



## Optimizing Care for Patients With Moderate to Severe Psoriasis

### Learning Objectives

After completing this activity, participants should be better able to:

- Compare the efficacy and safety profiles of systemic biologic and nonbiologic therapies for psoriasis
- Educate patients about the benefits and side effects of systemic therapies for psoriasis to improve treatment adherence
- Integrate recommendations from national guidelines on comorbidity screening and treatment monitoring into long-term management plans for patients with psoriasis

### Introduction

Psoriasis is a chronic, noncontagious, inflammatory skin disease that affects approximately 7.5 million Americans, or 2% to 3% of the general population. It can develop at any age, but psoriasis most often develops between the ages of 15 and 25. Psoriasis rarely appears in infants, and occurs in only 10% to 15% of patients before age 10. Unlike other inflammatory diseases, psoriasis affects men and women in equal proportions.<sup>1</sup>

There is no cure for psoriasis and, despite the availability of therapies for improved symptom control, most patients with moderate to severe psoriasis are not receiving treatment based on recommended guidelines. A survey from the National Psoriasis Foundation (NPF) found that nearly 40% of all patients with psoriasis were not receiving any form of treatment.<sup>2</sup> Among those with severe disease, 39% were not in treatment, and 35% were treated with topical therapy alone.<sup>2</sup> This widespread undertreatment of psoriasis reflects, in part, that many patients do not seek medical attention or do not accurately portray the severity of their condition. Clinicians must understand the true burden of psoriasis in their patients—including the degree to which it may interfere with physical and mental health as well as overall quality of life.

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# Optimizing Care for Patients With Moderate to Severe Psoriasis

This workbook reviews the rationale for biologic and nonbiologic therapies for psoriasis, the role of patient education in improving treatment adherence, and evidence-based guideline recommendations for monitoring and long-term treatment. Strategies for optimal patient management and education in the context of clinical care also are suggested.



**Figure 1. Plaque psoriasis on the arm.<sup>3</sup>**

## Psoriasis: A Chronic Inflammatory Disorder

The pathophysiology of psoriasis is characterized by localized and systemic inflammation. Within the immune system, signs of increased inflammatory activity include increased antigen presentation, defects in T regulatory cells, upregulation of T helper cells (Th1 and Th17), and cytokine activation. This activity is associated with increased markers of inflammation, including C-reactive protein (CRP).

Plaque psoriasis appears as patches of raised, scaly, and/or cracked skin lesions covered by a flaky buildup of dead skin cells (Figure 1).<sup>3</sup> These signs are the clinical manifestations of 2 major pathologic mechanisms: (1) epidermal hyperproliferation, a phenomenon of rapid skin cell growth that is associated with elevated uric acid levels and oxidative stress; (2) angiogenesis, resulting in the appearance of new capillaries very close to the skin surface under a psoriasis lesion. Angiogenesis can be detected clinically by Auspitz's sign, which is the development of punctate bleeding when psoriasis scales are removed and capillaries are exposed by gentle scraping, such as with a tongue depressor. Angiogenesis is associated with elevated levels of circulating vascular endothelial growth factor (VEGF).

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## Severity of Psoriasis

Psoriasis typically is described as mild, moderate, or severe, as determined by the percentage of body surface area (BSA) covered by psoriasis lesions:

- Mild: 1%-2%
- Moderate: 3%-10%
- Severe: >10%

Severity can be estimated by taking the palm of the hand and placing it on the skin; 1 palm print approximates about 1% of BSA. Although the severity scale is a convenient scoring system, it does not capture the true burden of

psoriasis for many patients. Psoriasis is associated with a broad range of medical and psychosocial comorbidities that erode quality of life and hasten all-cause mortality. Patients with severe psoriasis die 3.5 to 4.4 years earlier than individuals without psoriasis.<sup>4</sup> Thus, these comorbidities should be considered when assessing the impact of psoriasis on patients' well-being.

