

# Education via Medical Simulation Improves Screening and Treatment of Psoriasis

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## ABSTRACT

### Introduction

Research has shown gaps among dermatologists in best practices for screening patients with psoriasis for comorbidities and psoriatic arthritis. We also identified practice gaps in the treatment of psoriasis in alignment with treatment guidelines. This study aimed to determine whether online medical simulation-based education could assist clinicians in achieving best practices related to screening for comorbidities (e.g., psoriatic arthritis, cardiovascular disorders) as well as counseling and treating patients with psoriasis.

### Methods

Education consisted of two online, narrative, competency-based, branch-logic patient simulations featuring media elements such as video clips and links to resources. Participants were required to make decisions at key steps/branches in the activity, and they received feedback on their choices at each step. Assessment of improvements in knowledge, confidence, and performance consisted of survey instruments sent to participants 3 months following the activity, as well as to a group of matched nonparticipant controls. Responses were compared between participants and controls using chi-square tests. Statistical significance was determined at alpha = .05.

### Results

Over 2900 clinicians participated in the activity, representing nearly 33,000 patients with psoriasis. A subset of participants responded to the follow-up survey (n = 30), with a similar response rate for controls (n = 30). After 3 months, participants significantly outperformed controls on 5 questions assessing knowledge and one question assessing performance.

### Conclusions

Dermatologists and other healthcare providers participating in this online medical simulation significantly improved their knowledge and clinical practice behaviors as a result of the activity. Participants learned about best practices for screening, treatment, and counseling, resulting in more frequent screening for psoriatic arthritis, compared to matched controls. This format provided a safe environment for clinicians to match real-life experiences to improve clinical decision-making related to treatment of patients with psoriasis.

## METHODS

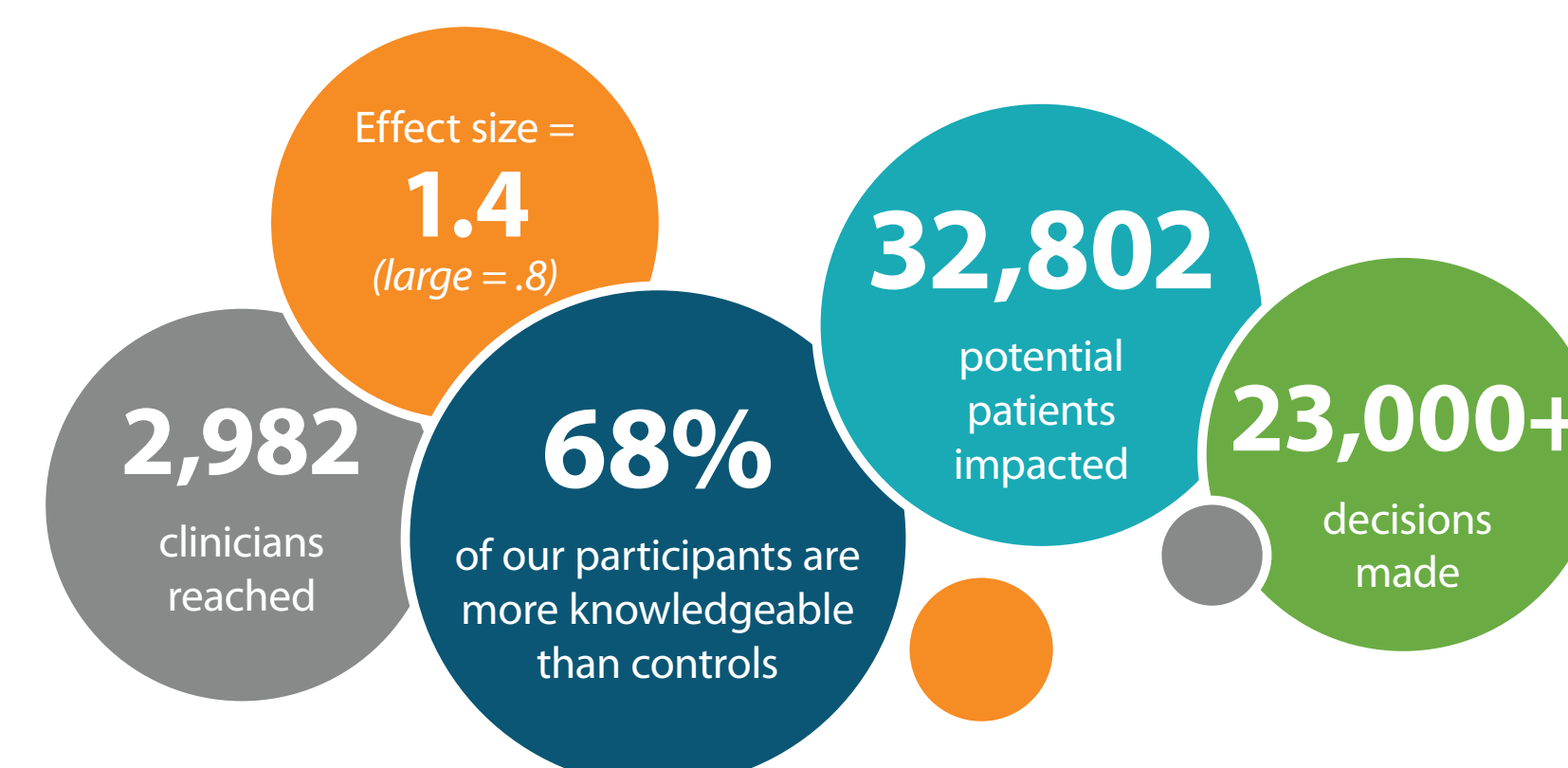
Education consisted of two online, narrative, competency-based, branch-logic patient simulations featuring media elements such as video clips and links to resources. The simulations assisted in educating dermatologists on two key issues:

