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DERMATOLOGY NURSE PRACTICE

Vaccination Protocols in Atopic Dermatitis

INSIDE THIS ISSUE:

Are there any unique concerns among patients with atopic dermatitis (AD) related to vaccines?

How might evidence of vaccine efficacy from other immune-mediated diseases be relevant to patients with AD?

Is the COVID-19 vaccine recommended for patients with AD?

What role should dermatology practices play in assuring patients are receiving age-appropriate vaccinations?

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LEARNING OBJECTIVES

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

- Assess the benefits of vaccination in patients with atopic dermatitis (AD)
- Identify specific vaccination concerns among patients with AD being treated with specific therapeutic agents
- Discuss published vaccination guidance that is available to help direct patients with AD being treated with systemic therapy
- Consider the role of dermatology practices in assuring that patients with AD receive age-appropriate vaccines

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ACTIVITY DESCRIPTION

This issue of *Dermatology Nurse Practice*, focuses on current vaccination considerations for patients with AD, especially those being treated with immunomodulatory agents. It will discuss the benefits of vaccination for patients with AD and offer a detailed look at how AD and immunomodulatory agents impact the immune response of patients. It will also summarize guidelines for vaccinating adult and pediatric patients with AD, including those using immunomodulatory and immunosuppressive agents.

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.

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Nurses

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This educational activity is jointly provided by Dermatology Nurses' Association and Excalibur Medical Education.

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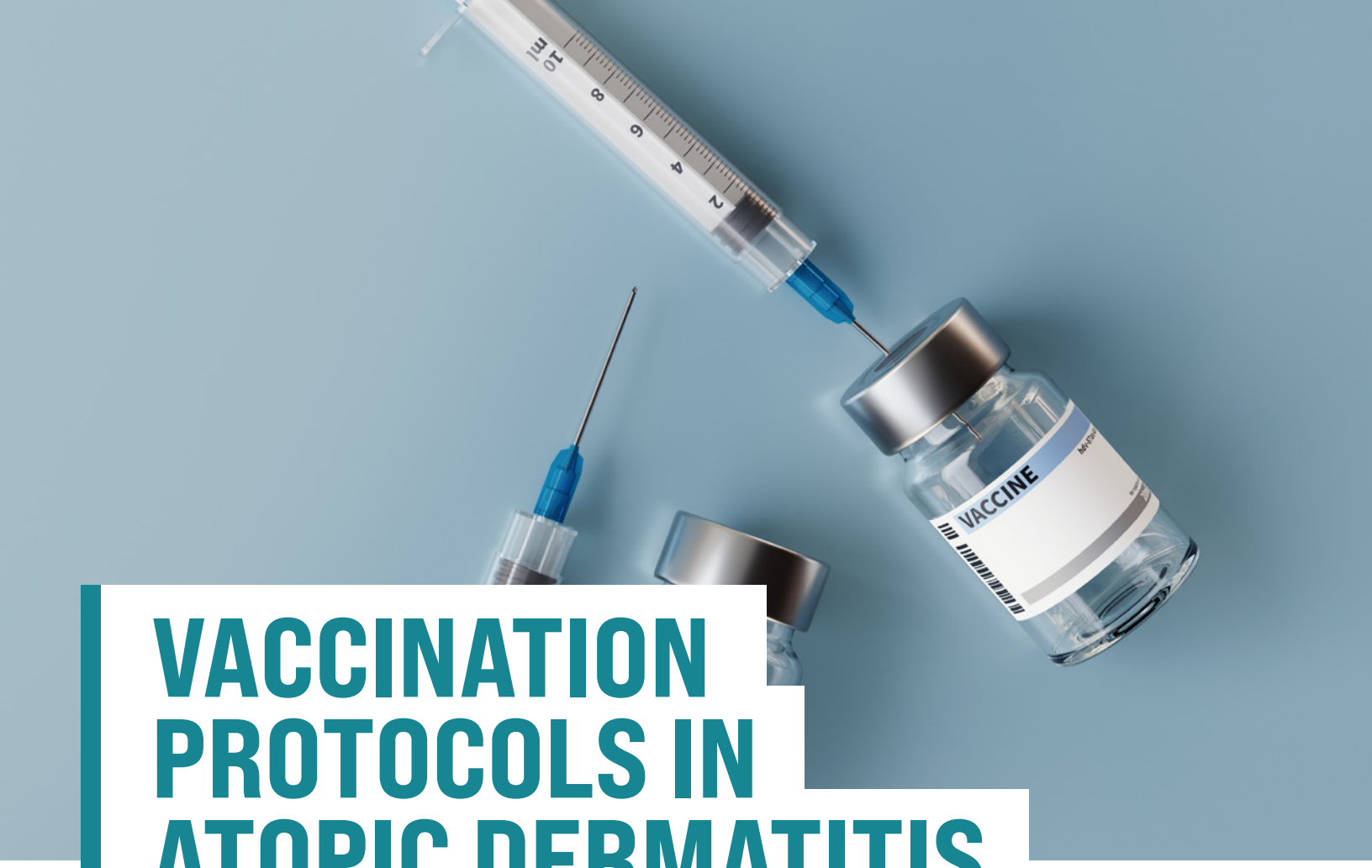

VACCINATION PROTOCOLS IN ATOPIC DERMATITIS

DRUG NAMES INCLUDED WITHIN THIS ISSUE

Generic	Brand
Dupilumab	Dupixent
Tralokinumab	Adbry
Abrocitinib	Cibinqo
Upadacitinib	Rinvoq
Azathioprine	Imuran, Azasan
Cyclosporine	Sandimmune, Neoral, Gengraf
Methotrexate	Otrexup, Rasuvo, RediTrex
Clindamycin	Cleocin, Cleocin T, Evoclin, Clindesse
Mupirocin	Bactroban, Centany
Clobetasol	Dermovate, ClobaDerm, Etrivex

Many people think of atopic dermatitis (AD) exclusively as a skin disease. However, people with AD are also more prone to infection than the general public, in part due to abnormalities in their innate and adaptive immune systems.[1-3] In addition, when people with AD develop infections, they are often at higher risk of developing complications from these infections. For example, people with AD who develop chickenpox (varicella) have a higher rate of painful and sometimes life-threatening complications compared to the general population.[4] Infections may also speed patients' journey along the atopic march, a sequential progression from AD to other atopic diseases such as asthma and allergic rhinitis.[5] All of these factors make vaccinations an essential part of care for both pediatric and adult patients with AD.

In the United States, the majority of patients typically receive vaccinations from their primary care providers. However, because dermatology specialists are the primary prescribers of immunomodulatory and immunosuppressive therapies for patients with AD, it is critical that they also be familiar with vaccine recommendations for this patient population.[6] In fact, in its *Clinical Practice Guideline for Vaccination of the Immunocompromised Host*, the Infectious Disease

"Caregivers may be relieved to learn that a recent systematic review and meta-analysis of roughly 40 studies on this topic found no consistent associations between any vaccinations or vaccine regimens and atopic dermatitis risk."

