

# Practical Solutions to Prevent and Prepare for Severe Hypoglycemia: Expanding the Benefit of Quality Improvement Programs to Diverse Provider Types

## Digital "Out-of-the-Box" Quality Improvement

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### INTRODUCTION

The practice of quality improvement (QI) is evolving. Once the bastion of academic medical centers, today, patients, payors, and regulators are calling on providers of all sizes and resources to demonstrate improved quality of care. To achieve this, innovative CPD must support QI programming in a sustainable and easily replicable manner. Digital frameworks for QI offer dual benefit—broader access to established models of success and timetables that take the theoretical and make them actionable today, versus two or three years in the future.

The pathway to optimizing and improving prevention and preparedness for severe hypoglycemia in patients with diabetes is a multi-specialty endeavor. As such, this educational design used a digital QI construct to reach clinicians and pharmacists in community settings, outside the traditional brick and mortar of a large, resourced hospital setting.

### ACTIVITY DETAILS

Target audience: Physicians, pharmacists and advanced practice providers who manage patients with diabetes from the hospital to the private primary care practice to the community pharmacy.

#### DIGITAL QI

A digital QI "toolbox" was developed to offer both educational and practical guidance, with easy, step-by-step directions on how to run the QI program locally in a cost effective and high impact way.

Anticipated: 140 self-managed QI-in-a-box clinician/clinic learners  
2 coordinated QI sites (1 pharmacy clinic & 1 PCP clinic)

#### STANDALONE CME/CPE/CE

QI interventions, including education and practice tools, offered as standalone CME/CE to create secondary access.

5,177 OSP-learners and 4,211 completers to-date



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Digital QI: [prevent-hypo.org/](http://prevent-hypo.org/)  
Toolkit: [toolkit.prevent-hypo.org/](http://toolkit.prevent-hypo.org/)  
Interventions:  
• Checklist for Alerts  
• Patient Ed Infographic  
• Hypoglycemia Assessment Tool: [prevent-hypo-tool.org/](http://prevent-hypo-tool.org/)

### DIGITAL QI DESIGN

The "out-of-the-box" QI experience draws from the Plan-Do-Study-Act (PDSA) model of success and creates a framework for realizing the benefits of QI as easy as 1, 2, 3:

#### 1 Digital Self-Assessment (Clinic/Hospital/Pharmacy level)

Sites identify process-focused performance targets via a data collection questionnaire. Questionnaire targets were identified through guideline and medical specialty society recommendations. Learners or clinics receive a "report card" showing how they performed relative to each targeted goal. This score becomes the learner or clinic's baseline.

- Measures include:
1. Assessing risk of hypoglycemia
  2. Prescribing glucagon for at-risk patients
  3. Prescribing glucagon with insulin therapy
  4. Verifying glucagon expiration
  5. Selecting and recommending glucagon
  6. Ensuring patient access to glucagon
  7. Patient/caregiver education

#### 2 Self-Directed/Self-Initiated Educational and Practical Interventions

Downloadable Slide Deck & Moderator's Guide

Digital Case Studies

Hypoglycemia Assessment & Management Tool

Patient Management Infographic

Checklist for Setting up Alerts/EMR Flags

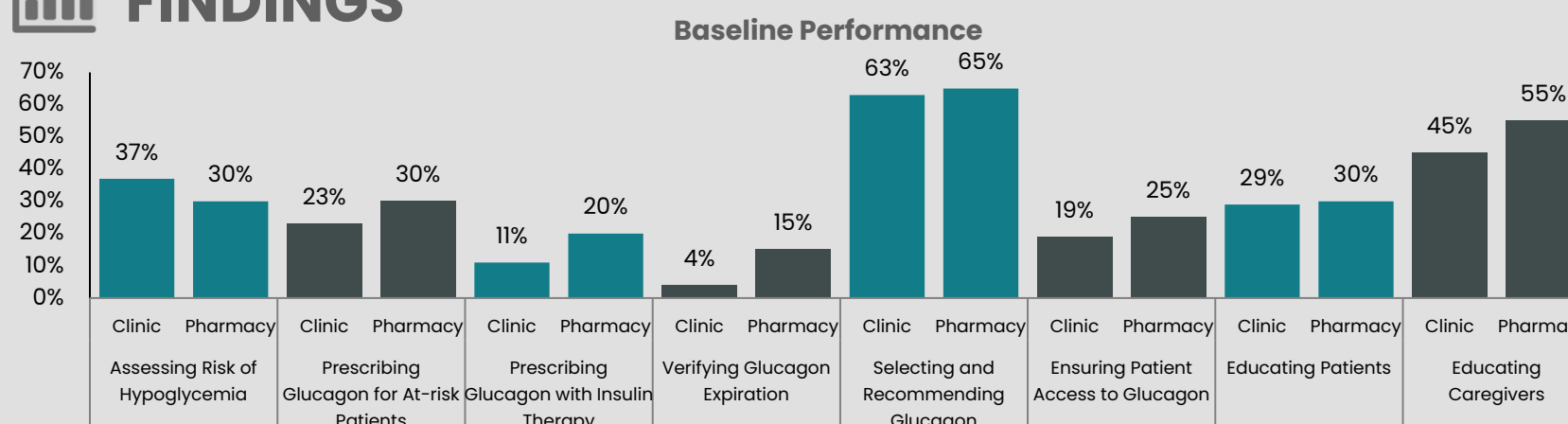
#### 3 Follow-Up Data Collection (Clinic/Hospital/Pharmacy level)

