacy Practice

Assistant Dean, Practice and Policy Partnerships



We Live in a “VUCA “World



Thriving (not surviving) in a “VUCA” World

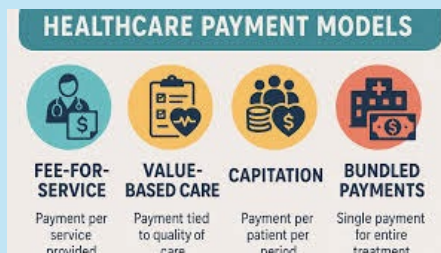
- Pharmacy Education and Practice has evolved in last 100 years



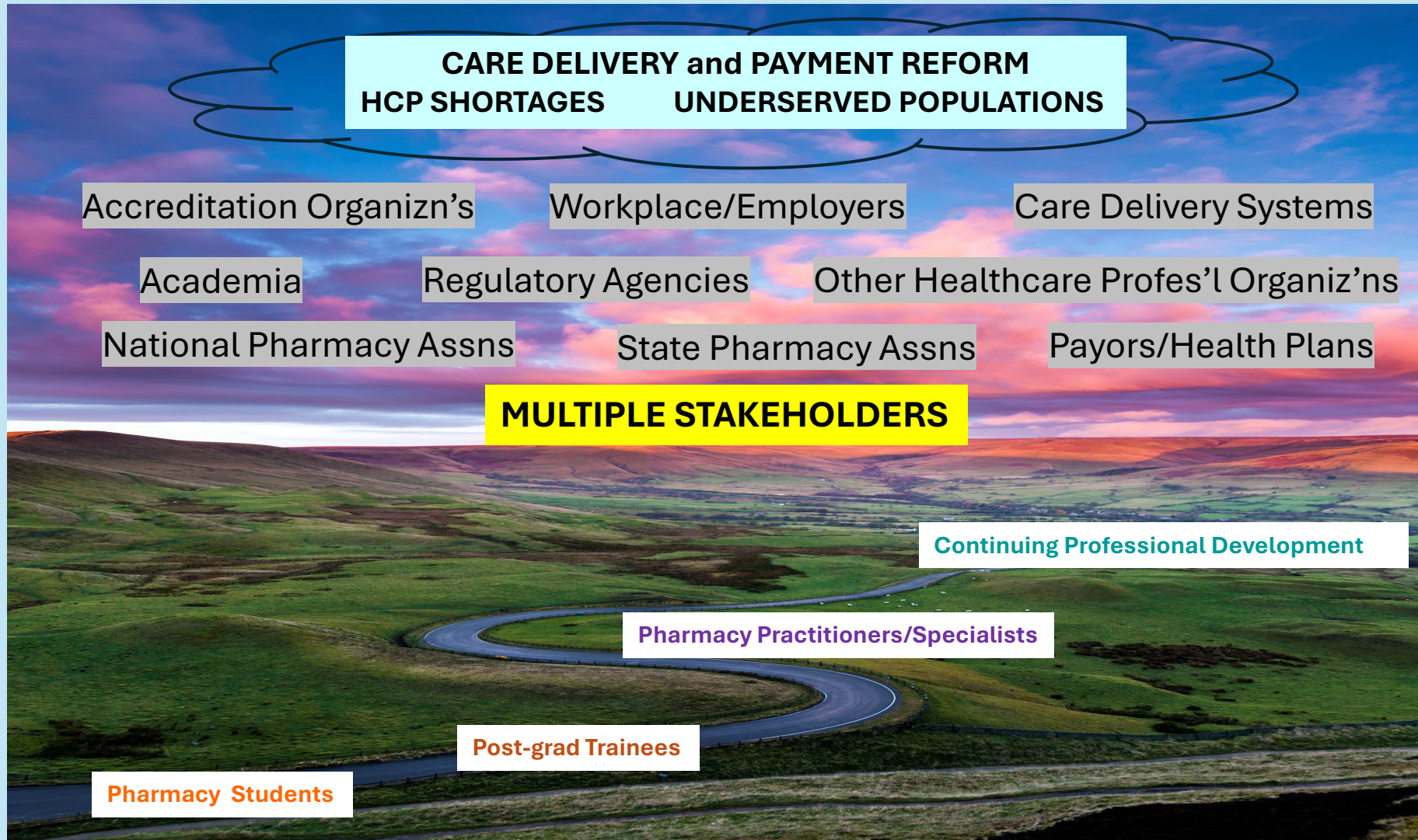
- Health Care Delivery ecosystem has transformed