Society of America (IDSA) stated that specialists who care for immunocompromised patients share responsibility with primary care providers for ensuring that appropriate vaccinations are administered.[7]

Current vaccination rates in the United States demonstrate why primary care providers and specialists must work together to protect patients. Currently, only 22% of U.S. adults have received all age-appropriate vaccinations,[8] and immunization rates among immunocompromised people are even lower than in the general population.[9] Thus, this issue of *Dermatology Nurse Practice* focuses on current vaccination considerations for patients with AD, especially those being treated with immunomodulatory agents. It will discuss the benefits of vaccination for patients with AD and offer a detailed look at how AD and immunomodulatory agents impact the immune response of patients. It will also summarize guidelines for vaccinating adult and pediatric patients with AD, including those using immunomodulatory and immunosuppressive agents.

BENEFITS OF VACCINATION FOR PATIENTS WITH AD OR AT RISK FOR DEVELOPING AD

Patients with AD are at elevated risk of developing additional allergy-related conditions such as asthma or allergic rhinitis. This sequential progression from AD to other atopic diseases is called the ***atopic march***. Respiratory infections, in particular, can interact with the allergic sensitization already present in patients with AD to promote recurrent wheezing and the development of asthma.[5,10] Therefore, vaccination against respiratory pathogens should help protect patients with AD from progressing to develop asthma. To illustrate this concept, researchers in one study followed patients with newly diagnosed AD for 13 years.[10] They found individuals who were vaccinated against influenza had a significantly lower incidence of developing asthma than those who remained unvaccinated. In the future, additional research may further clarify the levels of protection against asthma offered by vaccines against various respiratory infections.

Paradoxically, some patients with AD or their caregivers may worry that vaccines can cause or exacerbate AD and other atopic diseases. This concern is often driven by the ***Hygiene Hypothesis***, which posits that the increased incidence of atopic diseases such as AD in modern society is due to a decrease in the incidence of early-childhood infections.[11] If the Hygiene Hypothesis is correct, then it follows that vaccinating children—which reduces their risk of contracting infections—would also increase their risk of developing AD. Discussion of the Hygiene Hypothesis in parenting groups has driven vaccine fears among some caregivers.[12]

Parental concern was understandably exacerbated by a 2016 study in which researchers reported that delaying infants' tetanus-diphtheria-acellular pertussis (Tdap) vaccinations is associated with a reduced risk of developing AD before 1 year of age.[13] This finding sparked a flurry of follow-up studies seeking to confirm whether or

not vaccination should be delayed in pediatric patients at high risk for developing AD. Caregivers may be relieved to learn that a recent systematic review and meta-analysis of roughly 40 studies on this topic found no consistent associations between any vaccinations or vaccine regimens and AD risk.[14] Given this information, all patients at high risk for AD should receive age-appropriate vaccinations, and vaccination should not be delayed.

THE IMPACT OF IMMUNOMODULATORY AGENTS ON VACCINE EFFICACY

Vaccination is effective in people with AD who are not using immunomodulatory or immunosuppressive agents, although some evidence exists that these patients' immune responses may be slower to develop for some vaccines. For example, one study analyzed immune responses in atopic and non-atopic 6-year-old children who had completed the full Tdap vaccine regimen.[15] It found that vaccine-specific immunity (as measured by cytokine and antibody titers) in children with atopic disease was at least equivalent to that of nonatopic children. However, the T-helper cell response to vaccines appeared to develop more slowly in children with atopic disease. Another study investigated the immune response to the varicella vaccine in children aged 1-3 years with and without AD.[16] It found that, 2-8 weeks after vaccination, the cell-mediated response to the vaccine was similar in both groups of children, indicating that a rapid immune response had occurred in the children with AD. In short, available research indicates that people with AD mount a robust immune response to vaccines, but certain aspects of their immune response may be altered relative to that of people without AD.

A small body of research has investigated how using immunomodulatory agents impacts the immunogenicity of vaccines among patients with AD. Common immunomodulatory and immunosuppressive agents used to treat AD include long-term treatments such as the interleukin (IL)-4/IL-13 inhibitors dupilumab and tralokinumab; the Janus kinase (JAK) inhibitors abrocitinib and upadacitinib; azathioprine; and methotrexate. In some cases, agents such as corticosteroids and cyclosporine are also used for short-term treatments of AD flares.[17-19] In general, it is believed that individuals who use immunomodulatory and immunosuppressive agents may be unable to mount an appropriate immune response to vaccines.[7] However, some evidence suggests this may not be the case for individuals with AD using dupilumab or tralokinumab.

In one clinical trial, adults with moderate-to-severe AD received dupilumab (300 mg) or placebo weekly for 16 weeks.[20] At week 12, they also received single doses of the Tdap vaccine (which elicits a T-cell-dependent immune response) and quadrivalent meningococcal polysaccharide vaccine (which elicits a T-cell-independent immune response). By week 16, individuals in the dupilumab and placebo groups had achieved similar levels of immunity to both vaccines. However, at week 32, individuals in the dupilumab group were significantly less likely to have developed Tdap-specific IgE antibodies, consistent with dupilumab's beneficial impact on IgE levels more generally. This study suggests that use of dupilumab may actually benefit patients with AD who are vaccinated with Tdap by lowering the risk of an allergic response to the vaccine.

In a similar trial, adults with moderate-to-severe AD received tralokinumab (300 mg) or placebo weekly for 16 weeks.[21] Again, at week 12, participants received the Tdap and meningococcal vaccines. By week 16, the individuals who had received tralokinumab exhibited a response to the vaccines that was not inferior to that of the individuals who received placebo. Thus, like dupilumab, tralokinumab does not seem to prevent patients from mounting an adequate immune response to these vaccines.

The Tdap and meningococcal vaccines both protect recipients against bacterial pathogens. Research has also been performed on immunomodulatory agents' effect on the immunogenicity of the COVID-19 (SARS-CoV-2) vaccine, which targets a virus. In a 2020-21 clinical trial that enrolled 1,442 participants with AD who were taking tralokinumab, 231 (16%) had received at least 1 dose of a COVID-19 vaccine.[22] During the trial, all but 1 of the 77 COVID-19 cases that occurred among trial participants were in unvaccinated patients, and the 1 vaccinated patient who contracted COVID-19 was only partially vaccinated. These findings suggest that the COVID-19 vaccine did protect patients with AD taking an IL-4/IL-13 inhibitor. Another study, this one of more than 77,000 people with AD, found that patients with AD who were vaccinated against COVID-19 (defined as having received 2 doses of vaccine BNT162b2) were significantly less likely to develop COVID-19 infection, be hospitalized for COVID-19, or die from COVID-19.[23] Exposure to immunomodulatory and immunosuppressive drugs (dupilumab, azathioprine, methotrexate, or cyclosporine) did not appear to impair this protection. Given all available evidence, the European Task Force on AD has stated that systemic immunosuppressants and JAK inhibitors used to treat AD may attenuate the immune response to the COVID-19 vaccine, but no attenuation is expected for dupilumab.[24]

Live vs Non-live Vaccines: A Brief Explanation

Vaccines can be classified into two basic types: live (attenuated) and non-live (inactivated).[25]

LIVE VACCINES

Live vaccines are derived from viruses or bacteria found in the "wild" and attenuated, or weakened, in a laboratory, usually via repeated culturing. These vaccines replicate in the body of a vaccinated person and stimulate a protective immune response similar to the one a person would mount if they were infected with a non-attenuated version of the same pathogen. In immunocompetent individuals, live, attenuated vaccines rarely cause disease. However, in individuals with a weakened immune system (for example, because they are treated with certain drugs, such as biologics), the pathogen in a live, attenuated vaccine may cause severe or fatal infections as a result of uncontrolled replication. For this reason, live vaccines are often not recommended for immunocompromised individuals. Examples of live vaccines used in the United States are the measles mumps rubella (MMR), varicella, rotavirus, and intranasal influenza vaccines.

