





The Skin Is In

Skin Conditions in Children and Adults with Down Syndrome

Jillian Rork, MD
Clinical Assistant Professor of Dermatology and Pediatrics
Dartmouth Health
Geisel School of Medicine at Dartmouth

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MEDICINE

Conflicts of Interest and Disclosures

- I do not have any financial disclosures or conflicts of interest
- I will be discussing off-label treatments today

Our Road Map

Welcome to the “Clinic”



The “Big 6”

Welcome to the “Lab”



Research Helps

The “Big 6” in Clinic



Dry Skin



Dandruff



Psoriasis



Alopecia Areata

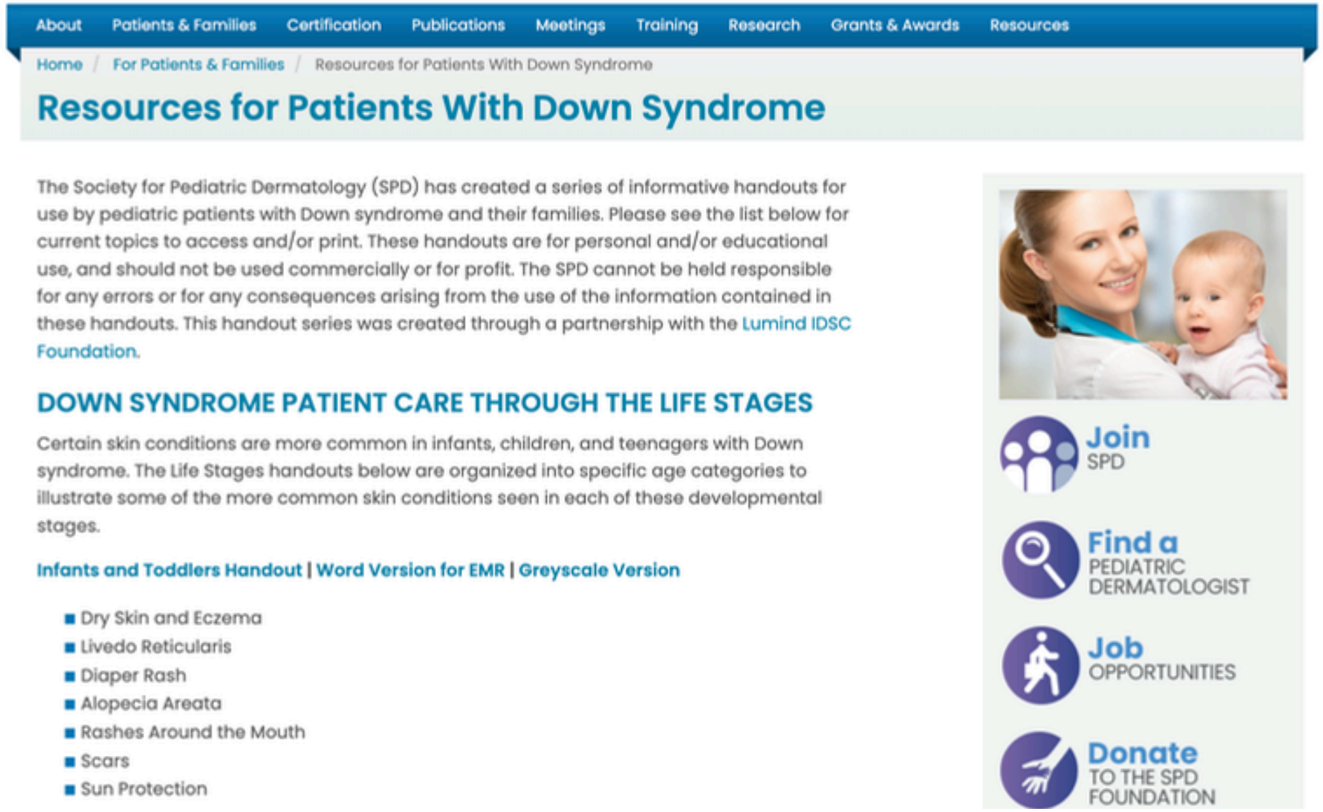


Folliculitis/HS



Foot Fungus

Patient Handouts on Skin Conditions



About | Patients & Families | Certification | Publications | Meetings | Training | Research | Grants & Awards | Resources

