



## **Final Curriculum Report**

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# **MAKING A DIFFERENCE & MEASURING IMPROVEMENT: Psoriasis in Primary Care**

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## ▀ ABSTRACT

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### Purpose

This CME curriculum was designed to improve primary care providers' ability to recognize the signs and symptoms of psoriasis, appropriately refer to a specialist, and to collaboratively advance patients along the correct treatment pathway in order to control disease activity.

### Scope

Psoriasis affects nearly 7.4 million individuals in the United States and has a significant negative impact on patient quality of life. While many patients with the disease are cared for by dermatologists, 22% of patients with psoriasis are solely treated in the primary care setting. However, primary care providers often fail to recognize psoriasis as a systemic inflammatory disease, resulting in significant under-treatment of the disease.

### Methods

This curriculum included three interactive, online enduring activities hosted on pri-med.com, available from 3/24/2016 – 4/15/2017 and each certified for one year. Impact of the curriculum was analyzed based on pre/post-activity assessment questions, as well as change in learner performance based on practice patterns from a subset of learners utilizing Amazing Charts EHR.

### Results

There were a total of 8,508 activity completions totaling 10,066 CME credit hours. 33% of learners completed all three activities. Learners demonstrated significant improvements in knowledge and competence in the management of psoriasis. Overall 79% of participants reported making changes to clinical care based on participation in these activities at six-week follow up. There was also an increase in the diagnosis rate of psoriasis among learners who utilized Amazing Charts EHR.

### Conclusions

The three-part curriculum resulted in significant improvement in knowledge, competence, and performance around diagnosis and treatment of psoriasis.

**Key Words:** Psoriasis, primary care, psoriatic disease, psoriatic arthritis

## ▀ PURPOSE (OBJECTIVES OF STUDY)

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This CME curriculum was designed to improve primary care providers' (PCP) ability to recognize the signs and symptoms of psoriatic disease, appropriately refer to a specialist, and to collaboratively advance patients along the correct treatment pathway in order to better control disease activity and improve overall outcomes.

## General Educational Objectives

- ▶ Improve PCPs' knowledge and competence in the recognition and diagnosis of psoriasis and psoriatic arthritis, including a strong working knowledge of the various forms/ stages of psoriasis, and the common comorbidities, so as to better affect a timely referral and treatment with a specialist
- ▶ Improve PCPs' clinical understanding of stage-appropriate pharmacological management of psoriasis and psoriatic arthritis so as to develop individualized treatment plans, which result in the greatest improvement in patient outcomes
- ▶ Assess the comparative risk-benefit profiles of available and emerging treatments for psoriasis, including topical, oral and biologic agents so as to better manage disease, while limiting unnecessary side effects and suboptimal outcomes
- ▶ Utilize clinician-patient communication strategies to clarify treatment expectations, emphasize the importance of adherence to therapy, and address patient concerns regarding the physical, psychological and emotional impact of psoriasis on QOL

## Specific Learning Objectives of Each Online Activity

### **VIRTUAL EXPERT ROUNDTABLE | Optimizing Diagnosis and Management of Psoriatic Disease in Primary Care**

- ▶ Apply effective therapeutic strategies to address the systemic nature of psoriasis and associated comorbidities and refer to a specialist as warranted
- ▶ Assess the comparative risk-benefit profiles of available and emerging treatments for psoriasis, including agents for difficult-to-treat patients
- ▶ Utilize clinician-patient communication strategies to clarify treatment expectations, emphasize the importance of adherence to therapy, and address patient concerns regarding the physical, psychological, and emotional impact of psoriasis on quality of life

### **PATIENT CASE STUDY | A 37-Year-Old Woman with Moderate-to-Severe Plaque Psoriasis**

- ▶ Recognize the physical signs and symptoms of psoriasis
- ▶ Choose appropriate pharmacologic therapies for psoriasis and assist the multidisciplinary healthcare team in monitoring patients in accordance with evolving consensus guidelines and recommended treatment algorithms
- ▶ Refer patients with psoriasis early and appropriately for advanced care, and engage in multidisciplinary collaboration with other healthcare professionals involved in the management of patients with psoriasis

### **EXPERT PERSPECTIVE | Frequently Asked Questions: Optimizing Diagnosis and Management of Psoriatic Disease in Primary Care**

- ▶ Apply effective therapeutic strategies to address the systemic nature of psoriasis and associated comorbidities, and refer to a specialist as warranted
- ▶ Assess the comparative risk-benefit profiles of available and emerging treatments for psoriasis, including agents for difficult-to-treat patients
- ▶ Utilize clinician-patient communication strategies to clarify treatment expectations, emphasize the importance of adherence to therapy, and address patient concerns regarding the physical, psychological, and emotional impacts of psoriasis on quality of life

## ▶ SCOPE

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Psoriasis, a condition with a significant negative impact on patient quality of life, affects nearly 7.4 million individuals in the United States; and a recent survey from the National Psoriasis Foundation showed that 22% of patients with psoriasis are being seen by a primary care providers instead of dermatologists. In addition to the direct physical effects,

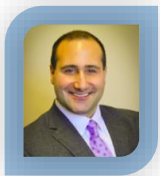
the disease is associated with a number of potentially serious comorbidities as well as debilitating psychological and emotional complications such as depression, anxiety, and embarrassment.<sup>1-5</sup> Physicians often fail to recognize psoriasis as a systemic inflammatory disease, resulting in significant under-treatment of the disease.<sup>6,7</sup> Specifically, moderate and severe psoriasis is often treated with topical monotherapy, and newer biologic and oral treatments are underused.<sup>7</sup> Moreover, as psoriasis presents in certain locations, including the scalp, nails, and palms, it is difficult-to-treat, challenging clinicians and frustrating patients<sup>8</sup>

## METHODS

### Educational Design

This curriculum was comprised of three online CME activities, available at [www.pri-med.com](http://www.pri-med.com) from 03/24/2016 to 04/15/2017. The CME activities were marketed in such a way as to encourage providers who completed one activity to sequentially continue on to complete the 3-module series.

The following key opinion leaders were used as faculty for the curriculum:



**Vasilios Chrisostomidis, DO**  
Assistant Professor, Department of  
Family Medicine and Community  
Health  
UMass Memorial Medical Group  
Shrewsbury, MA



**Sylvia Hsu, MD**  
Professor of Dermatology  
Baylor College of Medicine  
Chief of Dermatology  
Ben Taub General Hospital  
Clinical Service Chief of  
Dermatology  
The Methodist Hospital  
Houston, TX



**Anthony P. Fernandez, MD, PhD**  
Director of Medical Dermatology  
Cleveland Clinic  
Cleveland, OH

### VIRTUAL EXPERT ROUNDTABLE | Optimizing Diagnosis and Management of Psoriatic Disease in Primary Care

This dynamic 90-minute program featured the three expert faculty who provided a foundational overview of psoriasis, and discussed available and emerging agents that target the underlying pathology of psoriasis and can improve patients' quality of life/outcomes. This activity was live streamed, and the recording was immediately posted online following the live presentation. During the live stream, the faculty answered questions that were submitted by the audience in real time.

**Faculty:** Anthony P. Fernandez, MD, PhD, Vasilios Chrisostomidis, DO, Sylvia Hsu, MD

**Dates:** 3/24/2016 – 3/24/2017

**Credits:** 1.50 AMA PRA Category 1 Credits™, 1.50 AANP contact hours

### PATIENT CASE STUDY | A 37-Year-Old Woman with Moderate-to-Severe Plaque Psoriasis

This text-based case study reviewed when patients with psoriasis should be treated with topical therapy, when to refer patients to specialists for treatment with systemic agents, what prerequisite work-up is needed prior to the initiation of biologics/immunosuppression, and how to monitor patients with psoriasis on biologic therapy for potential safety and

efficacy issues. Learners were engaged through in-line multiple-choice questions, to assess their course of action throughout the case of a patient with psoriasis.

