

**Understanding  
Atopic Dermatitis (AD)  
Disease Activity...  
Exploring WHAT CAN—  
and CAN'T—Be Seen  
on the AD Iceberg**

**A Planning Guide to Help You  
Work With Your AD Care Team  
to Optimize Disease Management**

The information contained in this educational resource is intended to reinforce and supplement information you receive from your healthcare team. It is not a substitute for medical advice from your physician. If you have questions about the information you read in this educational resource, please discuss them with your healthcare provider.

**This has been produced as a patient education resource by Pfizer Inc.**

## How to Use This Planning Guide

### The Iceberg



Consider the popular phrase, *the tip of the iceberg*. This means that only part of an iceberg is visible above the surface of the water, yet below the surface lies a much larger piece of the iceberg that cannot be seen. It's a commonly used image to help explain situations where what you see doesn't tell the full story.<sup>1</sup>

The iceberg is a useful metaphor to explain what's happening in your body when you're living with atopic dermatitis (AD), a chronic, recurring, and complex form of eczema.<sup>2,3</sup>

That's because the signs and symptoms of AD—dry skin, red skin, itching, and patches that may appear on various parts of the body—are just the tip of the iceberg.<sup>1,2</sup> AD is an immune system disease marked by chronic inflammation.<sup>4</sup> This means that inflammation may still be occurring below the surface of your skin even when there may be no visible signs of the disease.

### This educational resource will help you:

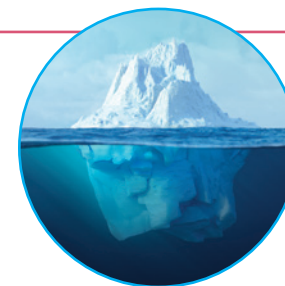
- 1 Define AD, also known as eczema,** as well as describe the common signs and symptoms of AD
- 2 Understand the potential causes of AD**—the physical and other factors associated with the disease, the environmental triggers that may make it worse, and the reasons for skin barrier dysfunction
- 3 Explain the other medical conditions** that may occur with AD
- 4 Identify available disease management options for AD** while understanding the core goals of AD disease management—namely, *reducing itching and skin irritation and keeping skin well hydrated and protected*, while reducing flares and infections<sup>5</sup>
- 5 Describe how AD can affect your quality of life** (including the associated emotional challenges that may impact patients and their caregivers) and the importance of regularly communicating with your healthcare team about important disease management-related issues

### Support for Disease Management Decision-Making

This is a different type of patient resource in that it's intended to support disease management decision-making between patients and caregivers and their healthcare providers. The medical content is more in-depth than traditional patient education materials. That is by design. Each section explains important clinical concepts and raises key issues you will want to discuss with your healthcare team during your disease management. If you're a caregiver, the information in this educational resource may help you support a patient in need. If you're a patient, these new insights about AD may help you support your own disease management through improved communication and shared decision-making with your doctor. This guide includes medical terms you may have never seen before. **Bolded** terms throughout each section are defined in the glossary.

#### Disease Management Takeaway

Gaining new insights about AD may help empower you to support your own disease management. Empowerment means gaining control over medical well-being and acting on the medical issues that a patient or caregiver defines as important.<sup>6</sup> Being empowered also involves partnering with your AD Care Team—your primary care physician, dermatologist, pediatrician, allergist, nurse practitioner, physician assistant, pharmacist, etc—to design a disease management plan that's right for you or for a person under your care.



#### A Tip From the AD Iceberg

Patients should seek out as much information as possible about AD—including clinical insights found in this educational resource that may not be found in patient education materials—to support their disease management through enhanced patient-HCP communication and shared decision-making.

# Need-to-Know Information About AD

## 1 AD: A Chronic Inflammatory Disease Marked by a Range of Symptoms<sup>3</sup>



Understand these key facts about AD. Then, in each section, mark down your personal questions and concerns when discussing your medical condition and disease management plan with your healthcare providers (HCPs).

