Clinical Updates for Nurse Practitioners and Physician Assistants: 2019

Final Outcomes Report

Individualizing Diabetes Care: The Impact of CV Risk on Therapeutic Strategy

Boehringer Ingelheim Pharmaceuticals, Inc. and Lilly USA, LLC • ME201923646

April 13, 2020

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Clinical Updates for Nurse Practitioners and Physician Assistants: 2019

Individualizing Diabetes Care: The Impact of CV Risk on Therapeutic Strategy

Participation

2,598* Total Attendees

9 Cities

1,107* On Site

1,491* Simulcast / Virtual Symposium

2,598 certificates issued to date

This education has the potential to impact **1,904,854** patients with T2D on an annual basis.

32,969–40,295 Patients Weekly

2019 Meeting/Simulcast	Date	Attendees
Orlando, FL	9/7/19	171
Charlotte, NC	9/14/19	105
White Plains, NY	9/21/19	129
Phoenix, AZ	9/28/19	129
Seattle, WA	10/5/19	55
Miami, FL	10/12/19	108
Anaheim, CA	10/19/19	103
Anaheim simulcast	10/19/19	522
Valley Forge, PA	10/26/19	93
Dallas, TX	11/2/19	214
Virtual Symposium	11/9/19	969
Total		**2,598**

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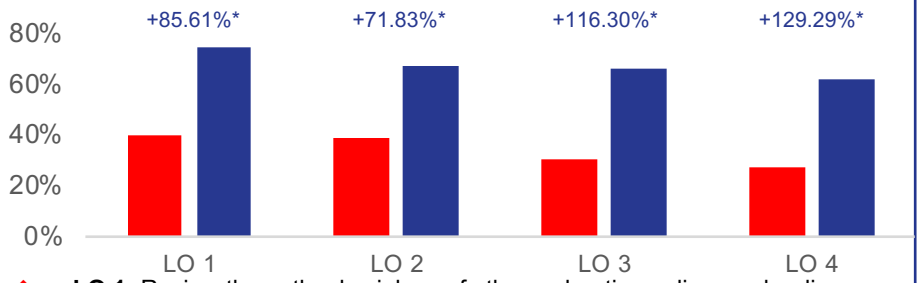
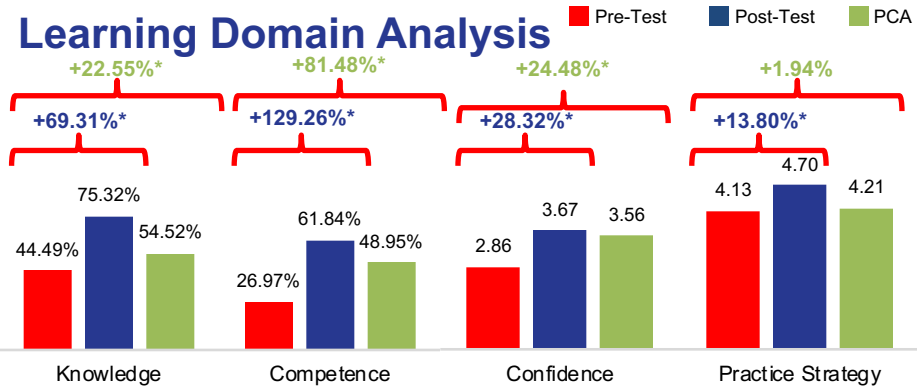
Learning Gains Across Objectives



- **LO 1:** Review the pathophysiology of atherosclerotic cardiovascular disease (ASCVD) and congestive heart failure (CHF) in T2DM
- **LO 2:** Recognize how the mechanism of action of the SGLT-2 inhibitor class can potentially have a beneficial impact on cardio-renal disease
- **LO 3:** Discuss Cardiovascular Outcomes Trials (CVOTs) to date in T2DM and the impact of the SGLT-2 inhibitor class on improving cardiovascular outcomes and preventing progression of chronic kidney disease (CKD)
- **LO 4:** Incorporate evolving clinical data into the management of diabetes in patients with, or at high risk for, cardiovascular disease (CVD)

Learning Domain Analysis



- Curriculum learners achieved substantial and significant gains in average score in Knowledge, Competence, Confidence, and practice strategy, from Pre- to Post-Test measurements
  - Low Pre- and Post-Test scores in Competence were shared among both items, presenting cases of diabetic patients with recent cardiac symptoms in need of therapy modification
  - Knowledge scores were more varied, with the highest scoring item at Pre- and Post-Test related to the relationship between risk for heart failure and A1C
- Learner ratings in Confidence were moderate, reflecting learner awareness of their Knowledge and Competence gaps in this area
- Statistically significant net gains were measured from Pre-Test to PCA in Knowledge, Competence, and Confidence, with a non-significant increase measured in practice

Persistent Learning Gaps/Needs

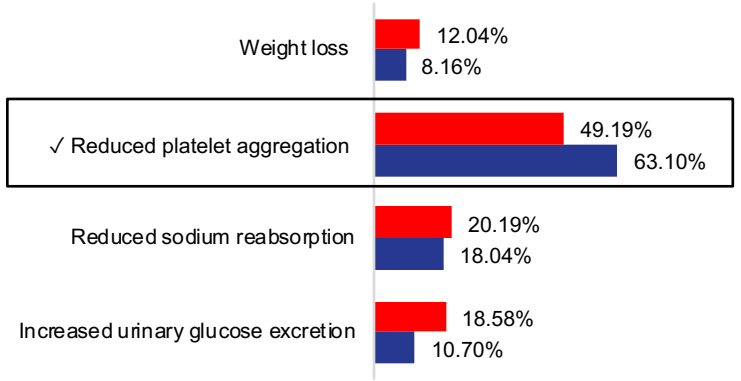
Selection of SGLT-2 inhibitor therapy for T2D patients with recent cardiac symptoms

Despite improvements in score on two Competence items asking learners to modify therapy for T2D patients with recent NSTEMI, low scores (61% and 62%) were observed at Post-Test

Effects of SGLT-2 inhibitors that impact ASCVD

On a Knowledge item about effects of SGLT-2 inhibitors, low Post-Test scores were observed.

All of the following are effects of SGLT-2 inhibitors that may impact ASCVD, EXCEPT:



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Curriculum Patient Impact

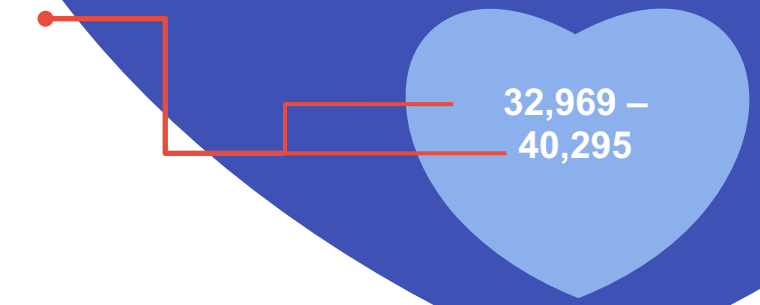
In the evaluation, learners (N = 1,450) were asked to report how many patients with type 2 diabetes they see in any clinical setting per week by selecting a range. The resulting distribution of learner responses was then extrapolated to reflect the total number of learners who attended the onsite and online meetings.

The findings reveal that this education has the potential to impact

1,904,854

patients with type 2 diabetes on an annual basis.

