INSIDE THIS ISSUE:

What are the key components of a diagnostic evaluation among patients with suspected plaque psoriasis?

Which topical therapies have demonstrated appropriate safety and efficacy in patients diagnosed with plaque psoriasis?

How do clinicians know when a patient with plaque psoriasis is ready for use of systemic therapy?

What impact does plaque psoriasis have on patient quality of life?

The Evolving Treatment of Plaque Psoriasis: WHERE WE ARE AND WHERE WE’RE GOING

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LEARNING OBJECTIVES

After participating in the activity, learners should be better able to:

• Describe the procedure that should be followed to assess body surface coverage area among patients with plaque psoriasis
• Determine appropriate parameters of treatment success for patients with plaque psoriasis
• Discuss the safety and efficacy of biologic therapies commonly used for the treatment of plaque psoriasis
• Identify characteristics of moderate-to-severe plaque psoriasis that might favor use of a specific therapeutic agent

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TARGET AUDIENCE

This activity has been designed to meet the educational needs of nurses, nurse practitioners, and physician assistants. Other healthcare providers may also participate.

ACTIVITY DESCRIPTION

In this issue of Dermatology Nurse Practice, we cover the information that clinicians need to know to formulate effective, individualized treatment plans for their patients with psoriasis. We provide an overview of the treatments available, including their benefits and drawbacks, so that dermatology specialists can provide psoriasis care that maximizes their patients’ chances of skin clearance—and delivers the health and quality-of-life benefits that result from optimal management of this challenging condition.

ACCREDITATION AND CREDIT DESIGNATION

Nurses

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According to recent studies, roughly 3% of the adult population in the United States has psoriasis, with plaque psoriasis accounting for approximately 80% of all cases.\(^1\) Plaque psoriasis can have a dramatic effect on the lives of patients. In addition to experiencing pain and discomfort, many individuals with plaque psoriasis find that the stigma related to skin lesions reduces their self-esteem, causes social isolation, and diminishes their overall sense of well-being.\(^2,3\) In more severe cases, plaque psoriasis can also affect patients’ ability to function in the workplace, at home, and in public; during social interactions with friends and family; and even in romantic relationships.

Fortunately, an array of effective agents—many of them relatively recent additions to the armamentarium—are now available to treat plaque psoriasis. Today, whether their disease is mild or severe, patients with psoriasis have an unprecedented opportunity to achieve complete, or nearly complete, skin clearance.\(^2\)

**NOTE: For brevity, we will refer to “plaque psoriasis” as “psoriasis” for the rest of the article**

With so many effective treatment options to choose from, it may seem puzzling that many patients with psoriasis continue to be undertreated—or even untreated.\(^4\) Among patients who are receiving therapy, more than 50% report being dissatisfied with their current treatment regimen. What explains the disconnect between the availability of so many effective therapies and such poor treatment outcomes?

Paradoxically, the sheer number of treatment options may be a factor. To create a psoriasis treatment plan, dermatology specialists must sift through an overwhelming number of choices. Because straightforward algorithms do not exist to determine the optimal treatment for a given patient, healthcare providers must do their best to choose between topical treatments, biologics, oral systemic treatments, and phototherapy based on individual patient presentation. After choosing a type or class of therapy, they must then further select one agent from the many available. For example, the U.S. Food and Drug Administration has approved 11 biologics for the treatment of psoriasis, and there are likely more on the way in coming years. Little wonder, then, that it can feel dizzying to try and stay abreast of which psoriasis therapies are available and which patients they are best suited for, let alone the latest developments in the field.
Formulating an effective treatment plan for psoriasis hinges on accurate diagnosis and assessment. Furthermore, insurers may only cover some expensive treatments if a patient has documented moderate-to-severe disease. Therefore, accurately characterizing a patient's psoriasis is critical. The process is not, however, always straightforward.

The diagnosis of psoriasis is typically based on clinical examination, although a biopsy can be used to confirm a diagnosis, especially in cases where a patient's presentation is atypical. The diagnostic workup should include an assessment of a patient's family history of psoriatic disease, as well as a comprehensive skin and nail examination that includes evaluation of the morphology and distribution of psoriatic lesions. The differential diagnosis for psoriasis includes conditions such as atopic dermatitis, seborrheic dermatitis, pityriasis rosea, syphilis, and cutaneous T-cell lymphoma.

One critical component of a comprehensive skin evaluation is determining how much of a patient's body surface area (BSA) is affected by psoriatic lesions. Several different measures of psoriasis severity exist, including objective scales such as the Psoriasis Area and Severity Index (PASI), and subjective scales such as the Dermatology Life Quality Index (DLQI). However, American Association of Dermatology–National Psoriasis Foundation (AAD-NPF) joint guidelines suggest that for practical use, simply measuring BSA via visual observation and clinical assessment is the most efficient way to determine baseline psoriasis severity and gauge treatment response. Clinicians can use their hands to approximate BSA: a handprint represents ~1% of a patient's BSA (see Figure 1). Rules of thumb also exist for different parts of the body. For example, a patient's head and neck corresponds to approximately 10% of their total BSA, the upper extremities to 20%, the trunk to 30%, and the lower extremities (including buttocks) to 40%. Because patients with psoriasis often feel a great deal of stigma about their condition, it can feel reassuring to them when a healthcare provider uses their ungloved hands to perform skin assessments. This demonstrates that the patient's lesions are neither contagious nor repulsive.

Based on these quick and easy BSA approximations, the severity of a patient's psoriasis can be estimated. According to AAD-NPF guidelines, mild psoriasis affects <3% of a patient's BSA, moderate psoriasis between 3-10%, and severe psoriasis >10%. However, it should be noted that a BSA evaluation should only represent a starting point for assessing disease severity.