## Psoriasis Comorbidities

### Autoimmune Diseases

Patients with psoriasis have an increased risk of other autoimmune diseases, possibly through common genetic and pathologic factors. Psoriasis occurs 3 times more often than expected among patients with ulcerative colitis and Crohn's disease, an inflammatory condition affecting the gastrointestinal (GI) tract.<sup>5</sup> In family studies of autoimmune diseases and genetic susceptibility, psoriasis has been significantly linked with multiple sclerosis.<sup>6</sup>

### Cancer

Psoriasis also increases the risk of certain cancers affecting the immune system. Compared with healthy persons, patients with severe psoriasis have a 3-fold risk of Hodgkin's lymphoma (relative risk [RR], 3.18; 95% confidence interval [CI], 1.01-9.97) and a 10-fold risk of cutaneous T-cell lymphoma (RR, 10.75; 95% CI, 3.89-29.76).<sup>7</sup> Although the relative risk for lymphoma is increased among patients with psoriasis, the amount of risk attributable to psoriasis is low because lymphoma is a rare disease.

### Psychosocial Comorbidities

Living with psoriasis is very distressing for some patients and may lead to psychological comorbidities such as depression, suicidal thoughts, and substance abuse.<sup>8</sup> Patients with psoriasis also experience social stigmatization, high stress levels, and employment problems related to the disease. The psychosocial burden of psoriasis varies among patients and is not always proportional to other measures of disease severity such as plaque severity or BSA involvement.<sup>8</sup>

### Metabolic Syndrome and Cardiovascular Disease

Within the last few years, psoriasis has been identified as an independent risk factor for chronic vascular and metabolic disorders, which has important implications for patient education. The definition of metabolic syndrome varies, but generally includes any 3 of the following: increased waist circumference, elevated triglycerides, reduced high-density lipoprotein (HDL) cholesterol, hypertension, and elevated fasting glucose. In one study, patients with severe psoriasis were nearly 6 times more likely than healthy controls to have metabolic syndrome (odds ratio [OR], 5.92; 95% CI, 2.78-12.8;  $P < .0001$ ).<sup>9</sup>

Reflecting the high burden of metabolic syndrome in this patient population, psoriasis is also associated with an excess risk of myocardial infarction (MI).<sup>10</sup> Controlling for other cardiovascular (CV) risk factors, the risk of MI is especially pronounced for younger patients with more severe disease. Among 30-year-old patients with psoriasis, the risk of MI is 29% higher for those with mild disease (RR, 1.29; 95% CI, 1.14-1.46) and 310% higher for those with severe disease (RR, 3.10; 95% CI, 1.98-4.86), relative to healthy age-matched controls. As patients age and accumulate more CV risk factors, psoriasis makes a smaller contribution to total MI risk. For 60-year-old patients, the presence of mild and severe psoriasis increases the risk of MI by 8% (RR, 1.08; 95% CI, 1.03-1.13) and 36% (RR, 1.36; 95% CI, 1.13-1.64), respectively.<sup>10</sup>

To better understand the relationship between psoriasis and cardiovascular disease (CVD), Neimann and colleagues conducted a population-based study of 131,560 patients with psoriasis.<sup>11</sup> Patients with psoriasis were more likely than healthy individuals to have a broad range of CV risk factors, including type 2 diabetes mellitus (T2DM), hypertension, hyperlipidemia,

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smoking, BMI 25-30 kg/m<sup>2</sup>, and BMI >30 kg/m<sup>2</sup>. Moreover, each of these risk factors occurred more commonly in patients with severe psoriasis than in those with mild disease.<sup>11</sup>

Shared inflammatory mediators may contribute to the increased risk of atherosclerosis and MI in patients with psoriasis. Recent research has shown that psoriasis is linked to atherothrombotic diseases through the expression of inflammatory cytokines such as tumor necrosis factor (TNF)-alpha, interleukin (IL)-1, IL-6, and IL-7.<sup>12</sup> These cytokines, which are characteristic of psoriasis inflammation, also drive endothelial dysfunction and oxidative stress in patients with atherosclerosis. The shared mechanisms of chronic inflammation may have important implications for treatment in patients with psoriasis and comorbid CVD.

**All patients with psoriasis should be evaluated for traditional CV risk factors.**

Together, findings from epidemiologic and clinical studies highlight the high burden of modifiable CV risk factors in psoriasis, particularly among those with severe disease. Therefore, all patients with psoriasis should be evaluated for traditional CV risk factors—blood pressure, lipid profile, smoking status, obesity, and fasting blood glucose—and managed accordingly, as part of a comprehensive approach to risk factor reduction.

