



NACE *Conversations* in Primary Care 2019

Final Live Outcomes Report



Optimizing Diabetes Care: Evolving Strategies for Safer Integration of Insulin Therapy

Lilly Grant ID: A-24819



2,081 Participants

3 Activities

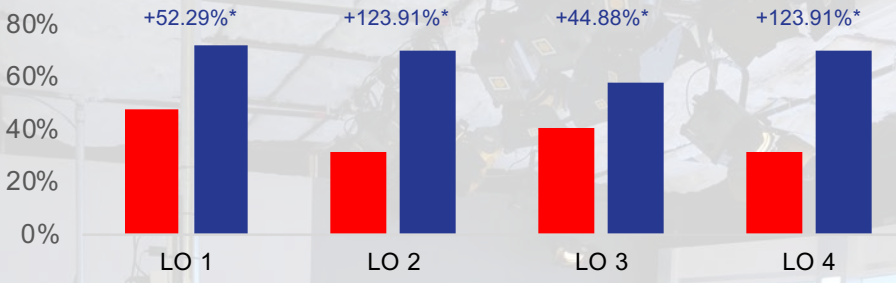
1,432 certificates issued to date

This education has the potential to impact 1,514,968 patients with type 2 diabetes on an annual basis.

26,221-32,047 Patients Weekly

Optimizing Diabetes Care: Evolving Strategies for Safer Integration of Insulin Therapy

Learning Gains Across Objectives

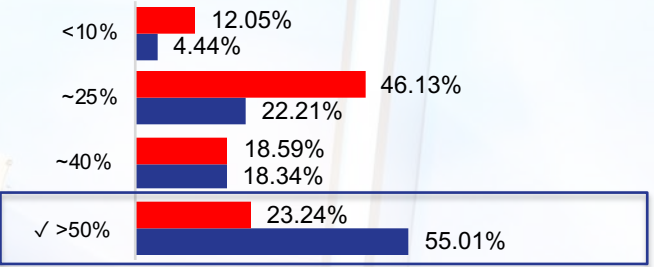


- ❖ **LO 1:** Recognize the risk for, and impact of hypoglycemia in patients with diabetes
- ❖ **LO 2:** Describe strategies for reducing the occurrence of glycemic variability
- ❖ **LO 3:** Understand effective SMBG vs. newer CGM in managing diabetes and reducing risk of dysglycemia/hypoglycemia
- ❖ **LO 4:** Differentiate between available insulin preparations and their effects on glycemic variability and hypoglycemic risk

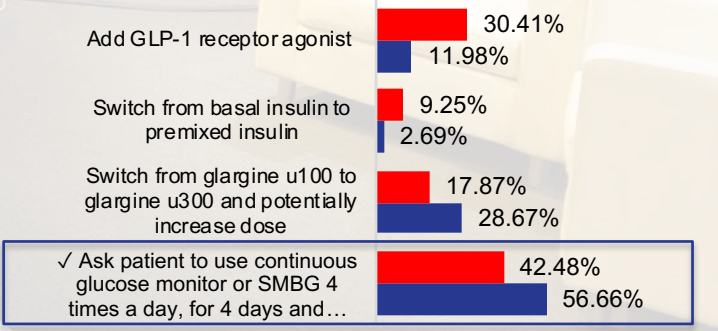
Persistent Learning Gaps/Needs

Prevalence of and appropriate therapy for hypoglycemic episodes in patients with type 2 diabetes
Learners remained challenged on Knowledge item addressing the prevalence of asymptomatic episodes of hypoglycemia in type 2 diabetic patients, and both Competence items presenting patients with poorly controlled type 2 diabetes. Learners finished with low Post-Test scores after some improvements from Pre-Test:

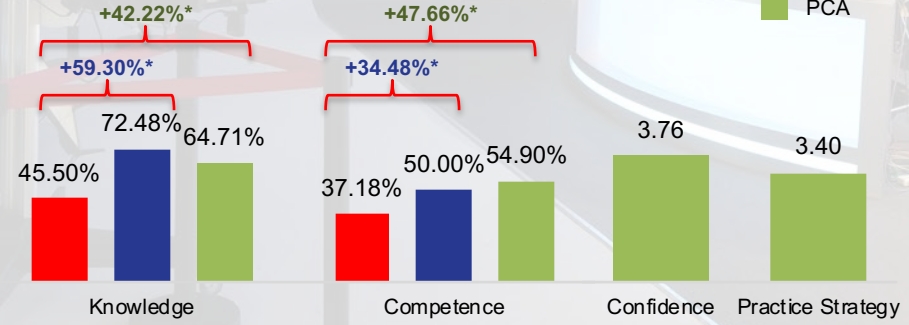
Learners remained unclear on the proportion of patients with asymptomatic hypoglycemic episodes



Learners remain challenged on appropriate steps to manage a patient with hypoglycemia and the role of CGM to make adjustments to therapy



Learning Domain Analysis



- ❖ Learners demonstrated strong improvements from Pre- to Post-Test and PCA in Knowledge and Competence
- ❖ At 4 week follow-up, clinicians state they felt more confident in understanding how to design antihyperglycemic therapy to minimize risk for glycemic variability, used a BeAM factor and paired glucose testing more often, and increased their use of continuous glucose monitoring in practice. Despite these gains, opportunities for improvement remain.

| 2019 Conversations Activity | Date | Participants |
|--|--------------|--------------|
| Conversations In Primary Care 2019 Episode 1 | 2/9/2019 | 867 |
| Conversations In Primary Care 2019 Episode 2 | 3/2/19 | 792 |
| Conversations In Primary Care 2019 Episode 4 | 5/18/19 | 422 |
| Live Guarantee:1500 | Total | 2,081 |

Speaker



Mark Stolar, MD
Associate Professor of Clinical Medicine
Feinberg School of Medicine Northwestern University
Chicago, IL

Optimizing Diabetes Care: Evolving Strategies for Safer Integration of Insulin Therapy

Cost: Free
Start Date: 05/15/2019
Expiration Date: 05/14/2020
Target Audience: Primary Care Providers
Format: Webcast
Estimated Time To Complete CME Activity: 1.0 hour
Credit(s): 1.0 AMA PRA Category 1 Credit™
1.0 AANP Contact hour which includes 0.50 pharmacology hours
Hardware/Software Requirements: Any web browser



Lilly Grant ID: A-24819



Curriculum Patient Impact

In the evaluation, learners (N = 757) were asked to report how many patients with type 2 diabetes they see in any clinical setting per week by selecting a range. The resulting distribution of learner responses was then extrapolated to reflect the total number of learners who have attended the onsite and online meetings.