- Healthcare Payment Systems have transformed



Career Development Ecosystem

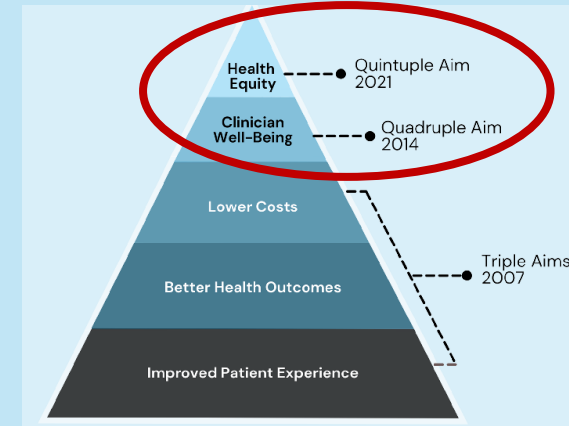


Training Needs for Future Workforce

Training Students and Practitioners

- Foundational Sciences and “Pharmaco-Everything”
- Leadership Skills/ Adaptability/ Resilience
- Critical-Thinking and Change Management Skills
- Interprofessional Experiences – virtual or in-person
- Simulations: EHRs/HIE, Patient Assessment, Care Plans
- Health services research: expanded workforce/pharmacist roles with HC payment reform
- Value of impact “VOI” based on Quintuple Aim dimensions

1 FTE embedded primary care pharmacist working with CPAs to provide Comprehensive Medication Management services can open up ~1,900 PCP-patient appointments/year

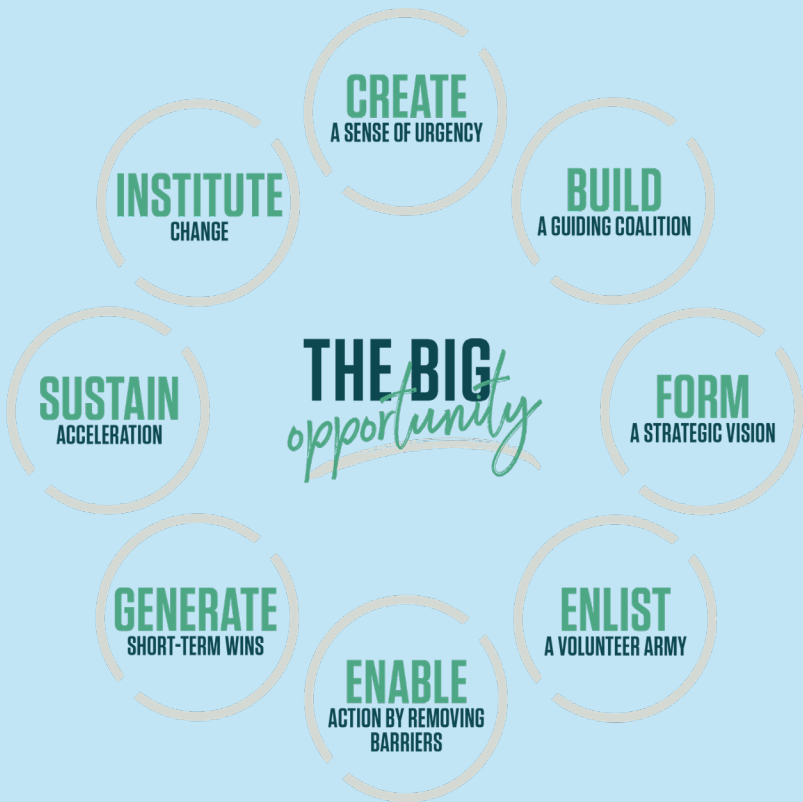


Culture of “Life-long Learning”

- No place for “binge/purge” learning for tests/exams
 - Connect KNOWLEDGE * CRITICAL DECISION-MAKING SKILLS * ACTION PLANS
- Scaffolded learning pedagogy – “practice readiness”
- Short courses, workshops, certificate programs
 - Pharmacogenomics, Informatics/AI/Digital Health/Telehealth, Implementation Science, Innovative Pharmacist Clinical Services and Payment Opportunities....