### Psoriatic Arthritis

Psoriatic arthritis (PsA) is a form of inflammatory arthritis that is specifically associated with psoriasis. It affects approximately 520,000 patients in the United States.<sup>13,14</sup> The average risk of PsA is approximately 30%, although risk estimates range from 6% to 40% depending on the patient population and extent of skin involvement.<sup>14</sup> PsA typically develops 7 to 10 years after the onset of psoriasis, at an average age of 36 years.<sup>14</sup>

PsA is characterized by stiffness, pain, swelling, and tenderness in the joints, ligaments, and tendons. Tissue inflammation and swelling often affect the fingers and toes, resulting in dactylitis (“sausage digit”). Nail disease is also common, and may be the first manifestation of PsA (Figure 2). The symptoms of PsA can be severe and progressive, ultimately becoming deforming for many patients.<sup>15</sup> In a study of patients with PsA, 39% reported that PsA was a “large problem” in their everyday life.<sup>13</sup> Early intervention with systemic therapy is critical for slowing joint disease progression and protecting physical function in PsA. Patients with psoriasis should be screened for PsA and encouraged to report any changes in symptoms, particularly the appearance of nail disease and any pain or tenderness in the joints.



**Figure 2. Features of PsA.** Top, nail disease is common. Bottom, dactylitis (“sausage digit”) is common and can affect both fingers and toes. Courtesy of JM Gelfand, MD.

### Treatment Options

The NPF recommends a 2-tiered approach treatment that is guided by extent of skin involvement, degree of disability, and quality of life.<sup>16</sup> As the first step, localized therapy is recommended for patients with localized plaque psoriasis (<5% BSA) and minimal disability or

deterioration of quality of life. Appropriate localized therapy includes topical corticosteroids, vitamin D analogs, retinoids, coal tar preparations, anthralin, keratolytics, and/or ultraviolet B (UV-B) laser treatments. Any of these choices may be used in combination or in sequence with other localized therapies, systemic therapies, or phototherapy.

The second tier approach involves systemic therapy and is recommended for patients with significant disease, which is defined as psoriasis that affects >5% of BSA or psoriasis in vulnerable areas, including the face, genitals, hands, and feet. Systemic therapy is also appropriate for patients with erythrodermic, pustular, or guttate psoriasis, patients with PsA, and patients who experience significant disability

**The National Psoriasis Foundation recommends a 2-tiered approach to treatment that is guided by extent of skin involvement, degree of disability, and quality of life.**

### What Is PASI?

The Psoriasis Area and Severity Index (PASI) score allows researchers to put an objective number on what would otherwise be a very subjective idea: the severity of a person's psoriasis. The score comprises 3 features of a psoriatic plaque: redness, scaling, and thickness, which are each assigned a number from 0 (none) to 4 (worst). Then, the extent of involvement of each region of the body (12 regions) is scored from 0 to 6. The total score is a range of 0 to 72.

Many studies quote the improvement seen in the PASI score over time as a measure of a drug's effectiveness. For example, they may note that a certain proportion of patients experienced a 75% reduction in their PASI scores over a 12-week treatment period and report this as a percentage of people achieving "PASI 75." Figure 3 is an example of a patient who has achieved PASI 75 response.<sup>18</sup>

PASI scores are seldom used in clinical practice, although more careful clinicians, especially those working at university-based clinics or specialized psoriasis treatment centers, may routinely use this tool to follow their patients' progress.



**Figure 3.** A PASI 75 response. Left, baseline (PASI = 45); right, 12 weeks (PASI = 2) (95% improvement).<sup>18</sup>

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or erosion of quality of life due to the disease. Options for systemic therapy include phototherapy (UV-B broadband and narrowband), which requires a substantial time commitment; psoralen and ultraviolet A radiation (PUVA); traditional systemic agents such as acitretin (often used in combination with phototherapy; cyclosporine, or methotrexate); and systemic biologic therapy.