Patients with psoriasis on visible or very sensitive areas may have significant physical and psychological stigma even if they have a small amount of affected BSA. In particular, lesions on areas such as the scalp, face, skin folds, genitals, hands,
One handprint is equivalent to ~1% of your body surface area

Inadequate treatment of PsA can potentially result in irreversible harm, so prompt diagnosis and effective therapy are essential.

A number of other comorbidities are also common in patients with psoriasis. Cardiovascular and metabolic issues are frequent, so risk assessment is recommended for all patients with psoriasis. This includes early and frequent screening for hypertension, diabetes, and hyperlipidemia in patients who are candidates for systemic therapy or phototherapy, or among those who have psoriasis involving >10% BSA. In addition, patients with psoriasis should be informed about the disease’s association with anxiety and depression, and asked whether they are experiencing signs and symptoms of these psychiatric disorders. Finally, patients with psoriasis should be informed about the association between psoriasis and inflammatory bowel disease (IBD). Individuals with concerning symptoms should be referred to their primary care provider or gastroenterologist for further assessment and management.

Finally, all patients with psoriasis should be assessed for comorbidities. Approximately one-third of patients with psoriasis will go on to develop psoriatic arthritis (PsA), so screening patients for this condition and educating them about its signs and symptoms is critical. Screening questionnaires, such as the Psoriasis Epidemiology Screening Tool, are useful in detecting symptoms consistent with a diagnosis of PsA. If a patient is suspected of having PsA, referral to a rheumatologist should be considered.

Figure 1: Illustration of how to use handprints to measure body surface area affected by psoriasis. The pictures below are meant to help you estimate the % of your body surface area affected by psoriasis. The exact areas that are affected by psoriasis do NOT need to match the pictures below.
**WHAT DOES TREATMENT SUCCESS MEAN?**

Every dermatology specialist and every patient with psoriasis are united in wanting treatment to be successful. The many psoriasis therapies available today provide many potential pathways to this goal. But how should treatment success be defined and measured? What are the targets that clinicians should aim for?

The NPF offers useful guidance about measuring treatment success. It recommends that treatment response be assessed 3 months after initiating a therapy, using BSA. At the 3-month assessment, an acceptable response is defined as ≤3% BSA affected or a BSA improvement of >75% from baseline. However, the target response by this time is ≤1% BSA affected, and the target response at each 6-month maintenance appointment is the same.

As mentioned, BSA does not account for the impact that psoriasis has on a patient’s day-to-day life. Therefore, a patient’s goals should also be considered in assessing treatment success. Whereas clinicians tend to focus on skin clearance, patients often value treatment goals related to itching, burning, pain, and normal life functioning. Thus, treating to target using NPF guidelines is important, but treatment cannot be considered successful unless it also involves acceptable progress toward a patient’s unique goals.

**WHEN IS TOPICAL TREATMENT ENOUGH? AND WHICH ONES SHOULD BE USED?**

For patients with mild psoriasis, topical agents are usually the initial treatment of choice. For patients with moderate-to-severe psoriasis, topical therapies should not be used as monotherapy, but they are often used as adjuncts to systemic therapy. For example, topical corticosteroids can increase the short-term effectiveness of biologics or reduce the necessary dose of methotrexate while...
extending the expected time to relapse. Here, we offer a brief review of some of the most widely used topical treatments for psoriasis.

**Corticosteroids** are a cornerstone of treatment for patients with mild or localized psoriasis. Many different formulations are available. A dermatology provider can determine the appropriate strength and vehicle based on the type of lesions present. For example, high potency corticosteroids are recommended for thick lesions, while low potency corticosteroids are generally preferred for lesions in more sensitive areas such as the facial, axillary, inframammary, and groin areas.

Adverse effects (AEs) associated with corticosteroids include skin atrophy, striae, folliculitis, telangiectasia, purpura, and exacerbation of acne, rosacea, perioral dermatitis, and tinea infections. These problems are especially likely to occur in chronically treated areas, or in delicate areas such as the face or skin folds. To minimize the chance of a patient developing AEs, clinicians should consider limiting the use of class 1 corticosteroids (the strongest) to no more than twice daily for up to 4 weeks. Transitional to lower potency agents after improvement occurs can also help minimize the risk of AEs.

Once a patient’s psoriatic lesions are quiescent, they can be switched to a steroid-sparing maintenance regimen that helps prevent recurrence while minimizing the risk of steroid-associated AEs. Potential options for maintenance regimens include vitamin D analogs, topical retinoids, and calcineurin inhibitors. Proactive maintenance treatment might include twice-weekly treatment with such steroid-sparing agents.

**Calcineurin inhibitors** such as tacrolimus and pimecrolimus are not approved by the FDA for the treatment of psoriasis but are frequently used to avoid prolonged (>4 weeks) corticosteroid use in areas of the body with thinner skin, such as the face and skin folds.

Calcineurin inhibitors can cause burning and pruritis in some patients. These AEs generally improve with continued use, and patients can minimize the risk by avoiding application of these agents to damp skin. Another AE associated with calcineurin inhibitors is flushing after the ingestion of alcohol. Of note, although both tacrolimus and pimecrolimus carry a boxed warning about the potential risk for malignancy, no evidence shows an increased risk associated with topical use.

**Vitamin D analogs** such as calcipotriene and calcitriol appear to be less effective than potent or ultrapotent topical corticosteroids at treating psoriasis. However, vitamin D analogs can be used in combination with topical corticosteroids to reduce the risk of AEs associated with corticosteroids (by reducing the necessary dose) or to reduce out-of-pocket treatment costs for patients.

