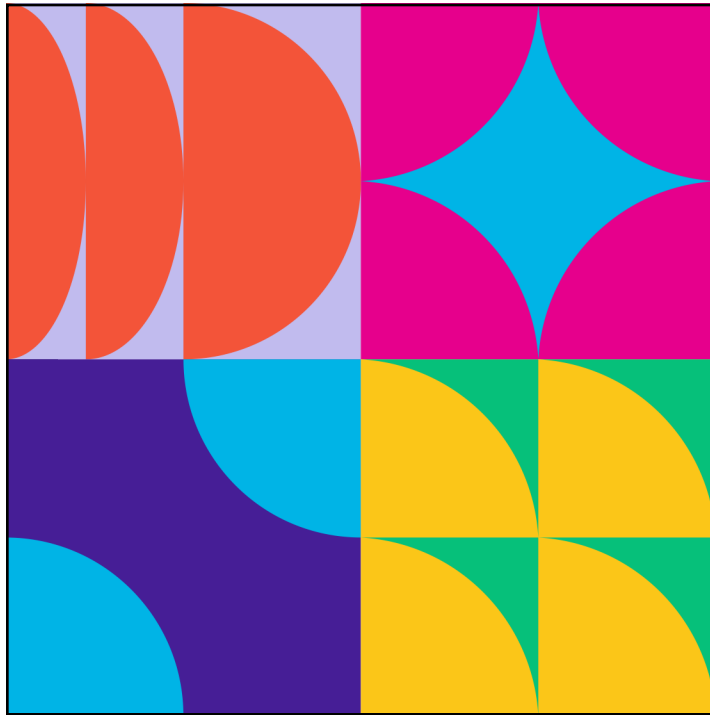




Cutting Through the Hype to Choose the Right Pharmacy Technology

Timothy Aungst, PharmD

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Description

New technology is everywhere, and choosing the right fit for your pharmacy has never been more important. Cut through the noise and evaluate which solutions actually improve workflow, patient care, and business performance. Review technology innovations to assess which are worth adopting—and how to integrate them effectively without adding unnecessary complexity.

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Meet the Faculty



Timothy Aungst, PharmD

Professor of Pharmacy Practice
MCPHS

Timothy Aungst

Timothy Aungst, PharmD, is a nationally recognized pharmacy educator, clinical pharmacist, and digital health expert known as “The Digital Apothecary.” He has spent more than a decade helping pharmacists, educators, and healthcare organizations understand how digital health, artificial intelligence, mobile apps, wearables, and emerging technologies are reshaping pharmacy practice and patient care. Dr. Aungst has advised national and international organizations, contributed to digital health education initiatives, and spoken widely on the future of pharmacy. His work focuses on translating complex technology trends into practical strategies that prepare pharmacists to lead in an increasingly data-driven healthcare environment.

Disclosures

- Timothy Aungst has no relevant financial relationships with ineligible companies to disclose.
- Timothy Aungst discloses that AI tools were utilized to generate visual content and to edit content included in this presentation.

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Learning Objectives

Upon completion of this activity, learners should be able to:

- Identify three technology innovations that enhance workflow or patient care.
- Describe how automation, digital engagement, and clinical tools address operational challenges.
- Analyze how a technology innovation could improve workflow, patient care, or medication safety.
- Compare technology solutions by workflow fit, staffing, and return on investment.
- Outline key steps and considerations to adopt, integrate, or optimize one technology solution.