Frameworks for Collaborative Solutions to Complex Topics

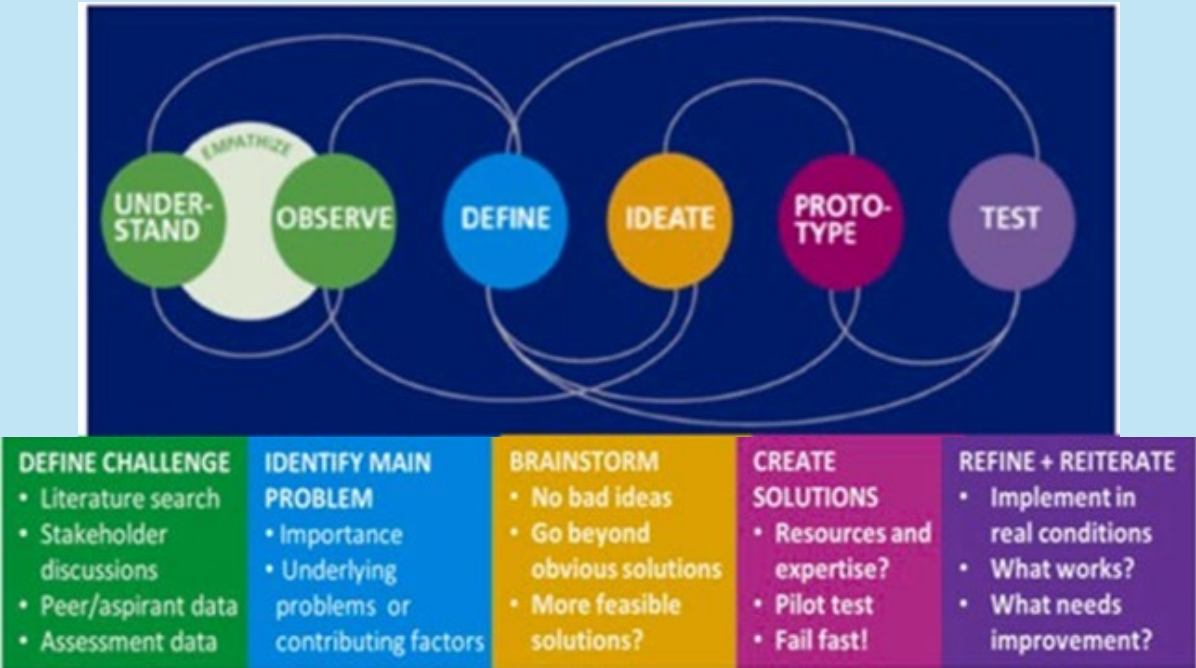
Kotter's Change Management Model



Useful for guiding a change process at a system-, organization-, group-, or individual level

Source: Kotter's 8-step Framework for Leading Change
<https://www.kotterinc.com/methodology/8-steps/>

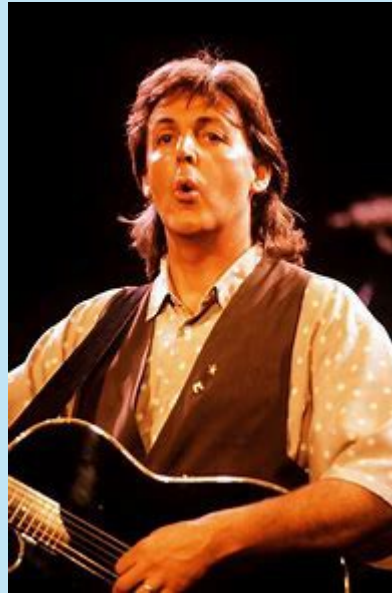
Design-Thinking Framework



Promotes creative problem-solving while using techniques that make ambiguity and failure more comfortable during the iterative process

Source: Sobieraj D, Wheeler K, Salvo M, Smith M.
AJPE (Nov 2024) <https://doi.org/10.1016/j.ajpe.2024.101325>