32,969 – 40,295 patients on a weekly basis



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Course Director

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

Activity Planning Committee

Cedrick Nazareth, Medical Writer

Gregg Sherman, MD

Deborah Paschal, CRNP

Michelle Frisch, MPH

Daniela Hiedra, BA

Sandy Bihlmeyer, MEd

Faculty

Lucia M. Novak, MSN, ANP-BC, BC-ADM, CDTC
Director, Riverside Diabetes Center
Riverside Medical Associates
Riverdale, MD

Javier Morales, MD, FACP, FACE
Clinical Associate Professor of Medicine
Donald and Barbara Zucker School of Medicine At Hofstra/Northwell University
Vice President
Advanced Internal Medicine Group, P.C.
East Hills, NY

Ashlyn Smith, PA-C
Endocrinology Associates, P.A.
President, American Society of Endocrine Physician Assistants
Adjunct Assistant Professor, Midwestern University
Scottsdale, AZ

Commercial Support

The Clinical Updates for Nurse Practitioners and Physician Assistants: 2019 series of CME activities were supported through educational grants or donations from the following companies:

- Boehringer Ingelheim Pharmaceuticals, Inc. and Lilly USA, LLC
- Novo Nordisk, Inc.
- Sanofi US and Regeneron Pharmaceuticals
- GlaxoSmithKline
- Grifols
- Genentech, Inc.

Overview

Learning Objectives

- Review the pathophysiology of atherosclerotic cardiovascular disease (ASCVD) and congestive heart failure (CHF) in T2DM
- Recognize how the mechanism of action of the SGLT-2 inhibitor class can potentially have a beneficial impact on cardio-renal disease
- Discuss Cardiovascular Outcomes Trials (CVOTs) to date in T2DM and the impact of the SGLT-2 inhibitor class on improving cardiovascular outcomes and preventing progression of chronic kidney disease (CKD)
- Incorporate evolving clinical data into the management of diabetes in patients with, or at high risk for, cardiovascular disease (CVD)

Clinical Updates for Nurse Practitioners and Physician Assistants: 2019

Curriculum Overview

9 Accredited Live Regional Symposia

September 7, 2019 – November 9, 2019

1 Accredited Live Virtual Symposium:

November 9, 2019

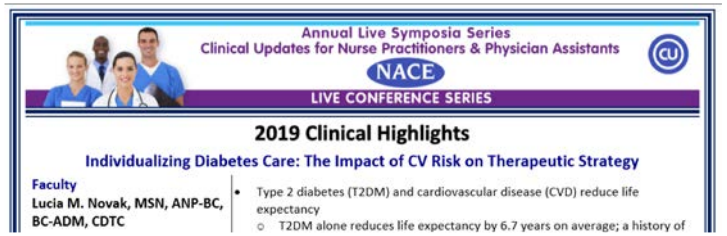
Podcast

The NACE Clinical Highlights Show

Reduce CVD Risk in Diabetes - Applying New Data to Clinical Practice: Mark Stolar, MD

Clinical Highlights eMonograph

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



Enduring Activity

Individualizing Diabetes Care:
The Impact of CV Risk on Therapeutic Strategy

Faculty and Reviewer

Mark Stolar, MD

Associate Professor of Clinical Medicine

Northwestern University Medical School

Chicago, IL

COURSE SUMMARY

Cost: Free

Start Date: 12/15/2019

Expiration Date: 12/14/2020

Target Audience: Primary Care Providers

Format: Monograph

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 0.75 pharmacology hours

Hardware/Software Requirements: Any web browser

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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

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Total		**2,598**

Level 1
Participation
Demographics
Patient Reach

Participation

2,598*
Total Attendees

9 Cities

1,107*
On Site

1,491*
Simulcast / Virtual Symposium

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*These numbers represent the total number of attendees, irrespective of assessment participation

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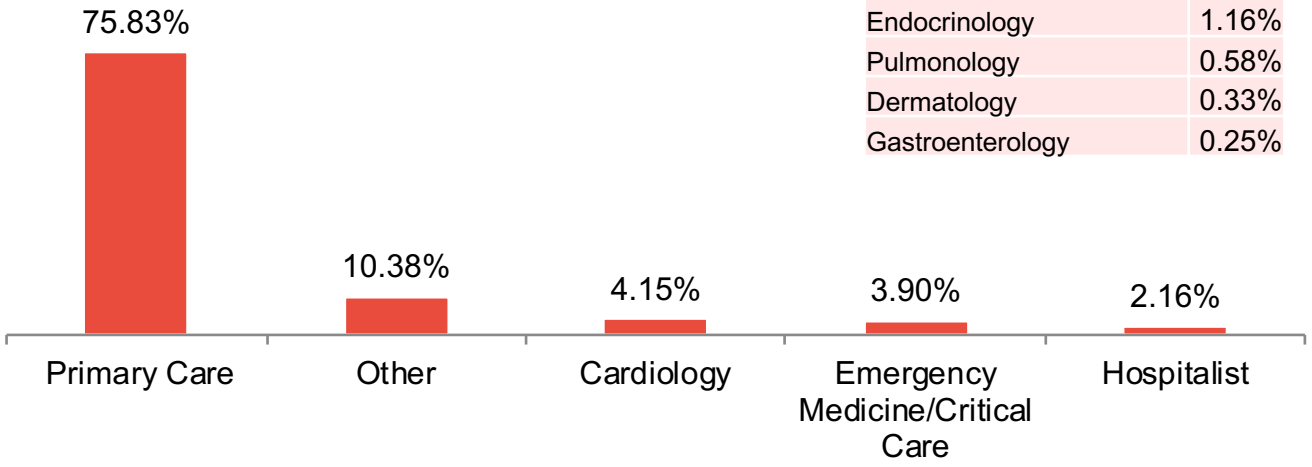
Level 1: Demographics and Patient Reach

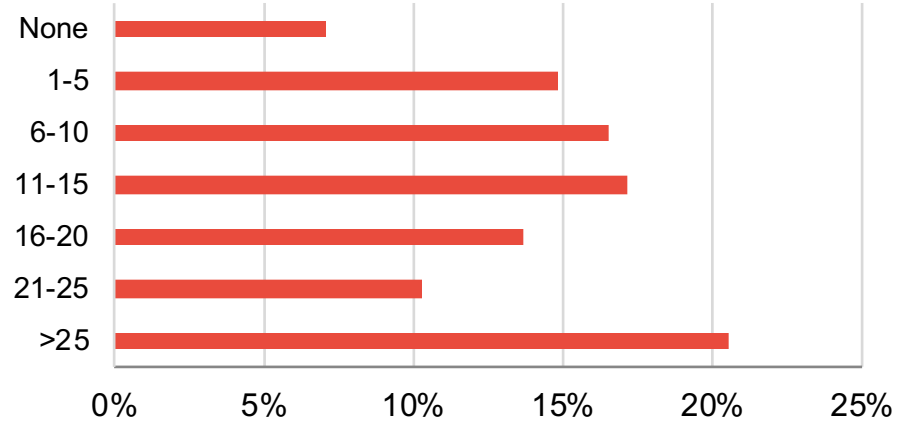
Specialty



Under 2%	
Neurology/Psychiatry	1.25%
Endocrinology	1.16%
Pulmonology	0.58%
Dermatology	0.33%
Gastroenterology	0.25%