Home / For Patients & Families / Resources for Patients With Down Syndrome

Resources for Patients With Down Syndrome

The Society for Pediatric Dermatology (SPD) has created a series of informative handouts for use by pediatric patients with Down syndrome and their families. Please see the list below for current topics to access and/or print. These handouts are for personal and/or educational use, and should not be used commercially or for profit. The SPD cannot be held responsible for any errors or for any consequences arising from the use of the information contained in these handouts. This handout series was created through a partnership with the Lumind IDSC Foundation.

DOWN SYNDROME PATIENT CARE THROUGH THE LIFE STAGES

Certain skin conditions are more common in infants, children, and teenagers with Down syndrome. The Life Stages handouts below are organized into specific age categories to illustrate some of the more common skin conditions seen in each of these developmental stages.

Infants and Toddlers Handout | Word Version for EMR | Greyscale Version

- Dry Skin and Eczema
- Livedo Reticularis
- Diaper Rash
- Alopecia Areata
- Rashes Around the Mouth
- Scars
- Sun Protection

Specific Skin Conditions



PATIENT PERSPECTIVES

DOWN SYNDROME SERIES

DOWN SYNDROME AND Folliculitis

Folliculitis is a skin issue that happens when a hair follicle gets inflamed. Folliculitis is one of the most common skin conditions in people with Down syndrome.

WHAT DOES FOLLICULITIS LOOK LIKE?

You may see raised, pinkish or reddish bumps around the hair follicle. These can be itchy or painful. Sometimes there is pus or peeling skin around the bumps. These bumps can appear anywhere on the body, but the buttocks and thighs are the most common.

When the bumps go away, they may leave behind dark spots or pink spots. These usually fade over time.

Sometimes a single bump can become infected. When this happens, it gets swollen, red, and painful. This is called a "boil" or "abscess".

It can be hard to tell the difference between folliculitis and another skin condition called hidradenitis suppurativa (HS). HS is larger, painful bumps in the armpits, buttocks, and legs. HS is also common in people with Down syndrome. Talk with your child's doctor about monitoring for HS.

WHAT CAUSES FOLLICULITIS?

Folliculitis is caused by inflammation or infection of the hair follicle.

- Hair follicles are small openings on the skin where the hair comes out. They may become blocked or damaged from rubbing against clothing or shaving.
- People with Down syndrome may be more likely to have folliculitis because of the extra copy of chromosome 21. This may cause follicles to become blocked more easily because of differences in skin proteins and the immune system.
- Clogged follicles may trap bacteria that normally live on the skin. Bacteria grow inside the follicle, causing them to become red, swollen, and bumpy.

HOW CAN I PREVENT FOLLICULITIS?