**Faculty:** Sylvia Hsu, MD

**Dates:** 3/24/2016 – 3/24/2017

**Credits:** 1 AMA PRA Category 1 Credit™, 1.10 AANP contact hours

### **EXPERT PERSPECTIVE | Frequently Asked Questions: Optimizing Diagnosis and Management of Psoriatic Disease in Primary Care**

In this text-based educational activity, Dr. Fernandez answered questions submitted by participants during the Virtual Expert Roundtable activity.

**Faculty:** Anthony P. Fernandez, MD, PhD

**Dates:** 4/15/2016 – 4/15/2017

**Credits:** 1 AMA PRA Category 1 Credit™, 1 AANP contact hour

## **PASI Screening Tool**

To help Amazing Charts providers screen for and assess the severity of psoriasis, a Psoriasis Area Severity Index (PASI) calculator was integrated into the Amazing Charts EHR. The PASI calculator was marketed to *all* Amazing Charts providers via e-mail.

## **Outcomes Assessment (Subjective Moore’s Level 5)**

Outcomes questions were aligned to initial content development to correlate with the learning objectives and educational content, as well as to assess learner competence, knowledge, and performance in practice. Outcomes data was collected prior to and immediately after each activity. Moreover retained learning and practice change was evaluated using a research instrument fielded via email among verified educational participants six weeks after completion of each online activity. The results of gathered participant data were analytically compared with pre-assessment data to measure changes in knowledge, competence and/or performance.

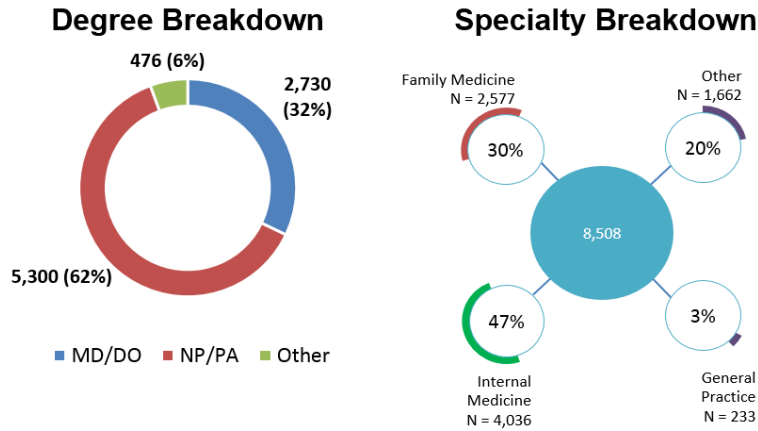
## **Outcomes Assessment (Objective Moore’s Level 5 – Real World Evidence)**

Additionally, actual effect of education on learner performance was measured in a subset of learners utilizing Amazing Charts EHR. Amazing Charts data-contributing providers who completed  $\geq 1$  activities in the curriculum were each matched to an individual provider who did not complete the education (“control providers”). Providers were matched on geographic region, specialty, number of patients encountered, and number of patients with psoriasis. The participating provider’s date of education was then assigned to their matched control provider. This allows for an observational comparison of performance metrics where the only measurable difference in provider characteristics between the two groups is the educational intervention. The following performance metrics were assessed:

- ▶ **Diagnosis Rate** (the percentage of patients encountered that were diagnosed with psoriasis) was measured for participating and control providers in the 6 month period both before and after the education date
- ▶ **Initiation Rate** (the percentage of total patients diagnosed with psoriasis that were initiated on a given therapy in the 6 month period after the education date) was measured for participating control providers

# RESULTS

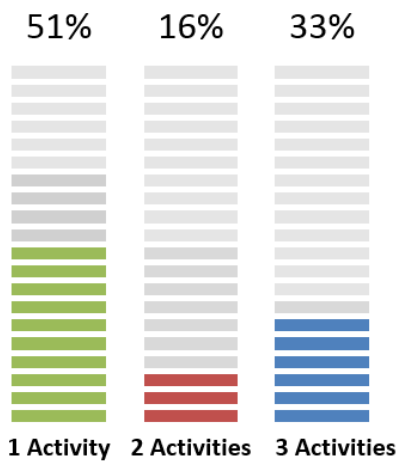
## Learner Demographics (All Activities)



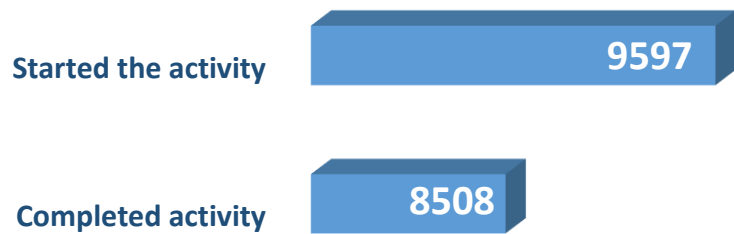
## Completion Rate (All Activities)

From 3/24/2016 to 4/15/2017, a total of 9,696 activities were initiated and a total of 8,508 activities were completed by learners across all three online activities, resulting in an 88% completion rate. With an original goal of 3,500 completions, the actual number of completions was 243% above the goal. Across the 8,508 completions, a total of 10,066 CME credit hours were awarded for all three online activities. Completion rates for individual activities are reported below.

### % of Learners Who Completed..

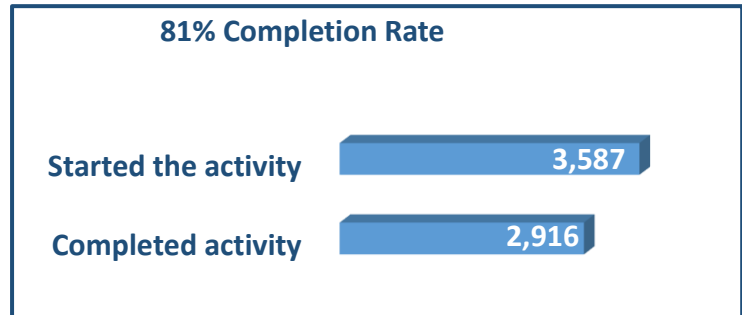


### 88% Completion Rate Across All Activities



## Virtual Expert Roundtable

A total of 3,587 learners initiated this activity and a total of 2,916 completed it. This resulted in an activity completion rate of 81.3% and a total of 4,371 credit hours awarded. The demographics of this activity closely mirrored the average pool of participants across all activities.