The findings reveal that this education has the potential to impact

1,514,968
patients on an annual basis.

26,221–32,047 patients on a weekly basis

26,221–
32,047

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Albany Medical Faculty: Community
Endocrine Group
Albany, NY



NACE *Conversations* in Primary Care

2019 Commercial Support

- ❖ Actelion Pharmaceuticals US, Inc.
- ❖ Amgen, Inc.
- ❖ Avanir Pharmaceuticals, Inc.
- ❖ Intercept Pharmaceuticals, Inc.
- ❖ Lilly USA, LLC
- ❖ Sanofi Genzyme and Regeneron Pharmaceuticals
- ❖ Sanofi US and Regeneron Pharmaceuticals
- ❖ Shire
- ❖ Takeda Pharmaceuticals U.S.A., Inc. and Lundbeck

Overview

Learning Objectives

- ❖ Recognize the risk for, and impact of hypoglycemia in patients with diabetes
- ❖ Describe strategies for reducing the occurrence of glycemic variability
- ❖ Understand effective SMBG vs. newer CGM in managing diabetes and reducing risk of dysglycemia/hypoglycemia
- ❖ Differentiate between available insulin preparations and their effects on glycemic variability and hypoglycemic risk



Three Live Virtual CME Symposia



Enduring CME Symposium Webcast

<https://www.naceonline.com/courses/optimizing-diabetes-care-evolving-strategies-for-safer-integration-of-insulin-therapy>

Optimizing Diabetes Care: Evolving Strategies for Safer Integration of Insulin Therapy



Speaker

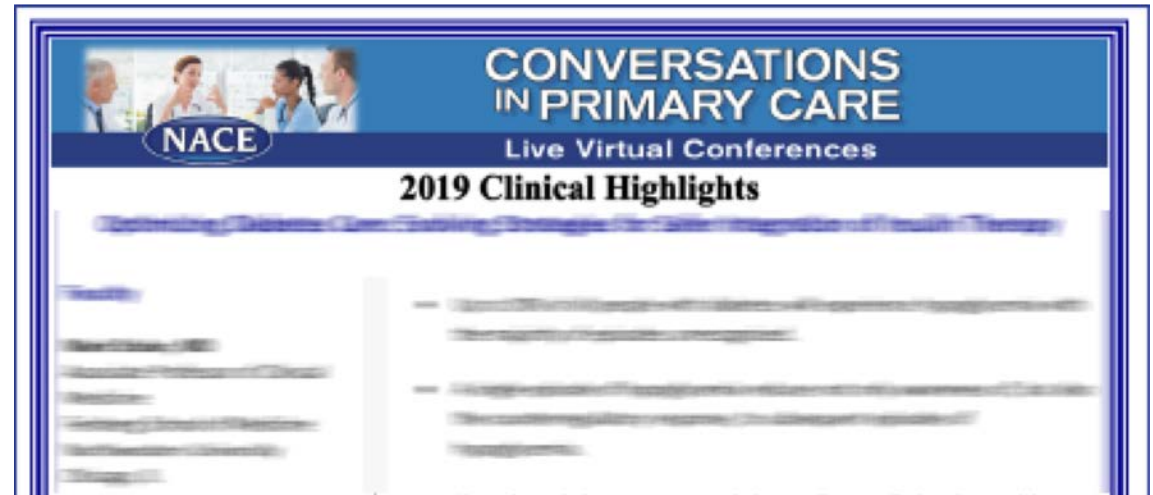


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Clinical Highlights eMonograph

eMonograph, containing key teaching points from the CME activity, was distributed 1 week after the meeting to all attendees.



Outcomes Methodology

Learning outcomes were measured using matched Pre-Test and Post-Test scores for Knowledge, Performance, Confidence, and practice strategy and across all of the curriculum's Learning Objectives.

| Outcomes Metric | Definition | Application |
|-------------------------------|--|---|
| Percentage change | This is how the score changes resulting from the education are measured. The change is analyzed as a relative percentage difference by taking into account the magnitude of the Pre-Test average. | Differences between Pre-Test, Post-Test, and PCA score averages |
| P value (p) | This is the measure of the statistical significance of a difference in scores. It is calculated using dependent or independent samples t-tests to assess the difference between scores, taking into account sample size and score dispersion. Differences are considered significant for when $p \leq .05$. | Significance of differences between Pre-Test, Post-Test, and PCA scores and among cohorts |
| Effect size (d) | This is a measure of the strength/magnitude of the change in scores (irrespective of sample size). It is calculated using Cohen's d formula, with the most common ranges of d from 0-1: d < .2 is a small effect, d=.2-.8 is a medium effect, and d > .8 is a large effect. | Differences between Pre-Test and Post-Test score averages |
| Power | This is the probability (from 0 to 1) that the "null hypothesis" (no change) will be appropriately rejected. It is the probability of detecting a difference (not seeing a false negative) when there is an effect that is dependent on the significance (p), effect size (d), and sample size (N). | Differences between Pre-Test and Post-Test score averages |
| Percentage non-overlap | This is the percentage of data points at the end of an intervention that surpass the highest scores prior to the intervention. In this report, it will reflect the percentage of learners at Post-Test who exceed the highest Pre-Test scores. | Differences between Pre-Test and Post-Test score averages |



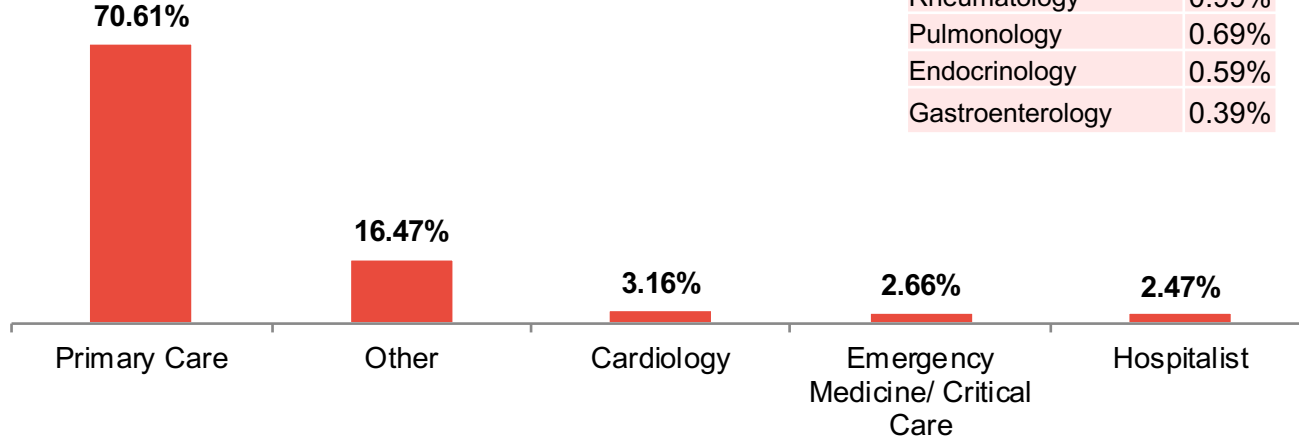
Level 1
Participation
Demographics
Patient Reach