Common AEs associated with vitamin D analogs include burning, pruritus, edema, peeling, dryness, and erythema, but these issues usually subside with continued treatment. Systemic AEs such as hypercalcemia and parathyroid hormone suppression are possible if more than 30% of a patient’s BSA is being treated, the recommended dose is exceeded, or a patient has underlying renal disease or impaired calcium metabolism. Finally, if vitamin D analogs are used in conjunction with phototherapy, they should be applied after phototherapy to avoid inactivation by UV radiation.

The retinoid tazarotene can be applied for 8-12 weeks to treat mild-to-moderate psoriasis, and it can be particularly helpful for managing palmoplantar and nail psoriasis. Like vitamin D analogs, tazarotene can be combined with topical corticosteroids to increase its overall efficacy. Potential AEs associated with tazarotene include erythema, burning, and pruritis. To minimize the chance of developing these AEs, dermatology providers can prescribe cream or lower concentration formulations. They can also suggest that patients combine tazarotene with moisturizers, apply it only every other day, apply it for only short periods (30-60 minutes) before washing it off, or combine it with topical corticosteroids. Tazarotene should be avoided in pregnant women; when used in women of childbearing age, a negative pregnancy test should be obtained 2 weeks before initiating treatment.

Two new topical agents have recently gained FDA approval—**tapinarof** and **roflumilast cream**. Tapinarof is indicated for adult patients with psoriasis while roflumilast cream is approved for use in patients aged 12 and older.

Tapinarof is a nonsteroidal agent that modulates the expression of interleukin-17 (IL-17). Recently, two 12-week, phase 3 trials showed that once daily treatment with tapinarof cream was significantly more effective than treatment with a vehicle control cream at managing psoriasis. The most common AEs associated with tapinarof cream included folliculitis, contact dermatitis, and headache.

Roflumilast cream, meanwhile, contains a phosphodiesterase-4 (PDE-4) inhibitor. A 12-week, phase 2b trial found that once daily treatment with roflumilast cream was superior to treatment with a vehicle control cream at controlling chronic psoriasis. The most common AEs included respiratory tract infections and nasopharyngitis, but these issues occurred in both the treatment and control groups.
When initiating topical treatments, dermatology providers should keep in mind that many patients find their use to be tedious. Individuals may also be disappointed to learn that topical treatments do not typically result in sustained clearance of lesions. Thus, it is helpful to discuss patients’ expectations prior to beginning treatment with topical therapy.

The most effective topical treatment choice is the one that a patient will actually use. For instance, many patients find creams more cosmetically acceptable than ointments. Patients with psoriasis of the scalp often find medicated shampoos easiest to use. However, for a patient of color with scalp involvement, it is important to select a treatment that is compatible with their hair texture, style, and wash frequency. For many Black patients, oil-based suspensions, lotions, and emollient foams are the preferred vehicles. If multiple topical agents are being used (eg, corticosteroids + vitamin D analogs or corticosteroids + tazarotene) in any patient with psoriasis, combination formulations can be prescribed to simplify application and improve adherence.

Trial and error will likely be needed to find a topical treatment plan that manages a patient’s psoriasis and is also compatible with their lifestyle. Explaining this approach to patients at the outset of treatment may be useful to help ensure that they don’t lose hope when a therapy fails, is intolerable, or is too difficult to use. Presenting the trial-and-error approach as a normal part of treatment encourages patients to speak freely about any challenges they are encountering in adhering to their treatment plan so that clinicians and patients can work together to brainstorm solutions.

WHEN IS IT TIME FOR SYSTEMIC THERAPY...AND WHICH ONE DO I CHOOSE?

For the approximately 15-20% of patients with psoriasis who have moderate-to-severe disease, systemic therapy is often warranted to control their condition. Systemic treatments can also be prescribed for patients with localized disease involving sensitive or functionally important areas of the body such as the scalp, palms and soles, and genitals, or for psoriasis that does not respond to topical therapy. Here, we discuss some of the key differentiators for each type of systemic therapy, offering tips for tailoring treatment to individual patients’ needs and preferences.

Biologics are now the most common type of systemic therapy prescribed for psoriasis in the United States, used nearly twice as often as oral systemic therapies and phototherapy combined. Studies have shown that biologics are more effective in patients with psoriasis than traditional oral agents or phototherapy. They have also been shown to improve patients’ quality of life and are associated with less toxicity than traditional oral agents. The 2019 AAD-NPF guidelines ranked all biologics approved at the time of its publication as having grade A evidence for efficacy (the highest level of evidence) when used as monotherapy for moderate-to-severe plaque-type psoriasis.

Four classes of biologics are approved to treat psoriasis: TNF inhibitors, IL-12/23 inhibitors, IL-17 inhibitors, and IL-23 inhibitors (see Table 1). Each class targets a different part of the inflammatory pathway linked to psoriasis. However, the biologics used to treat psoriasis do share some characteristics. All are administered subcutaneously with the exception of infliximab, which is administered by intravenous infusion. AEs associated with all biologics used to treat psoriasis include injection site reactions, nasopharyngitis, and upper respiratory tract infections. However, in patients with psoriasis, biologics are not associated with an increased rate of serious infection or internal malignancies.

TNF inhibitors (adalimumab, certolizumab pegol, etanercept, and infliximab) were the first class of biologics to be approved for the treatment of psoriasis. As such, the most clinical data exist for them. These agents may especially benefit patients with comorbid IBD, as adalimumab, infliximab, and certolizumab are approved to treat this condition as well as psoriasis. For overweight or obese patients, infliximab may be a particularly good choice since it utilizes proportional-to-weight dosing.

TNF inhibitors are also a good option for women who are breastfeeding as inadequate data exist to support the safety of other classes of biologics during lactation. For pregnant women, or those anticipating becoming pregnant, certolizumab is a safe and effective biologic option. It is the only biologic shown to have no—or minimal—transfer across the placenta. This is important because biologics that cross the placenta have the potential to cause immunosuppression for the first 3 months of a baby’s life.