NON-LIVE (INACTIVATED) VACCINES

Non-live (inactivated) vaccines do not contain live pathogens and therefore cannot cause disease even in immunocompromised individuals. However, the immunity provided by inactivated vaccines is generally not as long-lasting as that provided by live vaccines, so more doses and "boosters" are typically required. This category of vaccine includes whole-cell inactivated vaccines (eg, bacteria or viruses that have been killed; examples include the polio, hepatitis A, and rabies vaccines) and subunit vaccines that contain only a portion of the bacteria or virus (eg, the *Haemophilus influenzae* Type B and pneumococcal conjugate vaccines). Vaccines can also be made using inactivated toxins produced by bacteria (eg, the diptheria and tetanus vaccines), recombinant technology that combines DNA from two or more sources (eg, the hepatitis B and human papillomavirus vaccines), and viral messenger RNA (eg, COVID-19 vaccines).

CURRENT VACCINE RECOMMENDATIONS FOR ADULTS AND CHILDREN WITH AD

In this section, we will briefly discuss vaccine recommendations for adults (patients 19 years of age or older) with AD before considering the recommendations for children with AD. In addition to presenting vaccine recommendations by age group, we'll also discuss ways in which the recommendations differ for live and non-live vaccines (see sidebar), as well as depending upon whether or not a patient is receiving immunomodulatory or immunosuppressive therapy.[25]

VACCINATION FOR ADULTS WITH AD

No clinical guidelines exist specific to vaccinating adults with AD. If an adult with AD is not receiving an immunomodulatory or immunosuppressive therapy, they should follow the standard CDC vaccine schedule (see Table 1), which includes both live and non-live vaccines.[26,27] However, it is important to note that adults should not be vaccinated during acute AD flares; it is optimal for a patient to achieve good clinical AD control for at least 2 weeks before receiving vaccinations to avoid potential skin complications.[1]

In general, patients with AD who receive a biologic, JAK inhibitor, azathioprine at >3 mg/kg/day, methotrexate at >0.4 mg/kg/week, or high-dose corticosteroids (eg, ≥20 mg prednisone or equivalent per day when administered over 2 or more weeks) should be considered severely immunocompromised for the purposes of vaccination.[28-30] For these patients, the vaccine recommendations in the 2013 IDSA *Clinical Practice Guideline for Vaccination of the Immunocompromised Host* should be used.[7,17] This guideline states that live vaccines are contraindicated for immunocompromised individuals due to the risk of the attenuated pathogen growing unchecked in the patient's body post-vaccination. It also states that all non-live vaccines are safe for use in immunocompromised adults, but the effectiveness of vaccination during use of immunomodulatory or immunosuppressive therapy may be compromised. Thus, according to these guidelines, all patients vaccinated with a non-live vaccine within the 14-day period before starting immunomodulatory or immunosuppressive therapy, or those vaccinated during such therapy, should generally be considered unimmunized and revaccinated at least 3 months after therapy is discontinued.

Given these constraints, dermatology specialists should work with patients with AD to ensure that they receive

any required live or non-live vaccines 2 or more weeks prior to initiating immunomodulatory or immunosuppressive therapy.[17] Waiting 4 or more weeks to initiate immunomodulatory or immunosuppressive therapy is preferable after receiving live vaccines.[7] Both live and non-live vaccines can also be administered 3 months or more after stopping immunomodulatory or immunosuppressive therapy.

Please note that, during an acute AD flare, it is impractical to wait to initiate systemic treatment—or to interrupt treatment for months—in order to administer vaccines. In these cases, non-live vaccines should be administered concomitantly with systemic treatment once a patient's flare has been controlled for at least 2 weeks. It should also be noted that, although the *Clinical Practice Guideline for Vaccination of the Immunocompromised Host* states that patients who are vaccinated with non-live vaccines while using immunomodulatory or immunosuppressive therapy should be revaccinated after therapy is discontinued, many patients with AD who use IL-4/IL-13 inhibitors or JAK inhibitors remain on treatment for extended periods.[7] An inability to revaccinate patients taking these agents in a timely fashion may not be a major concern. As previously discussed, dupilumab and tralokinumab do not appear to attenuate the immune response in patients with AD for several different types of vaccines.[20,21,24] When patients with AD taking these agents do cease treatment, clinicians may want to consider obtaining antibody titers for any vaccines received during therapy before revaccinating.[31]

The live varicella and non-live zoster vaccines are especially important for patients with AD as they both prevent diseases with potentially serious skin complications: chickenpox and shingles, respectively. Compared to the general public, people with AD who develop varicella have a higher rate of complications such as cellulitis, hemorrhagic varicella, and superimposed soft tissue infections.[4] In addition, recent research shows that all patients with AD, whether using systemic therapies or not, are at higher risk of developing shingles than patients without AD.[32] Thus, making sure patients are up-to-date on both vaccines is a critical aspect of providing quality care.

If an adult patient with AD has not yet received the **varicella vaccine**, does not have evidence of varicella immunity, and is not using immunomodulatory or immunosuppressive therapies, catch-up vaccines should be administered, with at least 4 weeks separating the first and second doses.[33] Evidence of varicella immunity includes age-appropriate varicella vaccination, serologic evidence of immunity, a clinician-diagnosed or verified history of either varicella or zoster, or laboratory-proven varicella or zoster. Like other live vaccines, the varicella vaccine should ideally be administered 4 or more weeks prior to starting immunomodulatory or immunosuppressive therapy.[7] Of course, depending on the severity of a patient's AD, delaying therapy to complete varicella vaccination may not be possible. Thus, clinicians must consider what is best for each patient given their unique circumstances.

In adults with AD who are not receiving immunomodulatory or immunosuppressive therapy, the **recombinant**

TABLE 1
Standard CDC-recommended vaccines for adults aged 19 years or older who have received the standard schedule of childhood vaccinations[26]

Live vaccines[1]
None

Non-live vaccines[2]
COVID-19
Influenza
Tetanus, diphtheria, acellular pertussis (Tdap)
Zoster recombinant[3]

1. Catch-up vaccination with the measles, mumps, and rubella (MMR) and varicella vaccines may be necessary for patients with no evidence of immunity, including prior vaccination
2. Catch-up vaccination with the hepatitis B, human papillomavirus (HPV), and pneumococcal vaccines may be necessary for patients with no evidence of immunity, including prior vaccination. For guidance on determining which pneumococcal vaccines a patient needs and when they need it, please consult the CDC website.
3. Recommended for all adults aged 50 and over, or for immunosuppressed adults (including patients with AD who take immunomodulatory or immunosuppressive agents) aged 19 years or older

zoster vaccine is recommended for patients 50 years of age or older.[34] In adults with AD who are receiving immunomodulatory or immunosuppressive therapy, it is recommended for *all* patients.[35] This vaccine should be administered in 2 doses, a minimum of 4 weeks apart (and preferably, 2-6 months apart).[34] These recommendations apply even if a patient has already had shingles, received the Zostavax vaccine (a live zoster vaccine that is no longer available in the United States), or received the varicella vaccine.[34]

Finally, the CDC states that adults 60 years of age and older may receive a single dose of the non-live **respiratory syncytial virus (RSV)** vaccine using shared decision making with their clinician.[36] This common respiratory virus usually results in mild symptoms but can occasionally cause serious infections among the elderly.