AD is a chronic, relapsing, inflammatory disease.<sup>7</sup> Relapse means that the signs and symptoms of AD may return after a period of improvement.<sup>8</sup> Inflammation may still be occurring under your skin even when there may not be visible signs on your body.<sup>4,9,10</sup>



### A Tip From the AD Iceberg

Because underlying inflammation may be present in your body when you have AD—that is, it is occurring below the surface of the AD iceberg—it's important to always adhere to your disease management plan as directed by your HCP, even if your skin is clear and there are no visible signs of AD, unless your doctor instructs otherwise.<sup>4</sup>

## Medical Terms for Signs and Symptoms of AD

Multiple signs and symptoms characterize AD and the underlying inflammation that causes it.<sup>2,4</sup> The following table shows how AD signs typically appear on the body (although an individual patient's signs may vary depending upon their skin tone):

Clinical Features	Principal Characteristics		
	White	Asian	Black/African American
<b>Xerosis<sup>7</sup></b>	Excessive, dry, scaly skin <sup>11-13,a,b</sup>		
<b>Erythema<sup>4,7</sup></b> In darker skin, erythema is more likely to appear <b>violaceous</b> in color or may be missed completely <sup>14</sup>	Reddening of the skin <sup>12,14-16,a,c,d</sup>		
<b>Oozing and Crusting<sup>4,7</sup></b>	Bumps, sores, discoloration, or oozing and crusting		
<b>Papules<sup>2</sup></b>	Small, raised bumps on the skin <sup>2,14,17,d,e</sup>		
<b>Lichenification<sup>4,7</sup></b>	Thick, leathery skin patches occurring as a result of scratching or rubbing <sup>12,14,18,19,a,d,f</sup>		
<b>Itching<sup>7</sup></b>	Itchy skin, which is a main symptom and a factor in the AD disease burden <sup>7</sup>		

<sup>a</sup>Reprinted from *The Lancet*, 387(10023), Weidinger S, Novak N. Atopic dermatitis. 1109-1122. Copyright 2016, with permission from Elsevier.<sup>12</sup>

<sup>b</sup>Reprinted by permission from Springer Berlin, Heidelberg: Management of Chronic Kidney Disease. Arici M (ed). Pruritus and Other Dermatological Problems in Chronic Kidney Disease. Lester J, Robinson-Bostom L. 2014.<sup>13</sup>