Pharmacy is Feeling Under Pressure

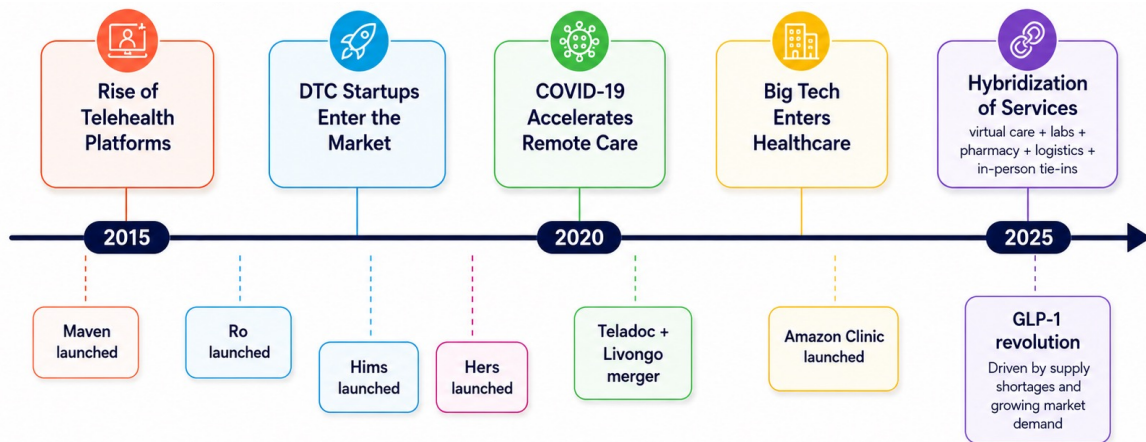


Bottom Line: Pharmacies need technology that improves workflow, protects margins, supports patient access, and enables new service models.

DSCSA = Drug Supply Chain Security Act
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Changing Timeline of How Patients Access Care

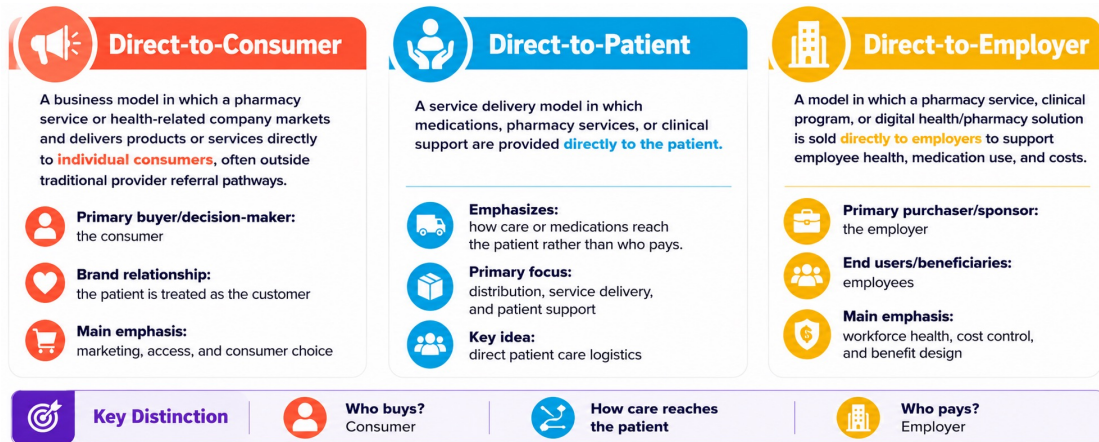


The rise in telehealth platforms and changing consumer expectations have led to a change in patient behaviors when accessing and utilizing healthcare resources.

DTC = Direct-to-Consumer
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New Pipelines for Medication Access



Abbreviations: DTC = Direct-to-Consumer; DTP = Direct-to-Patient; DTE = Direct-to-Employer

Nowosielski B, Aungst T, Patel R, Patel S. *Drug Topics*. February 12, 2026.
Figure/Infographic/Image generated with ChatGPT 5.5, May 12, 2026.

Adjusting to Meet Market Demands

- As the healthcare market changes, pharmacies will have to adapt to changing regulations, reforms, and policy that impact current drug distribution models
- Leveraging technology to facilitate business operations is a growing focus, with multiple new directions to follow
- **Current issues facing pharmacy operators are:**
 - *What is available?*
 - *What should they invest in?*
 - *Does it matter?*

What are your challenges?