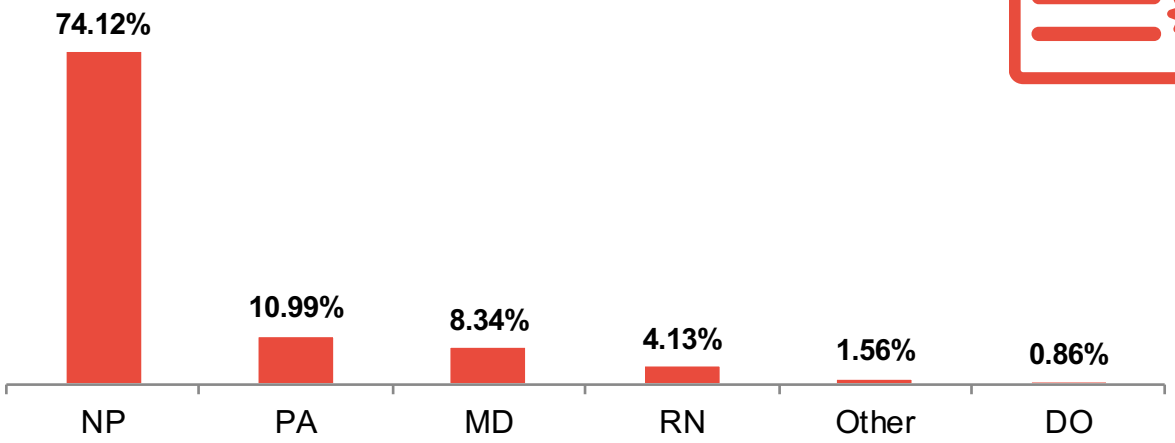
Patient Care Focus: 94%

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

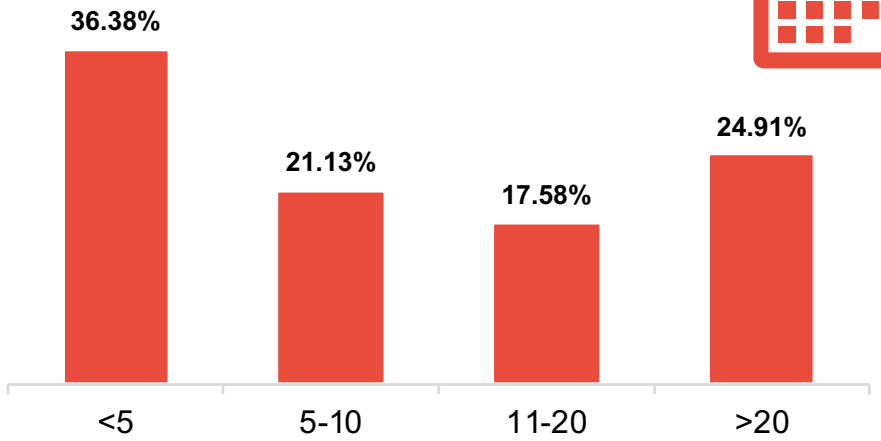


Average number of patients with type 2 diabetes seen each week, per clinician: 15

Profession



Years in Practice



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Level 2-5:
Outcomes Metrics

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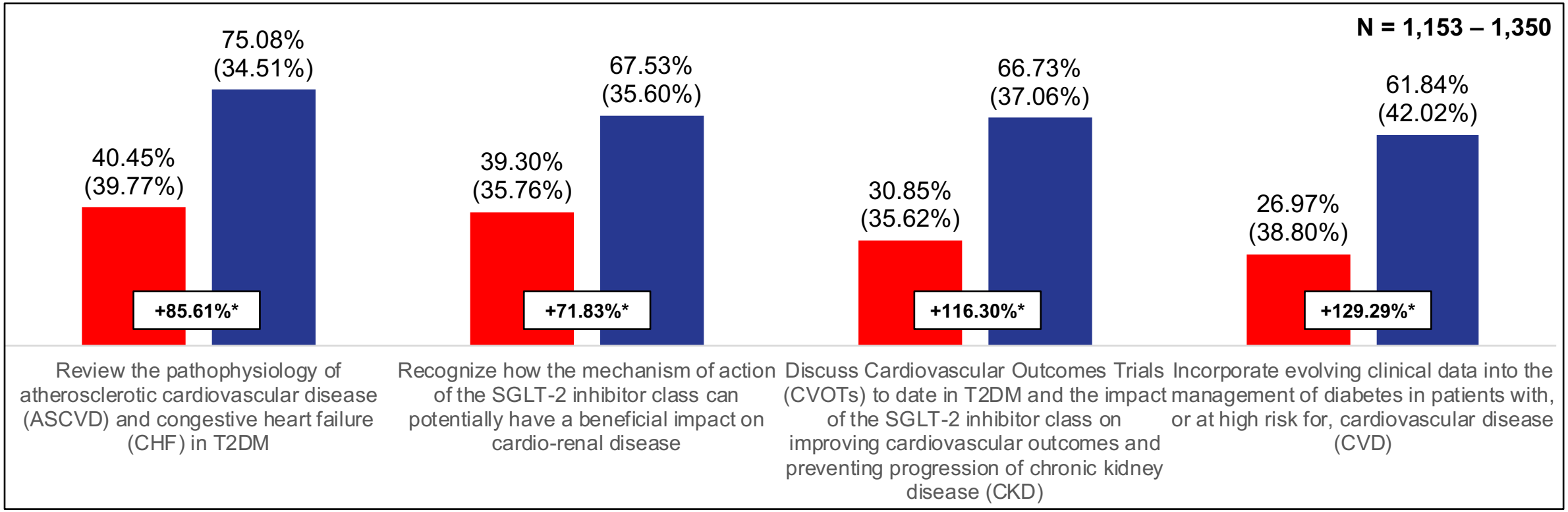
Learning Objective Analysis



- Learners achieved substantial and significant improvements on all four curriculum Learning Objectives, from low Pre-Test scores to moderate Post-Test scores
- The lowest Pre- and Post-Test scores (27% and 62%, respectively), were measured on incorporating evolving clinical data into the management of diabetes in patients with, or at high risk for, cardiovascular disease
  - Scores on this Objective were driven down by a Competence items presenting cases of T2D patients with recent NSTEMI and asking learners to modify therapy
- Scores on the pathophysiology of ASCVD and CHF in T2D were highest, driven by a Knowledge item about the degree of association between risk of heart failure and A1C

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Note: data are matched.
* indicates significance, $p < 0.05$.