Participation

| 2019 Conversations Activity | Date | Participants |
|-----------------------------|--------------|--------------|
| Activity 1 | 2/9/2019 | 867 |
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Level 1: Demographics and Patient Reach

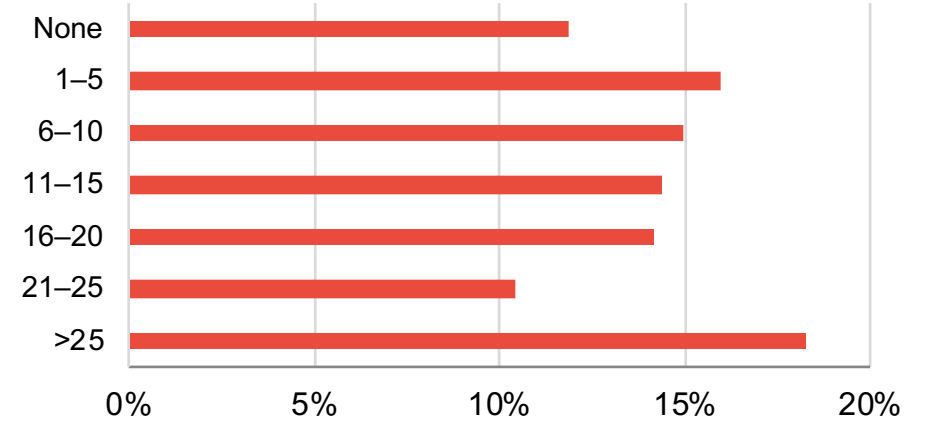
Specialty



| Under 2% | |
|----------------------|-------|
| Neurology/Psychiatry | 1.97% |
| Rheumatology | 0.99% |
| Pulmonology | 0.69% |
| Endocrinology | 0.59% |
| Gastroenterology | 0.39% |

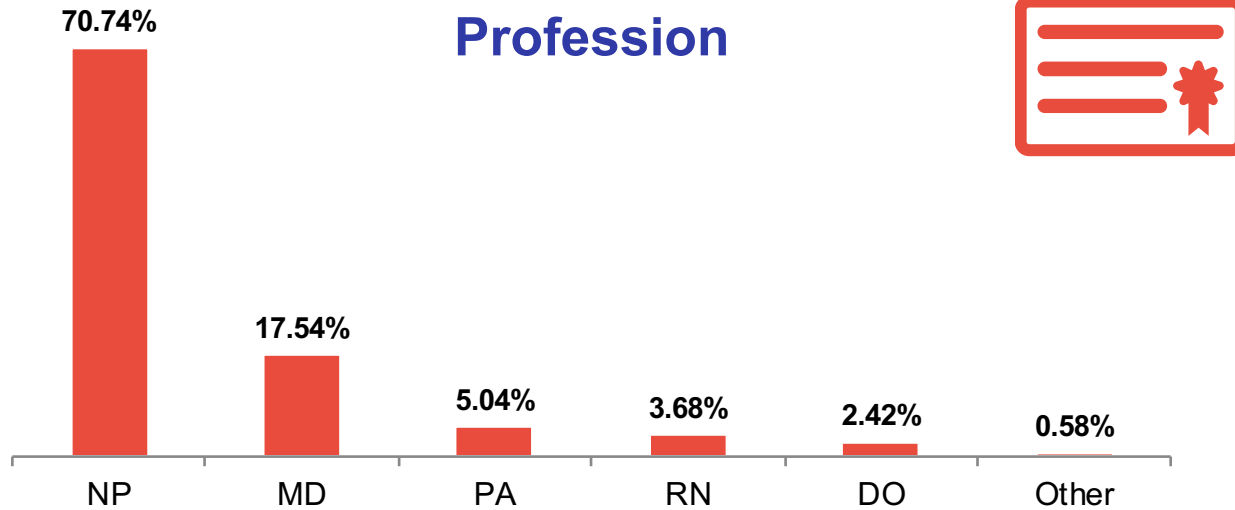
Patient Care Focus: 94%

Patients with type 2 diabetes seen each week, in any clinical setting:

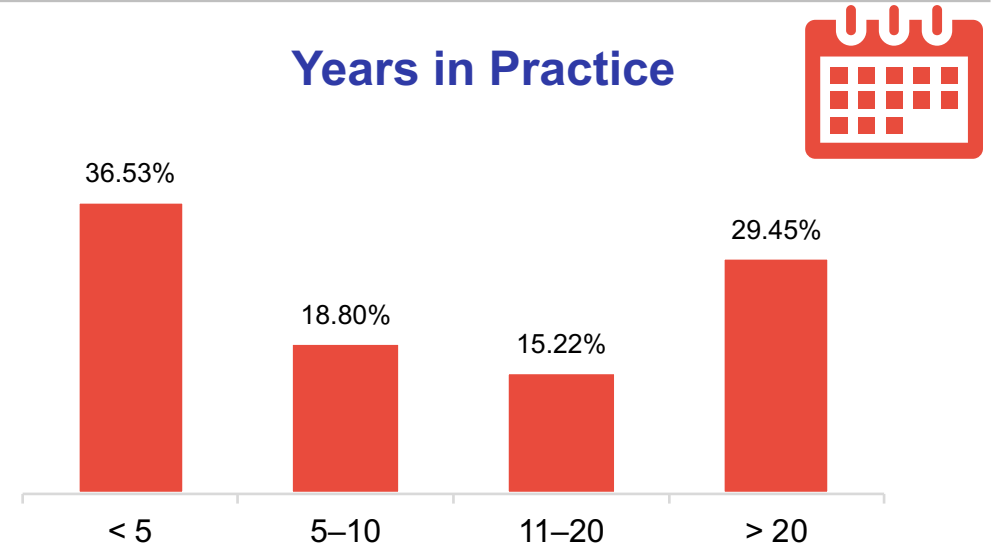


Average number of type 2 diabetic patients seen each week per clinician: 14

Profession



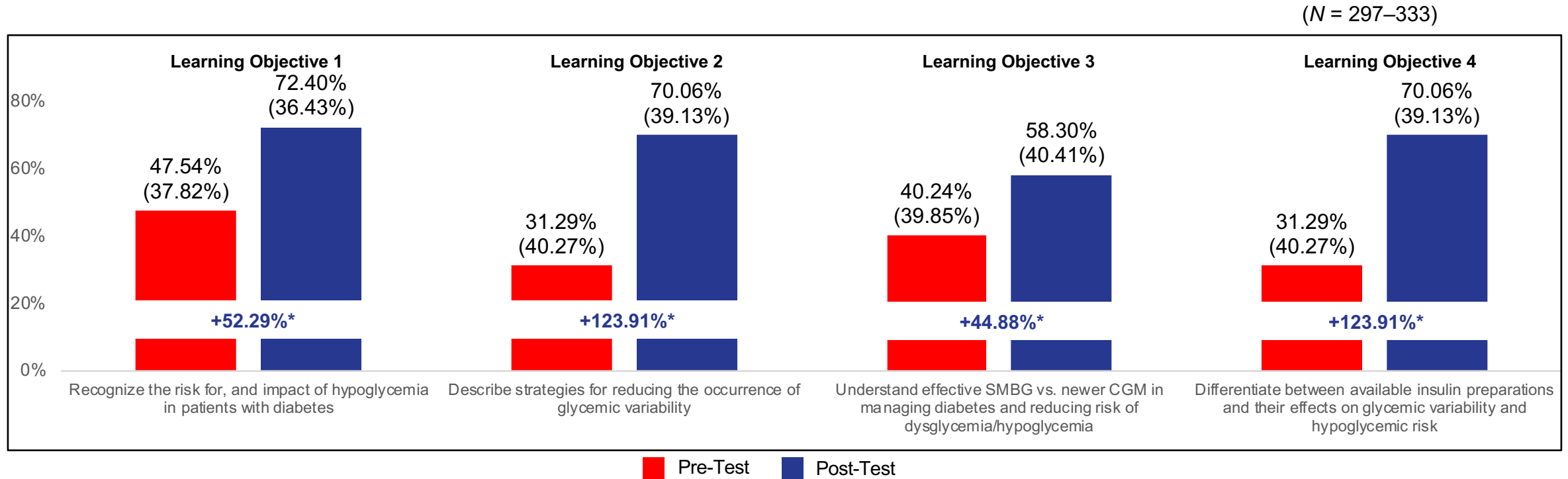
Years in Practice





**Level 2-5:
Outcomes Metrics**

Learning Objectives Analysis



- ❖ Substantial and significant gains, ranging from 52% to 124%, were observed across all four curriculum learning objectives
- ❖ The strongest increases in score were observed on the Learning Objectives related to reducing the occurrence of glycemic variability and differentiating between available insulin preparations
- ❖ Pre-Test scores were low on all Learning Objectives, leaving Post-Test scores low
- ❖ The lowest scores at Post-Test were on a Learning Objective about effective SMBG vs. newer CGM in managing diabetes

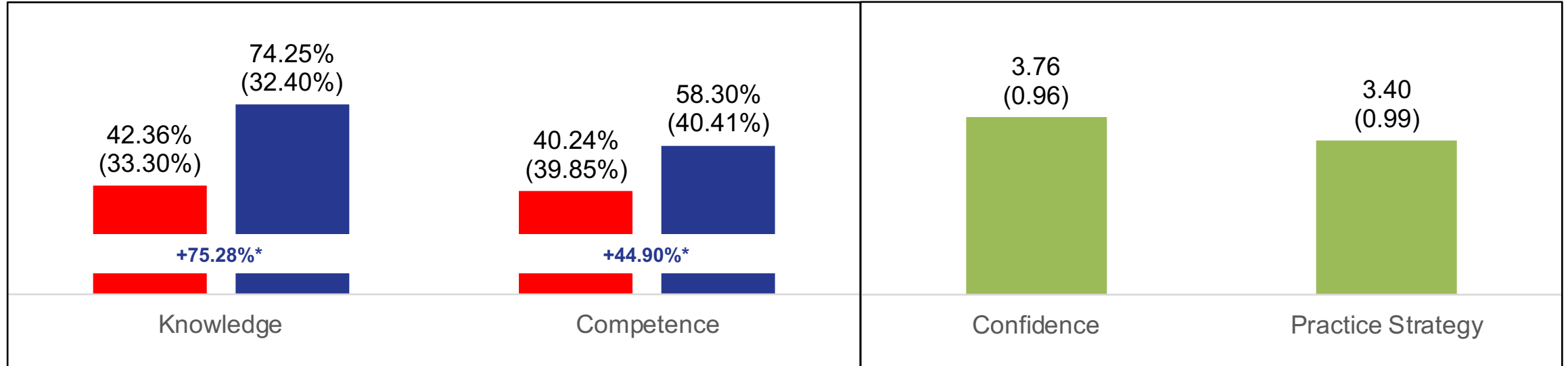
Note: data is matched; learners with a score for the given objective on both the Pre-Test and Post-Test are included

**significant at the $p \leq 0.05$ level*

Learning Domain Analysis

Pre-Test Post-Test PCA

(N = 521–548)



- ❖ Learners demonstrated strong improvements from Pre- to Post-Test in Knowledge and Competence
- ❖ In spite of this, Post-Test scores in Competence remained low (58%), following low Pre-Test scores (40%)
- ❖ In Confidence and practice strategy, which were measured on a scale of 1-5 at 4 week follow-up only, clinicians state they felt more confident in understanding how to design antihyperglycemic therapy to minimize risk for glycemic variability, used a BeAM factor and paired glucose testing more often, and increased their use of continuous glucose monitoring in practice. Despite these gains, opportunities for improvement remain.