VACCINATION FOR CHILDREN WITH AD

Children with AD who are not receiving immunomodulatory or immunosuppressive therapies should follow the standard CDC guidelines for vaccinations (see Table 2).[27] Children with AD who are using immunomodulatory or immunosuppressive therapies other than dupilumab should follow IDSA's *Clinical Practice Guideline for Vaccination of the Immunocompromised Host*.[7] The recommendations in these guidelines for children are essentially the same as described previously for adults: live vaccines are contraindicated, but all age-appropriate, non-live vaccines are safe and should be administered according to schedule, preferably prior to beginning systemic therapy.

For children with AD who are receiving dupilumab—which is now approved for use in children as young as 6 months of age—a specific set of expert guidelines now exists: *Recommendations for Vaccination in Children with Atopic Dermatitis Treated with Dupilumab* (see Table 3).[1] These recommendations were written in 2020 when dupilumab was not yet approved for children less than 6 years of age. For the most part, these recommendations are similar to those in IDSA's *Clinical Practice Guideline for Vaccination of the Immunocompromised Host*. However, these agent-specific guidelines state that, based on available data, dupilumab does not appear to compromise patients' immune responses to non-live vaccines. The guidelines also recommend that clinicians consider measuring children's antibody levels to ensure serologic protection after vaccination.

The dupilumab-specific recommendations pay special attention to the challenges that clinicians may face in determining whether their pediatric patients should receive live vaccines, which are contraindicated for immunosuppressed patients. For example, according to the CDC schedule, the measles, mumps, and rubella (MMR) booster should be administered when a patient is 4-6 years old. Many pediatric patients with AD taking dupilumab fall into this age category. The dupilumab-specific recommendations state that, in the absence of clear evidence regarding the safety of live vaccines for pediatric patients with AD taking dupilumab, individualized assessments that include pediatric subspecialists

TABLE 2
CDC-recommended vaccines for children from birth to 18 years[27]

Live vaccines
Measles, mumps, and rubella (MMR)
Rotavirus
Varicella

Non-live vaccines
COVID-19
Tetanus, diphtheria, acellular pertussis (Tdap)
Haemophilus influenzae type B
Hepatitis A
Hepatitis B
Human papillomavirus
Inactivated poliovirus
Influenza (excluding the live attenuated nasal spray)
Meningococcal
Meningococcal B[1]
Pneumococcal conjugate

1. For adolescents who are not at increased risk for this infection, the decision to administer the vaccine is based on shared decision-making

should guide decision making. For example, if a measles outbreak occurs in a child's community, the live MMR booster might be considered appropriate on a case-by-case basis.

INFLUENZA AND COVID-19 VACCINES

Unlike other vaccines, the influenza and COVID-19 vaccines must be administered on a regular basis. For these vaccines, patients with AD who are not using immunomodulatory or immunosuppressive therapies should follow standard CDC guidelines. Patients who are using immunomodulatory or immunosuppressive therapies should follow the recommendations in IDSA's *Clinical Practice Guideline for Vaccination of the Immunocompromised Host*.[7]

Annual **influenza vaccines** are recommended for all patients with AD. For patients with AD who are not using immunomodulatory or immunosuppressive therapies, the inactivated influenza vaccine, recombinant influenza vaccine, or live attenuated influenza vaccine are all appropriate choices.[37] However, patients using immunomodulating or immunosuppressive therapies should not receive the live attenuated influenza vaccine (which is administered via nasal spray).[1,17] For patients with AD aged 65 years and over, higher dose or adjuvanted influenza vaccines are recommended.[38]

The COVID-19 vaccine is also recommended for all patients with AD. Current CDC guidelines recommend that all people aged 6 years and older get a single updated COVID-19 mRNA vaccine dose.[39] Patients aged 6 months to 4 years are considered up-to-date if they have received 3 COVID-19 vaccines, including at least 1 updated COVID-19 mRNA dose. Patients aged 5 years are considered up to date if they have received at least 1 updated COVID-19 mRNA vaccine dose. Patients who are older than 65 years of age and/or receiving immunomodulatory or immunosuppressive therapies may receive an additional updated COVID-19 mRNA vaccine dose, for a total of 2 updated doses. Because COVID-19 vaccine recommendations are frequently updated, it is a good idea to regularly check the CDC website for current guidance.[39]

The COVID-19 vaccines represent the first mRNA products to achieve full FDA approval in the United States.[40] This fact, along with how quickly the vaccines were developed, may concern some patients. It may reassure them to learn that a recent large study found no evidence of higher adverse event rates among patients with AD within 30 days of receiving COVID-19 vaccines, including fever, allergic urticaria, weakness, altered

TABLE 3
Expert recommendations for vaccination of pediatric patients with AD treated with dupilumab[1]

1	Based on available data, dupilumab does not appear to affect the development of protective antibody titers to inactivated vaccines
2	Dupilumab treatment does not need to be interrupted for administration of inactivated vaccines
3	For patients on dupilumab treatment, seasonal inactivated influenza vaccination should continue as recommended
4	Based on available data, live attenuated vaccines should be avoided while on dupilumab
5	When live attenuated vaccinations are required, they should be given at least 4 weeks prior to initiation of dupilumab treatment, if possible
6	While on dupilumab, measurement of specific antibody levels can be considered to ensure serologic protection after vaccination on dupilumab therapy
7	There is no evidence to suggest that immunization while on dupilumab causes an exacerbation of AD

TABLE 4
Expert recommendations for vaccination of patients with AD against COVID-19[31]

1	Nonviral or inactivated COVID-19 vaccine subtypes may be considered before, during, or after immunosuppressive therapy in patients receiving systemic immunosuppressant or immune-targeting therapy without significant modification of ongoing treatments
2	Nonviral COVID-19 vaccine subtypes may be considered in patients receiving biologic therapy without significant modification of ongoing immune therapy
3	The risk-to-benefit ratio may favor COVID-19 immunization if immunosuppression is low and there is significant risk of disease development
4	Consider checking antibody titers after COVID-19 vaccination and using additional vaccinations, if needed, to boost the level of protective antibodies

mental status, malaise, allergic reactions, chest pain, circulatory or respiratory symptoms, axillary lymphadenopathy, and myocarditis.[41]

In 2021, an expert committee shared four recommendations for vaccinating patients using immunotherapy for dermatologic conditions such as AD against COVID-19 (see Table 4).[31] These recommendations are consistent with CDC guidelines for COVID-19 vaccination. However, one of the recommendations in this more specific set of guidance is to consider checking patients' antibody titers after vaccination and to then use additional vaccinations to boost antibody levels, if necessary. This recommendation is consistent with data showing a significant drop in SARS-CoV-2 IgG antibody titers between the second vaccine dose and the 6-month booster in patients with immune-mediated inflammatory diseases who are using immunomodulatory agents, along with a robust humoral response following administration of the booster.[42] The expert recommendations for patients with AD also specify that no significant modification of ongoing immune therapy is necessary for COVID-19 vaccination.

