# **Nedscape**

## IMPROVING MANAGEMENT OF ACS USING BIOMARKERS: CAN ONLINE CME IMPROVE PERFORMANCE?

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#### INTRODUCTION

Biomarkers are powerful adjuncts to clinical care for diagnostic and prognostic assessments in acute coronary syndrome (ACS)<sup>1,2</sup>; however, data show that physicians lack knowledge of practical aspects of using biomarkers in clinical practice.<sup>3</sup> In addition, biomarker utilization continues to evolve, with expanded uses, new targets for

assessment, and the introduction of highersensitivity assays. This study's objective was to determine if a curriculum of continuing medical education (CME) activities improved the performance of cardiologists related to the use of biomarkers in the management of ACS.

### METHODS

#### **Instructional Design**

The curriculum consisted of 2 CME activities, including an expert panel discussion<sup>4</sup> and a text-based review<sup>5</sup> on the application of biomarkers in ACS. The panel discussion was chosen to provide examples, highlight problem-solving processes, and offer multiple perspectives or interpretations on the expanded applications of cardiac biomarkers. The text-based instructional format was chosen to showcase the voice of a therapeutic expert and provide a comprehensive review of clinical findings and advances. The activities were available on the Medscape Mobile application, ensuring real-time access by the many clinicians who rely on mobile devices for education.

#### **Outcomes Assessment: Performance** Linked Learning Assessment

- This study design compared participants' responses to questions before exposure to educational content (preassessment measurement) with the same participants' responses to the same questions placed after the educational content (post-assessment measurement).
- The questions consisted of case-based scenarios and performance-assessment questions as well as a self-efficacy question.

- Linking pre-assessment and postassessment participants allow learners to serve as their own controls. A paired 2-tailed t-test was used to assess whether the mean pre-assessment score was different from the mean post-assessment score.
- Analysis was conducted on an identified audience of cardiologists who completed all of the pre-assessment and postassessment questions during a specified time period for each of the 2 activities. A subanalysis was conducted on a secondary sample of cardiologists who also completed the follow-up assessment, 30 to 60 days post-education.
- McNemar's χ<sup>2</sup> statistic was used to measure changes in responses to individual questions.
- *P* values were calculated for both t-test and  $\chi^2$  statistics to determine significance level ( $\alpha$ ).
- P values less than .05 are statistically significant.
- Cramer's V was used to calculate the effect size of the intervention. Effect sizes (V) between 0 and 0.25 are large, between 0.25 and 0.5 are moderate, and greater than 0.5 are small.
- Categories of participant responses are defined in Table 1.

table 1	Participant Response Categories	
CATEGORY	DEFINITION	
Improved Learners	Any incorrect response on pre-assessment, correct response on post-assessment	
<b>Reinforced Learners</b>	Correct response on both pre-assessment and post-assessment	
Unaffected Learners	Any incorrect response on post-assessment (with either correct or incorrect response on post-assessment)	