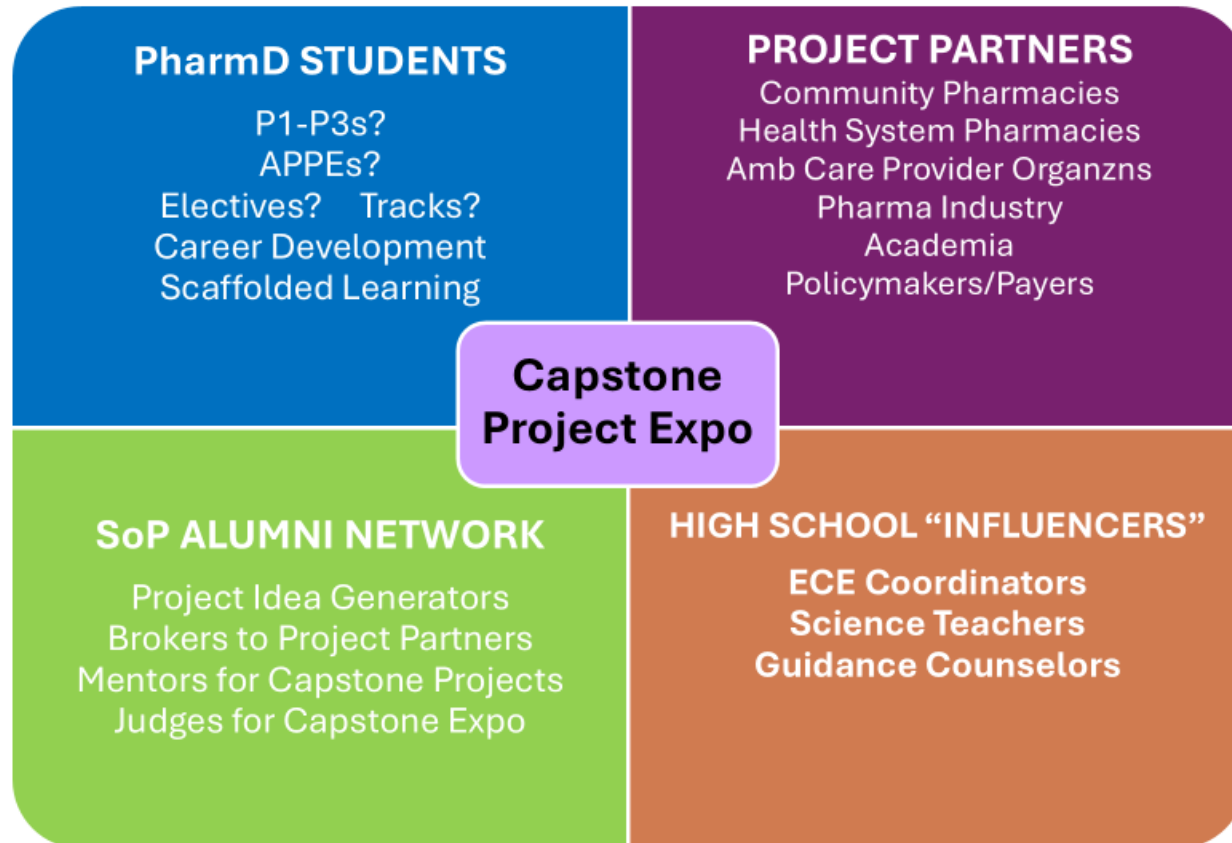
Great Things in History Come Full Circle.....



AND.....

Early PharmD Programs Required Capstone Projects

CAPSTONE PROJECT STAKEHOLDERS



STUDENT SKILL DEVELOPMENT

- ❖ Real-world Problem-Solving
- ❖ Critical Thinking
- ❖ Project Management
- ❖ Change Management
- ❖ Systems Thinking
- ❖ Design Thinking
- ❖ Dealing with Ambiguity/Uncertainty
- ❖ Culture of Vulnerability
- ❖ Teamwork/Collaboration
- ❖ Interdisciplinary Communications
- ❖ Technical Writing
- ❖ Presentation Skills

Innovations in Pharmacy Training and Practice to Advance Patient Care ***The Future***