### Immediately upon completion of his activity:

- ▶ 95% of learners reported that the content provided achieved the learning objectives
- ▶ 85% of learners reported that the content provided was relevant to their practice
- ▶ 95% of learners reported that the faculty were knowledgeable and effective teachers
- ▶ 95% of learners reported that content was free of commercial bias
- ▶ 92% of learners believes that the activity length was appropriate
- ▶ 93% of learners believed that the activity format was appropriate
- ▶ 85% of learners reported plans to change their practice based on information learned in this activity

### Six-weeks after completion of this activity:

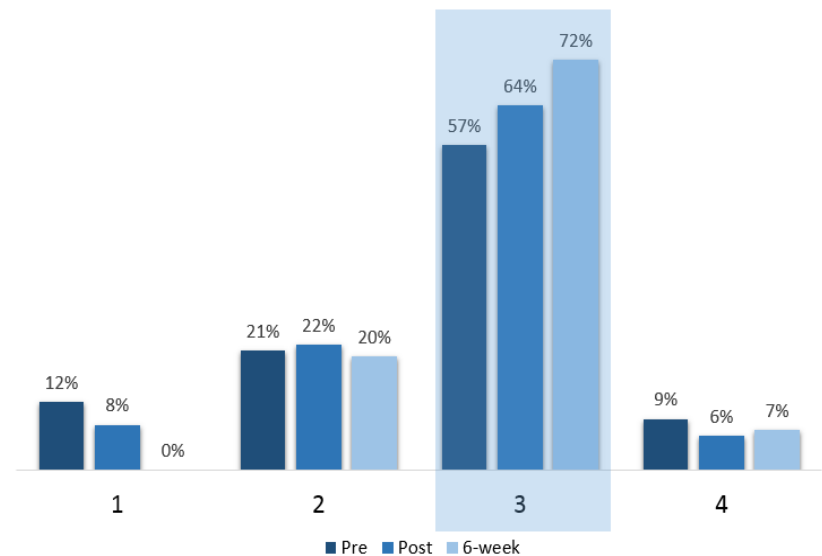
- ▶ 86% of learners reported making changes to clinical practice based on participation in this educational session

Pre- and post-activity outcomes questions including six-week follow-up questions showed improvement in the following areas:

**Knowledge:** Risk of cardiovascular disease in patients with severe psoriasis  
**Relative change (baseline → post-activity):** 12%,  $p < .0001$   
**Relative change (baseline → 6-week follow-up):** 26%

AR is a 51-year-old man with a history of long-standing severe psoriasis. He shares with you that his dermatologist recommends he be evaluated for cardiovascular disease, but he is confused, as he feels relatively healthy. You tell him that the risk of cardiovascular disease in patients with severe psoriasis is:

1. Less than the risk conferred by diabetes mellitus (DM)
2. More than the risk conferred by DM
3. **Similar to the risk conferred by DM\***
4. Similar to the risk in the general population



### Clinical Insights

Learners had a high baseline knowledge of the fact that psoriasis poses a similar cardiovascular risk as DM. The learners improved by 12% and 26% post-activity and during the 6-week follow-up survey. However, almost a quarter of the learners believed that psoriasis poses a greater cardiovascular risk than does DM during the three points of measurement.



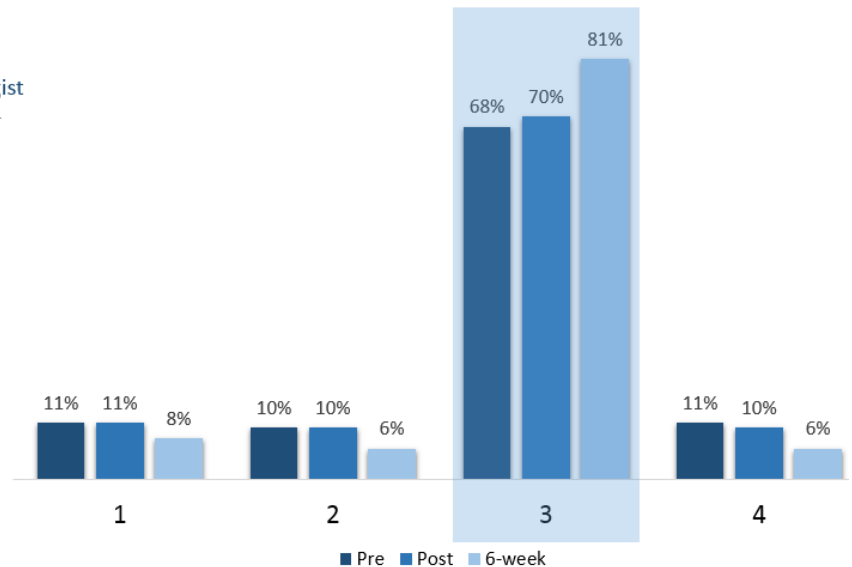
**Knowledge:** Proper vaccinations strategies for patients treated with biologic agents

**Relative change (baseline → post-activity):** 3%

**Relative change (baseline → 6-week follow-up):** 19%

BG is a 65-year-old male patient of yours whose dermatologist has had him on a biologic for the treatment of moderate-to-severe plaque psoriasis for many years. He comes in for his annual checkup and asks if he is behind on his vaccination schedule. Which of the following vaccines should not be administered to BG?

1. Influenza vaccine (intramuscular)
2. Pneumococcal vaccine
3. **Shingles vaccine\***
4. Tdap vaccine



#### Clinical Insights

Learners had a high baseline knowledge of the vaccination recommendations for patients. The learners improved their knowledge post-activity and during the 6-week follow-up. All of the other answer options decreased post-activity and during the 6-week follow-up. Both of these trends demonstrate the effectiveness of education on this specific topic.

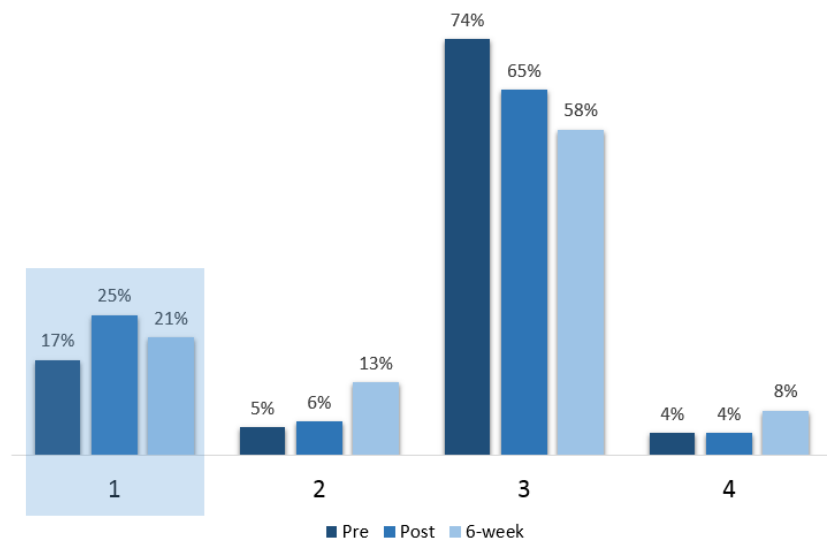
**Knowledge:** Identification of atopic dermatitis based on a written description of skin lesions

**Relative change (baseline → post-activity):** 47%,  $p < .0001$

**Relative change (baseline → 6-week follow-up):** 24%

JB is a 32-year-old woman. She presents to you with pruritic dry skin that has poorly defined erythematous patches and lichenified plaques with fine scale. Which of the following is the likely diagnosis?

1. **Atopic dermatitis\***
2. Inverse psoriasis
3. Plaque psoriasis
4. Tinea corporis



#### Clinical Insights

Participants showed poor ability to distinguish between atopic dermatitis from plaque psoriasis lesions when provided with a written description. In this case, only 17% of participants correctly identified atopic dermatitis at baseline. While there was a slight increase in correct answers post-activity and at six-week follow up (25% and 21% correct, respectively), the vast majority of participants selected an incorrect option. It is notable that the most common incorrect response, plaque psoriasis, decreased from 74% at baseline to 65% and 58% at post-test and six-week follow-up suggesting some improvement in learner's ability to distinguish plaque psoriasis from other clinical signs.