Take a few minutes to talk to those near you about what areas you are focusing on developing and what services/tools may help you.

Technology Updates

What technology trends are we seeing within the industry?

How Technology Offers a Business Proposition to Pharmacy

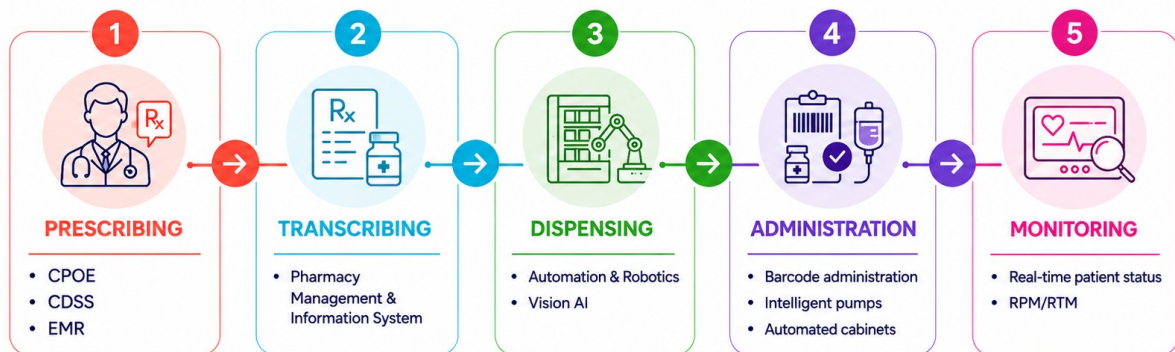


Bottom Line: The right technology should create capacity, improve quality, support patient access, and help pharmacies build a more sustainable business model.

Cornell WK, Clauson KA, Cain J. *Innov Pharm*. 2019;10(1):10.24926/iip.v10i1.1645. Figure/Infographic/Image generated with ChatGPT 5.5, May 12, 2026.

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Technology Advancements Across the Medication Use Process



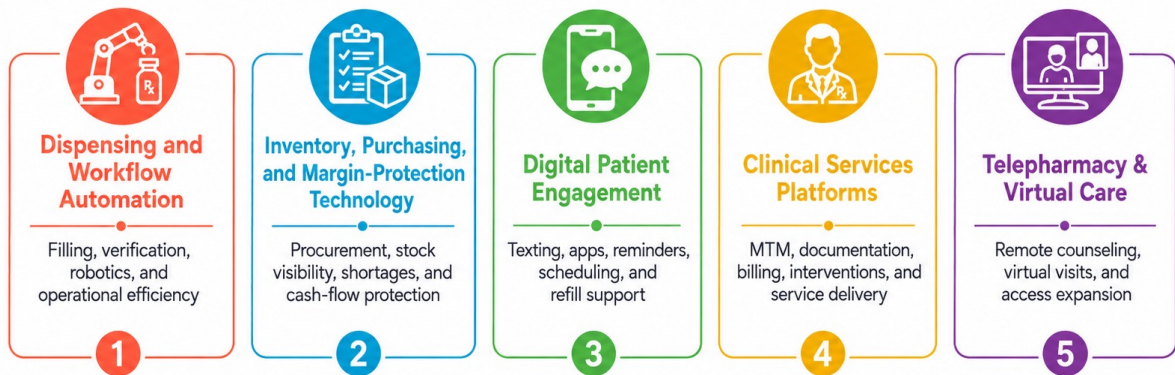
Pharmacy is no stranger to leveraging technology to help with the medication use process. But growing data demands and workforce constraints are accelerating the need for new technology adoption and AI augmentation for the workforce.

Bubalo J, et al. *J Oncol Pharm Pract*. 2014 Dec;20(6):445-60. Graafsma J, et al. *J Am Med Inform Assoc*. 2024 May 20;31(6):1411-1422. Figure/Infographic/Image generated with ChatGPT 5.5, May 12, 2026.