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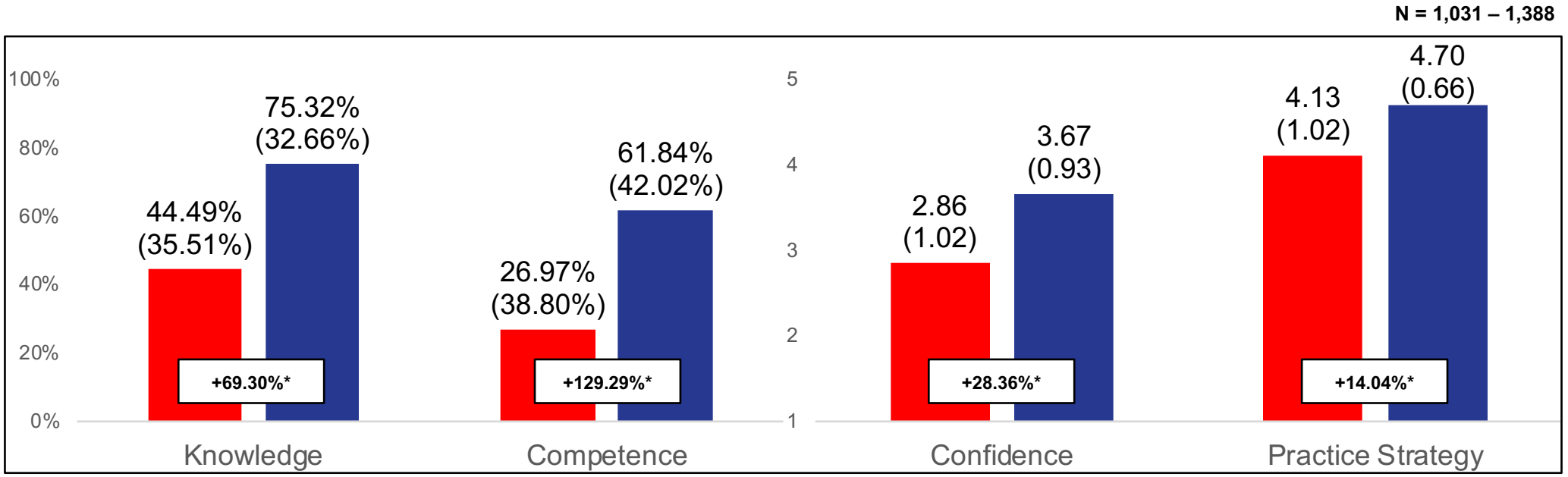
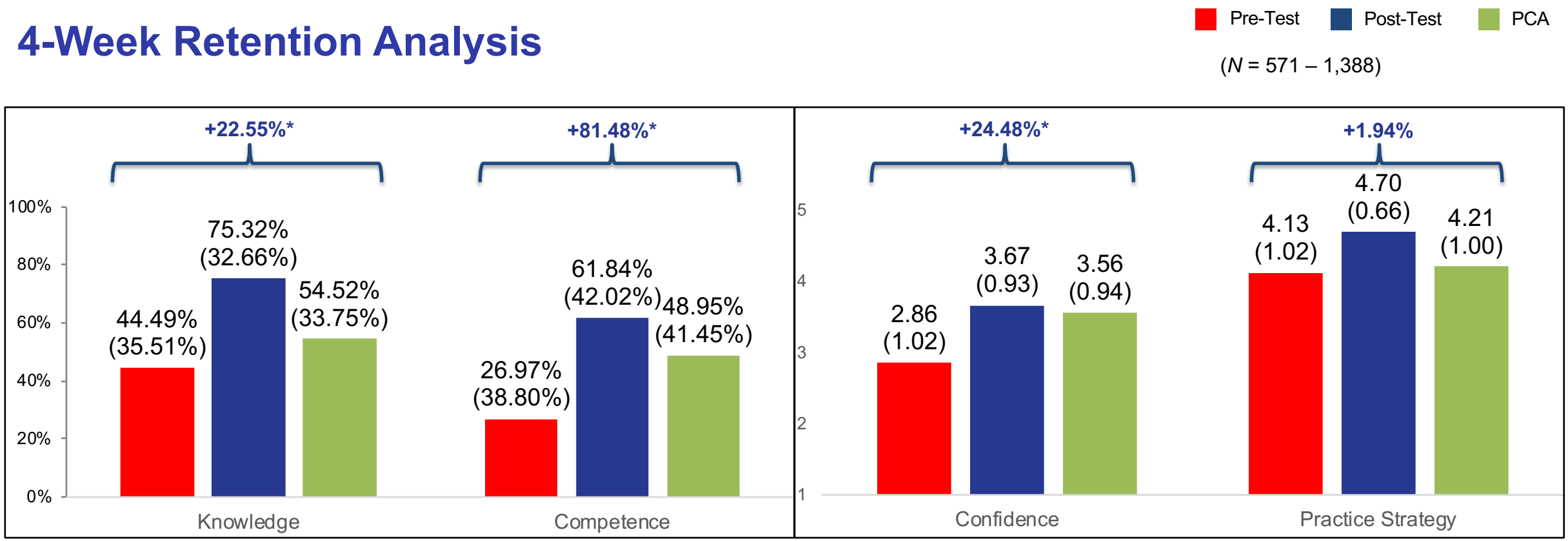
Learning Domain Analysis



- Curriculum learners achieved substantial and significant gains in average score in Knowledge, Competence, Confidence, and practice strategy, from Pre- to Post-Test measurements
  - Low Pre- and Post-Test scores in Competence were shared among both items, presenting cases of diabetic patients with recent cardiac symptoms in need of therapy modification
  - Knowledge scores were more varied, with the highest scoring item at Pre- and Post-Test related to the relationship between risk for heart failure and A1C
- Learner ratings in Confidence were moderate, reflecting learner awareness of Knowledge and Competence gaps in this area
- High ratings were measured in learner reported tendency to consider the impact of cardiovascular and renal disease when selecting antidiabetic treatments, at Pre- and Post-Test

Note: data are matched.
* indicates significance, $p < 0.05$.

4-Week Retention Analysis



- The Post Curriculum Assessment (PCA) repeated questions from all four curriculum learning domains
- Statistically significant net gains were measured from Pre-Test to PCA in Knowledge, Competence, and Confidence, with a non-significant increase measured in practice strategy
- Some reduction in score from Pre-Test to low values on the PCA was measured in Knowledge and Competence, reflecting a need for further reinforcement on this topic

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Note: pre- and post-test data are matched; PCA responses are not.
* indicates significance, $p < 0.05$.

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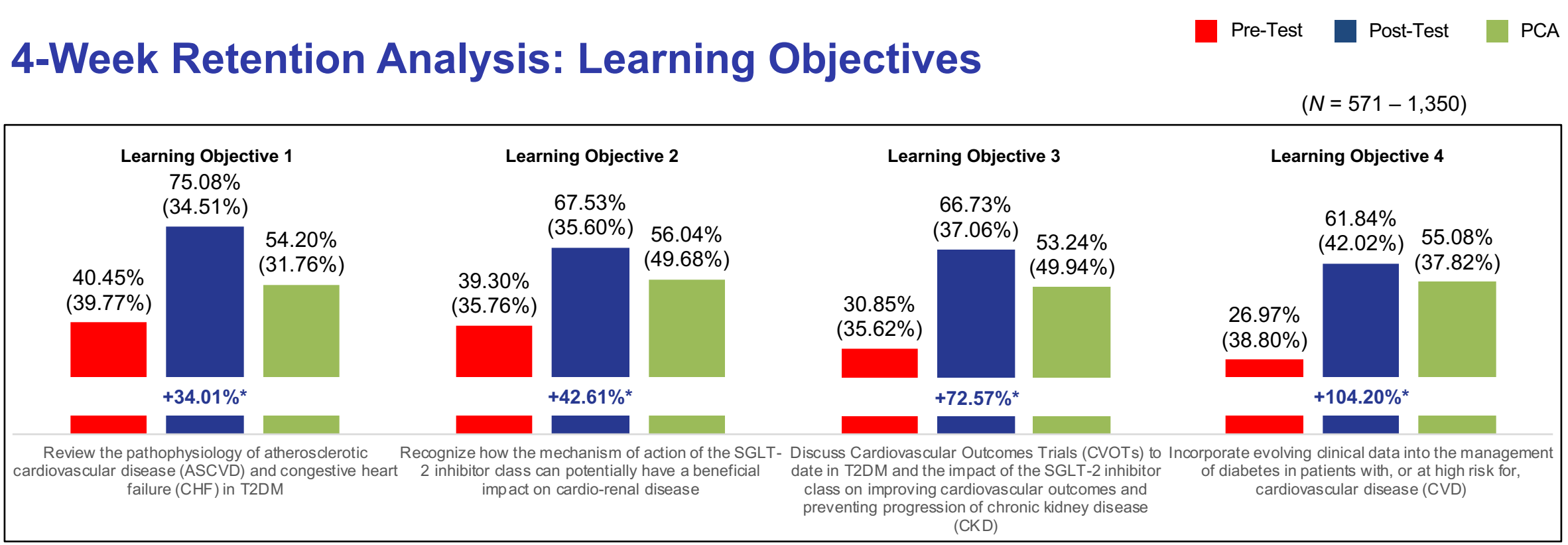
4-Week Retention Analysis: Learning Objectives



- Significant net improvements in score between Pre-Test and PCA observations were measured for all four curriculum Learning Objectives
- For all curriculum Learning Objectives, low to moderate PCA scores, and some slippage in score from Post-Test to PCA measurements, reflect opportunities for further education in this area

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Note: pre- and post-test data are matched; PCA responses are not.
* indicates significance, $p < 0.05$.

significant at the p ≤ 0.05 level

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Learning Objective Analysis: Onsite vs. Online Audience

- "Live onsite learners" include only those attending in-person meetings
- "Live online learners" include those from both the simulcast and virtual symposium