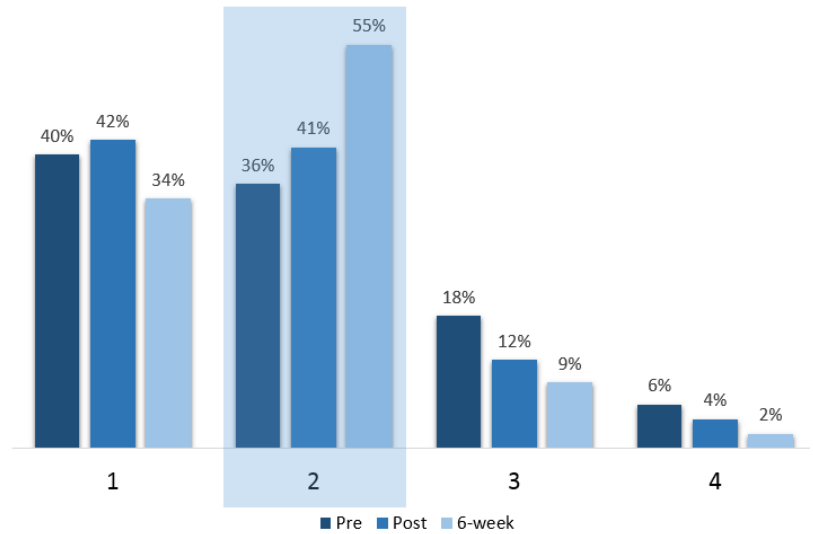
**Knowledge:** Association of teratogenicity and end-organ damage with conventional systemic agents

**Relative change (baseline → post-activity):** 14%,  $p < .0001$

**Relative change (baseline → 6-week follow-up):** 53%

Teratogenicity and end-organ damage are common side effects associated with which of the following psoriasis treatment strategies?

1. Biologics
2. **Conventional systemic agents\***
3. Corticosteroids
4. Phototherapy



#### Clinical Insights

While learners showed improvement in their knowledge of teratogenicity and end-organ damage as common side effects of conventional systemic agents, their understanding was limited both prior to and after education. Prior to education, more learners incorrectly believed that teratogenicity and end-organ damage were common side effects associated with biologics (40%) compared to conventional systemic agents (36%). There was an increase in correct answer after post-test and six-week follow up, and a corresponding decrease in those selecting biologics at six-week follow up (absolute decrease of 6%). Nevertheless, based on six-week survey results, 45% of participants are still unaware that teratogenicity and end-organ damage are common side effects associated with conventional systemic treatment.

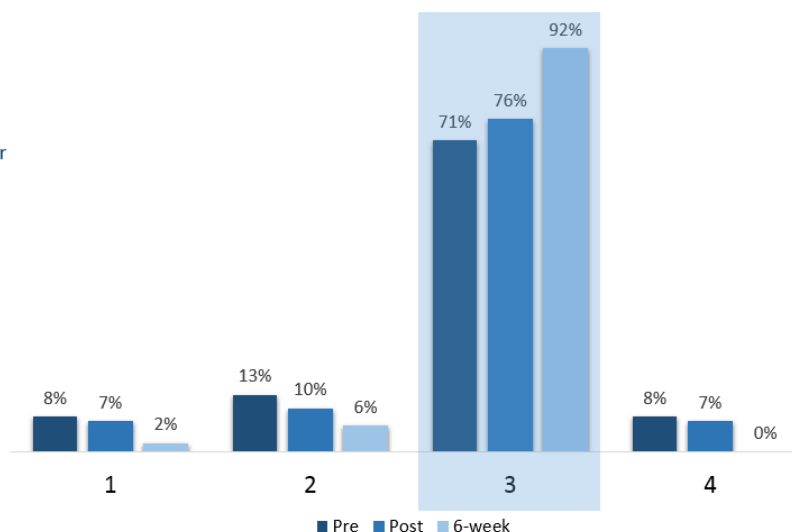
**Knowledge:** Indications (e.g. BSA >10%) for initiation of systemic or biologic therapy in a patient with psoriasis

**Relative change (baseline → post-activity):** 14%

**Relative change (baseline → 6-week follow-up):** 53%

Which of the following is a reason to initiate systemic or biologic therapy in a patient with psoriasis?

1. Active infection
2. Comorbid type 2 diabetes
3. **Psoriasis covers >10% body surface area (BSA)\***
4. Young age at diagnosis



#### Clinical Insights

Learners had a high baseline knowledge of the indication for initiation of systemic or biologic therapy in a patient with psoriasis. The learners improved their knowledge post-activity and during the 6-week follow-up. All of the other answer options decreased post-activity and during the 6-week follow-up. Both of these trends demonstrate the effectiveness of education on this specific topic.

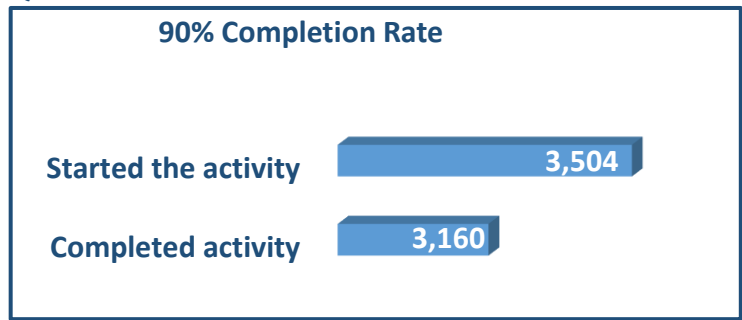
Number of learners pre-activity: 3,462

Number of learners pre-activity: 2,936

Number of learners at 6-weeks: 54

## Expert Perspective: Frequently Asked Questions

A total of 3,504 learners initiated this activity and a total of 3,160 completed it. This resulted in an activity completion rate of 90.2% and a total of 3,157 credit hours were awarded. The demographics of this activity closely mirrored the average pool of participants across all activities.



### Immediately upon completion of his activity:

- ▶ **93%** of learners reported that the content provided achieved the learning objectives
- ▶ **83%** of learners reported that the content provided was relevant to their practice
- ▶ **92%** of learners reported that the faculty were knowledgeable and effective teachers
- ▶ **94%** of learners reported that content was free of commercial bias
- ▶ **93%** of learners believes that the activity length was appropriate
- ▶ **92%** of learners believed that the activity format was appropriate
- ▶ **81%** of learners reported plans to change their practice based on information learned in this activity

### Six-weeks after completion of this activity:

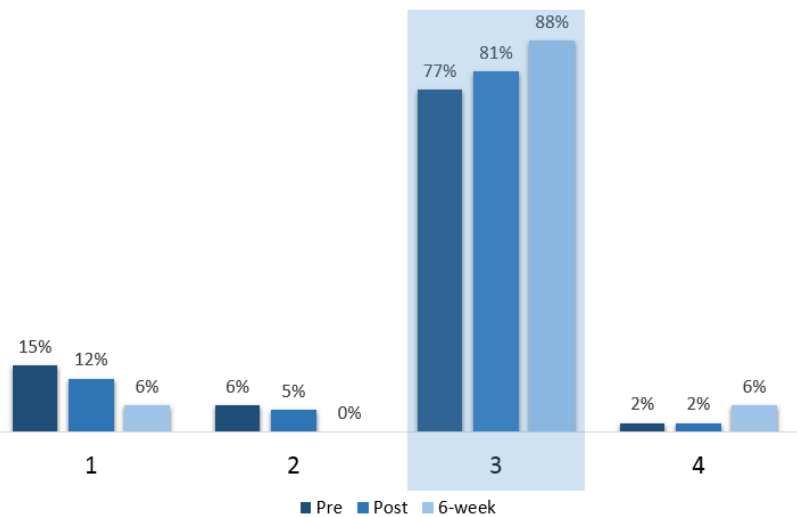
- ▶ **63%** of learners reported making changes to clinical practice based on participation in this educational session

### Pre- and post-activity outcomes questions including six-week follow-up questions showed improvement in the following areas:

**Knowledge:** Newer drugs, such as biologics, have significantly improved the percentage of patients who are able to achieve clearance  
**Relative change (baseline → post-activity):** 5%,  $p < .0001$   
**Relative change (baseline → 6-week follow-up):** 14%

CH is a 32-year-old man you have just diagnosed with moderate-to-severe psoriasis (10% BSA involvement). The disease has had a profoundly negative effect on his quality of life. In fact, he does not date because he is so self-conscious about his visible lesions. He asks you if treatment can completely clear the lesions. Which of the following is the most appropriate response?