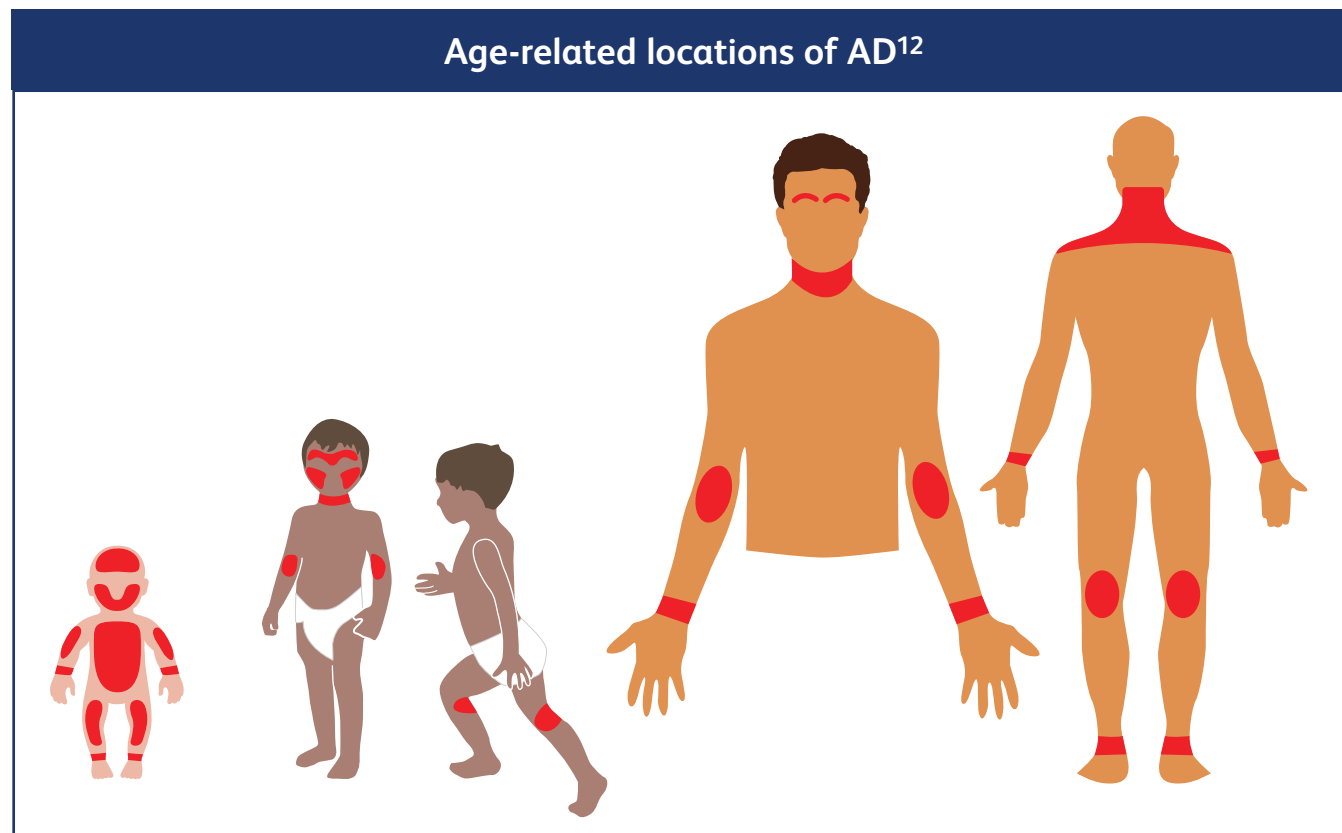
<sup>c</sup>Reprinted from the *Journal of Allergy and Clinical Immunology*, 136(5), Leung DY, Atopic dermatitis: Age and race do matter!, 1265-1267, 2015, with permission from Elsevier.<sup>16</sup>

<sup>d</sup>Kaufman BP, Guttman-Yassky E, Alexis AF. Atopic dermatitis in diverse racial and ethnic groups-Variations in epidemiology, genetics, clinical presentation and treatment. *Experimental Dermatology*. 2018;27(4):340-357. © 2018 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.<sup>14</sup>

<sup>e</sup>Used with permission of Springer Berlin, Heidelberg; from *Handbook of Atopic Eczema*; Wüthrich B, Ring J, Przybilla B, Ruzicka T, eds; 2 and 2006; permission conveyed through Copyright Clearance Center, Inc.<sup>17</sup>

<sup>f</sup>Girolomoni G, de Bruin-Weller M, Aoki V, et al. Nomenclature and clinical phenotypes of atopic dermatitis. *Therapeutic advances in chronic disease*. 2021;12:20406223211002979. doi:10.1177/20406223211002979. Reprinted by Permission of SAGE Publications.<sup>19</sup>

AD usually first appears in childhood.<sup>20</sup> In fact, the onset of AD in children generally occurs before 2 years of age. But it's important to note how patterns of AD vary by age.<sup>12</sup> **Note:** *the symptoms shown below are for illustrative purposes; your particular AD signs and symptoms may appear elsewhere on your body.*



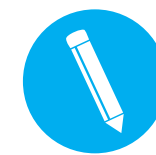
Reprinted from *The Lancet*, 387(10023), Weidinger S, Novak N. Atopic dermatitis. 1109-1122. Copyright 2016, with permission from Elsevier.<sup>12</sup>

- In infants, AD tends to appear mainly on the face, limbs, and trunk<sup>12</sup>
- In children (age 1-2 years and up), AD may appear on the skin on the inside of a joint that folds<sup>12</sup>
- In adolescents and adults, AD may appear on the wrists, ankles, and eyelids—as well as on the head, neck, and upper trunk; AD signs may also appear on the shoulders<sup>12</sup>