CPOE = Computerized Provider Order Entry; CDSS = Clinical Decision Support System; EMR = Electronic Medical Record; RPM = Remote Patient Monitoring; RTM = Remote Therapeutic Monitoring

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Pharmacy Technology Areas of Focus



Dispensing and Workflow Automation

- Reducing repetitive manual work can cut down on work tempo and improve consistency of dispensing medications in the pharmacy
- Automation now encompasses:
 - *Robotic Dispensing Units*
 - *Automated Pill Counting*
 - *Image Verification Software*
 - *Pouch/Blister Packaging*

The goal of using automation is to increase Rx volume capacity and create room to expand services. There is increased value in certain populations, such as LTC partnerships.

Dispensing and Workflow Automation

Questions to ask when considering automation:

- What specific task is being automated?
- How much time does that task currently consume?
- Will automation reduce work or shift work elsewhere?
- What prescription volume is needed to justify the cost?
- Who will maintain the system?
- What happens during downtime?
- How will saved staff time be redeployed?

Sng Y, et al. *Eur J Hosp Pharm*. 2019;26(3):157-162.
Alahmari AR, et al. *Cureus*. 2022;14(8):e28642.
Clifton CL, et al. *J Am Pharm Assoc* (2003). 2018;58(4S):S109-S113.

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Inventory, Purchasing, and Margin-Protection Technology

- Inventory is one of the most financially important areas for independent pharmacies
- Poor inventory control can create cash flow problems, stockouts, expired products, missed purchasing savings, and compliance risk
- Tools include:
 - *Perpetual Inventory*
 - *Automated Ordering*
 - *Purchasing Analytics*
 - *Wholesaler Price Comparison*
 - *Shortage Alerts*
 - *Expiration Tracking*
 - *Return Management*
 - *DSCSA Data Capture*

Inventory, Purchasing, and Margin-Protection Technology

Questions to ask when considering this technology:

- How much capital is tied up in inventory?
- How often do stockouts occur?
- How much expired inventory is written off?
- Does the system integrate with wholesalers and the pharmacy management system (PMS)?
- Does it support DSCSA data requirements?
- Does it improve purchasing decisions or just produce reports?
- Can staff maintain accurate inventory data?

Digital Patient Engagement

- Digital engagement tools can reduce inbound calls, improve refill capture, support adherence, increase immunization uptake, and help staff prioritize patient needs
- Tools of interest include:
 - *Interactive Voice Response (IVR) Systems*
 - *SMS Outreach*
 - *Medication Refills*
 - *Education and Vaccine Campaigns*
 - *Patient Scheduling*
 - *Digital Forms and Payments*
 - *Online App or Digital Front End*

Think of patient engagement tools as a means to reduce the 'friction' points during pharmacy and patient interactions.

Digital Patient Engagement

Questions to ask when considering engagement tools:

- Does the tool reduce phone calls or create another inbox?
- Is messaging integrated with the pharmacy management system?
- Can patients reply, schedule, refill, or act directly?
- Does the system support consent management?
- Can messages be personalized by patient need?
- Does it support older adults, patients with low literacy, and non-English-speaking patients?



IVR or AI Agents for Patient Engagement?

Wilson DH, et al. *Pharmacy (Basel)*. 2023;11(1):11.
 Gatwood J, et al. *J Am Pharm Assoc* (2003). 2019;59(2S):S21-S24.
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Growing Focus on Pharmacy Clinical Services

Examples of Expanding Services

- Pharmacist prescribing or protocol-based care
- Test-and-treat
- HIV prevention services
- Travel health
- Minor illness or self-care services
- Chronic disease support
- Preventive care
- And more...