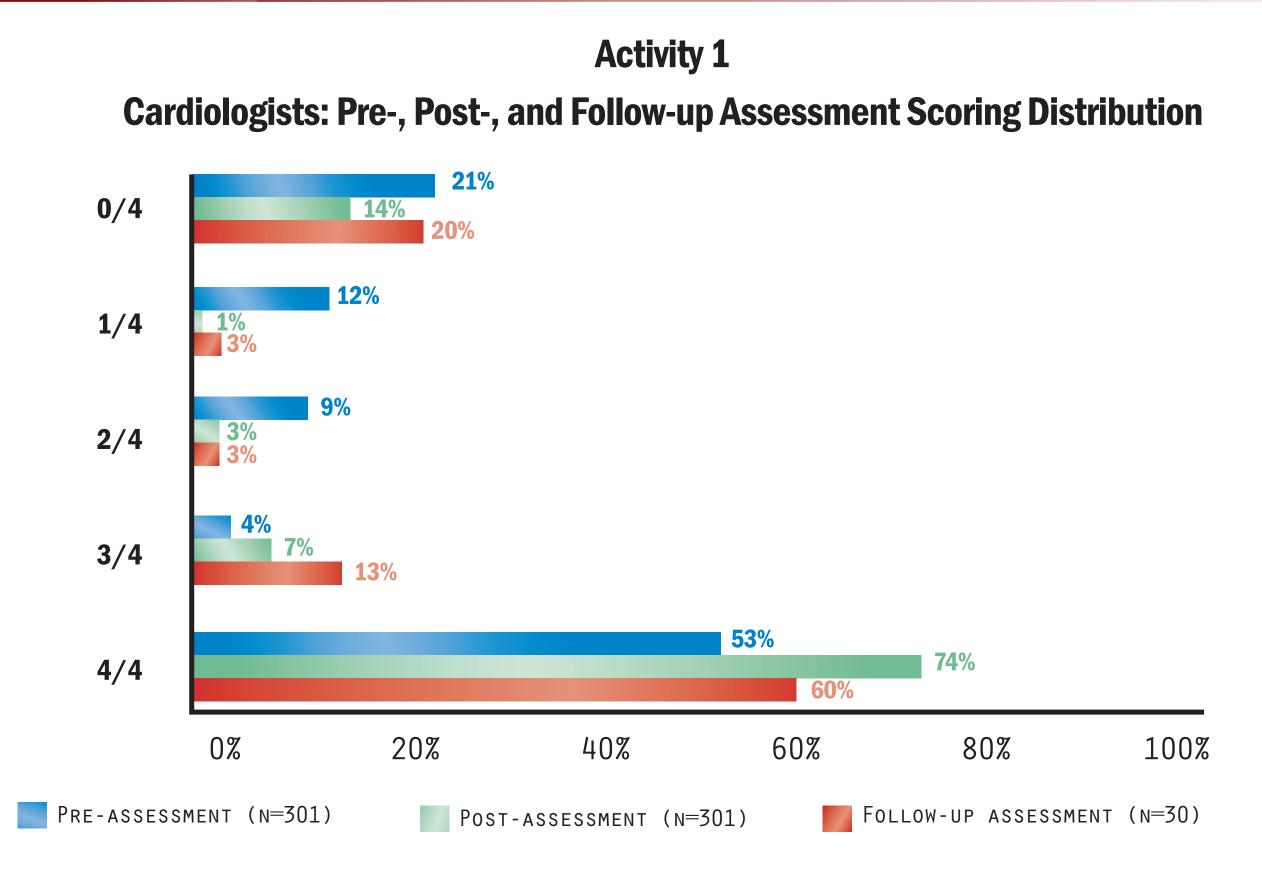
#### RESULTS

#### **Overall, both CME activities demonstrated significant improvement for cardiologists** related to integration of biomarkers into management of patients with ACS (Table 2).

table 2	Summary Activity Data		
ACTIVITY TOPIC	ACTIVITY 1: TROPONIN FOR Clinical Decision Making in ACS	ACTIVITY 2: RELEVANC OF TROPONIN FOR ACS	
N	301	80	
Follow-up data (n)	30	12	
Overall P value	<.001	<.004	
Effect size (V)	0.35 (medium)	0.44 (medium)	