Earlier guidelines from the American Academy of Dermatology (AAD) on the use of systemic psoriasis therapies align with the more recent NPF guidelines.<sup>17</sup> According to the AAD, biologics should be considered among the first-line treatment options in a patient who is a candidate for systemic therapy. In addition, the AAD recommends consideration of systemic therapy for patients with psoriasis on the palms, soles, head and neck, or genitals, or when ≥5% of BSA is involved.

## Conventional Systemic Therapies

### Methotrexate

Methotrexate is the most commonly prescribed systemic therapy for patients with psoriasis. After 16 weeks of therapy, 36% to 60% of patients achieve a 75% reduction in baseline PASI scores (PASI 75).<sup>19</sup> Methotrexate is also recommended for treatment of moderate or severe PsA.<sup>20</sup>

### Cyclosporine

Cyclosporine is recommended to treat severe psoriasis after the failure of 1 or more other systemic therapies. Approximately 50% to 70% of patients achieve a PASI 75 response after 8 to 16 weeks of treatment with cyclosporine. Cyclosporine use is limited to 1 year, which is a major barrier for the treatment of chronic disease.<sup>19</sup>

### Acitretin

Acitretin is an oral, systemic retinoid that is often used in conjunction with UV light therapy. Response to acitretin is slow, typically taking 3 to 6 months to develop. Moreover, the likelihood of achieving a PASI 75 response is dose-dependent and highly variable.<sup>21</sup>

**Table 1.**

### Limitations of Conventional Systemic Therapies<sup>19,22</sup>

Agent	Adverse Event	Contraindications
Methotrexate	Hepatotoxicity, drug interactions, immunosuppression, bone marrow suppression, pneumonitis, birth defects, decreased sperm count, miscarriage	Pregnancy (category X), <sup>a</sup> breastfeeding, renal impairment, hepatitis, cirrhosis, leukemia, thrombocytopenia, regular alcohol use, patient unreliability
Cyclosporine	Immunosuppression, impaired renal function, hypertension, malignancies, drug interactions	Acute infections, active malignancies, uncontrolled hypertension, impaired renal function
Acitretin	Birth defects, mucocutaneous effects, dyslipidemia	Pregnancy, breastfeeding

<sup>a</sup>Rule out pregnancy in women of childbearing potential; avoid pregnancy if either partner is receiving methotrexate; contraception: women, during therapy and at least 1 ovulatory cycle afterward; men, at least 3 months after therapy.

**Table 2.****Biologic Agents for the Treatment of Moderate to Severe Psoriasis<sup>23,24</sup>**

Biologic	Structure	Target	Dosing
Adalimumab	Human monoclonal antibody	Soluble and membrane-bound TNF- $\alpha$	80 mg SC, followed by 40 mg SC every other wk
Alefacept	Human IgG1 Fc region fused to LFA-3 extracellular domain	LFA-3	15 mg IM weekly for 12 wk
Etanercept	Human IgG1 Fc region fused to TNF type II receptor	Soluble TNF- $\alpha$ , lymphotoxin- $\alpha$	50 mg SC twice weekly for 12 wk, then 50 mg SC each wk
Infliximab	Chimeric monoclonal antibody	Soluble and membrane-bound TNF- $\alpha$	5 mg/kg IV at wk 0, 2, 6, then every 8 wk
Ustekinumab	Human monoclonal antibody	IL-12 and IL-23	45 or 90 mg SC at wk 0 and 4, then once every 12 wk

Ig = immunoglobulin; IM = intramuscular; IV = intravenous; LFA-3 = leukocyte function-associated antigen-3; SC = subcutaneous.

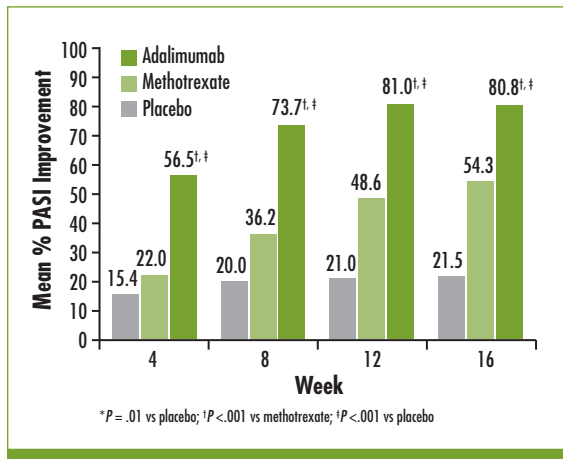
**Limitations of Conventional Systemic Therapies**

The common adverse events associated with conventional systemic therapies, as well as contraindications to treatment, are summarized in Table 1.<sup>19,22</sup> Notably, both methotrexate and acitretin are contraindicated in pregnancy and in women who are breastfeeding.