Questions to Ask:

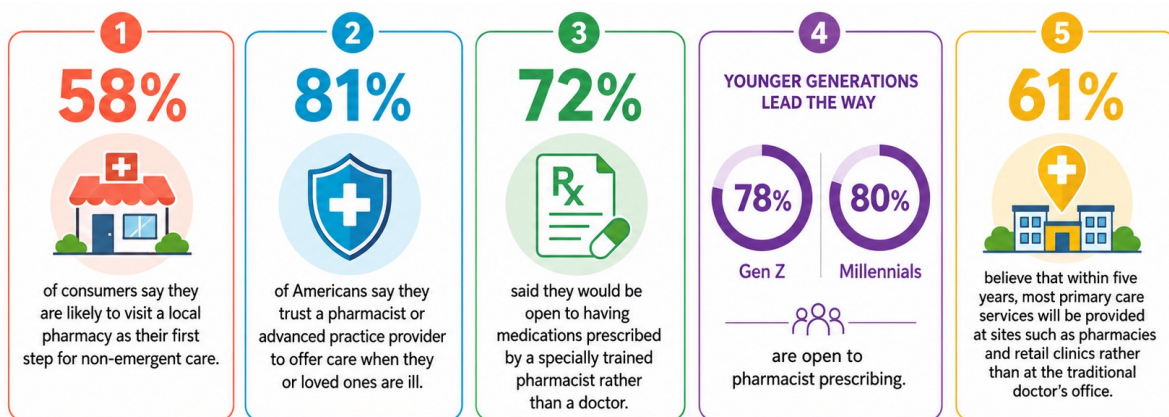
- What services are authorized in your state?
- Is authority based on statewide protocol, collaborative practice, standing order, or independent prescribing?
- What training, documentation, reporting, or referral requirements apply?
- Is there a viable workflow and reimbursement pathway?
- How will you monitor state policy changes?

Evolving state laws can create new clinical service opportunities, but pharmacies should verify current authority and operational requirements before investing in technology or workflow changes.

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Piroux A, et al. *J Am Pharm Assoc* (2003). 2024;64(6):102192.

Who Wants Clinical Services?



www.wolterskluwer.com/en/expert-insights/pharmacists-growing-role-in-patient-care-and-whole-person-wellness.
Figure/Infographic/Image generated with ChatGPT 5.5, May 14, 2026.

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Clinical Services Platforms

- As independent and outpatient pharmacies diversify beyond dispensing, they need technology that supports clinical service identification, documentation, billing, follow-up, and reporting
- Tools include:
 - *Medication Therapy Management (MTM) Platforms*
 - *eCare Plan Tools*
 - *Chronic Care Management (CCM) & RPM Management Support*
 - *Clinical Documentation Tools*
 - *Medical Billing Tools*

A clinical platform is only valuable if it helps turn pharmacy teams' activities into completed, documented, and financially sustainable care.

ncpa.org/newsroom/news-releases/2025/10/19/ncpa-releases-2025-digest-report
Farhana L, et al. *Patient Prefer Adherence*. 2025;19:2161-2178.
Roszak SE, Ferren SP. *Prev Chronic Dis*. 2020;17:E90.
Hohmeier KC, et al. *JAPhA Pract Innov*. 2025;2(4):100073.

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Clinical Services Platforms

Questions to ask when considering clinical service tools:

- Does the platform identify actionable opportunities?
- Does it reduce documentation burden?
- Does it support billing or payer reporting?
- Does it integrate with pharmacy workflow?
- Are interventions clinically meaningful or mostly administrative?
- Does it help generate revenue or demonstrate value?
- Does it prevent portal fatigue?

ncpa.org/newsroom/news-releases/2025/10/19/ncpa-releases-2025-digest-report
 Farhana L, et al. *Patient Prefer Adherence*. 2025;19:2161-2176.
 Roszak SE, Ferret SP. *Prev Chronic Dis*. 2020;17:E90.
 Hohmeier KC, et al. *JAPhA Pract Innov*. 2025;2(4):100073.