- Medication Simulation #1:** Screening for psoriatic arthritis and cardiovascular risk factors in patients with psoriasis
- Medical Simulation #2:** Implementing treatment according to treatment guidelines

Participants were required to make decisions at key steps/branches in the activity, and they received feedback on their choices at each step.

Assessment of improvements in knowledge, confidence, and performance consisted of survey instruments developed by faculty members and an internal staff of scientists, and were aligned to the educational objectives. Surveys were sent to participants 3 months following the activity, as well as to a group of matched nonparticipant controls. Responses to survey questions were coded as dichotomous (e.g., correct/incorrect) and compared between participants and controls using chi-square tests. Statistical significance was determined at alpha = .05. Effect size was calculated using Cohen's d, with data points reflecting the percentage of correct responses per participant.

## RESULTS



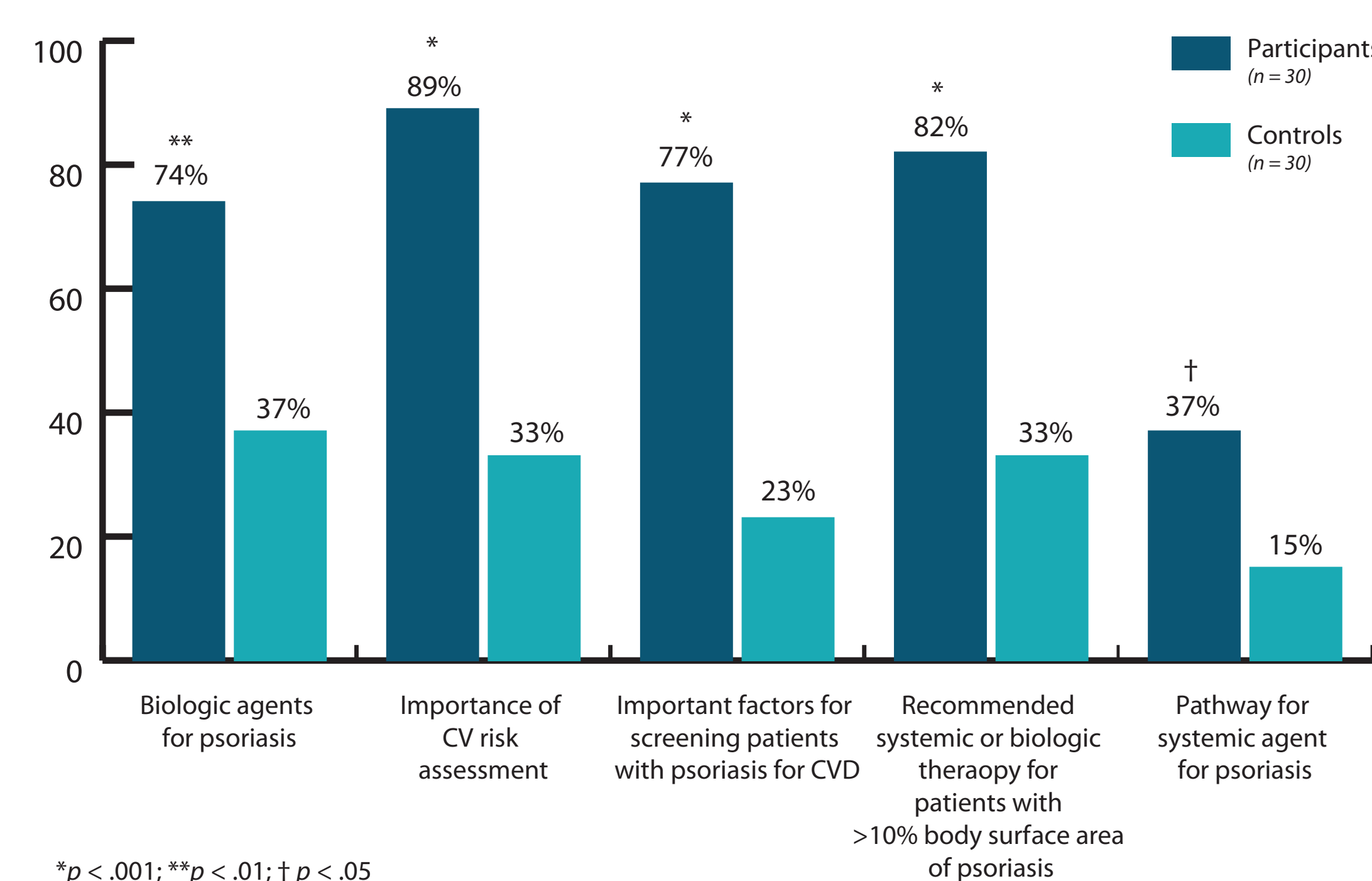
### Demographics

A total of 2,982 clinicians participated in the activity, representing nearly 33,000 patients with psoriasis. A subset of participants responded to the follow-up survey (n = 30), with a similar response rate for controls (n = 30).

### Knowledge

After 3 months, participants significantly outperformed controls on all 5 knowledge questions (Figure 1), resulting in an effect size of 1.4 (large = .8).