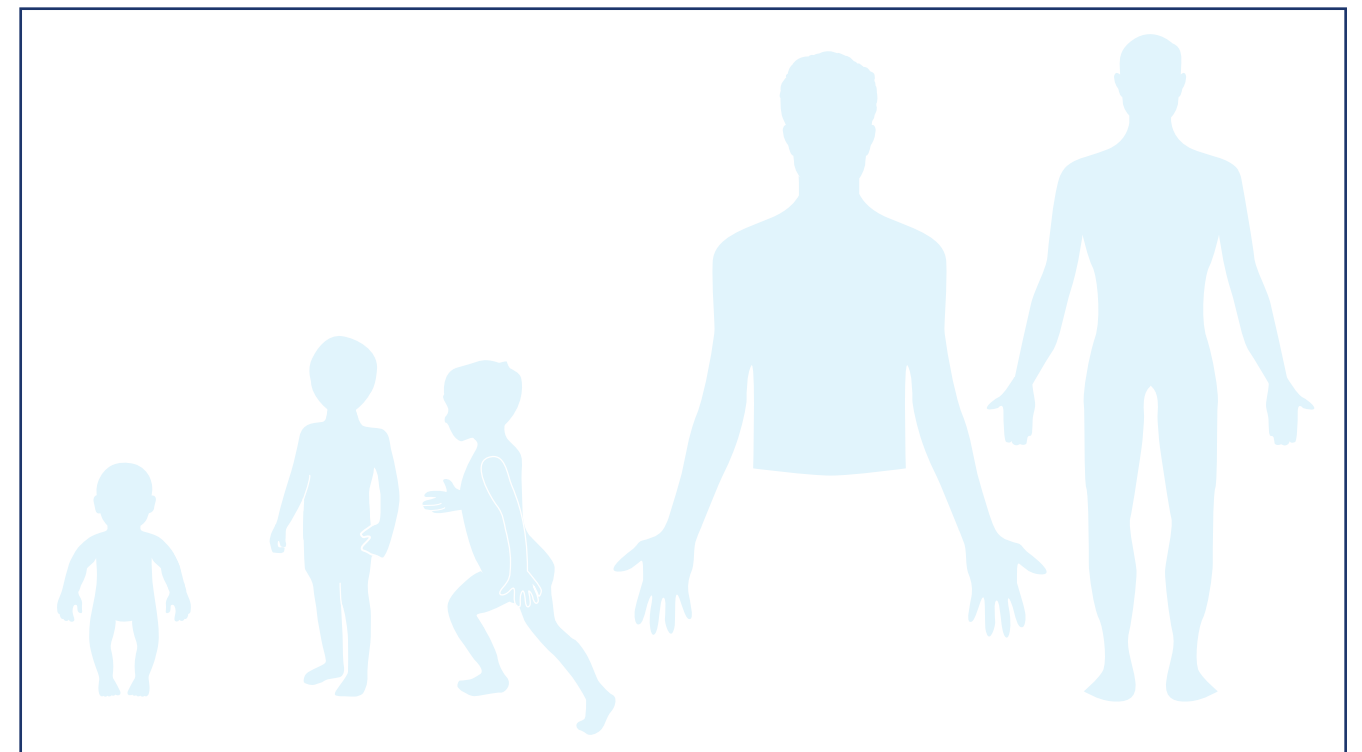
### A Tip From the AD Iceberg

Your dermatologist, pediatrician, allergist, and other HCPs may be ready to help you address the quality-of-life challenges associated with AD. You should share your concerns with your HCPs. They can help you cope with disease-related obstacles that may be interfering with daily activities.



### Where do your AD signs appear?

On the diagram below, work with your HCP to mark down exactly where your lesions are, then discuss with him or her how these areas may be treated.<sup>12</sup>



### Disease Management Takeaway

Itching—known by the medical term, **pruritus**—is a main symptom of AD and represents part of the disease burden experienced by patients and caregivers.<sup>7</sup> Pruritus may lead to what's known as the itch-scratch cycle.<sup>21</sup> The term describes how the act of scratching damages the skin barrier (leading to itchier skin and prolonging the disease) and which may be caused by complex immune system mechanisms.