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Telepharmacy & Virtual Care

- Virtual care can expand access, especially for rural communities, patients with limited mobility, specialty medication users, and patients needing ongoing follow-up
- Implementation must address workflow, reimbursement, training, and digital access
- Tools include:
 - *Remote Counseling*
 - *Video Consultations*
 - *Virtual Medication Reviews*
 - *Remote Pharmacist Verification (where allowed)*
 - *Digital Follow-up Visits*
 - *Specialty Medication Onboarding*
 - *Chronic Disease Check-ins*

Virtual care expands reach only when workflow, reimbursement, training, and digital access are addressed together.

Aboelzahab YH, et al. *Res Social Adm Pharm*. 2025;21(9):653-666.
Qudah B, AlMahasis S, Chewning B. *Pharmacy (Basel)*. 2025;13(5):115.

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Telepharmacy & Virtual Care

Questions to ask when considering teleservices:

- Which patients will benefit most?
- Does the pharmacy have a scheduling workflow?
- Is the service reimbursable?
- Who documents the encounter?
- How are follow-ups tracked?
- What happens when patients cannot use video or apps?
- Does the platform integrate with existing records?

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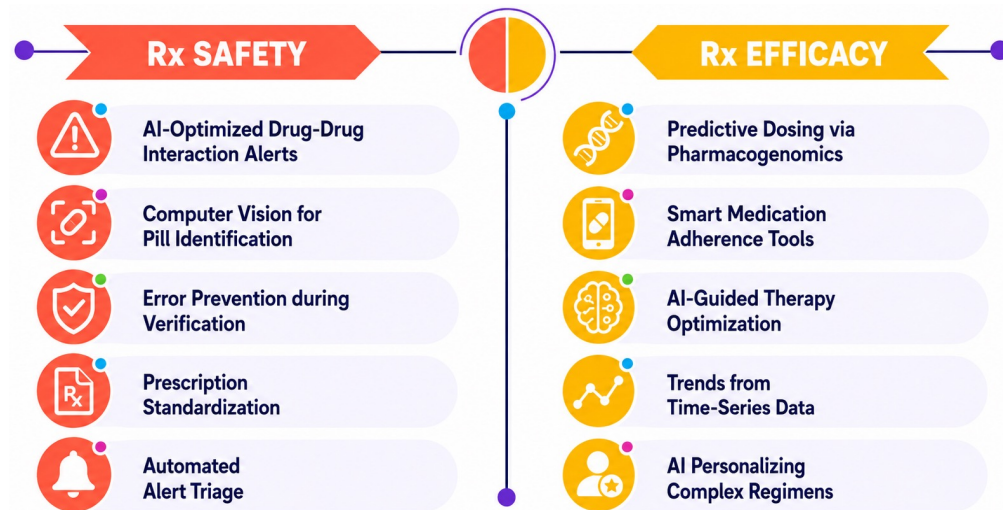


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What About Artificial Intelligence (AI)?

- The “next big thing” may often be overused to help promote marketability of products
 - Vendors may be looking for ways to keep ahead of the competition by highlighting AI or rebranding existing tools that already use AI
- AI should be framed as supervised workflow support, not autonomous clinical decision-making
 - The safest near-term uses are operational, auditable, and human-reviewed
- AI is another tool that may factor into a product's operation, but it should not be the sole reason you need it

Balancing AI in Pharmacy Practice Considerations



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How is AI Being Leveraged into Pharmacy Operations?

- Two sides of AI implementation are shifting the current pharmacy technology market:
 - Incumbent companies adding on AI-enabled services
 - New vendors using AI to offer services

Pharmacy operators need to keep updated on how AI works and its pros/cons when considering how to integrate it into their business and what scale of oversight they need to have in their workflow.

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Khan O, et al. *Intelligent Pharmacy J* (2023)32-40.
Tabaja Bortesi JP, et al. *Scoping Review J Med Internet Res* 2026;28:e86760.

How is AI Being Leveraged into Pharmacy Operations?