Sam Johnson, PharmD
VP, Medication Solutions
The Craneware Group

Technological Integration



Digital Health Tools



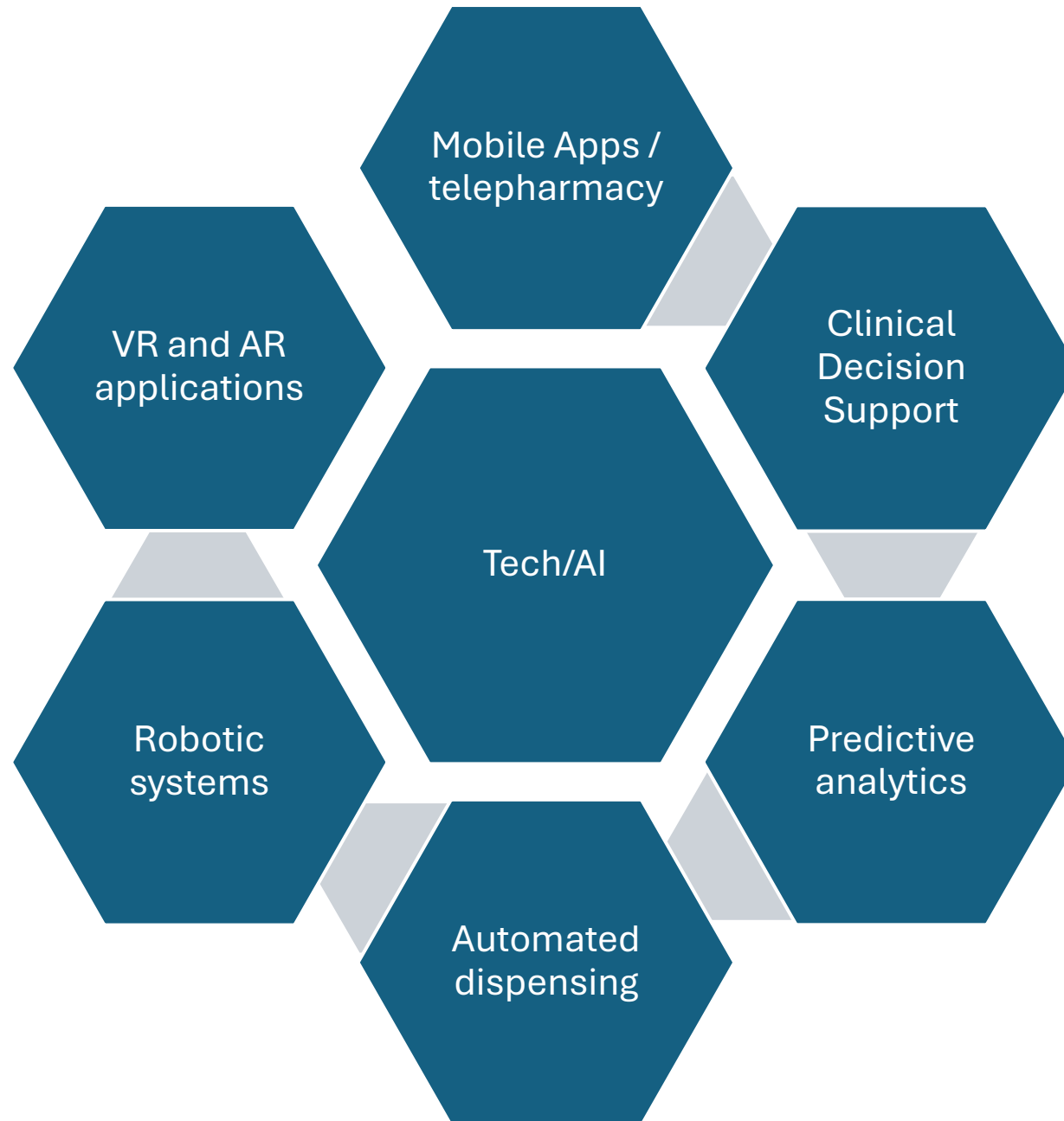
Artificial Intelligence (AI)



Automation Technologies



Immersive Technologies



Additional Considerations



Patient Privacy

Ensuring that digital tools and AI systems comply with privacy regulations to protect patient information



Regulatory Compliance

Adapting to evolving regulations that govern the use of technology in pharmacy practice



Training and Adaptation

Continuous professional development to keep pace with technological advancements and integrate them effectively into practice

