

# HIDRADENITIS SUPPURATIVA ONLINE CASE CHALLENGE: HOW DO PHYSICIANS PERFORM?

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## STUDY OBJECTIVES

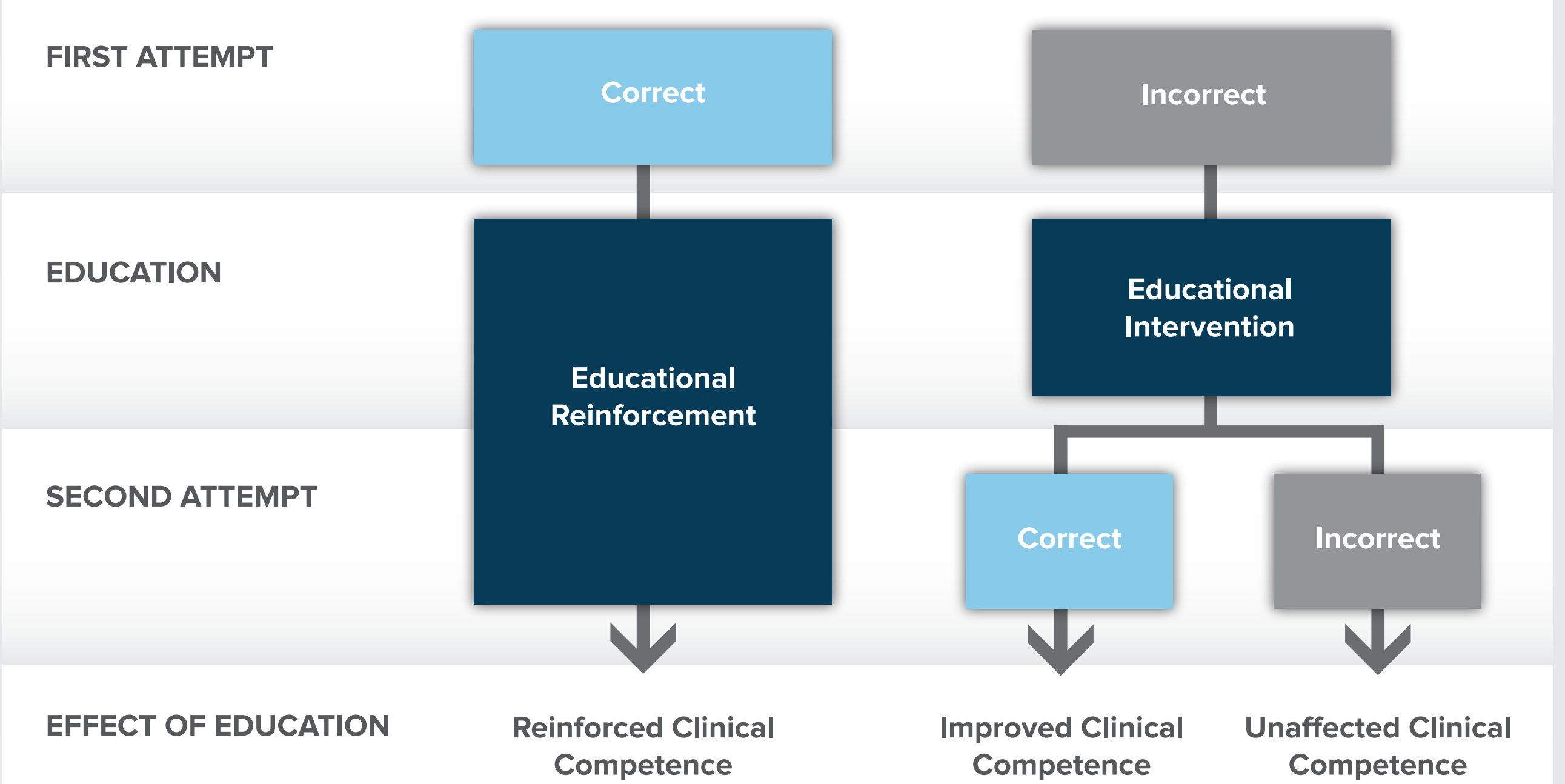
Hidradenitis suppurativa (HS) is a chronic, recurrent, painful skin disease characterized by abscesses, nodules, and draining fistulas in the axilla and groin.<sup>1</sup> The treatment landscape for HS has recently evolved, necessitating continuing medical education (CME) to bring clinicians up to date with advances. This study assessed whether CME can improve knowledge, competence, and performance of dermatologists and primary care physicians (PCPs) managing HS.