TNF inhibitors should not be used in patients with moderate-to-severe heart failure, in patients with demyelinating diseases such as multiple sclerosis or optic neuritis, or in patients with hepatitis B or latent tuberculosis. Deucravacitinib is an oral selective tyrosine kinase 2 inhibitor that was approved in September 2022 for the treatment of psoriasis in adult patients who are candidates for systemic therapy or phototherapy. In a 12-week phase 2 trial, treatment with deucravacitinib resulted in greater improvements in psoriasis severity than treatment with...
placebo.\textsuperscript{25,26} The most common AEs associated with use of deucravacitinib included nasopharyngitis, headache, diarrhea, nausea, and upper respiratory infections.

Ustekinumab, \textbf{an IL-12/23 inhibitor} approved for the treatment of psoriasis, may be a good option for overweight or obese patients.\textsuperscript{18} Although ustekinumab’s dosing is not proportional-to-weight, it does take weight into consideration. Patients heavier than 100 kg (~220 pounds) receive a different dose than lighter patients. Ustekinumab may also be a good option for patients with IBD as it is approved to treat patients with Crohn’s disease.\textsuperscript{8}

\textbf{Other IL-17 inhibitors} (brodalumab, ixekizumab, secukinumab) have a fast onset of action, elicit a robust response, and demonstrate good sustainability.\textsuperscript{1} These biologics should not be used in patients with comorbid IBD as they have been shown to reactivate or worsen this condition.\textsuperscript{18} In addition, brodalumab should not be used in patients with a history of suicidal ideation or recent suicidal behavior.\textsuperscript{18,19}

\textbf{IL-23 inhibitors} (guselkumab, risankizumab, tildrakizumab) are the final class of biologics approved to treat psoriasis. Guselkumab is notable as an effective treatment option for patients with nail, scalp, or palmoplantar disease.\textsuperscript{8}

\textbf{TIPS AND TRICKS FOR SELECTING A BIOLOGIC}

One recent meta-analysis found that patient satisfaction among those being treated with biologic therapy is better than among those using oral therapies, phototherapy,

\begin{table}[h]
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\begin{tabular}{|l|l|l|l|l|l|}
\hline
\textbf{Class} & \textbf{Agent} & \textbf{Maintenance Dose Frequency*} & \textbf{Select Features} & \textbf{Unique Class Contraindications} & \textbf{Unique Class Benefits} \\
\hline
\textbf{TNF inhibitor} & Adalimumab & Every 2 weeks & Preferred for nail and palmoplantar disease & \begin{itemize}
\item Demyelinating diseases
\item Hepatitis B
\item Latent tuberculosis
\item Advanced congestive heart failure
\end{itemize} & \begin{itemize}
\item Preferred in lactating women
\item Good option for patients with IBD
\end{itemize} \\
& Certolizumab pegol & Every 2 weeks & Preferred in pregnant women & & \\
& Etanercept & Once weekly & Preferred for nail and scalp disease & & \\
& Infliximab & Every 8 weeks & Good option for overweight/obese patients & & \\
\hline
\textbf{IL-12/23 inhibitor} & Ustekinumab & Every 12 weeks & Good option for overweight/obese patients and patients with IBD & \begin{itemize}
\item Hepatitis B
\item Latent tuberculosis
\end{itemize} & \\
\hline
\textbf{IL-17 inhibitor} & Brodalumab & Every 2 weeks & Avoid in patients with history of suicidal ideation or behavior & & \begin{itemize}
\item Inflammatory bowel disease
\end{itemize} & \begin{itemize}
\item Fast onset of action
\end{itemize} \\
& Ixekizumab & Every 4 weeks & & & \\
& Secukinumab & Every 4 weeks & Preferred for nail and palmoplantar disease & & \\
\hline
\textbf{IL-23 inhibitor} & Guselkumab & Every 8 weeks & Preferred for nail, scalp, and palmoplantar disease & & \\
& Risankizumab & Every 12 weeks & & & \\
& Tildrakizumab & Every 12 weeks & & & \\
\hline
\textbf{TYK2 inhibitor} & Deucravacitinib & Once daily & & & \\
\hline
\end{tabular}
\caption{Biologics approved to treat psoriasis\textsuperscript{1,8}}
\end{table}
or topical therapy. However, even for patients being treated with biologics, overall patient satisfaction levels are relatively modest. Roughly one-third of patients with psoriasis who initiate a biologic discontinue therapy within a year. Patients consider the most important attributes of biologics to be risk of AEs and probability of treatment benefit. Similarly, the primary reasons that patients discontinue biologics are AEs and lack of effectiveness. By finding the right “match” for a patient initiating biologics, clinicians can help maximize the odds of treatment success (see Table 2).

One important factor to consider is how often a biologic needs to be administered. Many patients, not surprisingly, prefer less frequent injections. In fact, some patients place greater importance on practical factors such as how a treatment is delivered than on clinical outcomes such as effectiveness. TNF inhibitors typically need to be administered more frequently than other types of biologics. The IL-12/23 inhibitor ustekinumab and the IL-23 inhibitors risankizumab and tildrakizumab need only be administered once every 3 months.

When difficult-to-treat areas of the body are involved, this may also be an important consideration. For nail disease, the TNF inhibitors etanercept and adalimumab, the IL-17 inhibitor secukinumab, and the IL-23 inhibitor guselkumab have the most evidence supporting efficacy. For scalp disease, etanercept and guselkumab have the most evidence of benefit. And for palmoplantar disease, adalimumab, secukinumab, and guselkumab appear to be most effective.