1. Although some systemic treatments might clear his lesions, the benefits of these treatments do not outweigh the risks, especially because he does not have severe disease (?10% BSA).
2. Because psoriasis affects only the skin, super-potent topical corticosteroids should clear his disease.
3. **Newer drugs, such as biologics, have significantly improved the percentage of patients who are able to achieve clearance and are appropriate to consider in his case.\***
4. Psoriasis is a curable disease.



#### Clinical Insights

Learners had a high baseline knowledge of the fact that the biologic agents are very effective in achieving disease clearance compared to traditional treatments. The learners improved their knowledge post-activity and during the 6-week follow-up.

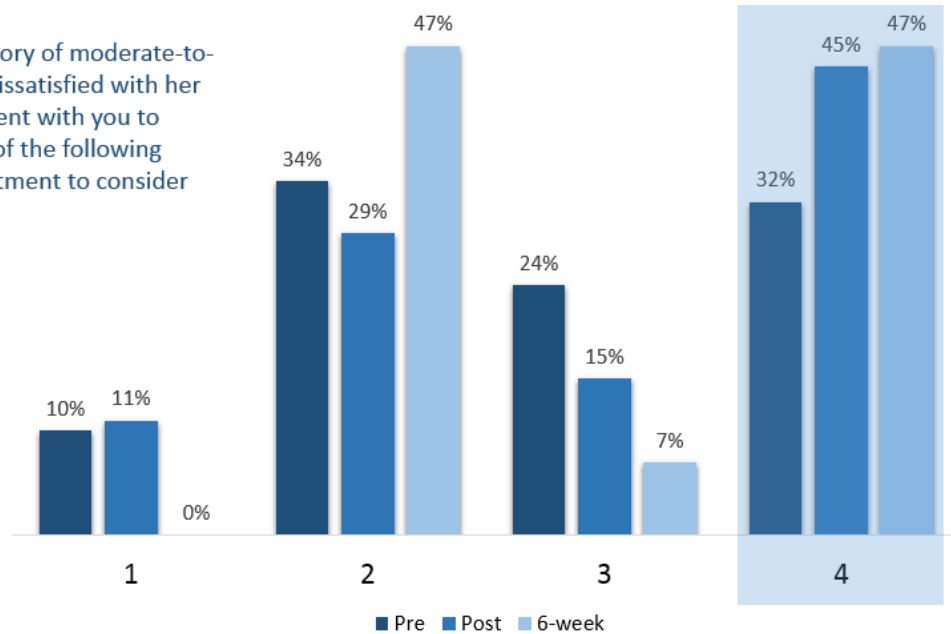
**Competence:** Use of ustekinumab in a 41-year-old woman with a 2-year history of moderate-to-severe generalized psoriasis who has been dissatisfied with past treatments.

**Relative change (baseline → post-activity):** 41%,  $p < .0001$

**Relative change (baseline → 6-week follow-up):** 47%

KT is a 41-year-old woman with a 2-year history of moderate-to-severe generalized psoriasis. She has been dissatisfied with her past treatments and has made an appointment with you to explore further therapeutic options. Which of the following options would be the most appropriate treatment to consider for KT?

1. Anthralin
2. Brodalumab
3. Calcipotriene
4. **Ustekinumab\***



**Clinical Insights**

Learners had a low baseline competence in choosing the correct agent in a patient with a 2-year history of moderate-to-severe psoriasis. However, they improved their knowledge post-activity and during the 6-week follow-up. The response rates went down for answer options 1 and 3 (anthralin and calcipotriene, respectively). The second most popular answer option was brodalumab which yielded a decrease from baseline during the post-activity assessment; however, the percentage of learners choosing brodalumab increased during the 6-week survey. A possible reason for this confusion among learners is the fact that at the time of the curriculum, brodalumab was not approved yet for moderate-to-severe psoriasis.

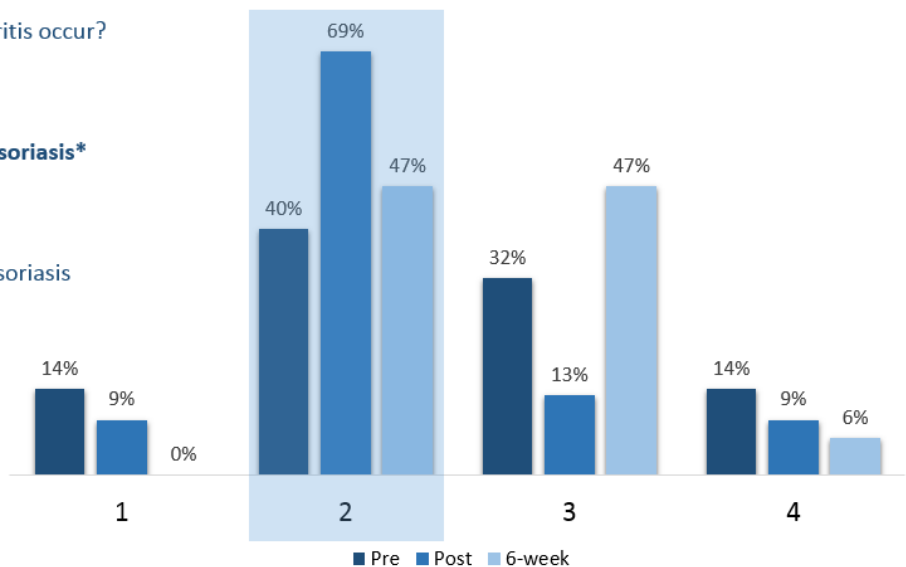
**Knowledge:** Average time (10-20 years) it takes for the onset of psoriatic arthritis after the onset of cutaneous psoriasis

**Relative change (baseline → post-activity):** 73%,  $p < .0001$

**Relative change (baseline → 6-week follow-up):** 18%

On average, when does the onset of psoriatic arthritis occur?

1. 1 year after the onset of cutaneous psoriasis
2. **10 to 20 years after the onset of cutaneous psoriasis\***
3. 5 years after the onset of cutaneous psoriasis
4. At the same time as the onset of cutaneous psoriasis



### Clinical Insights

Learners had a low baseline knowledge of temporal relationship between the onset of psoriasis and psoriatic arthritis. However, they improved their knowledge post-activity and during the 6-week follow-up. During the 6-week survey, there remained confusion with almost half of learners believing that the onset of psoriatic arthritis is about 5 years after the onset of the cutaneous disease, instead of 10-20 years. Future education should continue to stress this topic.