Clinics or learners who participate in the digital QI are tracked and reminded as to when they are eligible to return and complete the QI to measure performance improvements relative to selected targets.

### METHODOLOGY

Practice Gaps	Educational Needs	Hypotheses	Desired Outcomes
Despite widespread use of insulin and other medications with risks of hypoglycemia, HCPs fail to educate patients with T1D and T2D about what hypoglycemia is and why it happens	Clinicians need to assess for risk of hypoglycemia and make sure that patients are prepared. Patients need to understand their risk for hypoglycemia and how to prevent and manage any episodes	Clinics will incorporate EMR-driven tools to coordinate care and recognize hypoglycemia-related events or risk of hypoglycemia  Clinics will introduce new processes, workflows, and staff roles to provide initial and recurrent/routine education about hypoglycemia	100% of sites will assess patients for hypoglycemic risk at every patient encounter
HCPs underestimate the prevalence of severe hypoglycemia in patients with T1D and T2D and have poor adherence to ADA guideline recommendations on the treatment of severe hypoglycemia and poor adoption of easy-to-administer nasal and stable liquid glucagon formulations	Clinicians need to understand a patient's risk for hypoglycemia, understand how to prevent and manage episodes, and have up-to-date knowledge of available glucagon formulations	Clinics and pharmacies will introduce new processes and optimize EMR use to ensure patients have a current prescription for glucagon	100% of sites report that 100% of at-risk patients have an active Rx for glucagon  100% of sites use EMR to automatically trigger glucagon Rx in tandem with initiation of insulin  Sites will increase frequency at which they ask patients about glucagon use between clinic visits  100% of sites will prescribe glucagon type based on patient/caregiver preference
HCPs underutilize shared decision-making to effectively balance the benefits of achieving glycemic control with risk of hypoglycemia	Clinicians need to provide patients and their caregivers with appropriate counseling and education to guide decisions related to hypoglycemia prevention and management	Clinics will train clinical staff to counsel patients and caregivers to mitigate fears about glucagon administration  Clinics and pharmacies will develop/make available decision aids around optimal self-monitoring of blood glucose, glucagon products and routes of administration	Sites will increase the frequency at which they educate patients and caregivers  Sites will provide patient and caregiver education in a manner that ensures success in delivery of glucagon in a severe hypoglycemic situation