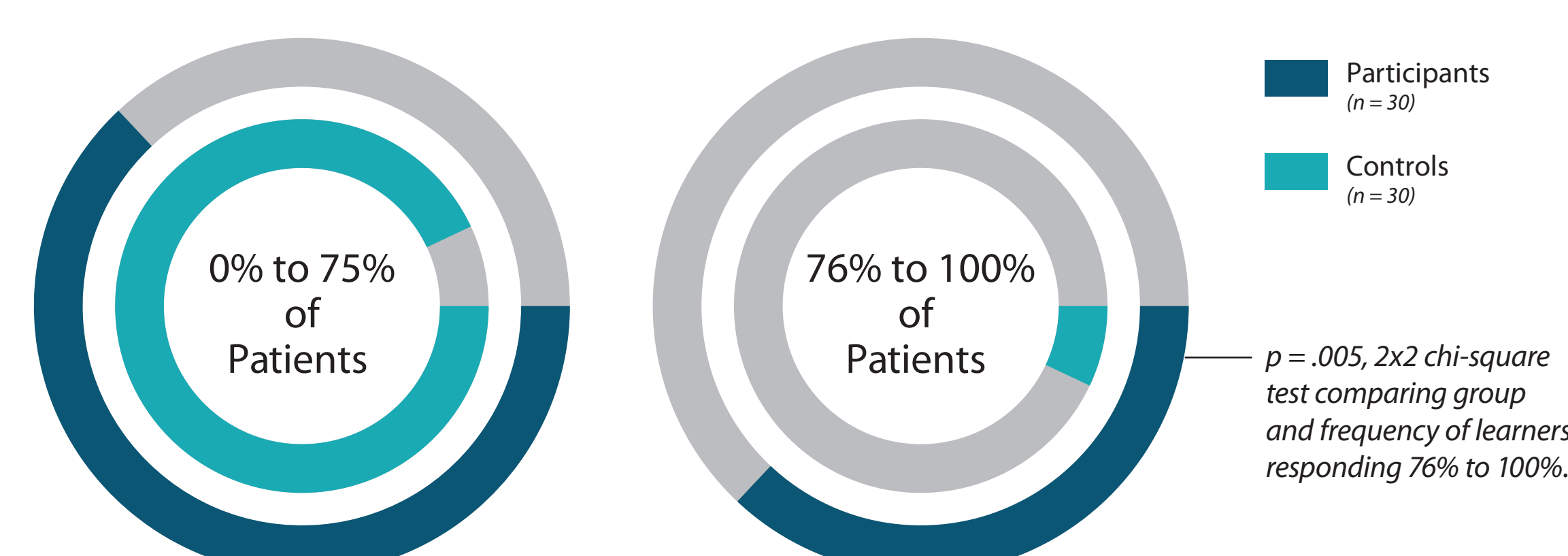
Figure 1. Percentage of Learners Correctly Responding to the Five Knowledge Questions.



### Performance

With regard to performance, participants outperformed controls on screening for psoriatic arthritis in patients with psoriasis (Figure 2).

Figure 2. Percentage of Learners Screening for Psoriatic Arthritis in Patients with Psoriasis.



## RESULTS, cont'd

### Medical Simulation Decision Point Responses

At various points during the medical simulations, learners were asked to make decisions regarding how they would screen, treat, or manage a hypothetical patient with psoriasis ("Lisa"). Figures 3 and 4 show results from 2 of these decision points.

Figure 3 shows the percentage of learners selecting their 1st, 2nd, and 3rd choices when initially consulting with a patient with psoriasis. There were no correct responses, although "review medication with her" was considered an incorrect response for a 1st choice.

Figure 3. Percentage of Learners Selecting Initial Behaviors Performed with Patient with Psoriasis During Medical Simulation Decision Point.