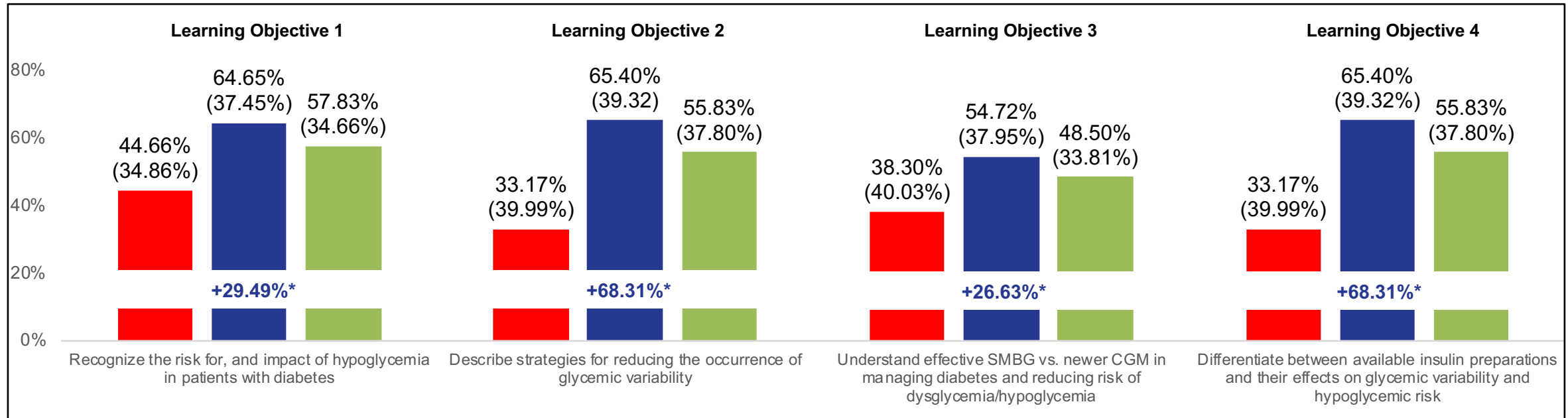
Note: data is matched; learners with a score for the given domain on both the Pre-Test and Post-Test are included

*significant at the $p \leq 0.05$ level, matched data

Learning Objectives Retention Analysis

Pre-Test Post-Test PCA

(N = 300–995)



- ❖ Substantial and significant gains, ranging from 27% to 68%, were retained across all four curriculum learning objectives, from Pre-Test to the PCA
- ❖ On all four Learning Objectives, some slippage in score was observed between the Post-Test and PCA
- ❖ PCA scores on all four Learning Objectives were low (49% to 58%), reflecting a need for further reinforcement in this area

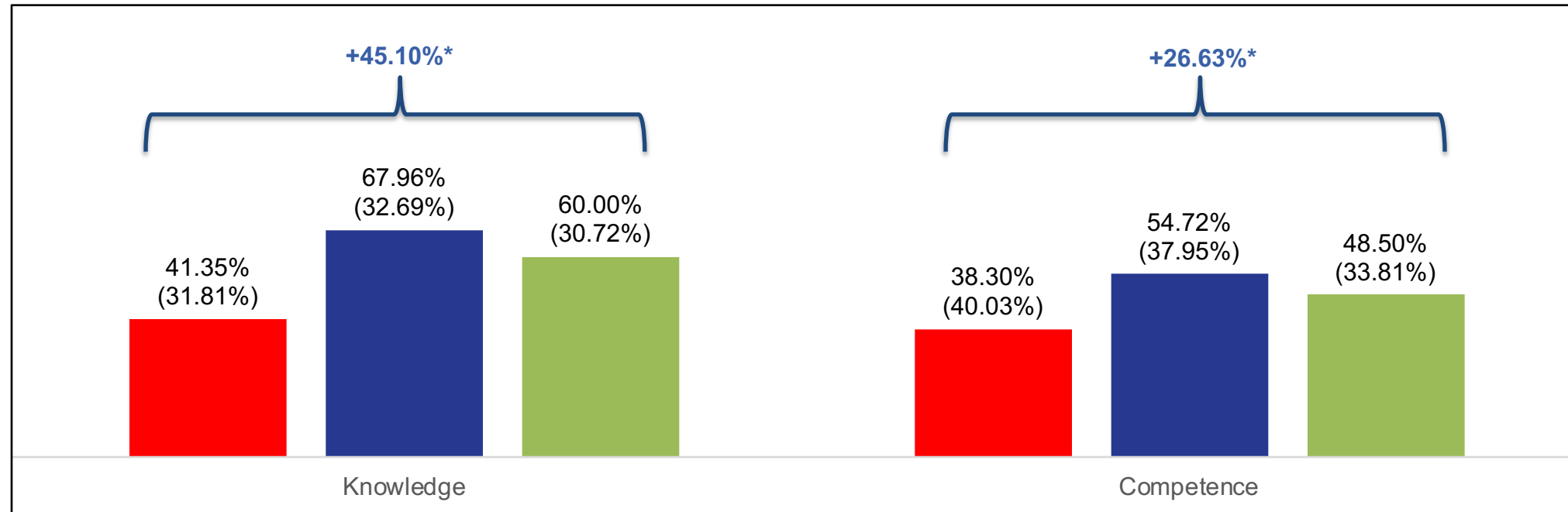
Note: data is matched; learners with a score for the given domain on both the Pre-Test and PCA are included

**significant at the $p \leq 0.05$ level*

4-Week Retention Analysis

Pre-Test Post-Test PCA

(N = 300)



At follow-up:

- ❖ In addition to collecting Confidence and Practice data for the curriculum, the Post Curriculum Assessment (PCA) repeated questions from the Knowledge and Competence domains
- ❖ A statistically significant net gain was measured from Pre-Test to the Post Curriculum Assessment (PCA) in both Knowledge (45%) and Competence (27%)
- ❖ In both Knowledge and Competence, some decrease in score was measured between Post-Test and PCA, reflecting a need for further reinforcement of both declarative and case-based content

Note: data is matched; learners with a score for the given domain on both the Pre-Test and PCA are included

**significant at the $p \leq 0.05$ level*

Curriculum/Activity Intervention Effect

| Learning Domain | Effect Size* | % Non-Overlap |
|-----------------|--------------|---------------|
| Knowledge | 0.448 | 37.27% |
| Competence | 0.256 | 8.38% |

Effect Size Definition: This is a standardized measure of the strength/magnitude of the change in scores, irrespective of sample size. This metric quantifies the association between outcome and exposure to education, in a way which makes meta-analysis possible. There exist many types of effect size measures, each appropriate in different situations. We select Cohen's d for this analysis, which is a standardized difference in mean. Most commonly, d ranges from 0–1: $d < 0.2$ is a small effect, $d = 0.2–0.8$ is a medium effect, and $d > 0.8$ is a large effect.

(4-week Post Assessment)

Please select the specific areas of *skills, or practice behaviors*, you have improved regarding the treatment of patients with type 2 diabetes since this CME activity. (Select all that apply.)