Note your personal questions/issues to discuss with your healthcare team:

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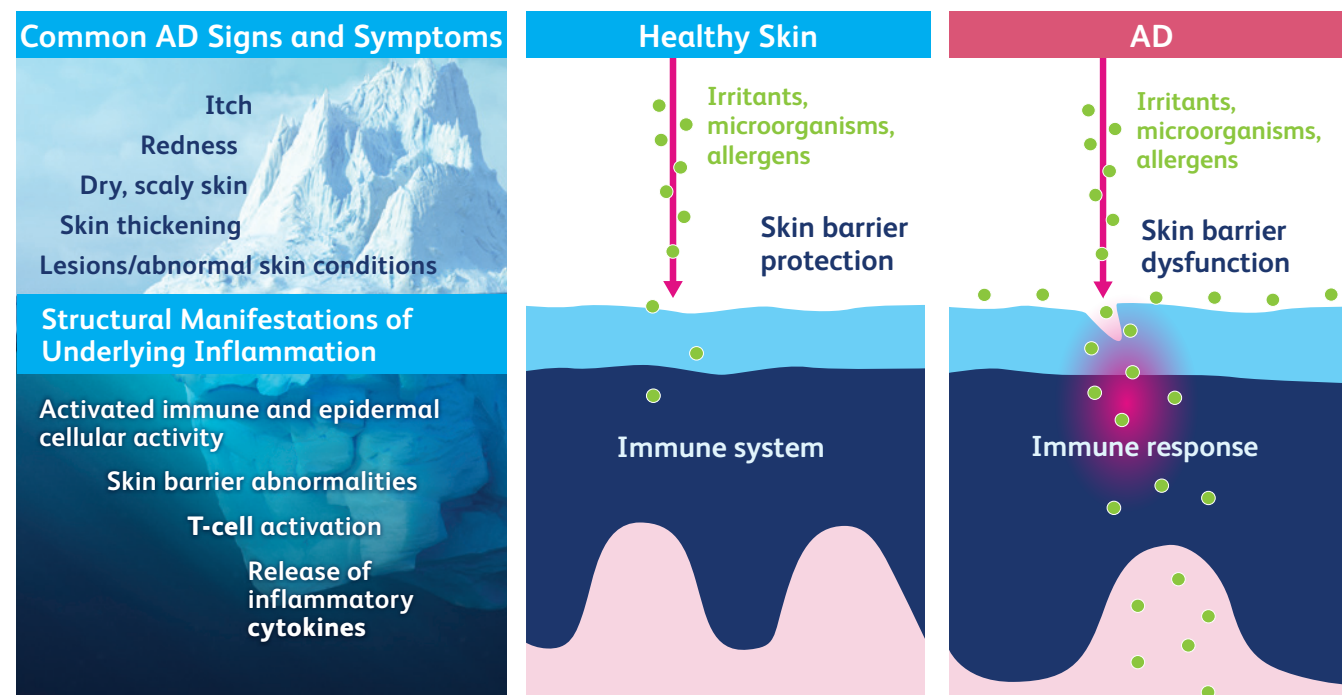
## 2 The Causes of AD and the Environmental Factors That Can Worsen It

The iceberg metaphor helps explain what's happening above and below the surface of your skin when you have AD.<sup>1</sup>

Look at the image below. It shows how healthy skin forms a natural barrier to external irritants.<sup>22</sup> But it is believed that physical abnormalities in the outer layer of your skin (the **epidermis**)—along with **immune system** irregularities occurring below the surface of the skin—help explain the common signs of AD.<sup>23</sup>

In clinical terms, the activity under your skin causes damage to the epidermis.<sup>23</sup> The image shows how your immune system is triggered due to *skin barrier dysfunction*, which allows irritants, microorganisms, and **allergens** to penetrate the skin and cause cellular interactions that lead to chronic inflammation.<sup>22,23</sup>

### Above and Below the Skin's Surface: An Image and an Iceberg<sup>1,22,23</sup>



Note your personal questions/issues to discuss with your healthcare team:

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AD is often associated with the patient's and their family members' medical histories.<sup>4,7</sup> But external factors may also contribute to the development of AD or be related to severity.<sup>24</sup> Here are just a few of the things that can trigger AD or worsen it.