**FIGURE 1.** Practice Challenge: Tailored educational format with branching logic and clinical decision points.

The Medscape Practice Challenge is a case-based activity that incorporates consequence-based feedback and guidance from expert faculty as it challenges you with practice-based **clinical decision questions**. Making an incorrect decision results in feedback as to why that decision was incorrect and the clinical consequences of that decision; you will then be given the opportunity to return to the clinical decision point to make a more informed choice. By observing the potential patient outcomes in a case-based learning environment, you can objectively analyze the success and/or consequences of your clinical decisions.

In addition to clinical decision questions, each case also includes questions that **test your knowledge**. After selecting your answer choice for these questions, you will see the correct answer choice, how your peers answered the same question, and an explanation supporting the correct answer.

The Medscape Practice Challenge is designed to support future knowledge retrieval in real-world circumstances, which is the foundation for improving your clinical competence and performance.



## INSTRUCTIONAL METHOD

- The online educational activity was presented in the form of 2 case scenarios that included questions assessing knowledge and clinical decision making<sup>2</sup> (Figure 1), with the following learning objectives:
  - Assess and stage HS to support diagnosis and evaluation of treatment efficacy
  - Select and individualize treatments for HS based on patient characteristics and the latest clinical data
- Using branching logic, after each response to clinical decision questions learners were provided with tailored feedback and clinical consequences based on the specific answer choice selected. Learners who answered the question incorrectly on the first attempt were allowed a second opportunity to answer after feedback had been provided (Figure 1)

**CASE 1:** Ron is a 47-year-old truck driver with a 20-year history of persistent and painful hidradenitis suppurativa (HS)

**CASE 2:** Cheryl, a 29-year-old single mother and teacher, developed HS when she was 14 years old.

## ASSESSMENT METHOD

- To determine measurable improvements in knowledge and clinical decision making, first- and second-attempt answer choices were evaluated for the clinical decision questions, and pre- assessment and post-assessment answer choices were compared for the knowledge assessment questions
- For the clinical decision questions, an overall effect size was calculated to show the magnitude and strength of the consequence-based feedback learning method, along with a percent improvement that measures the percentage of successes with the consequence-based feedback method in place
- For the knowledge assessment questions, a paired, 2-tailed t test was used to assess whether the mean pre-assessment score was different from the mean post-assessment score
- Pearson's  $\chi^2$ -statistic was used to measure changes in responses to individual questions
- Probability values (*P* values) were also calculated to determine significance level ( $\alpha$ ); a *P* value of less than .05 indicates statistical significance
- Knowledge assessment questions were placed before exposure to educational content (pre-assessment questions) and repeated after exposure to the educational content (post-assessment questions)
- The educational intervention launched online on June 22, 2016, and data were collected through August 1, 2016