ADDITIONAL VACCINES FOR TRAVEL OR OTHER PURPOSES

Some patients with AD may require additional vaccinations based on requirements for international travel or work. Some of these requirements may be for live vaccines, including the yellow fever, Ty21a oral typhoid, BCG (tuberculosis), and smallpox vaccines.[17] Generally, the guidance described previously should be followed: Patients who are not using immunomodulatory or immunosuppressive therapies may receive all recommended vaccines, whereas those using such therapies should receive the recommended non-live vaccines.[7] The exception is for the smallpox vaccine, which has been required for U.S. military members since 2002 but is contraindicated for individuals with AD.[43]

In the United States, the smallpox vaccine has not been routinely administered since the early 1970s. However, in the early 2000s, authorities became concerned about the possibility of bioterrorist attacks using the smallpox virus and reinstated vaccination for specific groups,

TABLE 5
Impact of azathioprine, JAK inhibitors, and methotrexate on vaccine immunogenicity in patients with immune-mediated inflammatory diseases[28,48,49]

Type of Agent	Azathioprine	JAK inhibitors	Methotrexate
Influenza vaccine (non-live)	Decrease	Not enough information	Unclear
COVID-19 vaccines	Decrease	Decrease	Decrease
PPSV23		Decrease	Decrease
PCV7/13		No effect	Decrease
Recombinant zoster vaccine		Study pending	No effect
Hepatitis B vaccine		Not studied	
HPV vaccine		Not studied	No effect
Tetanus		Unclear	Decrease

HPV, human papillomavirus; **PCV7/13**, 7/13-valent pneumococcal conjugate vaccine; **PPSV23,** 23-valent pneumococcal polysaccharide vaccine

such as military personnel. In the first 5 months of 2003 (the last year for which data is publicly available), the U.S. Department of Defense vaccinated more than 450,000 personnel against smallpox.[44] Most individuals who temporarily deferred vaccination during that period cited skin conditions, such as AD, as the main reason. This is because patients with AD who receive the smallpox vaccine may develop a potentially fatal complication called eczema vaccinatum, in which the vaccinia virus disseminates to cause an extensive rash and systemic illness.[45] For this reason, the military currently exempts individuals with AD from the requirement to be vaccinated against smallpox.[46]

INSIGHTS FROM OTHER IMMUNE-MEDIATED INFLAMMATORY CONDITIONS

The literature on AD, immunomodulatory and immunosuppressive agents, and vaccination is limited. However, quite a bit of research has been conducted on the use of immunomodulatory and immunosuppressive agents and vaccinations among patients with other immune-mediated inflammatory conditions such as rheumatoid arthritis, psoriasis, psoriatic arthritis, and Crohn's disease.[28] Some findings from this body of research may be helpful for clinicians tasked with making decisions about vaccinations for patients with AD. It is important, however, to note that patients with AD may differ in meaningful ways from patients with other immune-mediated inflammatory conditions. For example, patients with AD tend to be younger than patients with rheumatoid arthritis, to take different concomitant medications, and to have different comorbidities.[47] These differences could cause findings regarding vaccine immunogenicity to differ between patients with AD and other immune-mediated inflammatory conditions, so findings for other diseases should be treated with caution.

A summary of the impact of JAK inhibitors, azathioprine, and methotrexate on vaccine immunogenicity in patients with immune-mediated inflammatory diseases can be found in Table 5.[28,48,49] In general, research shows these agents do not have a uniform impact on vaccine immunogenicity. Rather, their impact depends on the agent and the vaccine being considered.

The data on JAK inhibitors illustrate this point. A recent study investigated antibody response to the 13-valent pneumococcal conjugate vaccine (PCV-13) in patients with rheumatoid arthritis who were taking methotrexate, JAK inhibitors, or JAK inhibitors plus methotrexate.[50] By 4-6 weeks post-vaccination, positive antibody response rates were comparable among patients treated with JAK inhibitors (95%) and those treated with methotrexate (90%); patients who used combination treatment had

significantly lower response rates (52%). These results suggest that JAK inhibitor or methotrexate monotherapy does not impair PCV-13 vaccine response for most patients. However, JAK inhibitors have been found to decrease patients' immune responses to COVID-19 vaccines and the 23-valent pneumococcal polysaccharide vaccine (PPSV-23).[28] Data are still lacking for the effect of JAK inhibitors on some other important vaccines, such as hepatitis B and human papilloma virus.

Although research indicates JAK inhibitors are associated with a decrease in patients' immune response to COVID-19 vaccines, clinicians should understand that this decrease may not be a problem for most patients with immune-mediated inflammatory diseases. One recent analysis of a large dataset indicates that the overall COVID-19 vaccine response rate for patients with rheumatoid or psoriatic arthritis treated with JAK inhibitors was high (88%).[51] Non-response to the vaccines occurred primarily among patients aged 65 years and older. Thus, checking antibody titers after vaccination may be especially important in older patients using JAK inhibitors. As more data accumulate on the impact of JAK inhibitors and other immunomodulatory and immunosuppressive agents on vaccine immunogenicity, guidelines may evolve to better reflect patient characteristics, the vaccine in question, and the type of immunotherapy being used.

VACCINATION OF CLOSE CONTACTS OF PATIENTS WITH AD

Close contacts of patients with AD who are taking immunomodulatory or immunosuppressive agents should receive all recommended, age-appropriate vaccines, with the exception of the smallpox vaccine.[17] No special precautions need be taken after administering the live MMR, varicella, or rotavirus vaccines unless the recipient of the varicella vaccine develops a rash after vaccination. If this happens, the patient with AD should avoid direct contact with the recently vaccinated person until the rash resolves. Patients with AD who are taking immunomodulatory or immunosuppressive agents should also take special care to wash their hands after changing the diaper of an infant who has received the rotavirus vaccine in the last month.

CONCLUSION

Dermatology specialists play an important role in ensuring that patients with AD are properly vaccinated. This is especially true for patients who are planning to initiate immunomodulatory or immunosuppressive therapies, which will simultaneously make them more susceptible to infection and prevent them from receiving live vaccines. The protection conferred by the full array of recommended vaccines allows patients with AD to enjoy optimal health and focus on controlling their skin symptoms rather than experiencing the painful and potentially dangerous—or even lethal—consequences of vaccine-preventable diseases. Thus, integrating discussion about vaccines into the workflow of the dermatology office visit is one of the best investments that a dermatology specialist can make in promoting the health of their patients with AD.

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The Importance of Patient Input

by Noreen Heer Nicol, PhD, RN, FNP, NEA-BC

In this year's issues of *Dermatology Nurse Practice*, we have highlighted the need to work with individual patients with moderate-to-severe atopic dermatitis (AD) to set realistic goals and personalize their care. We have also discussed the prevalence and impact of both common and uncommon comorbidities.[1,2] There are many lessons from each of these issues that I hope you have been able to incorporate into your daily practice.

Patients with moderate to severe AD unquestionably have unique needs.[3] Bill is one of my recent patients who helped reinforce to me just how unique these needs can be, and how important it is to build a trusting, long-lasting relationship with our patients.

Bill first arrived at our practice at age 3 years with moderate AD that has waxed and waned over the years. He's now 20 years old and has a predictably lengthy medical history. Over the years, he's had significant sleep problems due to nighttime itchiness that have resulted in a variety of quality-of-life issues. Along with AD, Bill has also been diagnosed with mild asthma and has allergies to some grasses.