**WHAT ABOUT WHEN BIOLOGIC TREATMENT DOESN’T WORK?**

If a patient does not achieve the desired response on biologic monotherapy, concurrent use of topical corticosteroids, topical vitamin D analogs, or narrowband UVB light therapy may be helpful, especially if targeting difficult-to-treat areas. In practice, most patients who receive systemic therapy will also need topical agents for symptomatic relief and to minimize the required dose of systemic medications.

Combining biologics with oral systemic agents such as methotrexate, cyclosporine, and apremilast should be done with caution. Although these different types of systemic medications have synergistic effects, combining them increases the risk for immunosuppression-related complications. The safest combination involving biologics may be with the oral medication acitretin, which lacks immunosuppressive properties. An additional benefit of this combination is that acitretin may help prevent squamous cell carcinoma from developing in high-risk patients taking TNF inhibitors or the IL-12/23 inhibitor ustekinumab.

Despite elevating the risk of immunosuppression-related complications, combinations involving biologics and traditional oral agents do have their place in treatment. For instance, methotrexate limits the formation of antidrug antibodies that limit the effectiveness of some biologics. This is one of the reasons that the AAD-NPF guidelines state that the combination of etanercept and methotrexate is recommended as a treatment option to augment efficacy; infliximab, adalimumab, and ustekinumab may also be combined with methotrexate to improve overall rates of response.

In some cases, a patient will need to switch from one biologic to another, either because of limited efficacy or AEs. In one study of nearly 9,000 patients with psoriasis who initiated biologics, only 57% remained on their index biologic a year later. In general, switching from one biologic to another in the same class is effective. However, if a patient is experiencing a class-specific AE (eg, demyelinating disease on a TNF inhibitor), a switch to an agent in another class makes sense.

As previously mentioned, oral systemic treatments for psoriasis include the traditional agents methotrexate, acitretin, and cyclosporine, as well as the PDE4-inhibitor apremilast. With the exception of cyclosporine, the efficacy of oral treatments is generally lower than that of biologics. In addition, most traditional oral agents are associated with greater toxicity than biologics. However, these therapies may be suitable for patients with limited access to biologics due to insurance restrictions or cost, or for those who prefer oral medication.

**Methotrexate** is the most commonly used oral systemic treatment among patients with psoriasis. Common toxicities associated with methotrexate include fatigue,
anorexia, nausea, stomatitis, and infections due to immunosuppression. Hepatic and hematologic toxicities are also common, so laboratory monitoring is typically required in patients taking methotrexate. Methotrexate should not be used in patients with cirrhosis, significant thrombocytopenia, leukopenia, or anemia, or in pregnant or lactating women. To reduce the risk of AEs, folate supplementation is recommended.

**Acitretin** is different from other systemic treatments in that instead of targeting the immune system, it works by decreasing the proliferation rate of skin cells. Because acitretin is not immunosuppressive, it may be a good choice for patients with HIV who are on highly active antiretroviral therapy. Acitretin is an oral medication that is more effective at higher doses, but dosing is often limited by tolerability issues. Thus, it tends to be less effective than other systemic medications. Nearly all patients taking acitretin experience mucocutaneous AEs such as xerosis, dryness of the eyes and nasal/oral mucosa, brittle nails, and itching or burning skin. Laboratory monitoring is required for patients taking acitretin. Because it is teratogenic, acitretin should not be used by pregnant or nursing women.

**Cyclosporine** should not be used as a long-term treatment for psoriasis because of its potential to cause serious AEs. However, cyclosporine can be used as short-term or induction therapy for patients with severe psoriasis who would benefit from rapid abatement of symptoms. The most common AEs associated with cyclosporine are nephrotoxicity and hypertension. Laboratory and regular blood pressure monitoring is required for any patient taking cyclosporine. There are a number of contraindications to the use of cyclosporine, including abnormal renal function, uncontrolled hypertension, malignancy, or prior PUVA treatment. In addition, cyclosporine can increase or decrease levels of medications metabolized by CYP3A4, including statins, calcium blockers, and warfarin.

**Apremilast**, which is approved for use in patients with psoriasis of any severity, was the first new oral treatment for psoriasis approved in years by the FDA when it was introduced in 2014. One of its benefits is the lack of requirement for routine laboratory monitoring. The most common AEs associated with use of apremilast are diarrhea, nausea, upper respiratory tract infections, and headache. Apremilast may also be associated with the worsening of depression, and some patients may experience weight loss.

**EDUCATING PATIENTS ABOUT PSORIASIS TREATMENT OPTIONS**

If the ever-expanding array of psoriasis therapies feels overwhelming for dermatology specialists, imagine how patients feel. Individuals with psoriasis are often eager to learn more about their condition and the most effective means of treating it. Today, many patients seek information about psoriasis on the Internet, and much of what they find there may be at odds with clinical guidelines. For example, YouTube videos about psoriasis tend to favor natural treatments over medications and discourage seeking medical advice. Perhaps it is not surprising that, in one study, individuals with psoriasis who had never used biologics associated these medications with the words “apprehension,” “side effects,” and “immune suppression.” Patients with psoriasis who are not currently receiving treatment also report particular concern about injection site reactions. These findings highlight the importance of taking time to educate patients about specific treatment options and to elicit their opinions and beliefs about psoriasis therapies. Engaging in this kind of open dialogue is an essential step in building a therapeutic alliance and creating a foundation for treatment success.