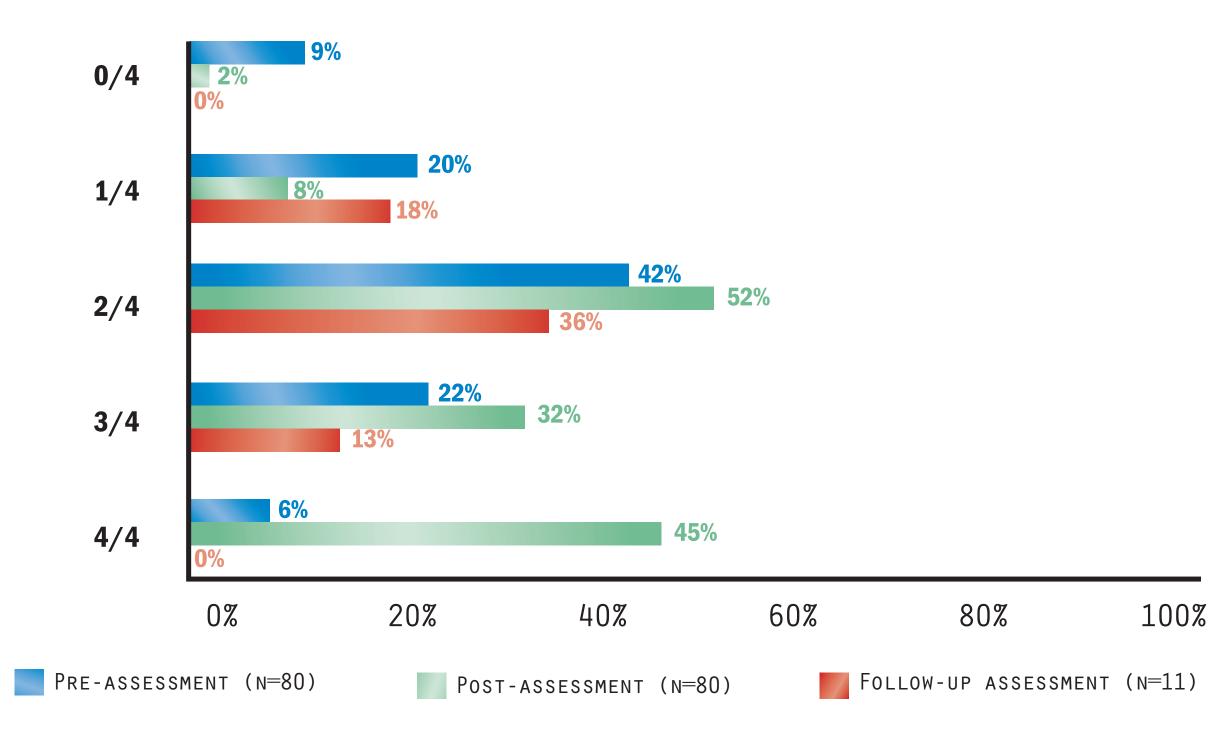
The scoring distribution for each activity indicated improvement in evidence-based choices and skills associated with the learning concepts on post-assessment. (Figure 1)

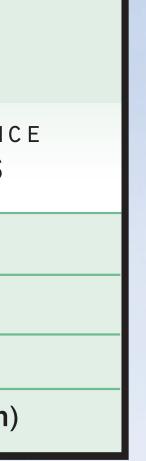












The education was successful in improving performance of cardiologists related to several clinical themes. (Table 3)

TABLE 3 Analysis of Clinical Themes						
Clinical Theme	N	Average % of Correct Responses (Post-assessment)	Average % of Correct Responses (Pre-assessment)	<i>P</i> value		
Interpretation of biomarker results in order to risk-stratify or assess patients with ACS and determine the appropriate next steps	381	83%	70%	<.001		
Application of biomarkers to identify clinical benefits and to tailor and guide a treatment plan	381	72%	56%	<.001		
Integration of new, universal definition of MI	<b>80</b> ª	24.5%	23%	NS		

ACS = acute coronary syndrome; MI = myocardial infarction; NS = not significant. <sup>a</sup>Responses based on activity 2 only.

Impact on self-efficacy was determined using a Likert scale of 1 to 7, with 1 being easy or confident and 7 being difficult or not confident, against a key learning concept. There was no significant improvement in the ease of/confidence in decision making surrounding the related patient management decision, but in each case, there was an increase in the number of cardiologists who self-identified as it being easier or as having more confidence in their decision following exposure to the education. (Figure 2)





#### CONCLUSIONS

The statistically significant improvements observed in this online CME curriculum demonstrate the benefits of incorporating adult learning principles in educational design to promote effective knowledge transfer and performance change.

#### **Recommendations for Future Education**

This assessment of cardiologists' performance identified education gaps that support the need to develop additional CME activities on the application of biomarkers in ACS management:

- The use of cardiac troponin (cTnT) to differentiate between a non-ST-segment elevation myocardial infarction (NSTEMI) and an ST-segment elevation myocardial infarction (STEMI)
- The use of cTnT to rule in or rule out an acute MI and to support clinical decision making
- Differences between MI type 1 and 2
- Troponin as the most practical and useful way to interpret the universal definition of MI

#### **Acknowledgements**

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For more information, contact Jelena Spyropoulos, Director of Educational Strategy, Medscape LLC, at jspyropoulos@medscape.

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