**Biologic Therapy**

For patients with psoriasis, biologic therapies target the overactive immune system. The activated immune system stimulates T cells to secrete cytokines, including TNF- $\alpha$ . Elevated levels of circulating signal the inflammatory process to begin. Biologic therapy selectively blocks specific steps in the inflammatory cascade. For instance, biologic agents can directly target pathogenic T cells, inhibit T-cell activation, eliminate activated T cells, or eliminate inflammatory cytokines.

Biologic agents that are available for the treatment of moderate to severe psoriasis include adalimumab,



**Figure 4.** Adalimumab significantly improved treatment response compared with methotrexate and placebo in patients with moderate to severe psoriasis. Responses are shown as mean percentage improvement in PASI scores over 16 weeks of therapy.<sup>26</sup>

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alefacept, etanercept, infliximab, and ustekinumab. The structure, immunologic target, and recommended dosing of these agents are summarized in Table 2.<sup>23,24</sup>

Biologic therapies vary in efficacy and ability to induce PASI 75 responses. In a head-to-head trial, treatment with ustekinumab was superior to that of etanercept. After 12 weeks, 74% of patients who received high-dose ustekinumab (90 mg at week 0 and 4) achieved a PASI 75 response, compared with 57% of those who received high-dose etanercept (50 mg twice weekly) ( $P < .001$ ).<sup>25</sup> In other placebo-controlled trials, the proportion of patients who achieved PASI 75 responses with alefacept, adalimumab, and infliximab were 33%, 80%, and 80%, respectively.<sup>23</sup>

Patients with moderate to severe psoriasis are more likely to achieve meaningful clinical responses with biologic therapy than with conventional systemic therapy.<sup>26</sup> In the CHAMPION study, the superiority of adalimumab versus methotrexate was apparent at week 1 and continued through week 16 of treatment.<sup>26</sup> The mean PASI improvement was 22% at week 4 and 54.3% at week 16 in the methotrexate arm, compared with 56.5% at week 4 and 80.8% at week 16 among patients treated with adalimumab ( $P < .001$  at all time points) (Figure 4).

### Limitations of Biologic Therapy

Biologic agents are generally well tolerated because their specificity reduces the risk of off-target side effects. The most common adverse events for many patients are related to administration, including injection-site reactions for subcutaneous and intramuscular therapies and infusion reactions for intravenous therapy. Adverse events and contraindications to biologic therapies are summarized in Table 3.

Biologic therapies are contraindicated in patients with infections such as tuberculosis (TB), sepsis, and fungal and opportunistic infections. Accordingly, patients should be screened for TB and other infections prior to initiating therapy. Clinicians should encourage annual immunization with the trivalent inactivated influenza virus vaccine (TIV) and annual TB skin testing for patients treated with biologic agents. Patients should not be immunized with live vaccines while taking biologic therapies.

Switching between biologic agents is safe. Reasons for switching biologic agents include lack of response to first-line biologic therapy and other conventional systemic therapies, toxicity, or side effects. Patients can switch to a second agent within the same class, such as from 1 TNF- $\alpha$  inhibitor to another.<sup>32,33</sup> Patients can also switch to a second agent in a different class, such as from a TNF- $\alpha$  inhibitor to an IL-12/IL-23 monoclonal antibody.<sup>25,34</sup> Switching first-line

biologic agents may result in enhanced efficacy and/or better tolerability. However, subsequent switches may be less effective.<sup>35</sup>

### Long-Term Monitoring

Psoriasis is a chronic disorder that requires long-term monitoring for treatment response, adverse events, and new comorbidities. In 2008, the NPF published guidelines for monitoring psoriasis comorbidities.<sup>14</sup> According to the NPF, clinicians should approach psoriasis as a potentially multisystem disorder affecting not only the skin, but also the CV system,