### Environmental elements—also known as triggers—that may cause or worsen AD include (but are not limited to)<sup>24-28</sup>:

- Soap, bubble bath, and detergent with fragrance and perfumed products<sup>24</sup>
- Tobacco smoke, air pollution, bacteria, and mold<sup>24,25</sup>
- Food allergies<sup>26</sup>
- Hormones<sup>27</sup>
- Wearing wool or rough fabrics next to the skin<sup>24</sup>
- Stress<sup>28</sup>

There may be times when triggers will cause your AD to worsen significantly.<sup>5</sup> This is called a *flare*. Flares may be caused by external or internal triggers—such as food allergies, stress, or hormones, which may increase inflammation in the body and lead to a bad rash.<sup>24</sup> Flares may require special treatments, such as those involving prescription medications.<sup>20</sup>

### Disease Management Takeaway

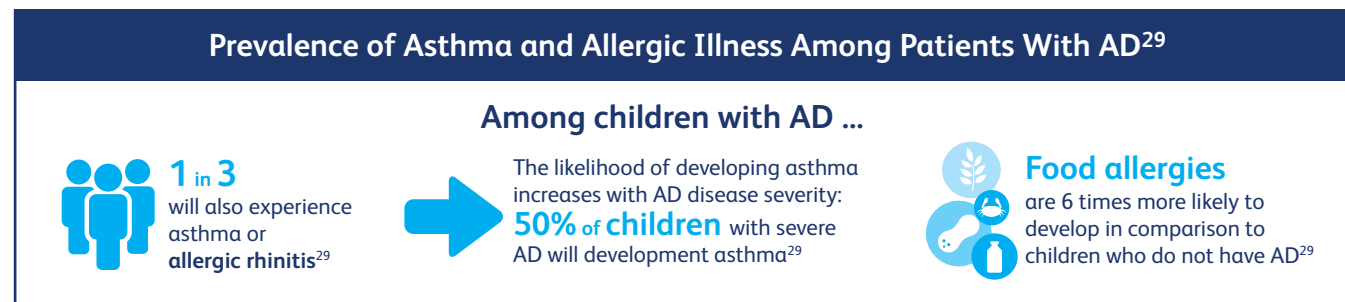
It's important to try to identify your personal triggers to avoid them and the disease activity they may provoke.<sup>5</sup> Understanding your triggers helps support management of your symptoms.<sup>5,24</sup> Be sure to document and share your AD experiences with your HCP to help pinpoint your specific triggers.

### 3 AD and Other Associated Medical Conditions—Known as Comorbidities

If you have AD, you may have other health problems known as **comorbidities**, which may be physical or psychological in nature.<sup>26,29</sup>

Asthma and allergies, in particular, are associated with AD.<sup>29</sup> Atopic march is a specific term that describes the natural progression of allergic diseases that sometimes occurs in patients with AD, often beginning early in life.<sup>7,29</sup> It's important to note that the atopic march does not occur the same way in all people.<sup>30</sup> Rather, patients experience atopic march issues in different ways and at different times based on genetic and environmental factors.

Statistics show the link between AD and asthma and allergies among children with AD.<sup>29</sup>



#### Physical comorbidities: examples

Other physical comorbidities linked to AD include **bacterial infections** and **viral infections**.<sup>29</sup> Problems with the epidermal skin barrier make patients with AD more likely to experience these and other types of infections.<sup>23</sup> Some patients may easily get staph infections.<sup>2</sup> Data show that more than 90% of patients with AD already have staph existing on their skin (although it may have not yet caused an infection).