Learning Objective	Live onsite learners				Live online learners			
	N	Pre-Test	Post-Test	% Change	*N*	Pre-Test	Post-Test	% Change
Review the pathophysiology of atherosclerotic cardiovascular disease (ASCVD) and congestive heart failure (CHF) in T2DM	868	41.01% (39.73%)	78.97% (31.55%)	+92.56%*	404	39.23% (39.82%)	66.71% (38.85%)	+70.05%*
Recognize how the mechanism of action of the SGLT-2 inhibitor class can potentially have a beneficial impact on cardio-renal disease	869	38.93% (34.84%)	71.17% (33.29%)	+82.82%*	481	39.95% (37.36%)	60.95% (38.56%)	+52.57%*
Discuss Cardiovascular Outcomes Trials (CVOTs) to date in T2DM and the impact of the SGLT-2 inhibitor class on improving cardiovascular outcomes and preventing progression of chronic kidney disease (CKD)	866	29.46% (34.55%)	70.88% (35.06%)	+140.60%*	477	33.37% (37.35%)	59.19% (39.34%)	+77.37%*
Incorporate evolving clinical data into the management of diabetes in patients with, or at high risk for, cardiovascular disease (CVD)	780	26.28% (38.33%)	63.65% (41.71%)	+142.20%*	373	28.42% (39.73%)	58.04% (42.41%)	+104.22%*

- ❖ Onsite and online learners independently achieved substantial and significant improvements, from Pre- to Post-Test, on all four curriculum Learning Objectives
- ❖ Onsite learners had greater gains from similar Pre-Test values, compared to online learners, for each of the four Objectives

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Note: data are matched.
* indicates significance, $p < 0.05$.

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Learning Objective Analysis: Comparison by Profession

Learning Objective	Nurse Practitioners				Physicians			
	N	Pre-Test	Post-Test	Change	*N*	Pre-Test	Post-Test	Change
Review the pathophysiology of atherosclerotic cardiovascular disease (ASCVD) and congestive heart failure (CHF) in T2DM	586	41.04% (40.27%)	78.92% (31.39%)	+92.30%*	50	48.00% (39.95%)	73.00% (36.35%)	+52.08%*
Recognize how the mechanism of action of the SGLT-2 inhibitor class can potentially have a beneficial impact on cardio-renal disease	610	38.83% (34.93%)	72.79% (32.77%)	+87.46%*	60	41.67% (35.81%)	68.89% (38.06%)	+65.32%*
Discuss Cardiovascular Outcomes Trials (CVOTs) to date in T2DM and the impact of the SGLT-2 inhibitor class on improving cardiovascular outcomes and preventing progression of chronic kidney disease (CKD)	608	28.23% (34.27%)	71.27% (34.73%)	+152.46%*	61	38.52% (36.90%)	72.95% (35.34%)	+89.38%*
Incorporate evolving clinical data into the management of diabetes in patients with, or at high risk for, cardiovascular disease (CVD)	531	25.33% (38.62%)	62.62% (42.42%)	+147.22%*	49	43.88% (42.42%)	69.39% (37.55%)	+58.14%*

- Nurse practitioners and physicians both achieved substantial and significant improvements on all four curriculum Learning Objectives, from Pre- to Post-Test
- Compared to physicians, nurse practitioners had stronger improvements from lower Pre-Test scores to similar Post-Test scores, on all four Objectives

Note: data are matched.
* indicates significance, $p < 0.05$.

Learning Objective Analysis: Comparison by Profession

Learning Domain	Nurse Practitioners				Physicians			
	N	Pre-Test	Post-Test	Change	*N*	Pre-Test	Post-Test	Change
Knowledge	624	45.17% (34.95%)	82.64% (26.80%)	+82.95%*	59	44.07% (35.49%)	76.55% (33.63%)	+73.70%*
Competence	531	25.33% (38.62%)	62.62% (42.42%)	+147.22%*	49	43.88% (42.42%)	69.39% (37.55%)	+58.14%*

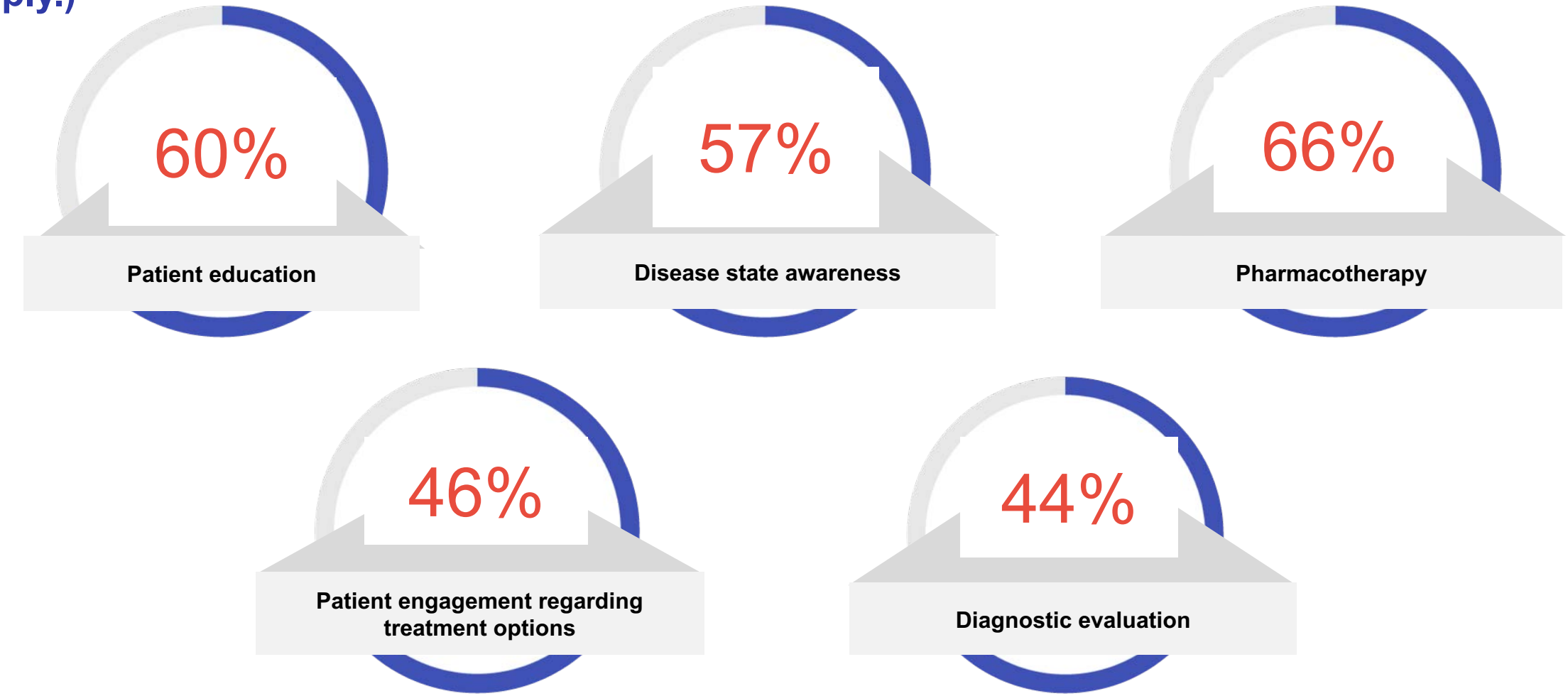
- Nurse practitioners and physicians both achieved substantial and significant improvements in both Knowledge and Competence, from Pre- to Post-Test
- Nurse practitioners had greater gains from Pre- to Post-Test compared to physicians, for both Knowledge and Competence
  - Physicians had higher Pre- and Post-Test scores in Competence, while nurse practitioners had higher Pre- and Post-Test scores in Knowledge

Note: data are matched.
* indicates significance, $p < 0.05$.