## CLINICAL DECISION QUESTIONS

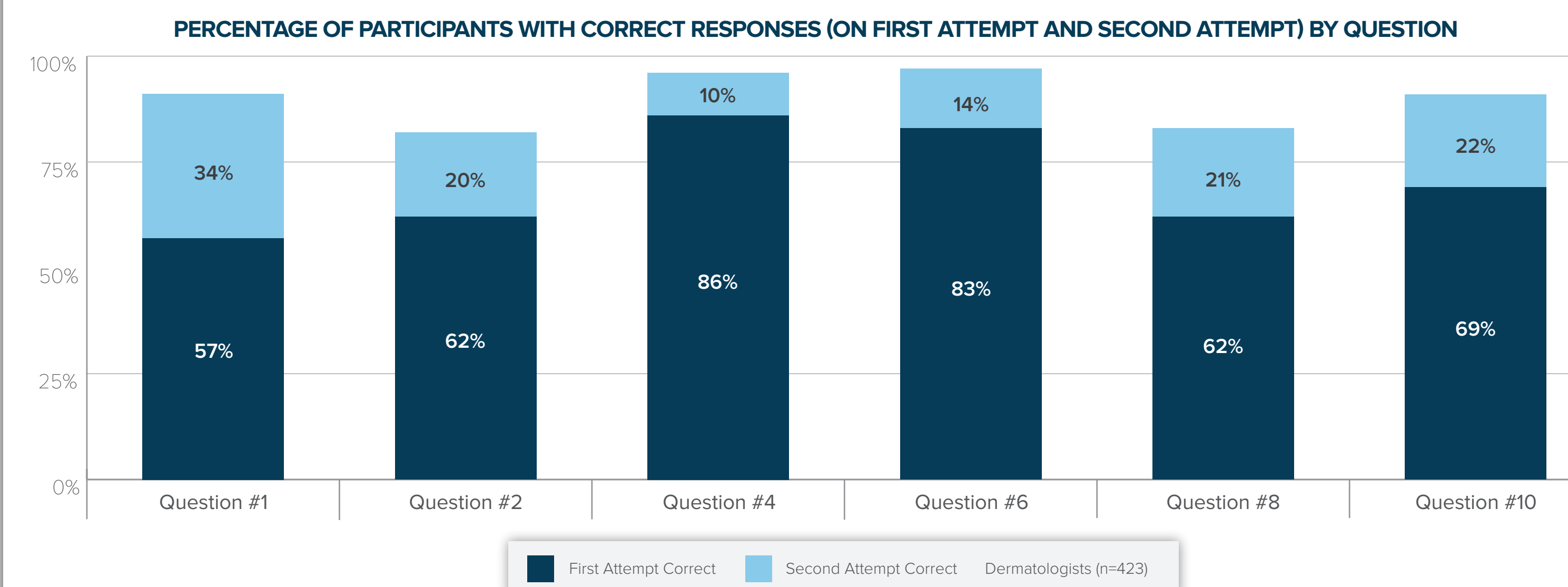
**FIGURE 2.** Clinical decision questions with correct answers.

- Q1:** Ron is a 47-year-old truck driver with a 20-year history of HS; he has received intermittent treatment by various family practitioners during that time for multiple groin, buttock and perianal nodules, abscesses, and fistulae with swelling and discharge. He is a smoker and struggles to continue working because of the pain experienced while driving. His care was most recently managed by his PCP. There are no dermatologists in his area, and he has driven quite a distance for a dermatology consultation because of the worsening of his condition in the past 12 months and the significant pain, which requires intermittent opioids prescribed by his PCP. He manages the drainage by wearing adult diapers but worries about the substantial odor. Ron has had several surgical procedures in the past but thinks they made the disease spread and feels very depressed about his condition. His mother also had HS, which was quite severe. Physical examination reveals inflamed perianal nodules, draining sinus tracts in the pubic area, inguinal folds, and a large abscess in the left buttock. He is taking atenolol 50 mg/d for hypertension and minocycline 100 mg PO BID, as currently prescribed by his PCP. How would you stage Ron's disease? (Correct answer: Hurley stage III)
- Q2:** You review Ron's medications – atenolol 50 mg/d, minocycline 100 mg PO BID, oxycodone 5 mg/acetaminophen 325 mg PO q8h – and relevant patient history: body mass index (BMI) 30.7 and hypertension. Patients with Hurley stage III disease are considered good candidates for systemic therapy beyond antibiotics. After prescribing oral clindamycin/rifampicin, you consider other options for Ron's treatment. Of the biologic therapies, what treatment is the best choice for Ron? (Correct answer: Adalimumab)
- Q4:** What laboratory value would you use to follow Ron's clinical course over time? (Correct answer: C-reactive protein)
- Q6:** Cheryl is a 29-year-old black woman with a 15-year history of HS. Her disease began with small nodules in the axilla that progressively spread to the area under her breasts and her groin. Cheryl is a single mother of two and works as a special education teacher. She is overweight and smokes cigarettes. Her disease seemed to improve during pregnancy, and she thinks she has premenstrual flares. Cheryl had been prescribed a short course of cephalexin, which she stopped taking because she didn't think it was working, and a multiple-month course of doxycycline, which made her nauseated. She uses 4% chlorhexidine gluconate intermittently to clean but finds that it stings. Her medications include metformin for type 2 diabetes, medroxyprogesterone acetate injection, and levothyroxine for hypothyroidism. She has glucose-6-phosphate dehydrogenase (G6PD) deficiency. She does not have a history of migraines. She visits the emergency department several times a year, which typically results in an incision and drainage of an inflamed nodule. Of the medications Cheryl is currently taking, which would you change to improve her disease condition? (Correct answer: Medroxyprogesterone acetate injection)
- Q8:** After Cheryl consults with her gynecologist, she is switched from medroxyprogesterone acetate injection to an oral contraceptive containing estrogen and drospirenone. About a month later, Cheryl called to report a flare in several areas and increased pain and discharge. Cheryl does not appear to have any fever or systemic illness, and the symptoms seem isolated to her usual type of HS flare. What is the best management option for this flare that will obviate a visit to the emergency department for Cheryl? (Correct answer: Prednisone)
- Q10:** Cheryl's disease is improving, and she did well on the course of prednisone, but she still experiences intermittent flares. Cheryl really does not want to go back on antibiotics and asks if there are any other therapies that could be added to her regimen. Which of the following would be the safest option as an additional therapy for Cheryl? (Correct answer: Spironolactone)