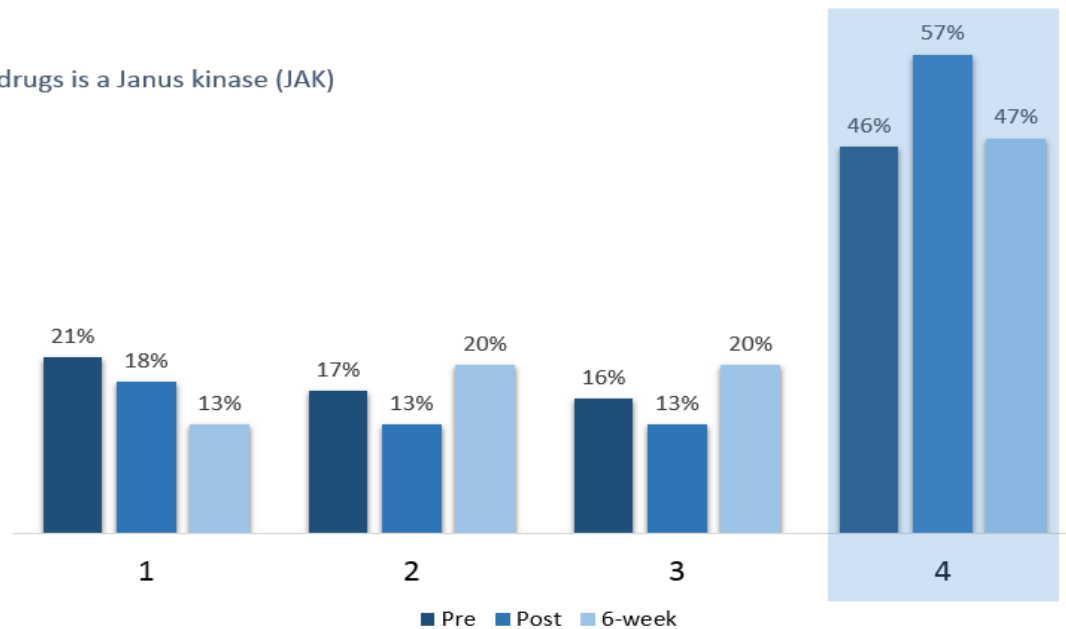
**Knowledge:** Identification of tofacitinib as a janus kinase inhibitor among a list of biologic agents

**Relative change (baseline → post-activity):** 24%,  $p < .0001$

**Relative change (baseline → 6-week follow-up):** 2%

Which one of the following drugs is a Janus kinase (JAK) inhibitor?

1. Brodalumab
2. Guselkumab
3. Tildrakizumab
4. **Tofacitinib\***



### Clinical Insights

Learners had a low baseline ability to name a Janus kinase inhibitor. However, they improved their knowledge post-activity and dropped back to baseline during the 6-week follow-up. At all three measurement points there remained confusion with almost equal distribution for answers 1 to 3. Future education should continue to clearly highlight the mechanism of action of the currently available biologic agents.

**Number of users pre-activity:** 3,398

**Number of users pre-activity:** 3,182

**Number of users at 6-weeks:** 17

## Patient Case Study

A total of 2,605 learners initiated this activity and a total of 2,432 completed it. This resulted in an activity completion rate of 93.4% and a total of 2,538 credit hours were awarded. The demographics of this activity loosely mirrored the average pool of participants across all activities.

93% Completion Rate

Started the activity 2,605

Completed activity 2,432

### Immediately upon completion of his activity:

- ▶ 94% of learners reported that the content provided achieved the learning objectives
- ▶ 87% of learners reported that the content provided was relevant to their practice
- ▶ 93% of learners reported that the faculty were knowledgeable and effective teachers
- ▶ 95% of learners reported that content was free of commercial bias
- ▶ 94% of learners believes that the activity length was appropriate
- ▶ 94% of learners believed that the activity format was appropriate

- ▶ **82%** of learners reported plans to change their practice based on information learned in this activity

**Six-weeks after completion of this activity:**

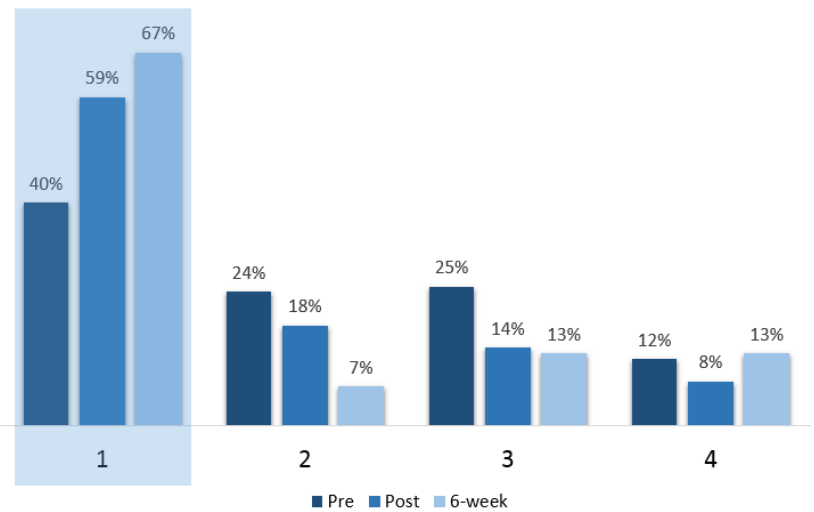
- ▶ **87%** of learners reported making changes to clinical practice based on participation in this educational session

**Pre- and post-activity outcomes questions including six-week follow-up questions showed improvement in the following areas:**

**Knowledge:** Acitretin is contraindicated during pregnancy  
**Relative change (baseline → post-activity):** 48%,  $p < .0001$   
**Relative change (baseline → 6-week follow-up):** 68%

DL is a 32-year-old woman who will be starting systemic medication for psoriasis. She informs you she wants to have another child. Which one of the following medications would be inappropriate for use during pregnancy?

1. Acitretin\*
2. Adalimumab
3. Etanercept
4. Ustekinumab



**Clinical Insights**

The learners had a low baseline knowledge of which treatments for psoriasis are contraindicated in pregnancy. However, they improved their knowledge post-activity and during the 6-week follow-up. Although the participants learned that biologics, including TNF-α inhibitors IL-12/IL-23, do not pose a risk during pregnancy, there was sizeable portion of the cohort that remained confused. Future education should continue to clearly highlight the contraindications of the currently available biologic agents.

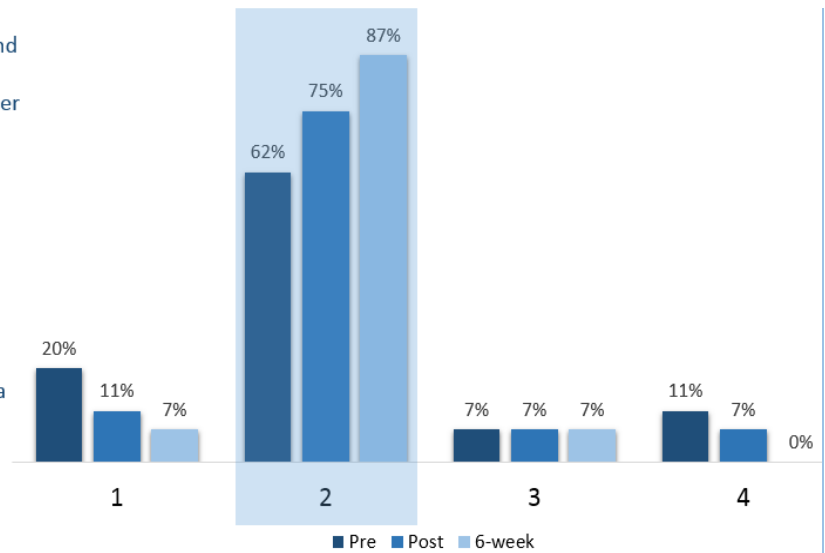
**Knowledge:** Efficacy of biologics over time

**Relative change (baseline → post-activity):** 21%,  $p < .0001$

**Relative change (baseline → 6-week follow-up):** 40%

KB is a new patient of yours. She tells you she has psoriasis and has been taking a biologic for 2 years. She has had relatively clear skin since starting it. However, she notes that recently her psoriasis seems to be flaring. What do you tell her?