(4-week Post Assessment)

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

N=571



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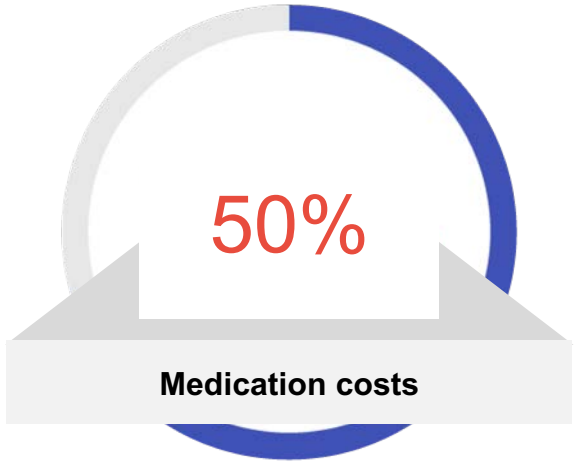
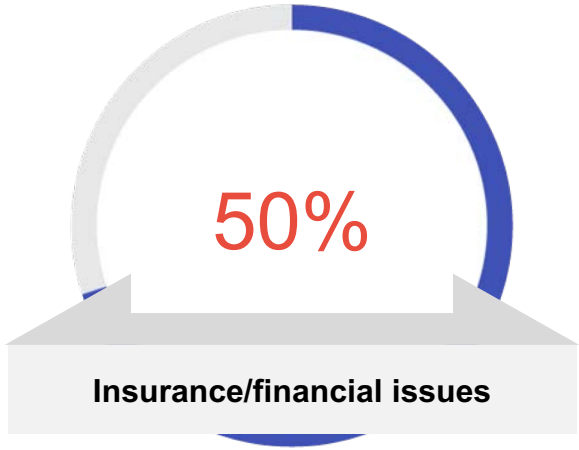
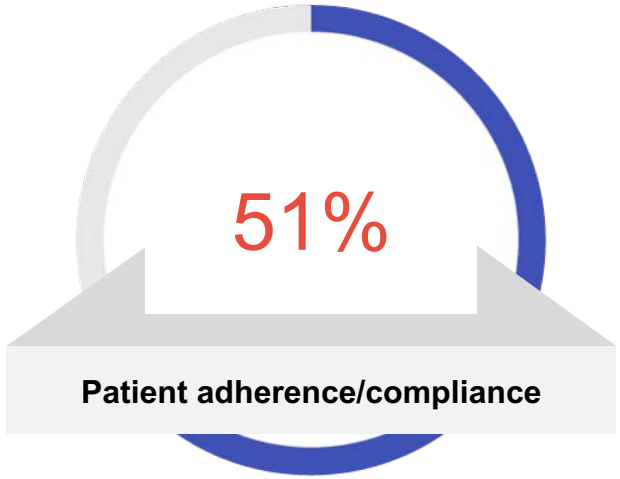
(4-week Post Assessment)

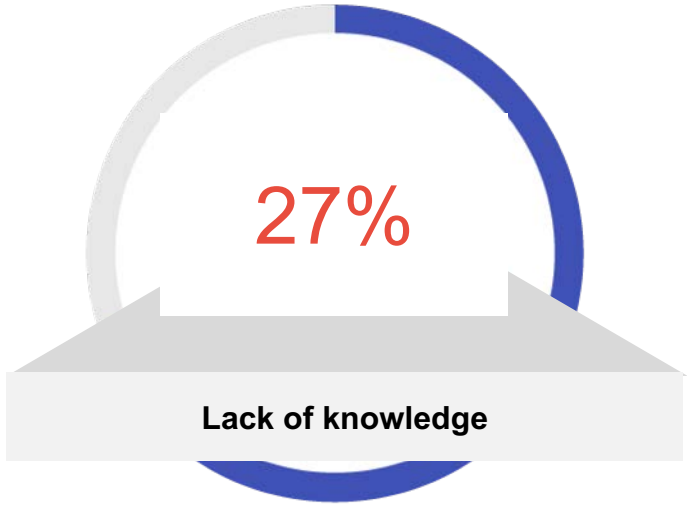
What specific *barriers* have you encountered that may have prevented you from successfully implementing strategies for patients with diabetes and cardiovascular disease since this CME activity? (Select all that apply.)

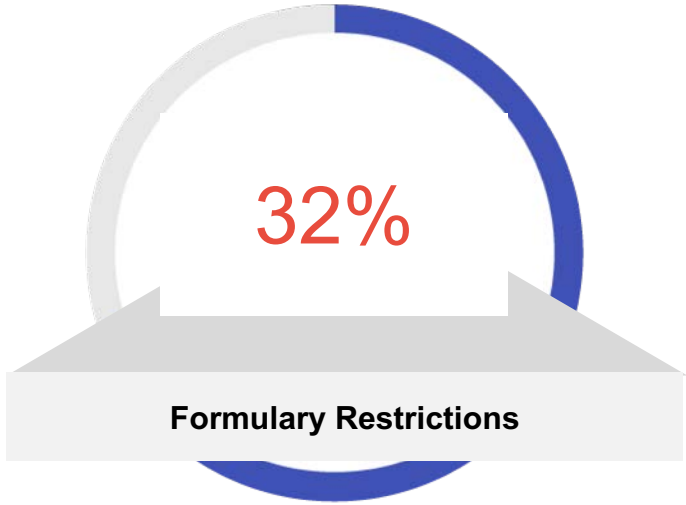
N=571











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Identified Learning Gap 1 of 2:

Selection of SGLT2 inhibitor therapy for T2D patients with recent cardiac symptoms

Despite improvements in score on two Competence items asking learners to modify therapy for type 2 diabetic patients with recent NSTEMI, low scores were observed at Post-Test.

A 61 y/o obese woman with a history of hypertension, dyslipidemia, and T2DM presents for a checkup. She was hospitalized for NSTEMI 12 months ago. Patient reports "occasional" hypoglycemic blood glucose readings (~1/week). Labs: A1C 8.1%, albumin:creatinine ratio (ACR) 102 mg/g, eGFR 54 mL/min/1.73 m2 Meds: Metformin 1000 mg bid, glipizide 10 mg qd, Lisinopril/HCT 20/25mg qd, metoprolol succinate 100 mg bid. Which of the following might be appropriate to manage this patient's T2DM and cardio-renal disease?

Results:

- At Post-Test, only 61% of learners correctly answered: "Stop glipizide and initiate canagliflozin"

A 62 y/o overweight man with a history of T2DM, hypertension, dyslipidemia, and recent NSTEMI presents for a checkup. Exam identifies mild edema, normal sinus rhythm, BMI 28 kg/m2, BP 130/78 mmHg. Labs: A1C 7.9%, ACR 83 mg/g, eGFR 62 mL/min/1.73 m2. Meds: metformin 1000 mg bid, sitagliptin 100 mg qd, rosuvastatin 40 mg qd, metoprolol succinate 100 mg bid, lisinopril 20 mg qd, aspirin 81 mg qd. Which of the following agents would you choose to add to his current regimen that may help reduce risk of future congestive heart failure?

Results:

- At Post-Test, only 62% of learners correctly answered: "Empagliflozin"