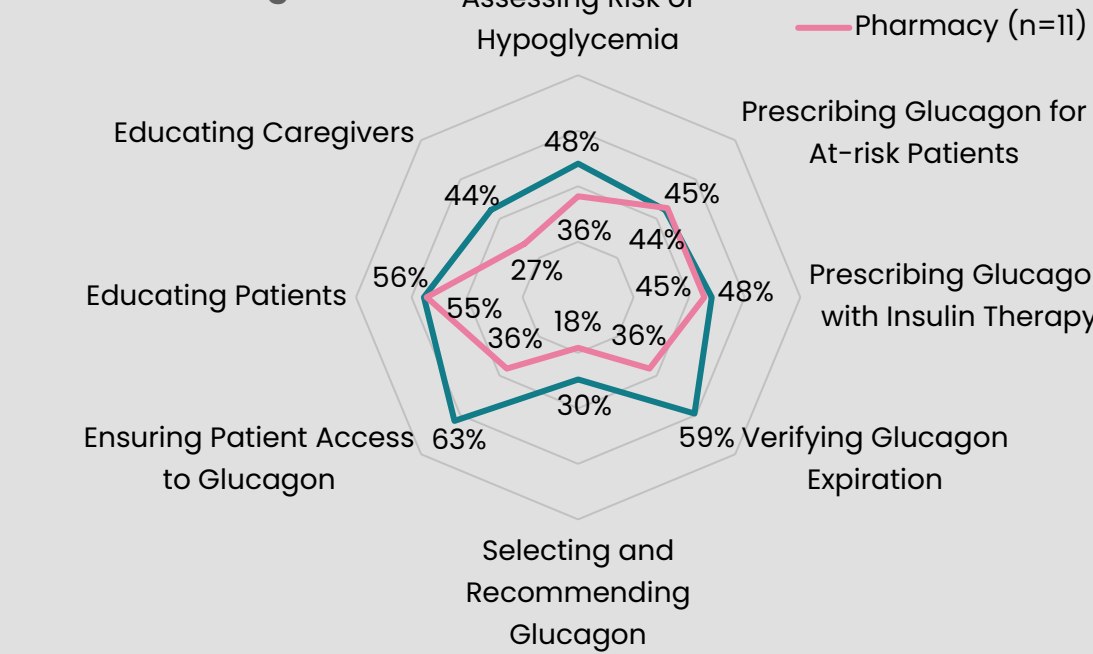
### FINDINGS



Baseline assessment of clinics participating in the digital QI (n=95) found:

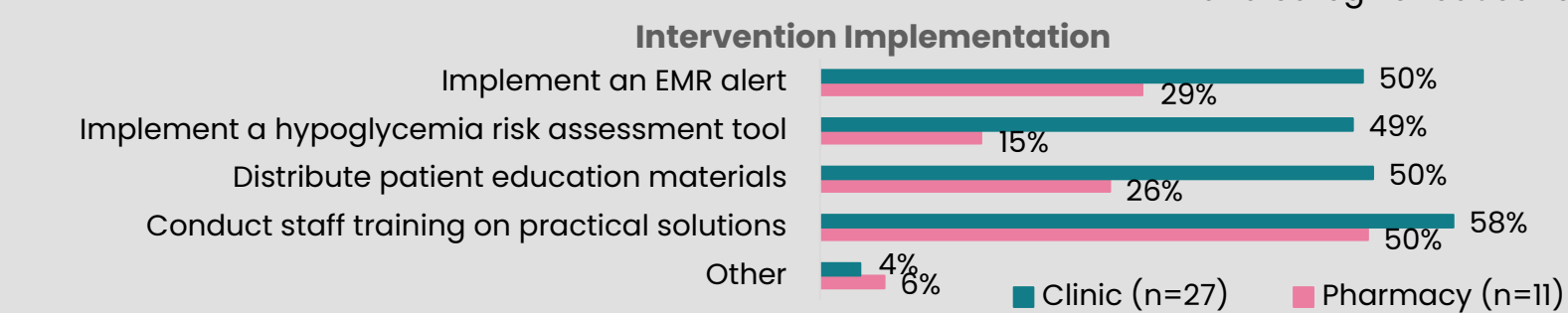
- Only 36% were conducting risk assessments per guidelines
- While 63% were recommending glucagon at some point in time, only 6% were following up to confirm patients had an active/unexpired device and 20% were following up to confirm patients had access
- Only 24% were prescribing glucagon for at-risk patients per guidelines and only 13% were prescribing glucagon concurrently with insulin therapy
- Only 29% were educating patients about hypoglycemia and 43% were providing educational materials about glucagon to caregivers

#### Goal Setting



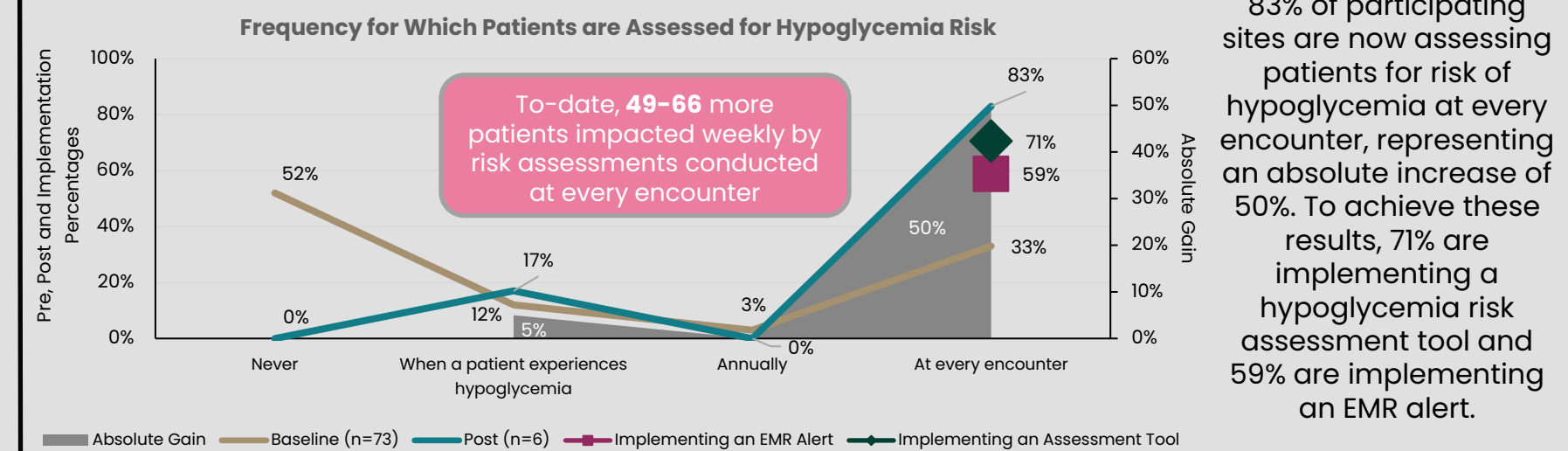
For medical practices that moved to goal setting and the implementation phase:

- 13 clinics and 4 pharmacies set goals to improve risk assessments
- 12 clinics and 5 pharmacies selected goals to improve prescribing for at-risk patients
- 13 clinics and 5 pharmacies selected goals to ensure concurrent prescribing of glucagon with insulin
- 16 clinics and 4 pharmacies set goals to verify glucagon expiration
- 15 clinics and 6 pharmacies set goals related to patient and caregiver education

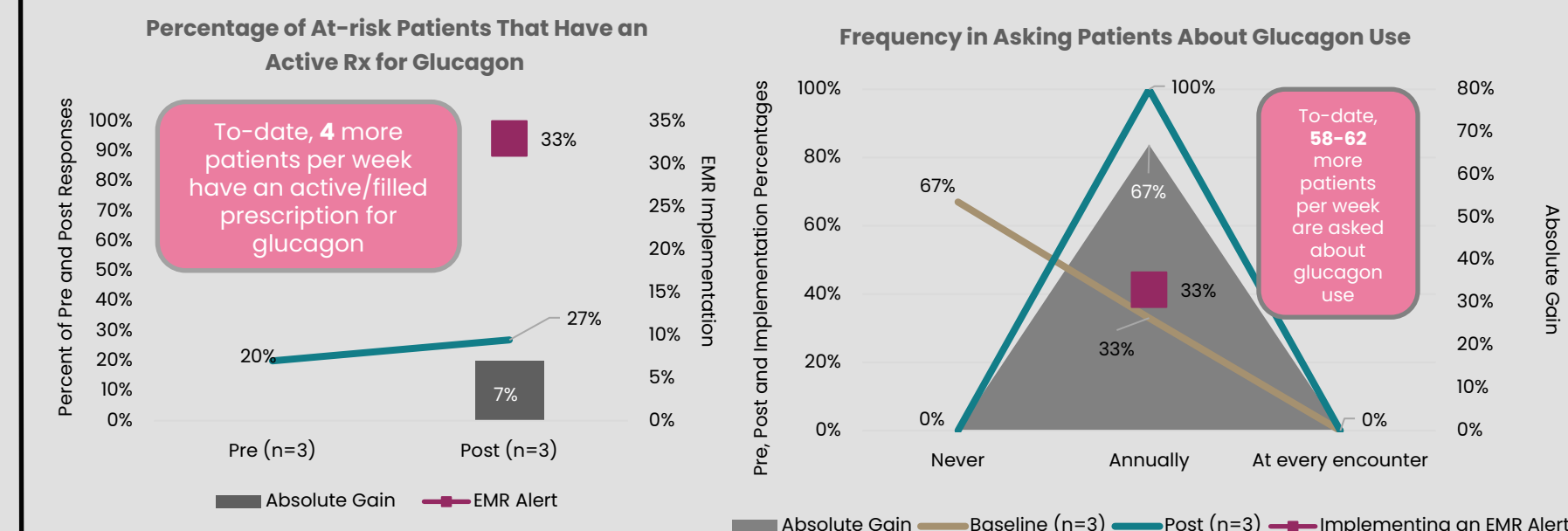


Of the 27 clinics and 11 pharmacies to set goals and begin executing action plans, 45% are implementing EMR alerts; 41% are developing processes to utilize hypoglycemia risk assessment tools; 56% are conducting staff training; and 45% are improving the quality and frequency of patient education materials distributed. Other interventions being leveraged include acquiring demo devices to support patient/caregiver education, updating EMRs, and improving communication with the multidisciplinary team.