N=534



62%

Patient education



64%

Disease state awareness



63%

Pharmacotherapy



48%

Screening protocols



51%

Diagnostic evaluation



39%

Non-pharmacotherapy



43%

Timely referral



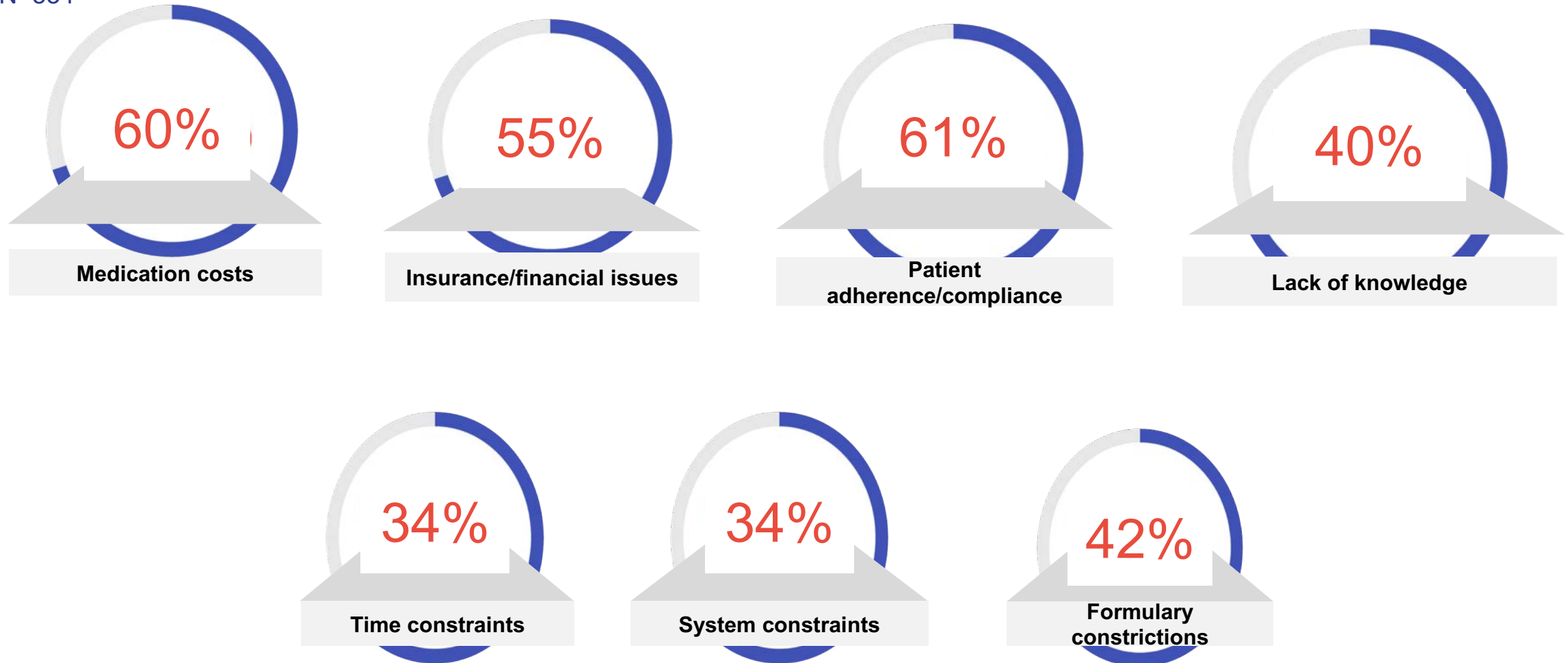
50%

Patient engagement
regarding treatment options

(4-week Post Assessment)

What specific *barriers* have you encountered that may have prevented you from successfully implementing strategies for patients with type 2 diabetes since this CME activity? (Select all that apply.)

N=534



Cohort Comparison by Profession: Learning Objectives

| Learning Objective | Nurse Practitioners | | | | Physicians | | | |
|--|---------------------|--------------------|--------------------|------------------|------------|--------------------|--------------------|-----------------|
| | N | Pre-Test | Post-Test | % Change | N | Pre-Test | Post-Test | % Change |
| Recognize the risk for, and impact of hypoglycemia in patients with diabetes | 273 | 46.34% (36.63%) | 73.99% (36.58%) | +59.67%* | 47 | 54.26% (39.72%) | 85.11% (27.12%) | +56.86%* |
| Describe strategies for reducing the occurrence of glycemic variability | 265 | 30.00% (38.31%) | 71.13% (38.20%) | +137.10%* | 47 | 43.62% (44.50%) | 81.91% (29.94%) | +87.78%* |
| Understand effective SMBG vs. newer CGM in managing diabetes and reducing risk of dysglycemia/hypoglycemia | 271 | 39.11% (39.85%) | 58.86% (39.31%) | +50.50%* | 49 | 35.71% (37.80%) | 55.10% (41.95%) | +54.30%* |
| Differentiate between available insulin preparations and their effects on glycemic variability and hypoglycemic risk | 265 | 30.00% (38.31%) | 71.13% (38.20%) | +137.10%* | 47 | 43.62% (44.50%) | 81.91% (29.94%) | +87.78%* |

- ❖ Nurse practitioners and physicians both demonstrated substantial and significant improvements across all four curriculum Learning Objectives, from Pre-Test to Post-Test
- ❖ The Post-Test scores of physicians were higher than those of nurse practitioners on three of the four Learning Objectives
- ❖ For both Nurse Practitioners and Physicians, Post-Test scores were low (59% and 55%) on the Objective related to use of SMBG and newer CGM in managing diabetes and reducing risk of dysglycemia/hypoglycemia

Cohort Comparison by Profession: Learning Domains

| Learning Domain | Nurse Practitioners | | | | Physicians | | | |
|-----------------|---------------------|--------------------|--------------------|-----------------|------------|--------------------|--------------------|-----------------|
| | <i>N</i> | Pre-Test | Post-Test | % Change | <i>N</i> | Pre-Test | Post-Test | % Change |
| Knowledge | 276 | 41.24% (32.02%) | 76.39% (31.00%) | +85.23%* | 48.0 | 52.08% (34.30%) | 87.15% (22.63%) | +67.34%* |
| Competence | 271 | 39.11% (39.85%) | 58.86% (39.31%) | +50.50%* | 49.0 | 35.71% (37.80%) | 55.10% (41.95%) | +54.30%* |

- ❖ Nurse practitioners and physicians both demonstrated substantial and significant improvements in Knowledge and Competence from Pre-Test to Post-Test
- ❖ Pre- and Post-Test scores in Competence were similar for nurse practitioners and physicians, with nurse practitioners having higher Pre- and Post-Test score in Knowledge

Identified Learning Gap:

Prevalence of and appropriate therapy for hypoglycemic episodes in patients with type 2 diabetes

On a Knowledge item addressing the prevalence of asymptomatic episodes of hypoglycemia in type 2 diabetic patients, and both Competence items presenting patients with poorly controlled type 2 diabetes, learners finished with low Post-Test scores after some improvements from Pre-Test:

Knowledge: In studies of patients with T2D, approximately what proportion have asymptomatic hypoglycemic episodes?