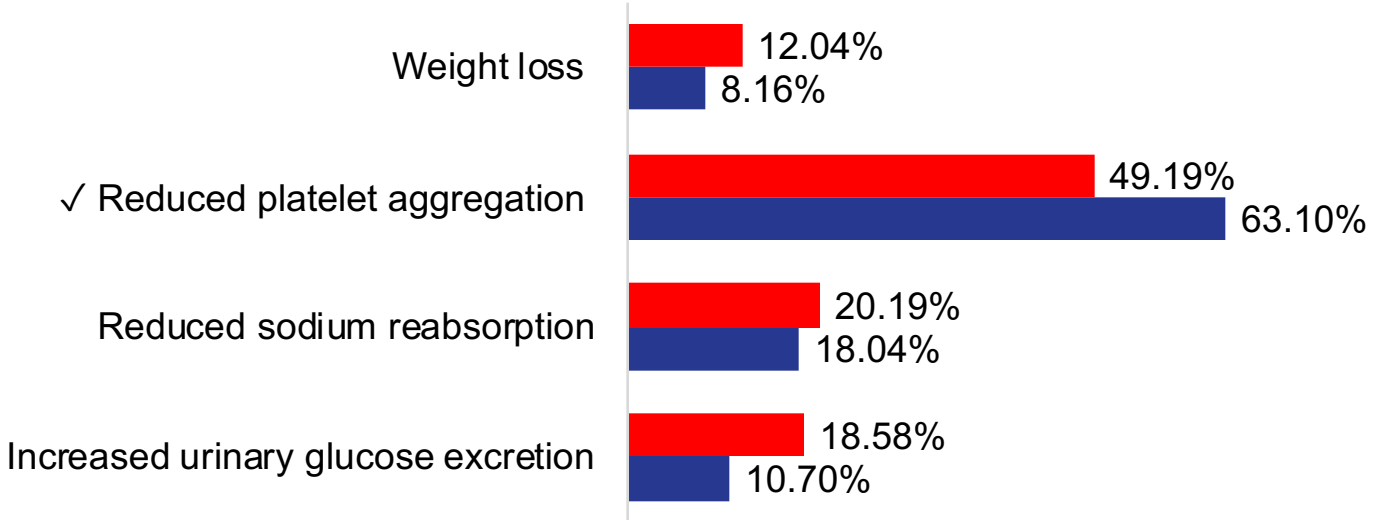
Identified Learning Gap 2 of 2:
Side effects of SGLT-2 inhibitors that impact ASCVD

On a Knowledge item about the effects of SGLT-2 inhibitors, low Post-Test scores were observed.

All of the following are effects of SGLT-2 inhibitors that may impact ASCVD, EXCEPT:

Results:

- At Post-Test, only 63% of learners correctly answered: “Reduced platelet aggregation”



Overall Educational Impact

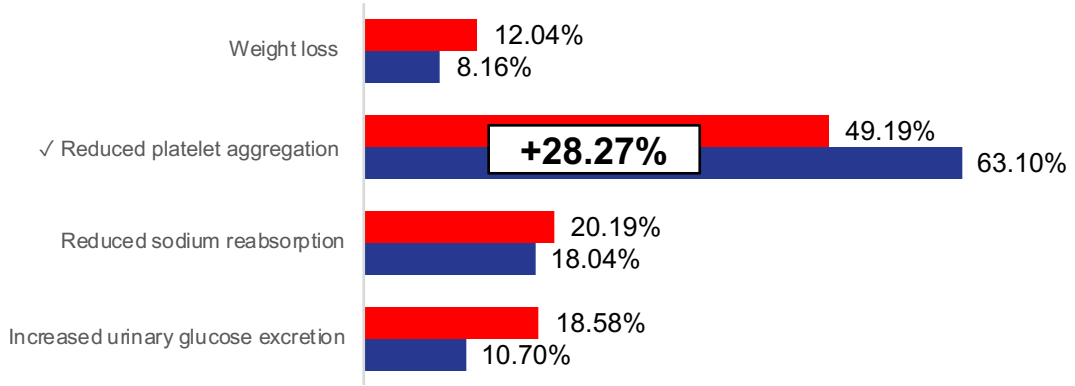
- Significant improvements in score of seen in Knowledge, Competence, Confidence, and practice strategy, from Pre- to Post-Test
  - These increases were stronger for live onsite learners compared to live online learners, with onsite and online learners having similar Pre- and Post-Test scores
  - On a follow-up assessment, significant net gains were retained in Knowledge, Competence, and Confidence
  - Confidence ratings were moderate, reflecting learner awareness of gaps in Knowledge and Competence
  - High ratings at Pre-Test, Post-Test, and PCA were given on tendency to consider the impact of cardiovascular and renal disease when selecting antidiabetic treatments
- Significant gains ranging from 72% to 129% were measured across all four Learning Objectives. The greatest improvement was measured on incorporating evolving clinical data into the impact management of diabetes in patients with or at risk for cardiovascular disease
- The analysis of the Knowledge and Competence domains identified two **persistent learning gaps related to management of cardiovascular disease risk in diabetic patients**
  - Low scores at Post-Test (61% and 62%) were measured on Competence items related to **selection of SGLT-2 inhibitor therapy for T2D patients with recent cardiac symptoms**
  - On a Knowledge item about **effects of SGLT-2 inhibitors that impact ASCVD**, learners struggled at Pre- and Post-Test (49% to 63%)

Appendix

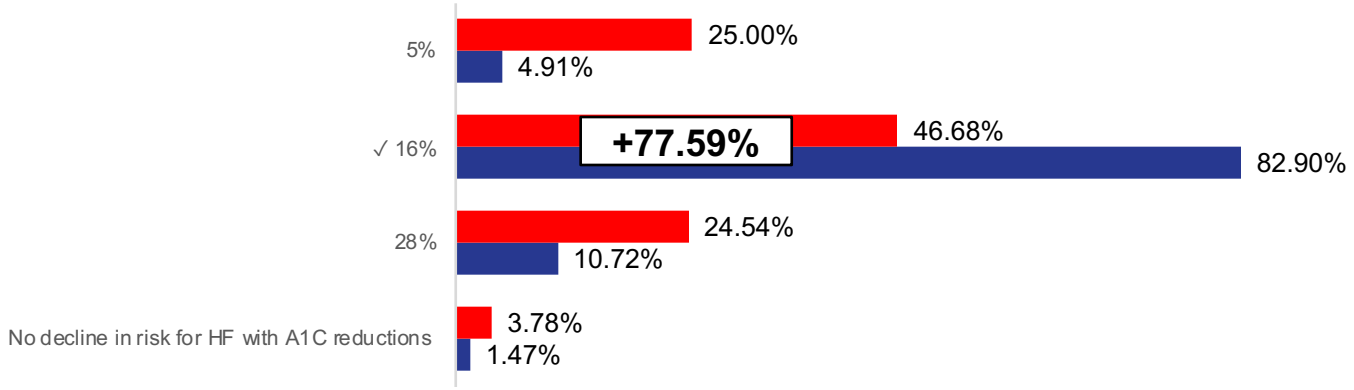
Knowledge Items

Pre-Test
Post-Test

All of the following are effects of SGLT-2 inhibitors that may impact ASCVD, EXCEPT: **N = 1,238 – 1,336**



Among patients with diabetes, by about how much does risk for heart failure decline for each 1.0% reduction in A1C? **N = 1,296 – 1,427**



RealCME

Correct answer is designated by a ✓.

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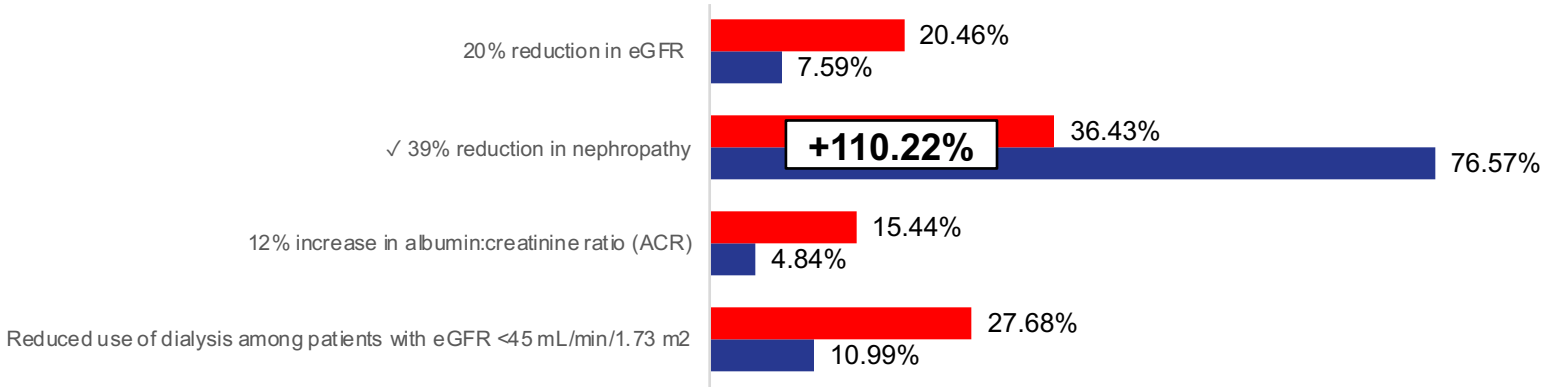
Knowledge Items

In the EMPA-REG trial, which of the following renal outcomes was associated with empagliflozin, compared to placebo?