Bacterial skin infections are particularly common.<sup>31</sup> Bacterial infections tend to result from breaks in the skin caused by extreme dryness or scratching. Having AD also appears to reduce a patient's ability to fight against bacteria on the skin. This, in turn, may lead to other skin conditions like boils and sores.

It's important to recall the challenges of the itch-scratch cycle previously discussed, which may worsen and prolong AD.<sup>21</sup>

Viral infections are also seen among people with AD.<sup>31</sup> In fact, certain viral infections may spread rapidly when you have AD—making infections more severe and leading to other issues like fever and crusting, blistering skin.

Studies have shown how frequently comorbidities may occur among patients with AD.<sup>32</sup> The following table presents consolidated data from multiple studies about the prevalence of 3 AD-related comorbidities—asthma, hay fever, and food allergies—among children and adults:

**Percent of Patients Experiencing Common AD-Related Comorbidities in a 1-Year Period<sup>32</sup>**

	Children, %	Adults, %
Asthma	19.8	18.7
Hay fever	34.4	28.4
Food allergy	15.1	13.2

#### Psychological comorbidities: examples

Comorbidities of an emotional nature, which tend to affect children with AD, include<sup>33</sup>:

- Depression
- Anxiety
- Behavior disorders

If you are experiencing any of these difficulties, please consult with your doctor.



#### Disease Management Takeaway

Comorbidities among patients with AD are common.<sup>29</sup> But remember, every patient's situation is different. AD is linked to a complex mix of genetic and environmental factors.<sup>24,25,34,35</sup>

Work with your HCP to better understand the specific factors that contribute to your condition.

#### Note your personal questions/issues to discuss with your healthcare team:

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## 4 The Goals of AD Medical Care and Available Disease Management Options


Medical guidelines established for managing AD emphasize the importance of reducing itching and repairing the skin barrier to avoid worsening your condition or that of your child.<sup>36</sup> Keeping skin well hydrated and protected is central to AD disease management.<sup>37</sup>

There are several steps you can take each day to help keep your skin hydrated and protected.<sup>38</sup> They include:

 <b>Establish a bathing routine</b>	 <b>Moisturize 2 to 3 times daily</b>
 <b>Use a small amount of mild non-soap or gentle skin cleanser</b>	 <b>Choose fragrance-free soaps, moisturizers, and laundry detergent</b>
 <b>Pat skin dry—don't rub</b>	

 In addition to the above steps, your HCP may recommend nonpharmacologic topical treatments—which include creams, lotions, and ointments—to apply externally to the skin.<sup>38</sup>

Another type of nonpharmacologic treatment is wet wrap therapy.<sup>39,40</sup> Here a moisturized layer of cotton and bandages is applied over topical treatments to help increase skin hydration and decrease itching. Sometimes, prescription medications may be needed to help manage your AD.<sup>41-43</sup> They include:

-  • *Topical corticosteroids (TCS)*<sup>41</sup>
- *Topical calcineurin inhibitors (TCI)*<sup>41</sup>
- *Topical phosphodiesterase-4 (PDE-4) inhibitors*<sup>42</sup>
- *Systemic treatments* (pills or injectable drugs that work inside the body)<sup>43</sup>

**Note your personal questions/issues to discuss with your healthcare team:**

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## 5 AD and Its Potential Impact on Your Quality of Life



AD can be a difficult condition to live with.<sup>44</sup> It's challenging to patients because of its symptoms and the changes it causes in physical appearance.<sup>45</sup> It may also cause burdens for caregivers who strive to help young patients in need.<sup>44</sup> In short, AD may directly affect quality of life.<sup>44,45</sup>

For some patients, living with AD may hinder their social, academic, or professional activities depending on the severity of their condition.<sup>44,46</sup> We have seen how AD tends to appear early in childhood.<sup>20</sup> Patients often experience emotional distress due to embarrassment, social isolation, and feelings of helplessness and depression.<sup>44,46</sup>

For caregivers, helping patients may lead to physical and emotional exhaustion due to the many hours of nighttime care required by pediatric sufferers—not to mention feelings of hopelessness, guilt, or sadness over their loved ones' medical issues.<sup>44,46</sup> Quality-of-life problems may be linked to a patient's disease severity: that is, lifestyle challenges may be more burdensome when a patient experiences significant skin discomfort and sleep disturbance.<sup>44,47</sup>



A tool is available to help you track your AD and generate information for your medical team.<sup>47</sup> It is the Patient Oriented Eczema Measure (POEM) Scale. This questionnaire lets you document your signs and symptoms—information that you can share with your HCPs to help them monitor and evaluate your AD.