- Medication reconciliation
- Refill prediction
- Adherence risk scoring
- Outreach prioritization
- Inventory forecasting
- Message drafting
- Patient segmentation
- Prior authorization support
- Documentation support
- Clinical note summarization
- Chatbot-assisted intake

Khan O, et al. *Intelligent Pharmacy J* (2023)32-40.
Tabja Bortesi JP, et al. *Scoping Review J Med Internet Res* 2026;28:e86760.

Making the Decision

How do you decide what to buy and integrate into your pharmacy?

Do not buy technology
because it is innovative.

Buy it because it solves a
problem your pharmacy
can measure.

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Start With Your Problems

What problems are you facing?

- Evaluate if these are multifactorial and not siloed issues
- Map out current processes and identify areas of weakness that could be diminishing operations
- Identify if current tools are not being leveraged enough to help solve current problems
- Research available alternatives and why they may help

What does your staff think of the problems?

- How does it impact their workflow and activities?
- Is labor cognitive, physical, or a mix that can be solved with a tool?
- What concerns do they have related to utilizing new technologies (e.g., training, ownership, workforce reducer)
- Identify if someone wants to be a 'superuser' for a product or service

How does it impact your patients and operations?

- Different patient demographics and market segments may want different services
- Perform 'market research' of your population to identify what services or offerings they may desire
- Identify ways to engage with your patients to incentivize services and product offerings (e.g., SMS, web-based, social media)
- Consider a patient engagement 'champion' amongst your staff

What Technology Should You Look For?

 Evaluation Domain	 What It Should Improve	 Questions or Metrics
1  Workflow Efficiency	remove bottlenecks, automate repetitive tasks, streamline steps	• wait time, turnaround time, manual touches.
2  Patient Experience	make care more convenient, connected, and accessible	• refill convenience, communication, patient satisfaction.
3  Medication Safety	strengthen verification, consistency, and documentation	• errors, near misses, safety checks.
4  Staff Capacity	free pharmacists and technicians for higher-value work	• time saved, task redistribution, reduced burden.
5  Revenue Capture	support sustainable reimbursement and service income	• billable services, margin protection, claims completed.
6  Inventory Control	improve purchasing, shortages management, and stock visibility	• stockouts, expirations, inventory turns.
7  Clinical Service Delivery	enable MTM, immunizations, follow-up, and interventions	• services completed, interventions documented.
8  Compliance Readiness	support DSCSA, privacy, documentation, and audit readiness	• tracing access, required documentation, workflow consistency.
9  Return on Investment	produce measurable operational or financial value	• 30/60/90-day outcomes, savings, revenue impact.

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Finding the RIGHT-FIT for Your Pharmacy

	Meaning	Question
R	Real Problem	What problem are we solving?
I	Integration	Does it connect to existing systems?
G	Governance	Who owns the workflow, data, QA, and troubleshooting?
H	Human Workload	Does it reduce work or shift work?
T	Training & Optimization	How will we train, launch, and improve it?
F	For Patients	Does it work for the patients we serve?
I	Impact Metrics	What will we measure?
T	Total Costs	What is the full cost, including training and maintenance?

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QA = Quality Assurance

Manpower, Resources, and Logistics Considerations

Staffing Considerations

- Review with staff on willingness to adopt/train on new technologies
- Evaluate impact on workflow and how staffing may need to be adjusted
- Ensure clear communication regarding use of technology
- Caution on language related to workforce maximizer or minimizer to avoid pushback

Logistics & Deployment

- Consider space and infrastructure needs
- Assess new technologies and hardware integration
 - Ex: Kiosks need power sources; does it connect to an outlet, run on a battery, etc?
- Develop a timetable for integration and launch
- Prepare for what to do if downtime occurs and have a plan of action

Determining ROI

- Establish clear, measurable metrics to understand the value of any new investment
- Identify what metrics matter in the short and long term
- Keep in mind that outcomes may be hard (e.g., time saved, \$\$\$) or soft (e.g., staff happiness, burnout)

Questions You Should Ask a Vendor

The Claim

“This saves time.”