**SUMMARY**

Dermatology specialists have the opportunity to dramatically improve outcomes for many of their patients with psoriasis. In one large survey of patients with psoriasis, 9% of individuals with severe disease reported receiving no treatment and 22% were being treated with topical medications alone. Patients of color are especially likely to miss out on the benefits of systemic therapy. By engaging more patients with moderate-to-severe psoriasis in discussions about the initiation of systemic therapy and by matching more patients with mild-to-moderate psoriasis with topical treatments that meet their needs, clinicians can meaningfully improve skin clearance for these individuals. Although psoriasis can be a challenging condition to manage, seeing patients’ quality of life improve is a truly gratifying experience for clinicians. The variety of effective psoriasis therapies, though sometimes overwhelming, means virtually every patient has the potential to achieve relief from this condition.
REFERENCES


Caring for children with dermatologic autoimmune diseases can be challenging for any provider. For starters, the clinical presentation of pediatric psoriasis often looks starkly different than in adult counterparts. Additionally, staying attentive to the developmental, emotional, and physical needs of children and adolescents as they age and evolve can be extremely tricky. For these reasons (among others), understanding the unique presentation, common comorbidities, and evidence-based treatment guidelines is crucial to help provide exceptional care to children with psoriasis.

Juan is a 10-year-old male patient who recently presented to my practice with a scaling rash on his scalp for several years. His mother told me that Juan had always had “sensitive” skin with some form of rash. On his 10th birthday, Juan became very ill with Group A *Streptococcus* pharyngitis, which triggered a worsening rash over his entire body. Physical examination revealed significant scaling on Juan’s scalp, posterior ear creases, ear conchae, and nasal folds. He had marked erythema and scale to his eyelid borders and complained they were “very itchy.” His trunk and extremities were covered with numerous, 6-8 mm, round-ovoid, scaling papules on an erythematous base. He was afebrile, eating, and sleeping normally. Because of the recent exacerbation of Juan’s condition following his *Streptococcus* infection, his mother suspected he had an allergic reaction of some kind to his oral antibiotic. Certainly, this was worth exploring, but there were a variety of potential causes of Juan’s skin issues.

Cases like Juan’s are not uncommon. Approximately one-third of patients diagnosed with psoriasis report onset in the pediatric years. According to Paller et al,
"The good news is that many pediatric patients with psoriasis—following appropriate and timely treatment—will experience years of disease remission with few or no skin issues."

The incidence of psoriasis among pediatric patients has doubled since 1970. The diagnosis and management of pediatric patients with psoriasis can provide a unique challenge for dermatology providers since the condition often presents quite differently in children than adults. For example, psoriatic plaques in children are often thinner, less scaly, and less well-defined than in adults. Missing these signs can easily lead to misdiagnosis and delays in the provision of care. Psoriasis in pediatric patients is easily confused with other skin conditions such as atopic dermatitis, pityriasis rosea, and superficial fungal infections, so we need to recognize that when we see scaling rash on the scalp, posterior ear creases, and gluteal cleft in children, psoriasis should be high in our differential. Furthermore, always suspect psoriasis when you see rash in the folds of skin under a diaper in an infant—this is among the most common places where the disease can “hide.”

There are a variety of common risk factors for the development of pediatric psoriasis that providers should also be mindful of, including a family history of psoriasis, obesity, infection (most often Streptococcal infections), emotional stress, and use of specific medications such as systemic corticosteroids.

I often tell professional colleagues that, “Autoimmune conditions herd. They occur together commonly.” This reminds us to screen for concomitant autoimmune conditions in patients already diagnosed with one autoimmune disease. For instance, we should always screen patients with psoriasis for both psoriatic arthritis and inflammatory bowel disease. We should also assess the potential role of obesity, metabolic syndrome, cardiovascular disease, depression, and anxiety. These can all be exacerbated in patients with autoimmune disease. In addition, psoriasis often has a profound impact on our patients’ quality of life.

When I describe psoriasis to my newly diagnosed patients and their families, I like to describe the patient’s immune system as a revved up, super-charged race car engine going at peak RPM. I tell them that patients with psoriasis have a unique light switch they were born with that has now been “turned on” through some combination of factors that we don’t completely understand. The good news is that many pediatric patients with psoriasis—following appropriate and timely treatment—will experience years of disease remission with few or no skin issues. This is a bit different than most adult patients with psoriasis who commonly have some degree of skin rash no matter how effectively they are being treated.

We do know that the same cytokines are responsible for the development of psoriasis in children as well as adults. One study by Lynde et al showed that plaque-type psoriasis is characterized by the tumor necrosis factor-alpha/interleukin-23/T helper-17 inflammatory pathway. The crazy cycle of this inflammatory loop leads to hyperproliferation of keratinocytes at the surface of the skin. Contextually, when we biopsy a psoriatic plaque, we typically see an abundance of immature keratinocytes that have been created by the immune system. While these immature keratinocytes are not yet prepared to be at the surface of the skin, they are abundant there and create tissue reorganization. This is one of the many
potential drivers of psoriasis, and research is ongoing to determine the role of other cytokines and inflammatory pathways in the development of the condition.

Because many medications we use to treat pediatric patients with psoriasis are not approved by the U.S. Food and Drug Administration, we must be cautious and vigilant as we create a treatment plan and monitor patient response to therapy. However, too much caution can also be detrimental. Inappropriate treatment or undertreatment can lead to further exacerbations of the condition. This can create more problems down the line for our patients and their families.

There are a variety of tools that can be used to assess the status of a pediatric patient’s psoriasis, including Body Surface Area (BSA), the Psoriasis Area and Severity Index (PASI), Investigator's Global Assessment (IGA), and a quality-of-life measure for children called Children's Dermatology Life Quality Index (CDLQI). These are useful tools, but we must also listen carefully to our pediatric patients and their parents, and allow them to tell us how their disease is impacting their lives as we contemplate therapeutic decisions.