### Disease Management Takeaway

It is important to regularly discuss quality-of-life challenges with your HCP team to help them evaluate the effectiveness of your disease management plan (and to make any required changes) as well as to determine other types of medical/healthcare support you may need to manage your AD.

## Resources for People With AD



The following organizations provide educational resources on atopic dermatitis and other skin disorders:

**National Eczema Association (NEA)**

<https://www.nationaleczema.org>

**International Alliance of Dermatology Patient Organizations (IADPO)**

<https://www.globalskin.org>

**Society for Pediatric Dermatology (SPD)**

<https://www.pedsderm.net>

**American Academy of Dermatology (AAD)**

<https://www.aad.org>

## Glossary of Key Terms

<b>Allergen</b>	A substance that can cause an allergic reaction. <sup>49</sup>
<b>Allergic rhinitis</b>	Medical term for hay fever, which is caused by exposure to an allergen. <sup>50</sup>
<b>Bacterial infection</b>	Of, or related to an infection caused by bacteria. <sup>51</sup>
<b>Comorbidities</b>	The coexistence of 2 or more medical conditions, which are usually independent of each other. <sup>52</sup>
<b>Cytokine</b>	A class of proteins secreted by cells in the immune system and which contribute to immune system responses. <sup>53</sup>
<b>Epidermis</b>	The outer, nonsensitive layer of skin on the human body. <sup>54</sup>
<b>Erythema</b>	Clinical term for abnormal redness of the skin. <sup>15</sup>
<b>Immune system</b>	A bodily system that helps provide protection against infections and foreign substances. <sup>55</sup>
<b>Lichenification</b>	A condition marked by the appearance of hard or leathery skin that results from chronic irritation. <sup>17</sup>
<b>Pruritus</b>	Clinical term for itching. <sup>56</sup>
<b>Systemic treatment</b>	A type of treatment that affects the entire body by traveling through the bloodstream. <sup>43</sup>
<b>T cell</b>	A blood cell type that is an infection-fighting antibody. T cells recognize foreign tissues and direct immune system response. <sup>57</sup>
<b>Violaceous</b>	Purple discoloration of the skin. <sup>58</sup>
<b>Viral infection</b>	An infection caused by the presence of a virus in the body. <sup>59</sup>
<b>Xerosis</b>	A condition marked by abnormal dryness of the skin. <sup>11</sup>





## Preparing for Your Next Appointment With Your Healthcare Provider

### Your next appointment:

Healthcare provider: \_\_\_\_\_

Date: \_\_\_\_\_

Location: \_\_\_\_\_



### A Tip From the AD Iceberg

The symptoms of atopic dermatitis are diverse.<sup>7</sup> That's why different HCPs—an "AD Care Team" comprised of dermatologists, allergists, pediatricians, and other HCPs—may be needed to provide specialized medical care.



List any other questions, issues, or concerns you would like to discuss with your healthcare provider (dermatologist, family practitioner, pediatrician, allergist, nurse practitioner, physician assistant, or pharmacist) during your next visit:

1. \_\_\_\_\_

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2. \_\_\_\_\_

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3. \_\_\_\_\_

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# Common AD Signs and Symptoms

Itch

Redness

Dry, scaly skin

Skin thickening

Lesions/abnormal skin conditions

## Structural Manifestations of Underlying Inflammation

Activated immune and epidermal cellular activity

Skin barrier abnormalities

T-cell activation

Release of inflammatory cytokines

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