N = 1,315 – 1,383



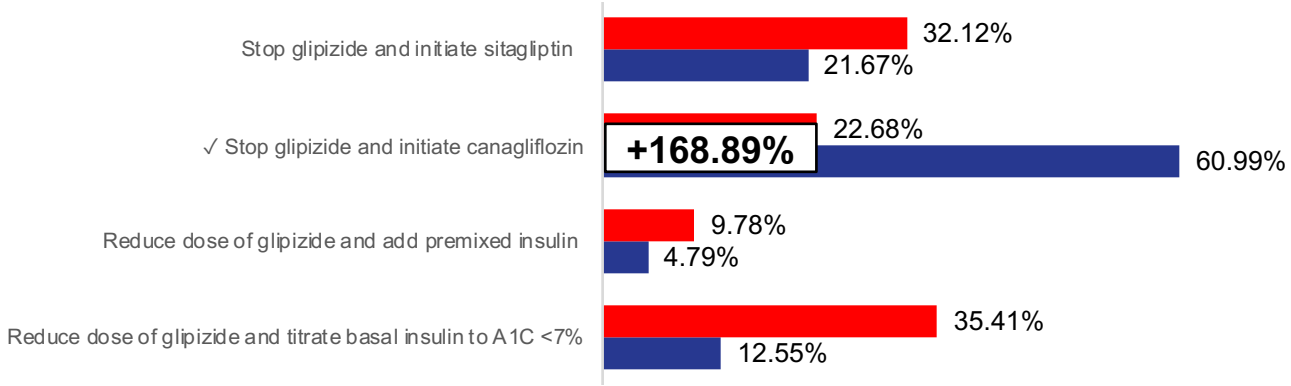
Correct answer is designated by a ✓.

Competence Items

Pre-Test
Post-Test

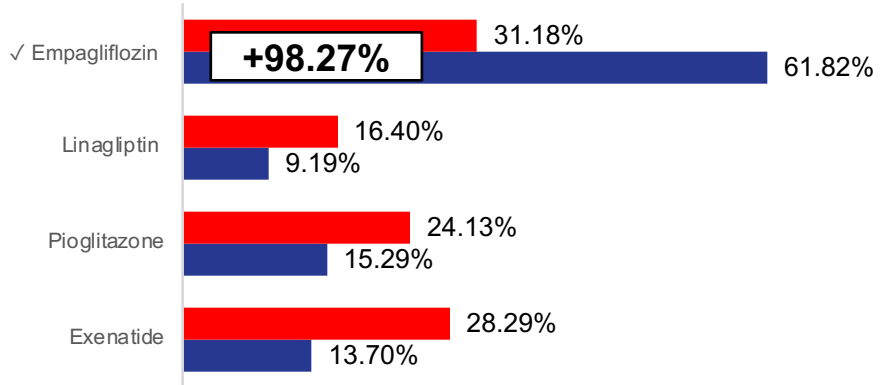
A 61 y/o obese woman with a history of hypertension, dyslipidemia, and T2DM presents for a checkup. She was hospitalized for NSTEMI 12 months ago. Patient reports "occasional" hypoglycemic blood glucose readings (~1/week). Labs: A1C 8.1%, albumin:creatinine ratio (ACR) 102 mg/g, eGFR 54 mL/min/1.73 m2 Meds: Metformin 1000 mg bid, glipizide 10 mg qd, Lisinopril/HCT 20/25mg qd, metoprolol succinate 100 mg bid. Which of the following might be appropriate to manage this patient's T2DM and cardio-renal disease?

N = 1,186 – 1,315



A 62 y/o overweight man with a history of T2DM, hypertension, dyslipidemia, and recent NSTEMI presents for a checkup. Exam identifies mild edema, normal sinus rhythm, BMI 28 kg/m2, BP 130/78 mmHg. Labs: A1C 7.9%, ACR 83 mg/g, eGFR 62 mL/min/1.73 m2. Meds: metformin 1000 mg bid, sitagliptin 100 mg qd, rosuvastatin 40 mg qd, metoprolol succinate 100 mg bid, lisinopril 20 mg qd, aspirin 81 mg qd. Which of the following agents would you choose to add to his current regimen that may help reduce risk of future congestive heart failure?

N = 1,177 – 1,328



RealCME

Correct answer is designated by a ✓.

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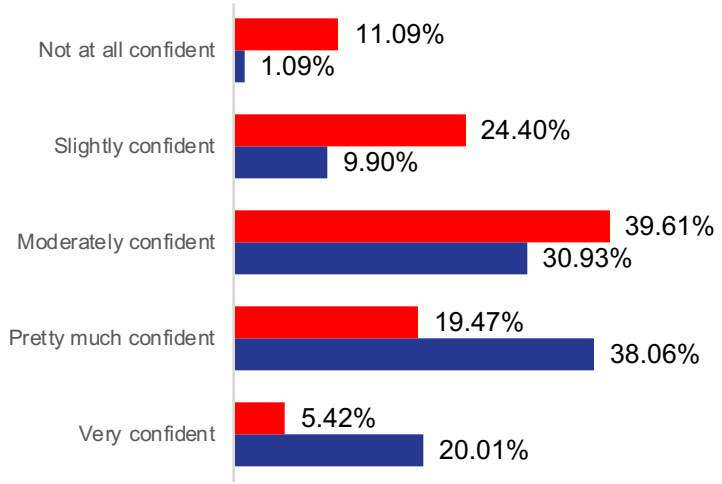
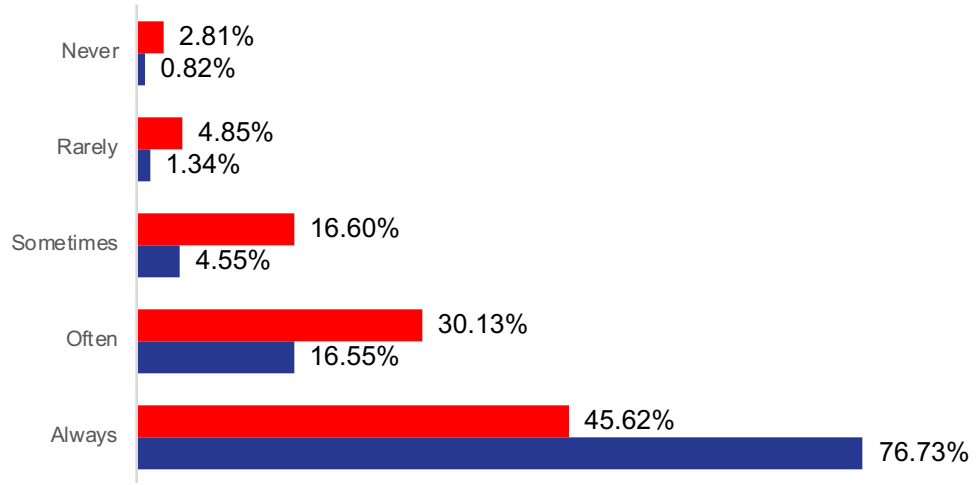
Confidence and Practice Strategy Items

How confident are you in your ability to manage patients with established atherosclerotic cardiovascular disease (ASCVD) and T2DM? **N = 1,217 – 1,374**



How often do/will you consider the impact of cardiovascular and renal disease when selecting antidiabetic treatment for patients with T2DM? **N = 1,175 – 1,341**



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