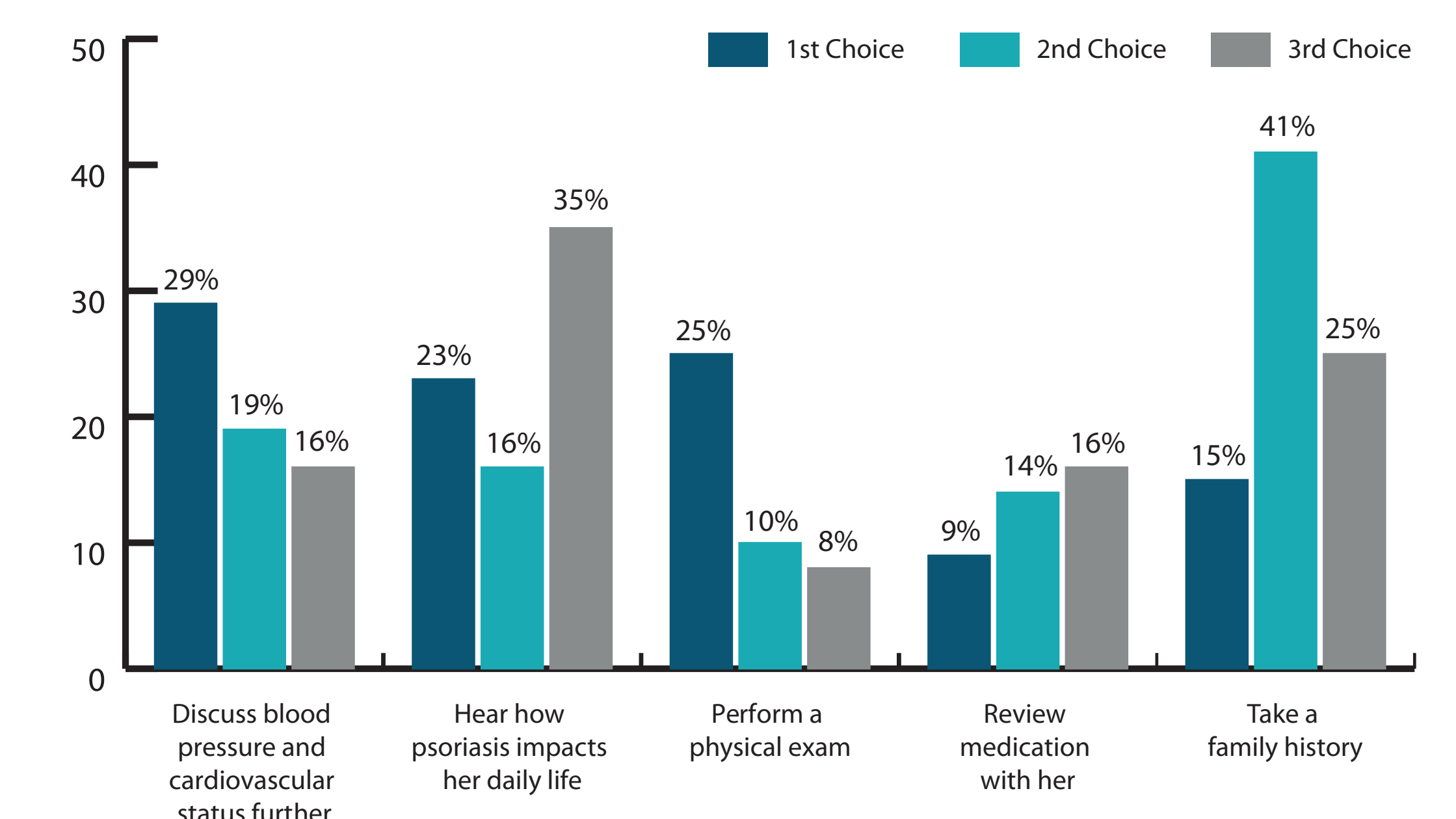