1. Ask her to be honest about her adherence
2. **Biologics may lose efficacy over time\***
3. Educate her that biologics are not appropriate for the treatment of skin diseases like psoriasis
4. Recommend that she discontinue the biologic and start a topical steroid



**Clinical Insights**

Learners had a high baseline knowledge about the fact that biologics may lose efficacy over time. They continued to improve post-activity and during the 6-week follow-up.

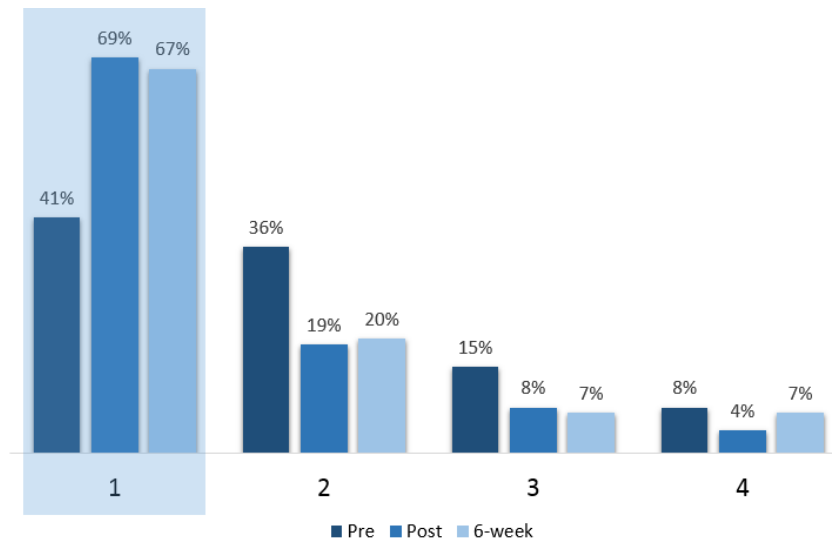
**Competence:** Approximation of body surface area affected in a patient with thick, scaly, well-demarcated plaque on his leg the size of the patient’s hand

**Relative change (baseline → post-activity):** 73%,  $p < .0001$

**Relative change (baseline → 6-week follow-up):** 63%

KS is a 51-year-old man who comes to you complaining of a thick, scaly, well-demarcated plaque on his leg. You suspect psoriasis. Looking at his leg, you estimate that the plaque is approximately the size of the patient’s hand. Using this estimate, what percentage of his body surface area (BSA) does this plaque cover?

1. **1%\***
2. 3%
3. 6%
4. 9%



**Clinical Insights**

Learners had a low baseline competence in approximating body surface affected by psoriasis. However, they improved post-activity and during the 6-week follow-up. Although the proportion of learners choosing the incorrect answers dropped during the post-activity assessment, they remained at the same levels during the 6-week survey. Future education should continue to cover the accurate approach to calculating affected body surface area in patients with psoriasis.

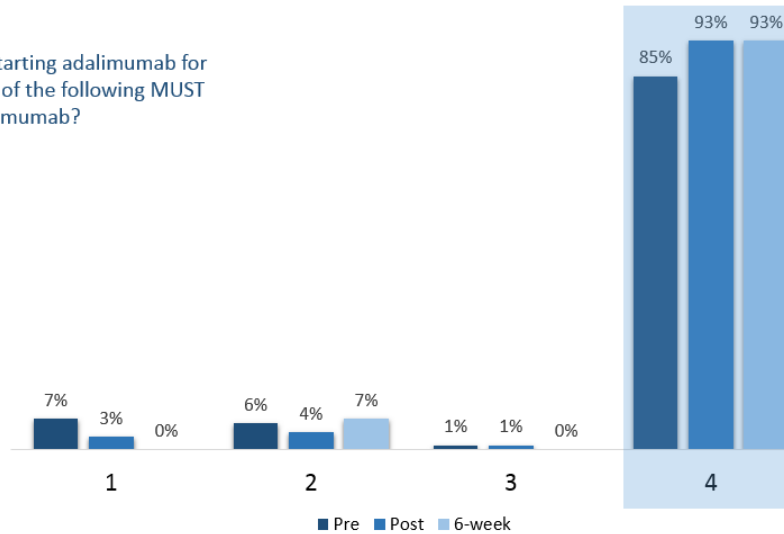
**Knowledge:** Screening for tuberculosis in patients who are to start treatment with adalimumab

**Relative change (baseline → post-activity):** 9%,  $p < .0001$

**Relative change (baseline → 6-week follow-up):** 9%

MP is a 45-year-old woman who will be starting adalimumab for the treatment of plaque psoriasis. Which of the following **MUST** she be screened for prior to starting adalimumab?

1. Epstein-Barr virus (EBV)
2. Human papillomavirus (HPV)
3. Malaria
4. Tuberculosis (TB)\*



**Clinical Insights**

Learners had a very high baseline knowledge of the vaccination requirements for patients to undergo therapy with biologic therapy. This knowledge improved post-activity and during the 6-week follow-up.

Number of users pre-activity: 2,543

Number of users post-activity: 2,449

Number of users at 6-weeks: 15

## Real World Evidence Outcomes

Of all learners who participated in  $\geq 1$  activities, 18 providers used Amazing Charts EHR and contributed their data to the central data warehouse. These providers encountered 8,507 total patients in the 6 month period before education and 8,047 total patients in the 6 month period after education.

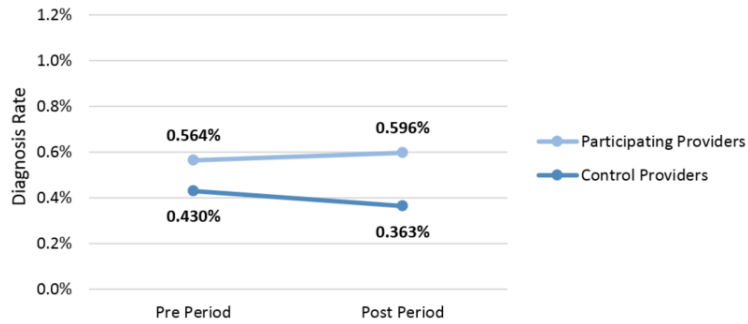
**Diagnosis Rate**

Compared to the pre-education period, participating providers increased their diagnosis rates of psoriasis by 5.7% after partaking in the education, as opposed to a decline of 15.7% from baseline in the control group.

Provider Type	Providers	Pre Period			Post Period			Pre to Post
		Patients Encountered	Patients Diagnosed	New Diagnosis Rate	Patients Encountered	Patients Diagnosed	New Diagnosis Rate	Diagnosis Rate Relative Change
Participating Providers	18	8,507	48	0.564%	8,047	48	0.596%	5.716%
Control Providers	18	8,597	37	0.430%	7,445	27	0.363%	-15.736%



**Psoriasis Diagnosis Rate (%)**



**Treatment Initiation**

An analysis of initiation of all classes of drugs for psoriasis post-education revealed that there was minimal uptake in treatment initiation with the biologic agents among the participating primary care providers. The greatest initiation rates post-education was observed among topical corticosteroids.