The latest guidelines for the treatment of psoriasis in pediatric patients from the National Psoriasis Foundation and American Academy of Dermatology were published in 2020 and include the use of topical therapies such as corticosteroids, calcineurin inhibitors, and topical retinoids as first-line therapeutic options. The evidence supporting their use, as well as other medications, is reviewed throughout this issue of *Dermatology Nurse Practice* and is worth a careful review so that providers can be familiar with the current tools in our therapeutic armamentarium. In my practice, we certainly take advantage of immunomodulators and biologic therapies in those patients who require a more aggressive approach to care.

The management of psoriasis, especially more aggressive versions of the disease, can be challenging in any patient, but is especially challenging in children. There are unique presenting characteristics, quality of life issues, and treatment options in these patients that providers must be familiar with. These are patients whose lives can be profoundly impacted if we help them make appropriate, clinically-sound decisions.

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Due to the COVID-19 pandemic, dermatology clinicians have had to readjust our practices based on workforce changes and the emerging healthcare needs of our patients, not to mention the ongoing frustration caused by electronic medical records and virtual visits. It is not uncommon for providers to run 30 minutes late for patient appointments, especially later in the day, due to unforeseen problems. Due to expensive copays and deductibles, many patients save up all of their skin-related complaints and hit us with as much as possible during their 10-15 minute office visit. The phrase, “Since I’m here...,” has taken on an ominous tone. While we all want to address our patients’ issues—all of their issues—that can be a challenge with the tick tick tick of our mental clock running in the background. Still, it is often worth it to slow down, become present in the moment, and truly listen to everything our patients are telling us.

Anna is a 32-year-old female who presented to my office a few months ago for treatment of her severe scalp psoriasis. She reported a 10-year history of redness, scale, and severe itching limited to her scalp. Past treatment mostly involved topicals corticosteroids prescribed by various primary care and dermatology providers. When we brought Anna into the exam room, she declined to undress and don a patient gown. She explained that it was unnecessary because her psoriasis was limited to her scalp. Furthermore, she was familiar with her disease since her mother and brother also suffered from severe plaque psoriasis.

Yet within the first minutes of our interaction, I sensed that Anna had something more on her mind than her scalp psoriasis. It seemed unusual that, despite 10 years of uncontrolled disease, she only wanted to consider treatment with topical corticosteroids. I sat and talked to Anna about the subtypes of plaque psoriasis and how she would be at risk of developing psoriatic arthritis and other comorbidities in the future if her disease remained uncontrolled. As we talked more and I showed Anna that I wouldn’t rush her out of the exam room, she began to share her concerns about other skin symptoms, especially in more intimate areas of her body.

Together, we spent a good deal of time exploring Anna’s physical symptom history and its impact on her life. She reported breaking out in “boils and cysts” all over her body, but especially in her groin and buttocks, since she was a teenager. She had tried a variety of approaches, including prescription oral and topical antibiotics, incisions and drainage, and an array of over-the-counter hygiene products, but nothing seemed to make a difference in slowing the draining lesions. Anna said she missed work “off and on” due to the general pain caused by these lesions, as well as the unpleasant odor that often accompanied them. She felt embarrassed and admitted difficulties in having intimate relationships for fear that her partner would think she had an infection or that she was unclean. As Anna continued talking, she seemed almost relieved to be able to share the physical and emotional burden that was having such a significant impact on her quality of life.

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After taking the extra time to establish our relationship, Anna grew more comfortable and allowed me to conduct a full body skin exam. While the initial clinical findings were indeed consistent with scalp psoriasis, including on the posterior sulcus of her ears, there were no other findings of psoriatic disease on Anna's body. However, I did note scarring along with several inflamed abscesses and draining sinuses on her axillae and inguinal regions. She had Hurley stage III (severe) hidradenitis suppurativa (HS). Now, it was time to put all of the puzzle pieces together.

Anna had not just one, but two immune-mediated skin diseases—scalp psoriasis and HS—that share important pathogenetic pathways. There is some evidence of overlaps in immune pathways that cause these dual conditions, specifically interleukin (IL)-12/23 and tumor necrosis factor (TNF) alpha. Additionally, the fact that plaque psoriasis and HS tend to respond to similar therapies provides further evidence that these conditions involve similar molecular pathways.\(^2\)\(^3\) When I explained this to Anna, she seemed unaware of the association between her two unique conditions. I also shared with Anna that genetics can play a role in both of her skin diseases, but she told me she had not shared personal details about the abscesses on her private areas with her family and was therefore unsure if there was any associated family history with HS.

Because Anna had kept quiet about the full array of her skin issues, she had never been educated about the therapeutic options that are available to concomitantly treat both psoriasis and HS. I sat Anna down to review some of the most promising treatment options.\(^4\)\(^5\) We first discussed adalimumab, a TNF inhibitor that is FDA approved both for the treatment of psoriasis and HS. However, because of Anna's family history of demyelinating diseases (she has two second-degree relatives with multiple sclerosis) and the possible association between TNF inhibitors and central nervous system demyelination, we looked for other options.\(^6\) Anna eventually made an informed decision to try secukinumab, an IL-17 inhibitor that is FDA approved for the treatment of psoriasis and is in phase III trials for the treatment of HS.\(^6\)\(^7\)

Few of our patients fit into “cookie cutter” scenarios that allow us to check a few boxes, make a diagnosis, and prescribe a treatment based on overall drug efficacy and safety. In our jobs, we deal with human beings and complex disease states that can have a severe impact on overall quality of life. The landmark advances in therapeutic options over the last two decades for many dermatologic conditions have given our patients real hope for disease control and a chance for some sense of normalcy, but only if we can reach them and talk through their choices.