“Patients love it.”

“This integrates.”

“This improves ROI.”

“This uses AI.”

The Real Question

Whose time and how much time?

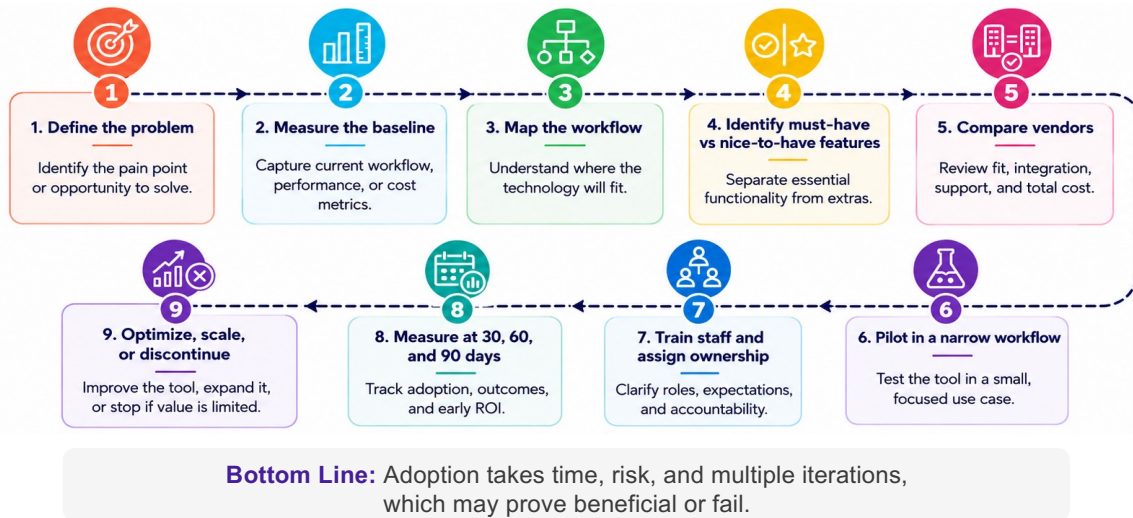
Which patients use it, and who may be excluded?

What data moves automatically, and what still requires manual entry and updates?

What metric will prove value, and at what time frames (e.g., 30, 90, 180 days)?

What task does the AI perform, and who verifies output and accuracy?

Pharmacy Technology Adoption Roadmap



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Group Discussion

Pair (~5 minutes)
Share (~5 minutes)

- Reflect on topics covered in the session thus far
- What areas are an opportunity to expand your pharmacy operations with new technologies covered?
- **Talk to your neighbors and discuss:**
 - *What are the opportunities for your pharmacy?*
 - *What concerns do you have with investing in or utilizing new technologies?*
 - *Which technologies do you think your patients may find most appealing?*
 - *How do you plan on looking further into these technologies, either with current products or possible new services you may investigate?*

Is it the RIGHT-FIT for Your Pharmacy?

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Key Takeaways

New Market Shifts

- Shift of patients toward a consumer mindset is changing how healthcare offers its service
- Expanding competition on medication access from new companies across the market
- Digital presence is a focal area of concern for consumer engagement
- Pharmacy is evolving beyond medication dispensing towards health services for patient utilization due to health deserts

Expanding Technologies

- New technologies are leveraging integration across the PMS to help with dispensing workflow
- Growing focus on expanding PMS or related software to aid in providing clinical services for patients in local communities
- Patient engagement technologies aim to reduce the 'friction' of accessing medication and care services

Finding What Works

- All that glitters is not gold
- AI won't solve all your problems
- Taking the time to identify problems or opportunities for the business comes first
- Evaluate products and services that fit your pharmacy operations
- Multiple iterations are needed and continuous process improvement must be considered for longevity of any offering



Questions?