Throughout our history together, the best way to characterize Bill's adherence to treatment would be a shrug of the shoulders. He does not like using medicated creams or ointments and admits to only periodic use of moisturizers ("I forget a lot"). While he could pretty much recite the components of stepwise care of AD recommended for him by heart, he had difficulty operationalizing many of these steps.[4] We have had many discussions about the chronic nature of AD, and I emphasized that while some patients are fortunate enough to outgrow the disease, this doesn't always happen, and that Bill needed to be prepared for a lifelong battle.

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When I saw Bill 2 years ago, it was obvious that he was losing his current battle with AD. He was in one of the worst flares of his life. He had numerous lichenified areas around his eyes as well as his popliteal and antecubital fossae. Excoriations and areas of hypopigmentation were prominent throughout his body. At the time, his medication regimen included triamcinolone ointment applied to the whole body twice daily, hydrocortisone 2.5% for facial lesions, wet wrap therapy as needed, and oral medications such as sedating antihistamines and antibiotics as needed.

Despite his physical appearance, Bill was upbeat when we met for his regular follow-up appointment. He had been hearing a lot about new therapeutic options for patients with AD, and he told me that he was "looking for a cure this time!" While he was correct about the recent additions to our treatment arsenal in AD, I gently explained to Bill (once again) that AD isn't a disease that can be "cured" but one that only can be managed with appropriate measures. This entire conversation highlighted the need for me to re-engage Bill about shared goals and expectations before even talking about transitioning to potential systemic therapy.

When I introduced the concept of shared decision making (SDM), Bill said that he was familiar with the concept but wanted some clarification about how it might be incorporated into his care. Because our clinical team embraces the concept of SDM—as I'm sure many of you do—I discussed with Bill what this means. SDM is the process whereby a healthcare provider and patient collaborate to make decisions that are best for the patient.[5] SDM has been promoted by numerous organizations, including the Institute of Medicine, the Agency for Healthcare Research and Quality (AHRQ), and the National Eczema Association (NEA), as a key process of patient care and education.[6] When engaging in SDM, providers should work with patients to consider appropriate evidence-based information regarding the pros and cons of various treatment options while also assessing the patient's values and preferences.

While nurses and nurse practitioners are highly skilled in educating patients about many components of AD, multiple studies have shown that patients are

FIGURE 1
The SHARE Model[7]

S Seek your patient's participation

H Help your patient explore and compare treatment options

A Assess your patient's values and preferences

R Reach a decision with your patient

E Evaluate your patient's decision

infrequently asked about their treatment goals, fears, and concerns. In fact, many patients report that they are rarely given sufficient time to ask questions about their disease and course of treatment.

One way to more formally ensure that providers and patients collaborate on SDM is to follow the AHRQ's SHARE model (see Figure 1). This model involves a 5-step process that includes exploring and comparing the benefits, harms, and risks of each potential treatment option. The focus is to identify what matters most to the patient.[7]

In the course of the SDM process between Bill and I, Bill finally acknowledged to me that he understood that his multiple atopic conditions were chronic in nature and that he would be satisfied with an increased degree of "control vs. cure." We agreed that the primary goals of treatment would include the prevention of further disease complications, control of symptoms, clearance of skin lesions, and prevention of relapses and flares. Combined, the hope was that by achieving these goals, Bill's quality of life would improve without the need for regular use of topical medication that he disliked through the introduction of systemic therapy. Because Bill is also needle-phobic, we first decided to try one of the newer oral Janus kinase (JAK) inhibitors, upadacitinib. Upadacitinib, as with all JAK inhibitors, carries a black box warning, necessitating additional time to discuss what this means as well as how we'd need to monitor Bill's condition moving forward.[2] By the time he started on upadacitinib, I am fairly confident that Bill had a firm grasp on why it was the best current choice for him and how we'd need to carefully assess his progress. Two years later, Bill remains on upadacitinib and is thriving.

Until my recent retirement from active practice, I served as a nurse practitioner for more than four decades. My work with Bill was a good reminder that our professional education must never stop. We must be intentional in practicing SDM with our patients, especially those who struggle with their disease for many years. As dermatology moves into greater personalization of care, it is only going to make our jobs more challenging to make the right recommendations and assess how our patients feel about the various options available to them. I am confident that it is a challenge we are all up for.

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Building Bridges Over Different Ideas

by Patricia Delgado, DNP, AGPCNP, DCNP

In the world of dermatology, atopic dermatitis (AD) is one of the most challenging and persistent conditions we encounter. This chronic skin disorder affects millions of people worldwide, and as a dermatology nurse practitioner with eight years of experience, I've witnessed countless patients struggle with its complexities.

However, of all of the patients who I have seen over the years, there is one particular case that stands out as being particularly exceptional, a case that tested all of my knowledge, patience, and communication skills. It was a journey through a maze of misinformation, misconceptions, and personal beliefs that ultimately led to a breakthrough.

I met Alexis, a 32-year-old woman who had been living with AD for most of her life, approximately 5 years ago. As soon as she walked into my exam room for the first time, I could see the physical and emotional toll the condition had taken out on her. Her skin was inflamed, dry, and covered in itchy, red patches. Her eyes were filled with frustration, and her posture radiated discomfort.

Throughout our initial encounter, it was clear that Alexis had done extensive research about her condition. She had a stack of printed articles about the management of AD and notes on her phone with information from various online sources. Thanks to "Dr. Google," Alexis had a preconceived notion of what she believed was the right treatment for disease; unfortunately, this didn't align with the evidence-based recommendations I was prepared to discuss with her.

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The first hurdle I encountered was Alexis's strong belief in the power of natural remedies. She had read extensively about the benefits of herbal treatments and essential oils for managing AD and was steadfast in her belief that these were vital to the successful management of her condition. While I appreciate patients taking an active interest in their health, I also know that the scientific evidence supporting natural remedies in the management of AD management is limited. My challenge was to navigate this delicate conversation without dismissing Alexis' beliefs entirely.

Alexis told me that she had been using a concoction of homemade creams and oils to heal her skin. I listened attentively as she passionately described the various natural ingredients she mixed and applied daily. It was clear that Alexis had invested time, money, and hope into her homemade remedies, making her resistant to any suggestion that it all might have been a waste.

As Alexis shared her treatment regimen with me, my mind was racing. If she truly believed she had come up with the answer to treating her AD, why was she even in my office? Was she simply looking for validation, or was there something else at play? Regardless, I knew that I needed to strike a balance between respecting her autonomy and providing her with evidence-based care.

I started by acknowledging Alexis's commitment to the management of her condition. I knew that dismissing her efforts outright would only lead to resistance so I thanked her for sharing her experiences and assured her that we would work together to find the best approach.

Then I explained the limitations of natural remedies in the management of AD, emphasizing the importance of incorporating evidence-based treatments into her care. I used simple, clear language to ensure that she understood the science behind her condition. I also made the point that even natural ingredients can be irritating to the skin.

And then I opened the floor back up to Alexis. I encouraged her to express her concerns and doubts

> "...it was a testament to the power of patient-centered care and the willingness of both healthcare providers and patients to work together towards a common goal..."

about what I had just told her. I listened to her anxieties about conventional treatments—she had cycled through many in her life, with only moderate success—and acknowledged her desires for a more natural approach to care. By validating her feelings, I hoped to build trust. After Alexis had finished sharing her thoughts, I calmly suggested that we incorporate some natural ingredients into her treatment plan while introducing additional, evidence-based medical treatments. This compromise allowed her to maintain a sense of control over her care while, from my perspective, giving her a better chance of getting her AD under control.