**Psoriasis is a chronic disorder that requires long-term monitoring for treatment response, adverse events, and new comorbidities.**

**Table 3.****Biologic Agents and Adverse Events<sup>27-31</sup>**

Biologic	Common (>5%)	Uncommon (0.1%-5%)	Rare (<0.1%)	Black Box
Adalimumab	Injection site reaction, +ANA, elevated alkaline phosphatase, cholesterol	Neutralizing antibodies, serious infections	TB, malignancy, lupuslike syndrome, hypersensitivity, hepatitis B reactivation, demyelination, CHF, pancytopenia	Infection (TB, sepsis, fungal, and opportunistic)
Alefacept	Lymphopenia	Elevated LFT values, serious infection	Malignancy, hypersensitivity	None
Etanercept	Injection site reaction, +ANA	Serious infection	TB, malignancy, lupuslike syndrome, hypersensitivity, hepatitis B reactivation, demyelination, CHF, pancytopenia	Infection (TB, sepsis, fungal, and opportunistic)
Infliximab	Infusion reactions, +ANA, elevated LFT values, neutralizing antibodies	Hypersensitivity, serious infection	Severe hepatic injury, TB, malignancy, lupuslike syndrome, hypersensitivity, hepatitis B reactivation, demyelination, CHF, pancytopenia	Infection (TB, sepsis, fungal, and opportunistic), hepatosplenic T-cell lymphoma
Ustekinumab	Nasopharyngitis	Upper respiratory tract infection, headache, fatigue	Cellulitis, injection site reactions	None

ANA = antinuclear antibody; CHF = congestive heart failure; LFT = liver function test; TB = tuberculosis.

psychosocial well-being, and other aspects of patient health. Hematologic (CBC and platelets) and liver function tests should be conducted at baseline and then every 2 to 6 months for patients receiving biologic therapy (except ustekinumab). Accordingly, clinicians should educate patients about the potentially negative effects of psoriasis on other aspects of their health, and encourage patients to monitor and report any health changes.<sup>14</sup>

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In 2008, editors of *The American Journal of Cardiology* published consensus recommendations for coronary artery disease (CAD) screening in patients with moderate to severe psoriasis.<sup>36</sup> The editors recommended that medical histories of all patients with moderate to severe psoriasis be assessed for traditional CAD risk factors. In addition, clinicians should conduct annual physical examinations that include blood pressure monitoring and laboratory measurements of blood lipids and glucose levels.<sup>36</sup>

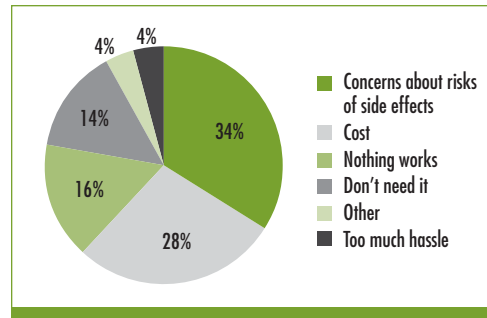
### Treatment Adherence

Poor adherence is a major barrier to better outcomes for patients with psoriasis. Approximately 40% of all patients with psoriasis are nonadherent to their prescribed regimen, and adherence rates are lowest among those with the most severe disease.<sup>37</sup> In an NPF survey of patients who were not taking their medications as directed, ‘concerns about treatment risks and side effects’ was the primary reason for nonadherence (Figure 5).<sup>38</sup> Other reasons included treatment cost, pessimism about potential efficacy (‘nothing works’), lack of belief that patients need treatment, and treatment hassle. Conversely, factors associated with improved adherence to psoriasis medications include<sup>37</sup>:

- An effective provider-patient relationship
- Optimism about the choice of treatment
- Limited treatment ‘nuisance’ related to side effects and inconvenience

Clinicians can use several strategies to improve adherence, beginning with education about psoriasis, how treatment will help, and the importance of adherence.<sup>39</sup> Clinicians can assess the extent of adherence using nonthreatening questions and address treatment side effects and possible effect on the patient’s quality of life. In the context

of effective provider-patient relationships, the patient becomes a partner in setting treatment goals. Moreover, patients can have an active role in treatment decisions based on expectations about treatment efficacy, side effects, convenience, and tolerability. In a survey of 1240 patients with psoriasis, greater satisfaction with psoriasis treatment was associated with improved adherence. Patients who were treated with biologic therapy were the most satisfied and adherent.<sup>40</sup>