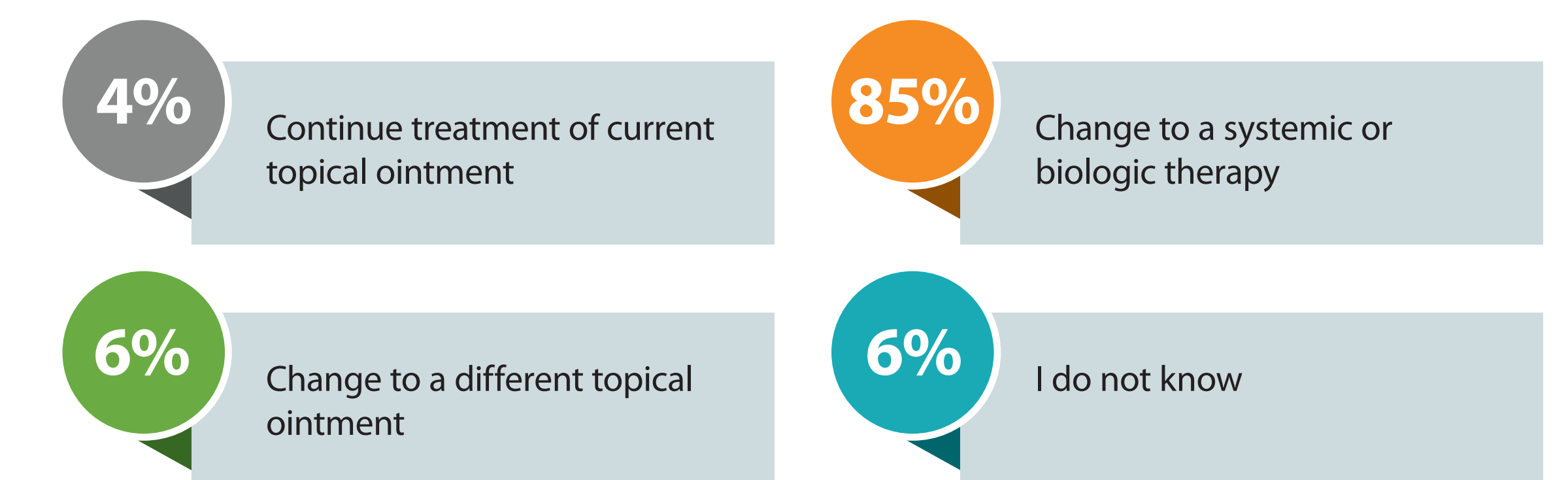