Results:

- At Post-Test, 55% of learners correctly answered: “>50%”

Competence: 54 y/o man with 9-year history of T2D presents for checkup. His A1C is 7.6% Medications: metformin 1000 mg bid, canagliflozin 300 mg qd, and insulin glargine U100 48 units HS. Attempts to increase basal insulin dose in the past have led to daytime hypoglycemia. What might you do now?

Results:

- At Post-Test, 57% of learners correctly answered: “Ask patient to use continuous glucose monitor or SMBG 4 times a day, for 4 days and adjust meds based on findings”

Competence: 44 y/o woman with a 10-year history of T2D presents with A1C 7.6%. Meds: metformin 1000 mg bid and insulin glargine U100 56 units qhs. Because of inconsistent fasting self-monitored blood glucose readings, her clinician recommended she use a continuous glucose monitor for several days which show a high degree of glycemic variability throughout the day, and occasional episodes of nocturnal hypoglycemia. What might you do now?

Results:

- At Post-Test, 57% of learners correctly answered: “Switch from insulin glargine U100 to ultralong-acting basal insulin”

Overall Educational Impact

- ❖ Significant improvements (of 75% and 45%) were seen in both learner Knowledge and Competence
 - Moderate Post-Test scores (74%) were measured in Knowledge, with lower (58%) Post-Test scores in Competence
 - Both curriculum Competence questions asked learners to modify insulin therapy for diabetic patients with episodes of hypoglycemia
 - Final scores on Confidence and practice strategy questions were low (3.76 and 3.40)
- ❖ Substantial and significant improvements ranging from 45% to 124% were measured across all Learning Objectives, from Pre-Test to Post-Test. The strongest increases, from very low Pre-Test scores, were on Objectives related to reducing the occurrence of glycemic variability and differentiating between available insulin preparations
 - Post-Test scores on all Learning Objectives were between 58% and 72%, highlighting opportunities for further education
- ❖ The analysis of the Knowledge and Competence domains identified a **persistent learning gap related to the prevalence of and appropriate therapy for uncontrolled hypoglycemic episodes in patients with type 2 diabetes**
 - Pre- and Post-Test scores (23% and 55%) were low on a Knowledge item about the prevalence of asymptomatic episodes of hypoglycemia
 - On both Competence questions, learners were asked to modify treatment for patients presenting with poorly controlled type 2 diabetes and hypoglycemic episodes; scores remained low (57% and 55%) at Post-Test

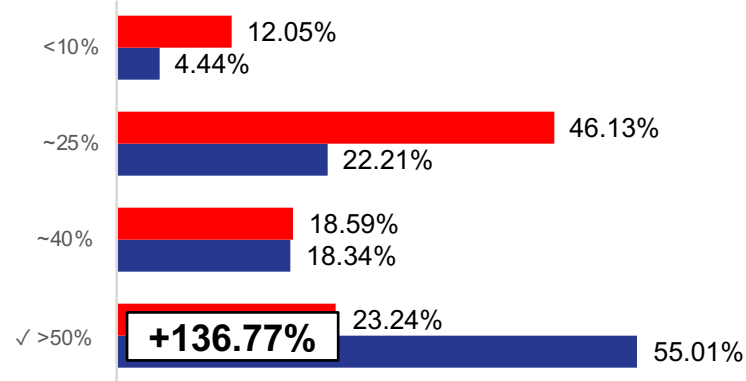
Appendix

Knowledge Items

Pre-Test
Post-Test

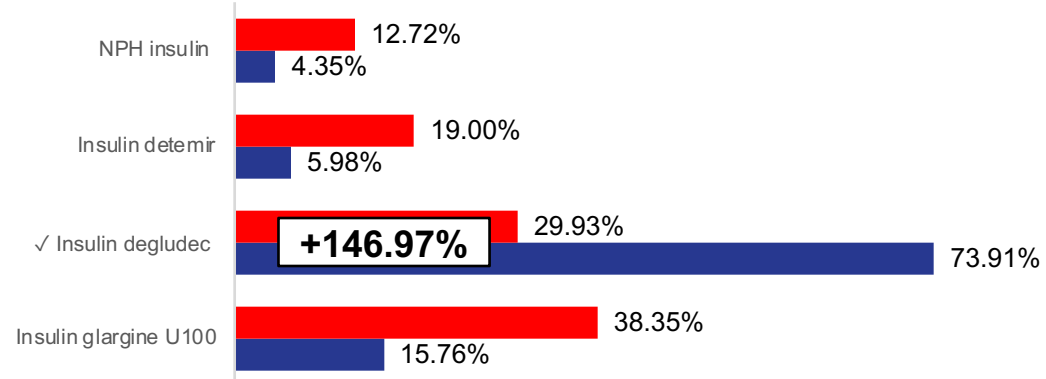
In studies of patients with T2D, approximately what proportion have asymptomatic hypoglycemic episodes? (LO 1)

N = 581 – 698



In clinical trials, which of the following insulin formulations has demonstrated the lowest glycemic variability? (LO 2,4)

N = 558 – 736

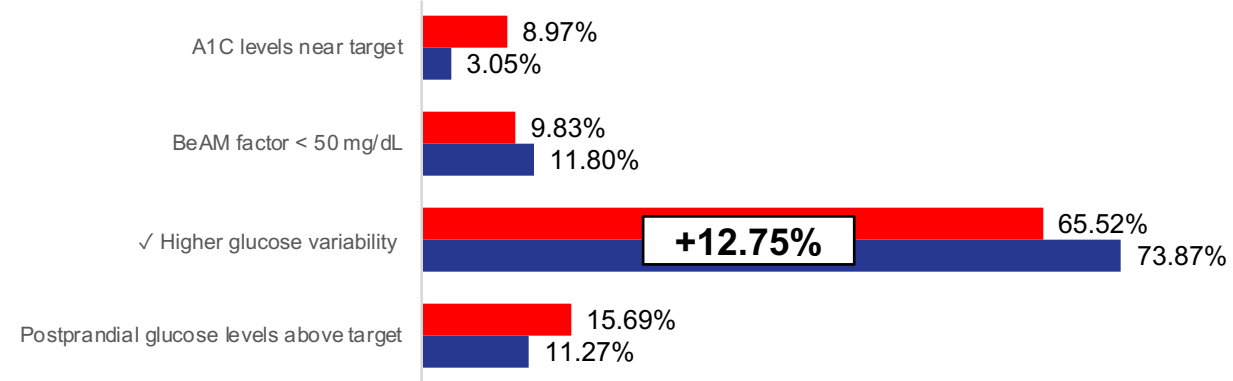


Knowledge Items

Pre-Test
Post-Test

Which of the following is associated with higher rates of hypoglycemia? (LO 1)