As dermatology clinicians, we are continually challenged to maintain high quality care in the wake of fast-paced office schedules, complex patient cases, and limited access to resources. Peeling away the layers of physical and psychological symptoms that patients suffer takes time, energy, and presence. Patients often seek care for specific symptoms while not fully appreciating the nuances of their disease. The importance of providing holistic care includes a comprehensive psychosocial assessment, detailed family history, and full body skin exam. Assessing our patients for comorbidities or associated conditions is also fundamental for disease prevention and optimizing patient outcomes.

For years, Anna had become accustomed to living with severe scalp psoriasis because it was less of a day-to-day burden than her debilitating HS. Because no one had spoken to her of the potential links between the conditions, Anna never understood that one cohesive therapeutic strategy might work to address both of her issues. Although we cannot guarantee long-term success, both Anna and I feel optimistic about her future and the new trusting partnership we have established.

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The first time I remember feeling self-conscious about my psoriasis was in the third grade. As the weather got warmer and summer approached, all I wanted to do was put my hair up in a ponytail. Unfortunately, I had psoriasis all over the back of neck, and there was no way to hide it with my hair up. But I also knew that, as long as I kept my hair down, my neck would sweat, and my dry skin would get itchier and itchier. So on one side, I was opening myself up to potential uncomfortable questions from my classmates and exposing my insecurities. On the other, it was days of itching the skin on the back of my neck until it bled. It was ultimate catch-22 for a 9-year-old girl with psoriasis.

Over the course of a few weeks, as the weather got warmer and warmer, I tried my best to talk myself into it. “No one will notice,” I kept telling myself. “This is silly. Just do it.”

And so, one morning, I decided to take the plunge and put my hair up in a ponytail before going to school. Initially, I felt so free and relieved. Until the inevitable question came.

“What’s wrong with your neck?”

Once one of my classmates pointed out that something was wrong or different about me, the insecurities hit me like a wave. I immediately took my hair down and fought back tears.

“It’s just a scratch,” I told him.
For years after that day, I went to whatever lengths were necessary to hide my psoriasis. I am in my senior year of high school as a 17-year-old, and I now recognize that everyone has their own issues to deal with, but when you are growing up as a young teenager, you think that your problems are worse than anyone else's around you. And psoriasis has been my personal burden for many years.

Sometimes, it’s the little things that are the most annoying. For instance, I can’t wear black shirts. My psoriasis is flaky and becomes even worse with itching. Some days, it looks like I’ve walked through a snowstorm, with little white spots dotting my clothing. Obviously, this becomes even more visible against a dark background, so I have to wear light colored clothing in the fall and winter when my psoriasis is at its worst.

As I already mentioned, I stopped putting my hair up in a ponytail nearly a decade ago, and once my psoriasis crept behind my ears and scalp as I neared middle school, I started wearing sweatshirts and pulled the hood over my head from the moment I left the house until the moment I came home. I felt like I was living in a box. I remember the feeling of intense relief coming home after a long day of school and immediately taking my sweatshirt off and putting my hair up. My house was the only place I felt comfortable enough to do what I wanted.

When I was younger and just learning about who I was, it was hard to hide my insecurities. When my rash first emerged, my mom first took me to my regular pediatrician to see if she could help. She tried her best, prescribing various topical creams and gels, none of which improved my condition. Once she realized my issues were beyond her area of expertise, I was referred to my first pediatric dermatologist. There, I was unfortunately incorrectly diagnosed with atopic dermatitis, and, despite an aggressive treatment regimen, my psoriasis got worse and worse, spreading to even more places on my body.

It wasn't until my mom took me to her dermatologist that things started to turn around. My diagnosis was correctly fixed to psoriasis, and I was given all kinds of new ideas to try. Some helped more than others, but the motivation to keep trying new things really kept me feeling hopeful, and my skin definitely began to improve. Unfortunately, around the time of my 16th birthday, my dermatologist moved abruptly and unexpectedly, closing her practice. This news was quite jarring and left me without a dermatologist for several months. Without access to treatment and having lost some of my motivation to keep trying, my skin became worse than ever.

Fortunately, my mom was able to find another great dermatology practice less than a mile from my house. I feel extremely fortunate to once again have the support I need. I'm back on a stable treatment regimen that involves an injection every 4-12 weeks, as well as various topical creams and liquids. Not only has my psoriasis gone away, but so have my feelings of being self-conscious from the moment I leave the house. I wear my hair in a ponytail without hesitation. I don't wear sweatshirts with the hood pulled over my head unless I want to (or I'm just cold – I mean, this is Ohio).

While I can look back now with some perspective on my condition, in the moment, the stress and negative impact that psoriasis had on my mental health was unbearable. I know that there are some teenagers who break out in a rash from time to time, but they are too afraid to tell anyone and therefore struggle in silence. I can't imagine dealing with psoriasis on my own, and I am so grateful to my current dermatology team for helping me get my life back on track.

Like a lot of kids, I always hated going to the doctor. It made me feel different from everyone else, and not in a good way. Especially when I was dealing with a new member of the healthcare team, I was extremely apprehensive. I wanted to feel normal and not judged as someone who needs to be “fixed.” Medical professionals who show empathy for their patients and try to relate to the challenges they are facing on a day-to-day basis are the ones who are going to build trust and successfully collaborate on solutions. Skin issues like psoriasis have an enormous impact on a young patient's self-esteem and mental health. Being treated like an individual and not a list of symptoms and medical records is what makes me feel normal.

It has taken a while, but I can now accept that psoriasis is not something I should hide or be ashamed of. Now, when someone comes up behind me and asks what those red marks are on my neck, I confidently tell them that it's psoriasis. Maybe they have more questions (Is it contagious? Does it hurt?), and I'm happy to answer them. I would never have written this essay and exposed my story a few years ago, but I'm not shy about sharing my journey anymore. Like it or not, psoriasis is a part of who I am.
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