Figure 4 shows the percentage of learners selecting various treatment options for the patient. After reviewing the patient case with the experts during the simulations, 85% of participants selected the optimal choice to change the patient to a systemic or biologic therapy (statistical comparisons were not conducted). After making a selection, participants moved on to hear an expert opinion on optimal choices based on treatment guidelines.

Figure 4. Percentage of Learners Selecting Treatment Options During Medical Simulation Decision Point.

What treatment do you recommend for Lisa's moderate-to-severe psoriasis? (n = 1573)



## CONCLUSIONS

- Dermatologists and other healthcare providers participating in this online medical simulation significantly improved their knowledge and clinical practice behaviors as a result of the activity.
- Participants learned about best practices for screening, treatment, and counseling, resulting in more frequent screening for psoriatic arthritis, compared to matched controls.
- This format provided a safe environment for clinicians to match real-life experiences to improve clinical decision-making related to treatment of patients with psoriasis.

*Perspectives from the learner*

- "This was OUTSTANDING! I had no idea the vast medical implications for patients with psoriasis!"
- "Loves the interactive didactic case, and the key point reminder email encouraged me to make a change."
- "Everything was useful, well done. Really enjoyed the presentation."

## REFERENCES

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## INTRODUCTION

### Background

Psoriasis is an inflammatory, autoimmune disorder with predominately joint and skin symptoms characterized by scaling and erythematous plaques that may be painful or severely pruritic, and may cause significant quality of life issues. Significantly and poorly understood by a majority of dermatologists, there are conditions associated with psoriasis such as cardiovascular disease (CVD), diabetes, psoriatic arthritis, and depression. The risk for myocardial infarction is higher in patients who are psoriatic than in non-affected individuals with the relative risk being particularly elevated in younger patients with more severe psoriasis.<sup>1,2</sup> Psoriatic arthritis is common in patients with psoriasis, affecting about 6% to 10% of psoriasis patients over all, with significantly higher estimates (20% to 40%) in patients with more extensive skin disease.<sup>3</sup>

### Gaps in Clinician Knowledge and Performance

Dermatologists are in a key position to effectively manage the skin, joint, and quality of life components, as well as screen for the serious conditions associated with psoriasis in order to prevent significant morbidity and mortality. However, gaps in performing according to best practices exist.

- GAP #1:** Implementing treatment guidelines and screening for comorbidities associated with psoriasis. Despite the availability of effective treatments, a large number of patients with psoriasis are either not treated or undertreated in divergence with treatment guidelines from the American Academy of Dermatology (AAD).
- GAP #2:** The majority of dermatologists do not recognize that psoriasis is a systemic inflammatory disorder and is associated with an increased risk for psoriatic arthritis and CVD and are not appropriately screening for these disorders despite recommendations from the AAD and the Agency for Healthcare Research and Quality (AHRQ).

### Study Aims

Education is key to narrowing or eliminating those gaps, but not all education is effective.

This continuing education initiative utilized faculty discussion and patient simulations to instruct healthcare providers (HCPs) how to...