N = 580 – 754

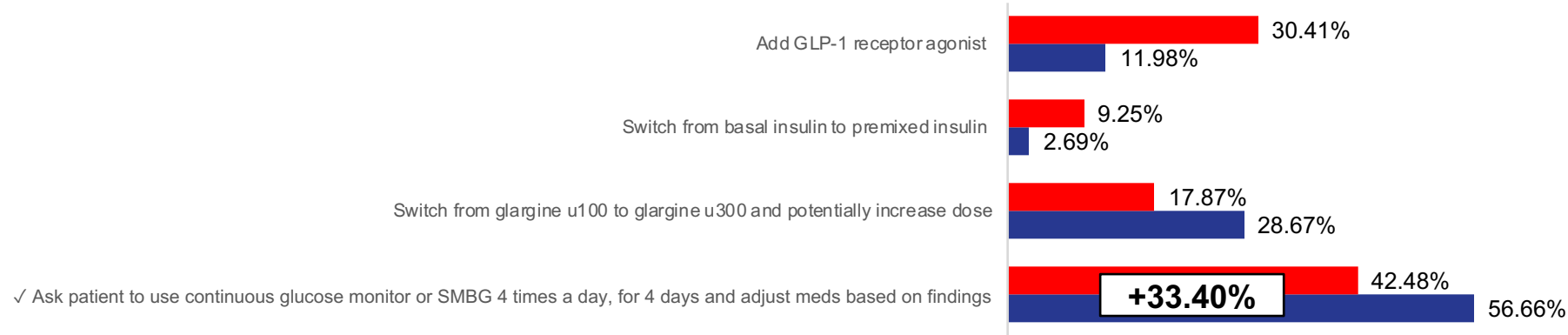


Competence Items

Pre-Test
Post-Test

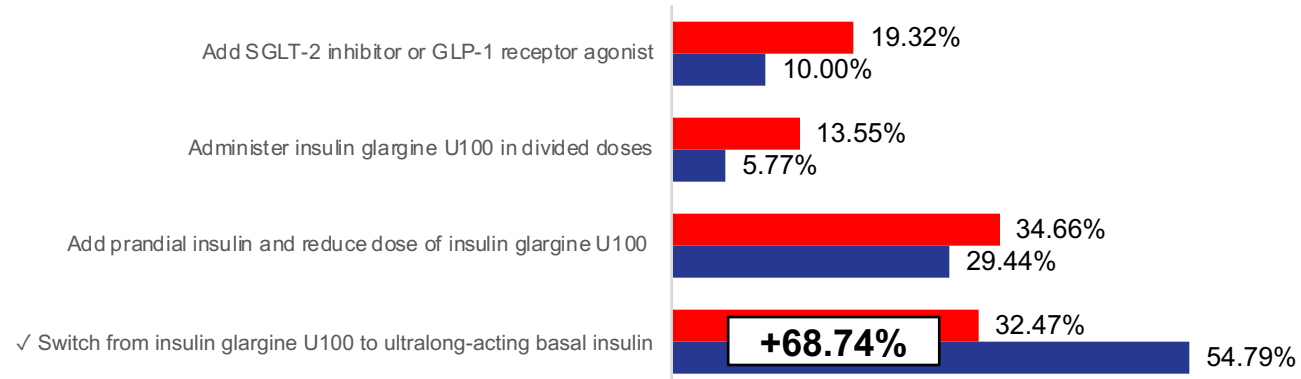
54 y/o man with 9-year history of T2D presents for checkup. His A1C is 7.6% Medications: metformin 1000 mg bid, canagliflozin 300 mg qd, and insulin glargine U100 48 units HS. Attempts to increase basal insulin dose in the past have led to daytime hypoglycemia. What might you do now? (LO 3)

N = 638 – 743



44 y/o woman with a 10-year history of T2D presents with A1C 7.6%. Meds: metformin 1000 mg bid and insulin glargine U100 56 units qhs. Because of inconsistent fasting self-monitored blood glucose readings, her clinician recommended she use a continuous glucose monitor for several days which show a high degree of glycemic variability throughout the day, and occasional episodes of nocturnal hypoglycemia. What might you do now? (LO 2,3,4)

N = 502 – 710

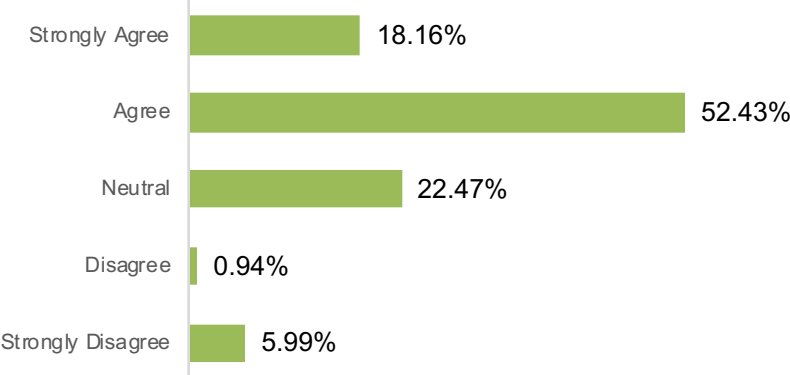


Note: Correct answer is designated by a ✓.

Confidence items (given at 4 week follow-up)

Please rate your level of agreement with the following statement: “I am more confident in understanding how to design antihyperglycemic therapy to minimize risk for glycemic variability.” (LO 2,3,4)

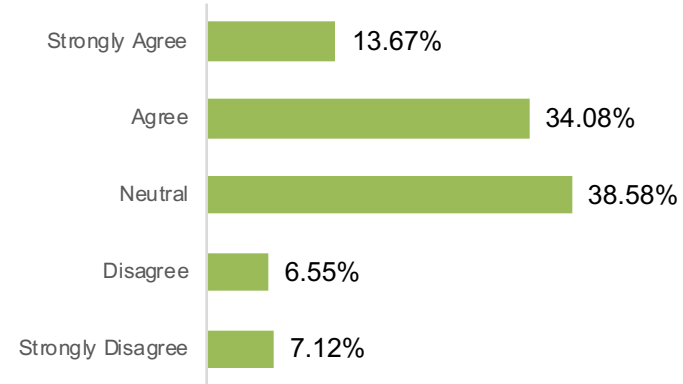
N = 534



Practice Strategy Items (given at 4 week follow-up)

Please rate your level of agreement with the following statement: “I more often utilize a BeAM factor and paired glucose testing when initiating or titrating prandial insulin.” (LO 2)

N = 534



Please rate your level of agreement with the following statement: “I have increased use of continuous glucose monitoring in my practice.” (LO 2,3)

N = 534