**Figure 5. Concerns about risks and side effects are the most common self-reported causes of nonadherence to prescription medications in patients with psoriasis (n = 422).<sup>38</sup>**



## CASE: A 64-Year-Old Man With Severe Psoriasis

### Presentation

A 64-year-old man with plaque psoriasis comes to see you because he is dissatisfied with his treatment. His first eruption 40 years earlier was mild and localized to his scalp (~5% BSA). Initially, topical agents were effective in controlling his symptoms. In recent years, his psoriasis has become more diffuse (~50% BSA) and involves his scalp, trunk, and limbs. His dermatologist prescribed acitretin in combination with PUVA, but he cannot continue with PUVA because of work commitments. He takes lisinopril for hypertension and allopurinol for gout. He has a 20-year history of cigarette smoking (1 pack/d), and he drinks 2 martinis with dinner each night. He no longer swims because of embarrassment. He is very distressed that his grandchildren are afraid of him.

### Physical Findings

- Height: 5 ft 10 in
- Weight: 190 lb
- BMI: 27.3 kg/m<sup>2</sup>
- Blood pressure: 140/85 mm Hg

### Clinical Decision Point

*Which psoriasis comorbidity are you most concerned about for this patient?*

- Lymphoma
- CVD
- PsA
- Crohn's disease

### Comment

The best answer is CVD. The presence of moderate to severe psoriasis increases the risk of CVD, even in patients with no other risk factors. However, in addition to his psoriasis, this patient also has several traditional risk factors for CVD, including hypertension, an elevated BMI, and a long history of smoking.

### Clinical Decision Point

*Which treatment is most appropriate for this patient?*

- Methotrexate
- Cyclosporine
- A biologic (eg, TNF- $\alpha$  inhibitor)
- All of the above

### Comment

The best answer is a biologic (eg, TNF- $\alpha$  inhibitor). The patient is a heavy drinker with gout. Methotrexate is associated with an increased risk of hepatotoxicity in the presence of alcohol and may increase uric acid levels in the presence of gout. Cyclosporine can exacerbate gout and appear in increased levels in the presence of alcohol.

### Clinical Course

The patient's dermatologist prescribes adalimumab.

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## Clinical Decision Point

*Before the patient starts treatment with a biologic agent, what other steps do you recommend?*

- Administer recommended vaccinations
- Screen for TB
- Screen for CV risk factors (eg, lipid profile)
- All of the above

### Comment

The best answer is all of the above. The AAD recommends immunization with the TIV and TB screening when starting biologic agents and annually thereafter. Regardless of treatment type, the NPF recommends that all patients with psoriasis undergo annual screening for CV risk factors, including blood pressure, BMI, waist circumference, pulse, fasting serum lipoprotein levels, and fasting blood glucose levels.

### Clinical Course

The patient returns to your office for recommended vaccinations, TB screening, and laboratory monitoring. After discussing options for addressing his unhealthy lifestyle—in particular, his smoking, heavy drinking, and high BMI—the patient admits he is unlikely to change his habits. He says he is depressed because “this disease is running my life.” He also expresses doubt about the effectiveness of any treatment and the safety of this new treatment.

## Clinical Decision Point

*Which of the following treatment-related issues would you choose to discuss with this patient?*

- Expectations of efficacy
- Expectations of side effects
- Treatment costs
- Convenience of treatment

### Comment

The best options are expectations of efficacy and expectations of side effects. Managing treatment expectations is important for improving adherence, which ultimately improves patient outcomes. Biologic agents can provide effective disease control in patients with moderate to severe psoriasis, with a favorable safety profile. Treatment costs and convenience are important barriers for some patients, but are not relevant in this case.

### 6-Month Follow-up

When the patient returns for his 6-month follow-up, he shows an 80% reduction in his baseline PASI score. He had a mild injection site reaction after his first treatment, but is otherwise tolerating therapy well. He has returned to swimming, and has lost 8 lb. He is also participating in more social events, including spending more time with his grandchildren.

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