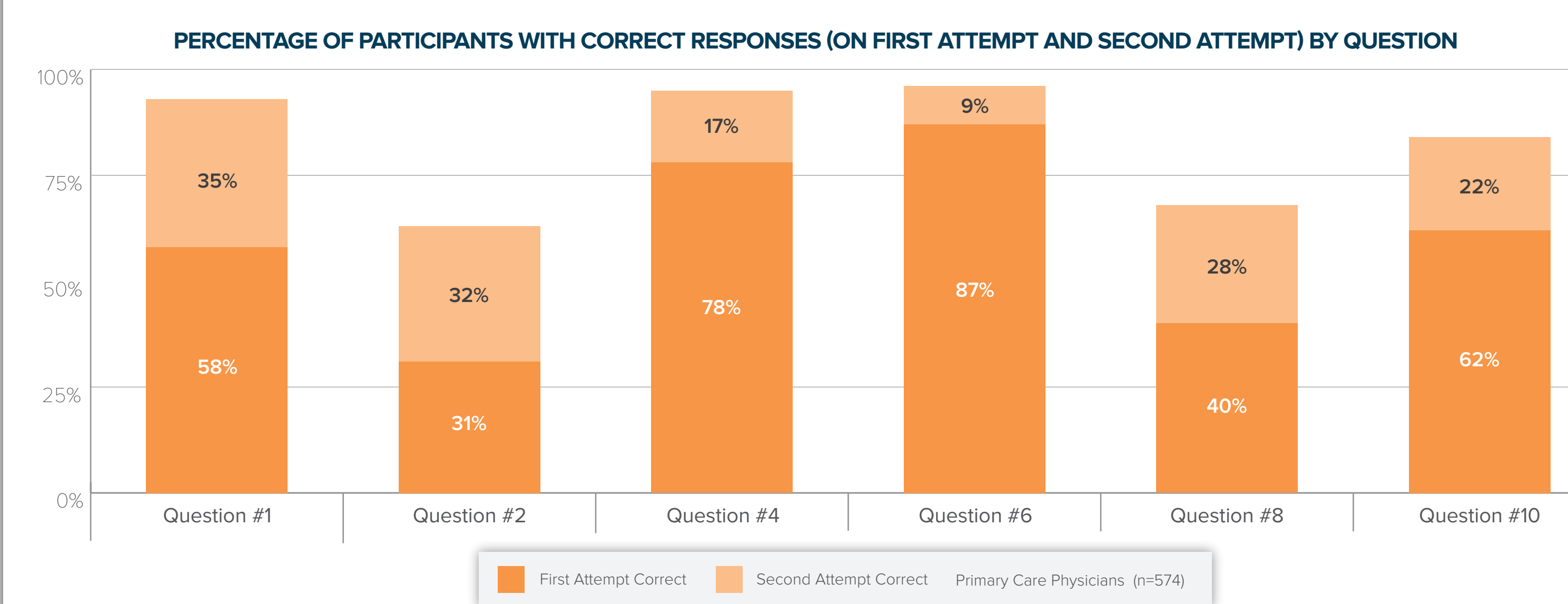
## RESULTS

- Between 57% and 86% of dermatologists answered 6 clinical decision questions correctly on first attempt, and improved by 10% to 43% after tailored feedback, (n=423; Cohen's d=0.5, medium effect size) (Figure 2; Figure 3)
  - Significant gains in competence/performance (*P* <.05) were observed for staging HS (34% improvement) and selecting biologic therapy for specific cases (20% improvement)
- Pre-assessment, 20% of dermatologists answered all 4 knowledge questions correctly, improving to 53% post-assessment (n=423; *P* <.05; Cramer's V=0.18, medium effect size) (Figure 5; Figure 6)
  - Specific improvements were observed in knowledge of pathogenesis (43% improvement), and understanding comorbidities associated with HS (22% improvement)
- Between 31% and 87% of PCPs answered 6 clinical decision questions correctly on first attempt, and improved by 9% to 35% after tailored feedback, (n=574; Cohen's d=0.56, medium effect size) (Figure 2; Figure 4)
  - Significant gains in competence/performance (*P* <.05) were observed on staging HS (35% improvement) and selecting biologic therapy for specific cases (32% improvement)
- Pre-assessment, 7% of PCPs answered all 4 knowledge questions correctly, improving to 34% post-assessment (n=574; *P* <.05; Cramer's V=0.21, medium effect size) (Figure 5; Figure 7)
  - Specific improvements were observed in knowledge of pathogenesis (95% improvement) and knowledge of utility of wound culture in HS (100% improvement)

**FIGURE 3.** Percentage of dermatologists (n=423) with correct responses (on first attempt and second attempt) on clinical decision questions.



**FIGURE 4.** Percentage of PCPs (n=574) with correct responses (on first attempt and second attempt) on clinical decision questions.