Educational Innovations

Simulation Labs and Virtual Reality: Pharmacy schools will adopt simulation labs and virtual reality for hands-on training, enhancing clinical skills in a controlled environment

Interprofessional Education: Emphasis on interdisciplinary training will prepare pharmacists to collaborate effectively with other healthcare professionals

Expanded Role in Healthcare Delivery

Clinical Services:
Pharmacists will play a larger role in chronic disease management, preventive care, and precision medicine

Public Health Contributions: Enhanced involvement in community health initiatives, vaccination programs, and health education

Workforce Development

Continuous Professional Development: Ongoing education and training will be essential to keep pace with technological advancements and evolving healthcare needs

Recruitment and Retention: Strategies to attract and retain skilled pharmacists will focus on offering enriching career growth opportunities

Headwinds Or Tailwinds?

Technological
advancements

Job Market
Saturation

Burnout and
Job
Dissatisfaction

Economic
Pressures

Regulatory and
Policy Changes

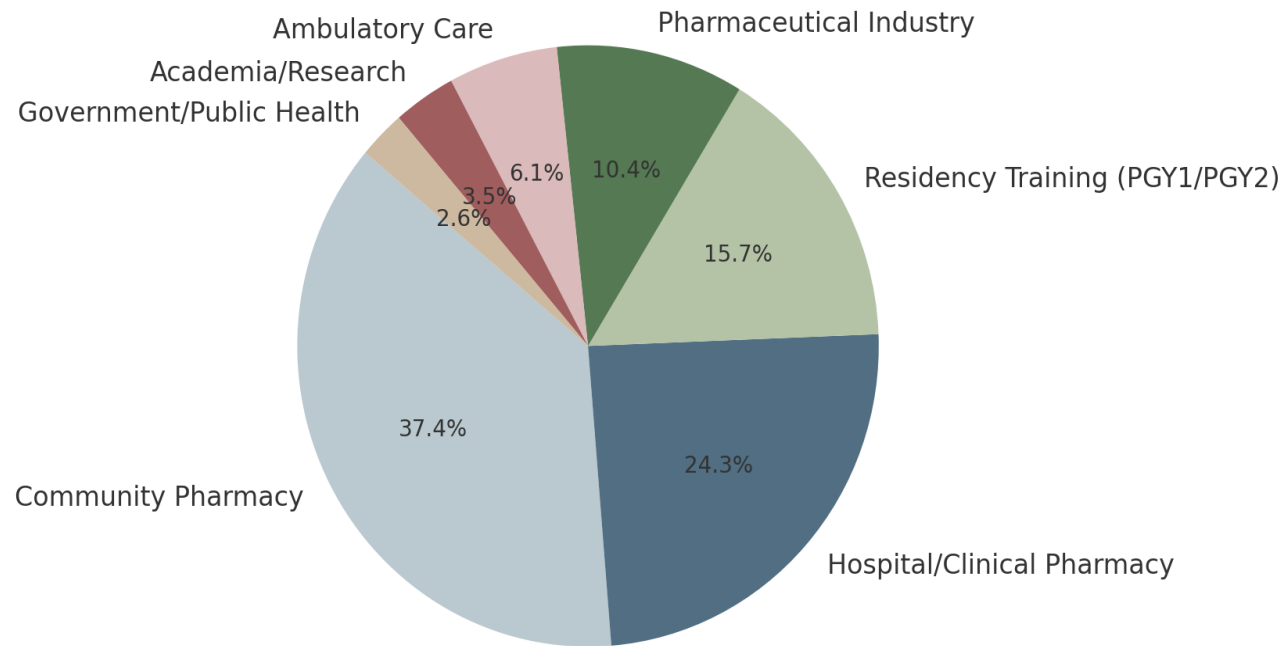
Next Generation Education and Training - *Bio-Pharmaceutical Industry*