I made sure to emphasize that even this initial compromise was likely no magic bullet, and that the management of Alexis' disease would likely be an ongoing process requiring adjustments to treatment as her condition continued to evolve. I knew that managing Alexis' expectations was going to be crucial to avoid disappointment and frustration.

Fortunately, Alexis agreed to my suggestion of combining some of her natural remedies with more evidence-based therapies. I provided her with a tailored skincare regimen that included moisturizers, topical corticosteroids, and a gentle, fragrance-free cleanser. I explained the importance of consistency and adherence to our agreed-upon treatment plan.

Over the following months, Alexis's condition gradually improved. Her skin became less inflamed, and the itchiness subsided. She began to realize that the evidence-based treatments, when used as directed, were making a positive difference. As her trust in me grew, she became more receptive to the idea of relying less on her homemade remedies and expanding the use of more traditional therapies.

Our continued dialogue allowed me to monitor Alexis' progress and adjust her treatment plan accordingly. We discussed triggers, lifestyle modifications, and ways to manage AD in different seasons. Alexis became an active participant in her care, and the improvement in her quality of life was evident.

Alexis's case was a journey through uncharted territory for me, as this was the first time (but not the last!) that I had a patient come in so ready with her own research that directly contradicted what I wanted to suggest. It challenged my ability to communicate effectively, adapt to unique patient preferences, and find common ground between traditional medicine and conventional beliefs. Through patience, education, and a collaborative approach, we overcame the initial hurdles of misinformation and misconceptions.

In the end, Alexis's journey was not just a story of overcoming hurdles; it was a testament to the power of patient-centered care and the willingness of both healthcare providers and patients to work together towards a common goal: managing a chronic condition and improving quality of life.

The Pressure to Please Our Patients

by Megan Lewis, MSN, RN, CPNP-PC

One of my favorite things about what I do is building a trusting relationship with patients and their families. It's easy for us all to remember those from our professional past who were appreciative of our efforts or for whom we have greatly improved their disease, but it can be more difficult and less comfortable dredging up those relationships when we had patients and/or families who disagreed with our recommendations despite repeated efforts to reach a group consensus.

In the last decade, there has been an onslaught of literature focused on the important role of shared decision making in healthcare.[1] This concept, however, is nothing new to nurses—it's been a core principle since my first training course and is fundamental to our practice. With rising pressures on healthcare providers, easily-accessible "patient satisfaction" ratings, and growing internal importance given to patient/family surveys and evaluations, it can be easy to fall into the trap of "give them what they want." Yet despite being in this era of easy access to information, it is incumbent upon the provider community to educate our patients and clearly explain the importance of evidence-based research to help make decisions even in the most challenging of circumstances.

I first met Patrick and his mother, Sarah, shortly after Patrick's third birthday. He had been diagnosed as an infant with chronic atopic dermatitis (AD), which was well controlled with emollients and intermittent topical steroids. Sarah brought Patrick to our practice primarily with concerns about management of his asthma. They had already consulted with two other nearby practices and weren't happy with the suggestions they had received.

As part of our routine intake exam, I first reviewed Patrick's medical history and talked to his mother

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> "...it is incumbent upon the provider community to educate our patients and clearly explain the importance of evidence-based research to help make decisions even in the most challenging of circumstances."

about her current concerns. Patrick had recently entered daycare and, as many kids do, struggled with repeated viral illnesses. Controlling his AD had been challenging in this new environment, and Sarah turned to a variety of alternative therapies such as essential oils and supplements such as tea tree and primrose cleansers. Unfortunately, these only further irritated Patrick's skin, though after a few weeks of more traditional medical therapies, his skin was showing improvement, and there were no notable skin infections.

Patrick's asthma, meanwhile, was currently less well controlled. He had had four episodes of wheezing in the last year, for which he was prescribed a course of oral steroids each time. One of the other practices that Sarah took Patrick to see recommended use of an inhaled daily steroid. Sarah did not like this suggestion.

While not in his medical chart, Sarah also told me that Patrick had just finished a course of antibiotics to treat his seventh recent episode of otitis media. He had also recently seen an otorhinolaryngologist (ENT), but Sarah balked at the suggestion to automatically proceed to surgery. She repeatedly focused on the possibility that allergies were the cause of all of Patrick's issues, and she wanted testing to determine why he kept getting so sick.

There was more. Sarah mentioned to me during our review of her son's history that he was not up to date on his childhood vaccines. Basically, she "didn't trust them." While Patrick had received his initial course of vaccinations in infancy, he had not received any in the last 18 months and, most notably, had not received the pneumococcal vaccine. There are numerous studies that have shown the ability of the pneumococcal vaccine to create antibodies that fight *streptococcus pneumoniae,* the common culprit for otitis media, sinusitis, pneumonia, and other invasive illnesses.[2]

Vaccination hesitancy, of course, is not new. In my 14-year career as a nurse practitioner, I have dealt with dozens of families who were either hesitant about vaccines or downright resistant to them. Instead of being combative (which is never helpful), I take the opportunity in these situations to provide patients with evidence-based peer information as well as personal stories from my professional career to try to bolster their confidence in these key components of childhood health. In Sarah's case, this proved particularly challenging since she was in the healthcare field and was familiar with some of the evidence I cited.[3] She simply didn't believe their conclusions.

Once our initial intake review was complete, I performed skin prick testing to the most common indoor and outdoor aeroallergens (tree, grass, weed, mold, dust mites, cat, and dog). Patrick tested negative for all of these. Not satisfied with these results, Sarah pushed for further testing, certain that there must be something there that was causing her son's medical issues. I explained to her that, in younger children,

symptoms can precede a positive allergen test. While we will sometimes order intradermal testing—which is a more sensitive test—we typically reserve its use for situations when we are considering allergy immunotherapy. Due to Patrick's young age and his lack of allergic responses to indoor, outdoor, and pet exposures, I explained to Sarah that immunotherapy did not seem to be medically indicated.

I spent a lot of time with Sarah trying to respectfully improve her understanding of the role of vaccines and how they had the potential to significantly improve her son's health. Additionally. I tried to debunk some of her theories about the value of excessive allergy testing. We discussed her concerns about steroid exposure and ways to use these medications judiciously based on Patrick's symptoms. Finally, I provided Sarah with recent article abstracts demonstrating the remarkable impact that pneumococcal vaccines can have on common childhood infections.

Based on all of this evidence, I told Sarah that I concurred with the previous two allergy specialists who had seen Patrick and recommended daily inhaled steroids, further consultation with an ENT, and, most importantly, "catching him up" on his vaccines.

Sarah wasn't buying it. "Vaccines aren't the answer," she said. "I've heard this all before!"

We were at an impasse when Sarah and Patrick left the office. I documented my suggestions in my notes to Patrick's pediatrician in the hopes that perhaps Sarah would be more willing to accept recommendations from her office.

I never saw or heard from Sarah or Patrick again.

Early in my career, which is when I met Patrick, I was probably overly concerned about pleasing patients and families. In retrospect, there were times when I should have been stronger with my opinions. With time and years in clinical practice navigating these difficult conversations, I have learned to present information differently and provide families with resources to consider once they are at home. While shared decision making is undoubtedly critical in our day-to-day interactions, it is important for the healthcare provider to be a trusted resource and provide responsible medical care. I am always open to alternative therapies and treatments, with one important caveat—they must be safe. The patient's care must not suffer.