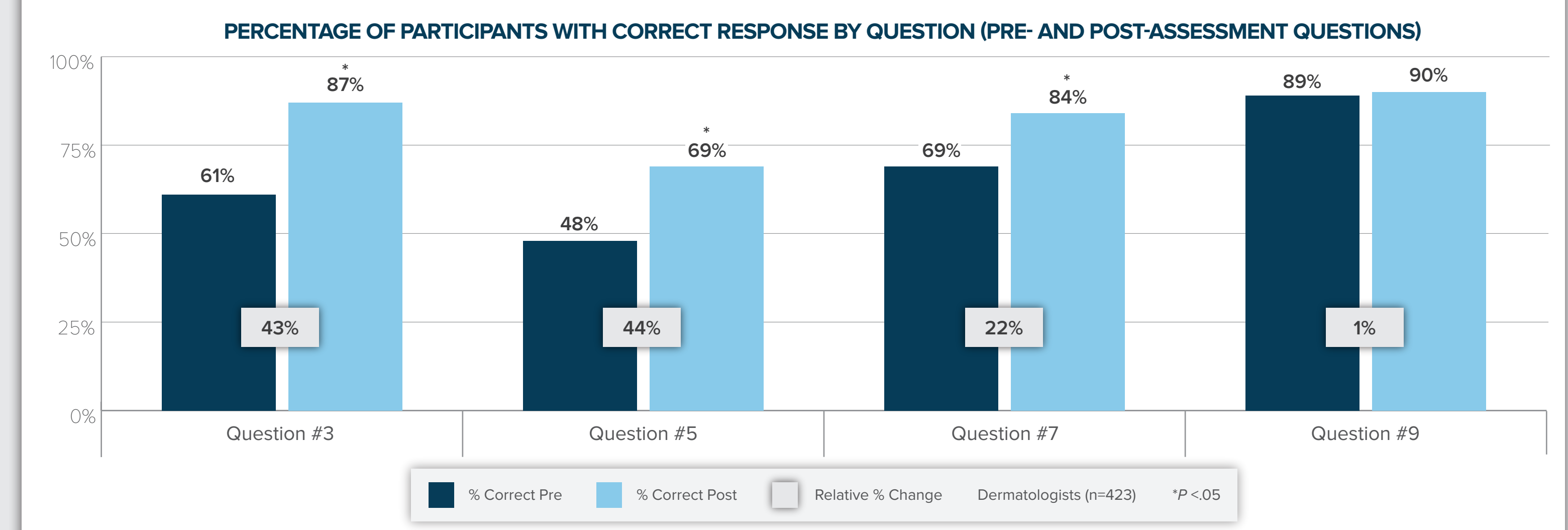


## KNOWLEDGE ASSESSMENT QUESTIONS

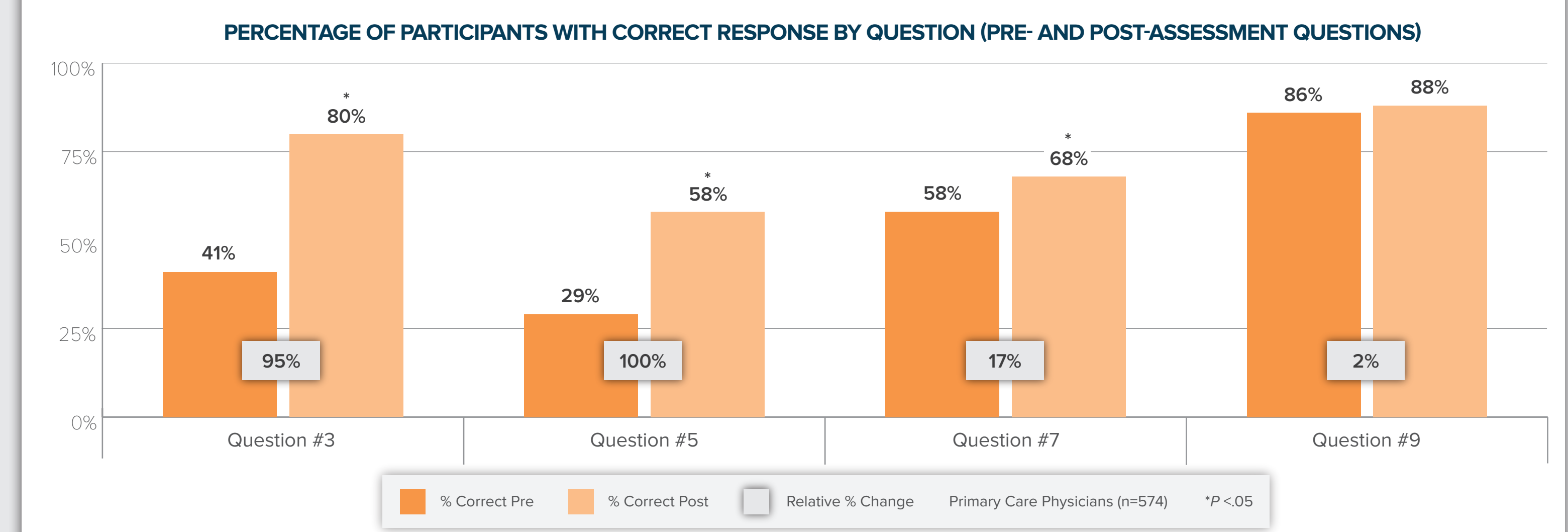
**FIGURE 5.** Knowledge assessment questions with correct answers.

- Q3:** What is the best current understanding of the primary pathogenesis of HS? (Correct answer: Follicular occlusion leading to inflammation)
- Q5:** Ron is a 47-year-old man with multiple groin, buttock, and perianal nodules, abscesses, and fistulae and a 20-year history of HS. Is a wound culture likely to be helpful in managing Ron? (Correct answer: No, lesions are often culture-positive, but *S aureus* does not have a substantial role)
- Q7:** Cheryl is a 29-year-old woman with HS since age 14. Her BMI is 28.9 and she is a cigarette smoker. Cheryl is taking metformin for type 2 diabetes, medroxyprogesterone acetate injection, and levothyroxine for hypothyroidism, and has G6PD deficiency. Which of Cheryl's comorbid conditions is associated with HS? (Correct answer: type 2 diabetes)
- Q9:** In what demographic population is HS more common than expected? (Correct answer: Black)

**FIGURE 6.** Knowledge assessment questions: percentage of dermatologists (n=423) with correct response by question (pre- and post-CME questions).



**FIGURE 7.** Knowledge assessment questions: percentage of PCPs (n=574) with correct response by question (pre- and post-CME questions).



## CONCLUSIONS

The use of technology-enhanced online educational interventions utilizing case-based scenarios, branching logic, and consequence-based feedback resulted in significant improvements in knowledge and clinical decision making of dermatologists and PCPs managing patients with HS. Based on the clinical relevance, these improvements may translate into clinical practice. In addition, the need for further education on several topics in the management of HS were identified: further instruction to guide clinicians on selecting an appropriate biologic therapy for HS, using prednisone for managing HS flares, and understanding the utility of wound culture in HS.

## Acknowledgments

The educational activity and outcomes measurement were funded through an independent educational grant from AbbVie, Inc.

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## References

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