**IL-17A inhibitors**

Provider Type	Providers	Patients with Psoriasis	Therapy Not Present Pre-Education	Therapy Initiated Post Education	% Initiated
Participating Providers	16	339	338	-	0.00%
Control Providers	16	334	334	-	0.00%

**IL-12 & IL-23 inhibitors**

Provider Type	Providers	Patients with Psoriasis	Therapy Not Present Pre-Education	Therapy Initiated Post Education	% Initiated
Participating Providers	16	339	338	1	0.30%
Control Providers	16	334	333	1	0.30%

**TNF-alpha inhibitors**

Provider Type	Providers	Patients with Psoriasis	Therapy Not Present Pre-Education	Therapy Initiated Post Education	% Initiated
Participating Providers	16	339	332	2	0.60%
Control Providers	16	334	331	1	0.30%

**PDE-4 inhibitors**

Provider Type	Providers	Patients with Psoriasis	Therapy Not Present Pre-Education	Therapy Initiated Post Education	% Initiated
Participating Providers	16	339	337	1	0.30%
Control Providers	16	334	332	1	0.30%

**Topical Corticosteroids**

Provider Type	Providers	Patients with Psoriasis	Therapy Not Present Pre-Education	Therapy Initiated Post Education	% Initiated
Participating Providers	16	339	325	13	4.00%
Control Providers	16	334	316	11	3.48%

**Coal Tar**

Provider Type	Providers	Patients with Psoriasis	Therapy Not Present Pre-Education	Therapy Initiated Post Education	% Initiated
Participating Providers	16	339	339	1	0.29%
Control Providers	16	334	334	-	0.00%

**Anthralin**

Provider Type	Providers	Patients with Psoriasis	Therapy Not Present Pre-Education	Therapy Initiated Post Education	% Initiated
Participating Providers	16	339	339	-	0.00%
Control Providers	16	334	334	-	0.00%

**Vitamin D analog**

Provider Type	Providers	Patients with Psoriasis	Therapy Not Present Pre-Education	Therapy Initiated Post Education	% Initiated
Participating Providers	16	339	336	-	0.00%
Control Providers	16	334	331	1	0.30%

**Topical Retinoids**

Provider Type	Providers	Patients with Psoriasis	Therapy Not Present Pre-Education	Therapy Initiated Post Education	% Initiated
Participating Providers	16	339	339	-	0.00%
Control Providers	16	334	333	-	0.00%

**Antimetabolites**

Provider Type	Providers	Patients with Psoriasis	Therapy Not Present Pre-Education	Therapy Initiated Post Education	% Initiated
Participating Providers	16	339	337	1	0.30%
Control Providers	16	334	328	1	0.30%

**Immunomodulators**

Provider Type	Providers	Patients with Psoriasis	Therapy Not Present Pre-Education	Therapy Initiated Post Education	% Initiated
Participating Providers	16	339	339	-	0.00%
Control Providers	16	334	334	-	0.00%

## DISCUSSION

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Overall, learners showed significant improvement in knowledge and competence based on participation in this three-part curriculum. The high completion rates for individual activities coupled with high completion rates of  $\geq 2$  activities resulted in consistent improvement in knowledge and competence post-activity and during the six-week follow-up surveys. Furthermore, across all three activities there were notable improvements lasting through six-week follow-up, which is rarely seen due to recency effects of education. Most likely, this improvement at six weeks is evidence of the significant impact a curriculum (versus a single activity) has on knowledge retention. Although participants weren't required to complete all three activities, 33% did. Given the overlap of content between activities, if more than one activity was completed within a six-week period, then it is likely that six-week follow-up responses were impacted by learning from an additional activity. However, it is notable that there was a substantial decrease in the number of learners responding to the six-week questionnaire versus those answering the post-test questions since completing the six-week follow-up survey was not required to receive CME credit.

Overall, learners demonstrated increased understanding of the nature of psoriasis including temporal relationship with psoriatic arthritis and the high prevalence of comorbidities, especially cardiovascular disease. Moreover, they improved their knowledge and competence around the diagnosis of psoriasis and atopic dermatitis, as well as around traditional and novel treatments. Significant improvements were seen around approximation of body surface area, appropriate screening for tuberculosis and vaccination strategies prior to initiation of biologic agents, as well as the overall knowledge of biologic agents including efficacy and safety. Furthermore, a significant proportion of learners (79%) reported making changes to clinical care based on participation in this curriculum six-weeks after education.

To measure whether participation in the curriculum resulted in practice change, an analysis of diagnosis and treatment initiation rates was carried out. Among the Amazing Charts providers who completed at least one of the curriculum activities, there was a slight increase in the rate of newly diagnosed patients with psoriasis post-education (as opposed to the control group). This observation lends credit to the effectiveness of the educational content in improving providers' ability to accurately identify psoriatic lesions. In regard to initiation of treatment, there was a minimal initiation of all agents including the biologics. Of all treatments, the majority of participating providers felt comfortable enough to use topical corticosteroids, probably in mild cases. This observation is not surprising since primary care providers have the most experience with topical corticosteroids for dermatologic diseases and minimal experience with the biologic agents. Primary care providers are more likely to initiate topical therapy in early stages of psoriasis and refer to a dermatologist when the disease progresses, at which point, treatment with biologics is indicated and is most likely initiated by the dermatologist. In order to increase the comfort level with initiating biologic therapy for psoriasis among primary care providers it is imperative to continue to educate this group of clinicians on the appropriate use of these agents.

### Areas of Future Education

In addition to the aforementioned topics, future education should continue to stress the differential diagnosis of psoriasis as well as the need to screen for psoriatic arthritis and other comorbidities (i.e. cardiovascular disease). Moreover, primary care providers would greatly benefit from continued education on the traditional and biologic treatments for psoriasis with a focus on side effect profiles as well as overall efficacy and indications for the drugs.

## APPENDIX A - CUMULATIVE FEEDBACK SUMMARY

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### ***Please comment on specific changes in practice based on what you learned***

- ▶ An advocate for new treatment modality for psoriasis treatment
- ▶ Assessing patients according celerity of disease
- ▶ At least annual screening for signs and symptoms of psoriatic arthritis in patients with psoriasis. More intense patient education about their illness.
- ▶ Be aware of increased CV risk in patients with psoriasis
- ▶ Consider initiating treatment rather than waiting on approval for referral to dermatologist or rheumatologist
- ▶ Earlier Dermatology consultation for consideration of biologics
- ▶ Earlier use of biologic drugs, less use of tar preparations. No use of systemic steroids.
- ▶ Limit the use of systemic steroids whenever possible and screen for psoriatic arthritis more often

### ***Please comment on appropriateness of faculty, content, relevance, format, or bias***

- ▶ Both specialists seemed very knowledgeable, with relevant and up-to-date presentation materials
- ▶ Excellent presentations and participation from all faculty. Discussion had appropriate level of detail to be highly useful, not overwhelming. Appreciated longer than usual time for taking questions from audience.
- ▶ Free from bias, appropriate content and format relevant to primary care
- ▶ Right to the point meaning practical, didactic. Good for practice enhancement
- ▶ These were experts. Like how communication between specialist & PCP was addressed.

### ***Please comment if you have experienced barriers to changing your practice***

- ▶ As a family NP, I am limited in what can be prescribed for psoriasis patients. Therefore, my patients with psoriasis are a lot of times referred to dermatology.
- ▶ Availability of Dermatologists
- ▶ Cost of treatment and compliance
- ▶ Lack of rheumatologist in our area
- ▶ Some medications may not be covered under their health insurance
- ▶ I will be difficult for my patients to be referred to a dermatologist as I work for a free clinic and my patient have limited resources

## APPENDIX B - REFERENCES

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