Rafael Alfonso C., MD, PhD, MSc

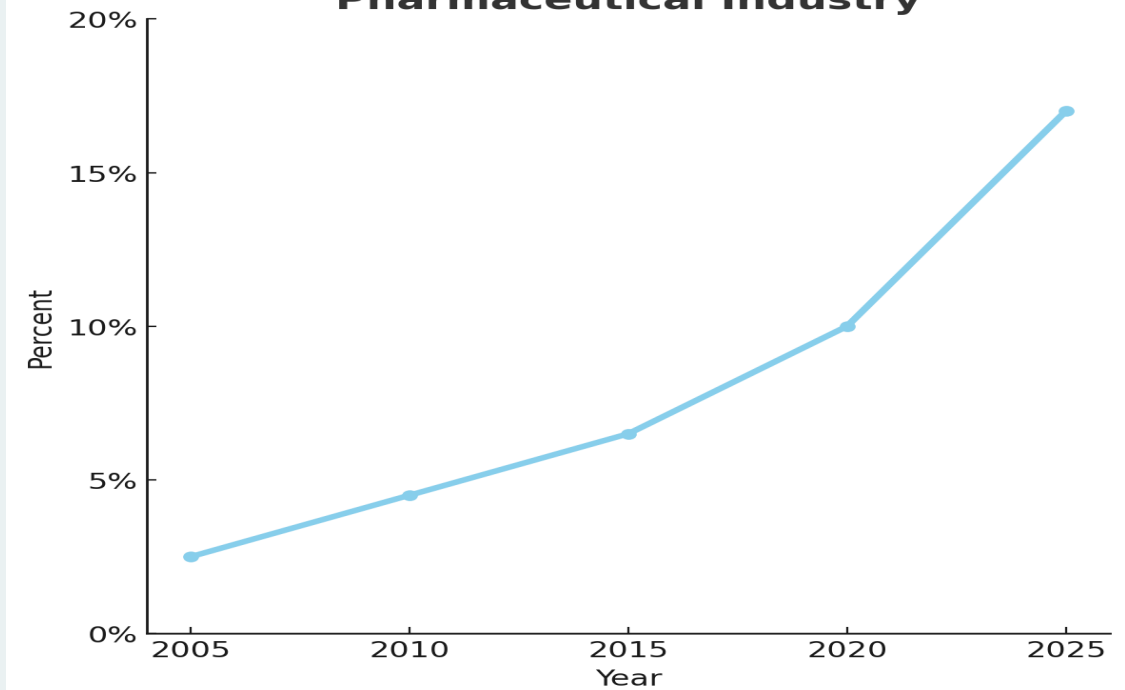
Disclosure and Conflicts of Interest

- Professor School of Medicine-Universidad del Rosario
- Mentor and Sponsor of PharmD Fellows
- Employee and stakeholder of GSK. Note, this presentation will not discuss any clinical content or products/services by GSK.
- The content and opinions expressed are my own

Career Paths for PharmD Graduates in the U.S. (2024-2025)



PharmDs in the Pharmaceutical Industry



Sources: AACP (2023), HRSA (2014), FIP (2016). Medical Science Liaison Society.

~25%

of PharmD graduates pursue non-traditional careers

AACP 2023 Graduate Survey



Growing demand in biopharma industry

"Pharmacists' knowledge makes them valuable to pharma." — American Pharmacists Association

Expanding Roles for PharmDs



Trends Driving PharmD Opportunities

25%

Increase in FDA precision medicine approvals (2023)

15%

R&D productivity boost from AI & Data (McKinsey)

Educational Evolution

60%

of pharmacy schools offer industry-related training (ACPE)

35%

rise in industry fellowships (ACCP)



Dual Degrees

PharmD/MBA
PharmD/PhD programs expanding



Industry Fellowships

Specialized training programs for biopharma careers

Industry-Focused Education Growth

Challenges & Opportunities



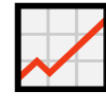
Transition Challenge

Shifting from clinical to industry mindset
requires adaptation



Value Proposition

Demonstrating unique PharmD skills to
industry leaders



Growth Opportunity

"Pharmacist demand in biopharma will
grow" — ASHP

Skills Gap Analysis: Clinical ≠ Industry

Future Outlook (5-10 Years)

Precision Medicine & AI Integration

PharmDs will lead personalized therapy initiatives and AI-driven drug development

Digital Health & Real-world Evidence

Expertise in digital therapeutics and real-world data analysis becomes critical

Leadership Roles for PharmDs

PharmDs will occupy C-suite positions in major biopharmaceutical companies

Key Takeaways



Key to Success

PharmDs are essential to future
biopharma success



Be Open

Embrace evolving, non-traditional
career paths



Change the World

"Your PharmD can change the world —
not just treat it."