As the famous quote suggests, "You can please some of the people all of the time and all of the people some of the time, but you can't please all of the people all of the time."

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When the Patient Makes the Rules

by Keischa Cash, DNP, APRN, DCNP, FNP-BC

It's hard for me to pinpoint the one patient who really pushed me to the brink of insanity. Now when I say "insanity," I don't mean it in the literal sense; it's more like insanity from frustration. Instead of one patient, there have been many who have tried my patience and tested my interpersonal skills as a healthcare provider.

One such patient was Katie. I met Katie when she was 35 years old. Nearly every time she came in for a scheduled appointment, Katie's skin was raging. She would be formally labeled as a patient with "severe atopic dermatitis (AD)," but if there was a grade above "severe," that's where Katie would have fallen. Nonetheless, no matter how bad Katie's skin got, she never thought it was bad enough to go into crisis mode and take seriously the majority of the advice I had for her. Topical and oral steroids, antibiotics, moisturizers, wet wraps, biologics, immunosuppressants… no matter what I recommended, Katie didn't believe she needed it to get through the day.

And yet, regular as clockwork, every time her disease flared badly enough, Katie would schedule an appointment in my office. On one recent visit, her skin was so irritated that she had developed a serious, oozing staph infection on her legs and feet. She couldn't even wear socks because the dried exudate tore the skin off her legs when she tried taking them off. She could barely walk into my office because it hurt too much to put any weight on her feet.

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I took one look at Katie and was amazed that she had waited this long to come into the office.

"You should have been in my office a week ago!" I told her. "You can barely even move."

"Nah, it wasn't that bad," Katie said, laughing.

Then she told me about all of the things going on in her life during the last 2 weeks and how she simply was too busy to take care of her skin. A single mom with two school-aged kids, Katie juggled life as a line cook during the day and a food delivery courier at night.

"I just don't have time to worry about myself," Katie said.

It was only when Katie started to notice a foul odor and she couldn't take off her socks without them sticking to her legs and feet that she made time for an appointment with me. "My rent is due next week, I've got to put food on the table, and no one is out there who is going to help," she said, hoping I'd be able to work some quick magic to get her out the door and back to her life.

I asked Katie what happened to the topical medications I had prescribed at her last visit. She told me she had run out of her clobetasol 0.05% ointment two weeks ago. She had no idea where she had stashed the crisaborole or petroleum jelly she was supposed to use for maintenance therapy, nor the triamcinolone 0.1% cream for acute flares.

"I lost it," she told me with a shrug. "I took it with me when I visited my family, and I guess I must have forgotten it."

Remember, in the best of times, this is a patient with very severe AD. Now we're looking at a patient with very severe AD who had been doing nothing for her skin for at least 2 weeks. It was hard not to be frustrated with Katie, having seen this scene play out over and over again. But this time, it was worse than ever. I was particularly concerned about the cellulitis and the real risk that Katie would need to be hospitalized for treatment.

As soon as I mentioned the possibility of hospitalization, the whole tenor of the conversation shifted. Previously, it was just an "Oops, my bad," kind of thing. Now, we were in the "Don't you even think about it" territory.

"There is no way I'm going to the hospital," Katie told me. "Not unless you plan on physically restraining me and taking me against my will!"

Her reaction certainly was a bit over the top, but I quickly realized that my veiled threat of a hospital stay wasn't going to get Katie back on board with a sustainable treatment plan. So I pivoted, focusing on stabilizing her condition through close observation at our clinic. I started her on oral antibiotic therapy (clindamycin 300 mg twice daily for 10 days), topical mupirocin 2% ointment twice daily for her legs and feet, clobetasol 0.05% ointment twice daily, and an oral steroid taper starting at 60 mg daily for the first week of therapy, tapering down by 10 mg every 4 days thereafter. I also gave her a bottle of antimicrobial/antibacterial cleanser and some non-stick dressings to wrap her legs and keep them from soiling clothing and bed linens.

Katie verbally agreed to a daily check-in over the phone to gauge her status. I also had her schedule an in-person appointment for the next week to more formally assess her condition. I asked her to record her temperatures every day and log them in a notebook so I could monitor things during our daily telephone checkups. If there was any worsening of her condition, I told her to go to the emergency room or call 911.

She quickly responded.

"Don't worry, I'm not going to no emergency room! You can forget about that!"

After we cleaned up Katie's legs using hydrogen peroxide and normal saline to remove the crusts, we

applied a ton of petroleum-based healing ointment to her legs and wrapped them with a nonstick dressing with cotton gauze.

Before Katie left, I once again went through our treatment plan and the follow-up timeline. I wanted to make sure she bought into everything we agreed upon. She assured me over and over that, "I got it!"

Well, apparently she didn't "got it." The very next day when we tried to reach her for our initial check-in, Katie didn't answer the phone. We left one voicemail, then two, then three. Finally, Katie called us back at the end of the day to tell us she had picked up her medications, applied the correct ones, and had changed the dressings on her legs. This was good news, so I enthusiastically congratulated her for getting off to a good start and told her I was looking forward to tomorrow's update.

The next day, Katie answered her phone on our first try to reach her (progress!). She said that she had some difficulty removing her bandages because of the swelling in her legs, but she was finally able to remove the dressings and clean her legs with the help of "a friend." There was no fever.

Four days later, right as scheduled, Katie showed up for her appointment. She had been forced to take a few days off from her daytime job as a line cook since she couldn't stand for long periods of time, which was helping her skin condition. Her legs looked much better than they had just a few days ago, and the odor and drainage had nearly disappeared. I could tell that she was trying to keep her legs clean and dry, and I complimented her on the work she had done.

With our newfound momentum, we stuck with the same plan. Katie even began calling us each day with updates instead of our team needing to chase her down. Things continued to improve—the swelling was down, the redness had mostly gone away, and there was no more drainage.

At her next in-person visit two weeks later, Katie brought her 11-year-old daughter with her. Katie was all smiles. She said she was feeling much better, and life was going well. I took this opportunity to explain to Katie that this could be her new normal if she simply took better care of her skin. There was no reason for her to have gone through the last few weeks if she would just consistently implement a few simple basic concepts.

We had taken a few small steps forward. Now we were about to take a giant, and unexpected, leap.

With her daughter in tow, Katie asked me about dupilumab. She had seen a commercial for the drug on television and wanted to know more about the treatment. Her daughter chimed in and told me that she had been "the friend" helping her mom over the past week or two. She was scared because her mom's skin looked so terrible, and she pleaded with her mom to take better care of herself.

That apparently was the hidden impetus behind Katie's recent adherence to our treatment plan. She never before considered how her AD might be impacting her family, and she was finally willing to take more aggressive steps to address it. While she was certainly a good candidate for use of dupilumab, I never even considered recommending it in the past due to Katie's history of "losing" her medications and her absolute resistance to anything outside of topical therapies. But we were now in a very different place, and while Katie told me that she wasn't excited about the idea of "poking herself" every 2 weeks, she would be willing to "give it a shot" (insert rimshot).

For the first time in years, we finally had a breakthrough! As a healthcare provider, every meeting with Katie had been tremendously frustrating because I knew that I had additional tools that could help, but Katie had to want to help herself first. Finally, that moment had now come—Katie was ready for my help, and I was ready to give it to her.

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