### FOUR-MONTH PROGRAM IMPACT

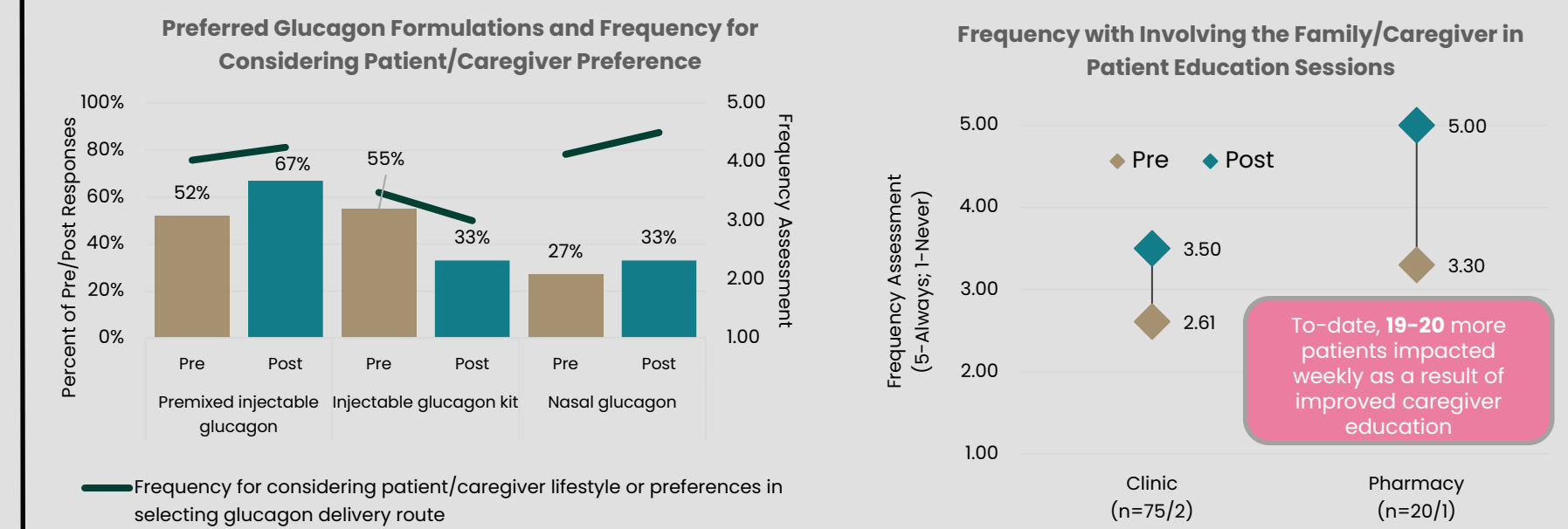


83% of participating sites are now assessing patients for risk of hypoglycemia at every encounter, representing an absolute increase of 50%. To achieve these results, 71% are implementing a hypoglycemia risk assessment tool and 59% are implementing an EMR alert.



Of the three sites reporting post-results for this measure to-date, an average of 7% more patients have an active prescription for glucagon as a result of this intervention. If this trend continues, for all 95 sites undergoing action plan implementation, 111 to more than 123 patients per week will gain an active/filled prescription for glucagon.

100% of sites post-intervention are asking patients, at least annually, about glucagon use whereas at baseline 67% were never asking patients if they needed to use their glucagon for a hypoglycemic event between office visits.



Sites have increased their frequency for considering patient/caregiver lifestyle or preferences in selection of glucagon by 33% following participation in the quality improvement initiative, while simultaneously shifting their preferred formulations to premixed injectable and nasal glucagon.

PCP clinics report an increase of 18% and the community pharmacies report an increase of 34% with involving family and/or caregivers in glucagon educational sessions.

### CONCLUSION

While the digital QI is still underway, data collected and analyzed thus far, coupled with participation trends, show the strengths of this design in achieving success and illustrate how a scalable digital QI construct, with pathways to accommodate both system-level and individual learner improvements, can facilitate participation in QI to broaden the reach and render more meaningful and sustainable results. This methodology promotes interactivity and alignment to goals amongst the team by actively engaging them in teaching, learning, and modeling system-level/structural changes considerate of their own performance levels. Problem-based learning delivered at the point of care cannot only positively affect knowledge gains but create a larger narrative of educational impact through the lens of: 1) demographic and clinical behavior data; 2) competency/proficiency assessments and performance outcomes; and 3) practice level changes on a department/system level.

### ACKNOWLEDGEMENTS

This activity was supported by an educational grant from Lilly. It is sponsored by Purdue University College of Pharmacy, Office of Continuing Education and Professional Development and the Academy for Continued Healthcare Learning (ACHL).