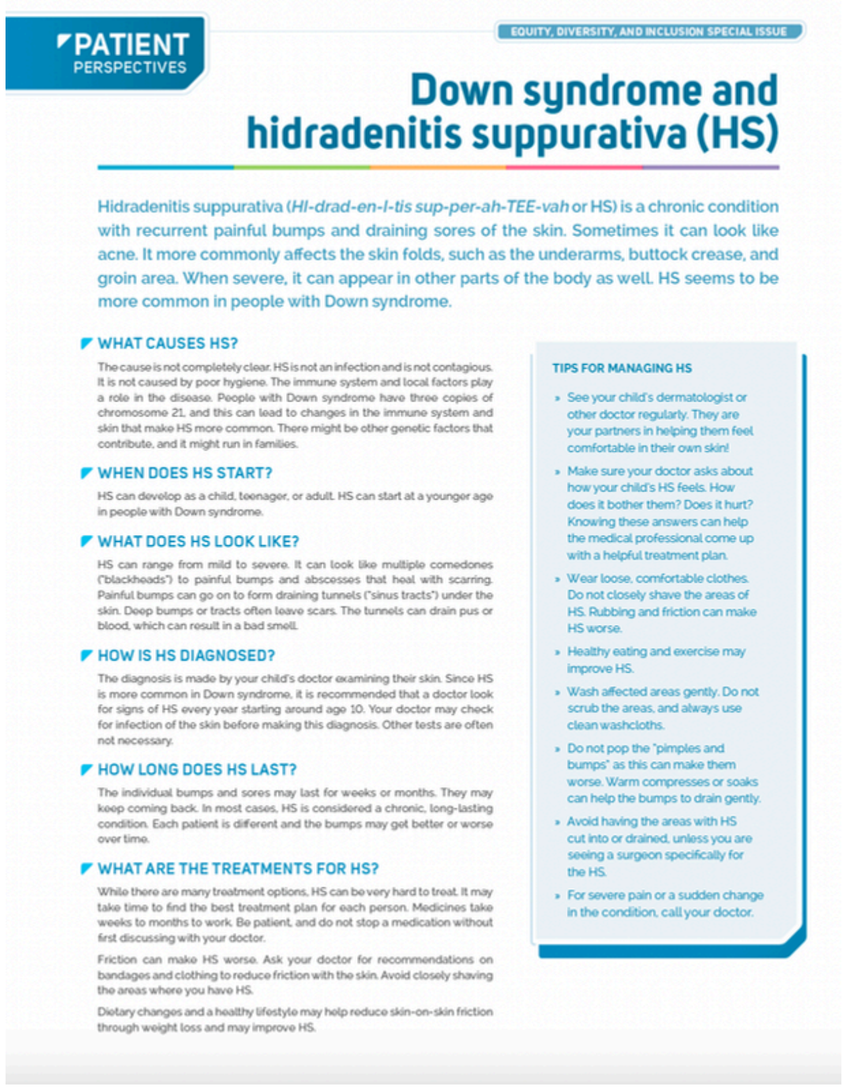
If your child is prone to folliculitis, wash your child's skin regularly with antibacterial soap. You can either use your hand, a clean towel, or washcloth. Avoid sharing washcloths with others. If your child prefers baths and/or application of soap is difficult, talk with your child's doctor about bleach baths.

Shaving Care

- ☐ Avoid shaving when possible.
- ☐ An electric razor is less irritating than a blade razor.
- ☐ Shave in the same direction that the hair grows.
- ☐ Use shaving cream to lessen friction.
- ☐ Do not share razors with others.

Clothing

- ☐ Regularly wash clothing with soap and water.
- ☐ Avoid tight clothes that rub against the skin.



PATIENT PERSPECTIVES

EQUITY, DIVERSITY, AND INCLUSION SPECIAL ISSUE

Down syndrome and hidradenitis suppurativa (HS)

Hidradenitis suppurativa (*HI-drad-en-I-tis sup-per-ah-TEE-vah* or HS) is a chronic condition with recurrent painful bumps and draining sores of the skin. Sometimes it can look like acne. It more commonly affects the skin folds, such as the underarms, buttock crease, and groin area. When severe, it can appear in other parts of the body as well. HS seems to be more common in people with Down syndrome.

WHAT CAUSES HS?

The cause is not completely clear. HS is not an infection and is not contagious. It is not caused by poor hygiene. The immune system and local factors play a role in the disease. People with Down syndrome have three copies of chromosome 21, and this can lead to changes in the immune system and skin that make HS more common. There might be other genetic factors that contribute, and it might run in families.

WHEN DOES HS START?

HS can develop as a child, teenager, or adult. HS can start at a younger age in people with Down syndrome.

WHAT DOES HS LOOK LIKE?

HS can range from mild to severe. It can look like multiple comedones ("blackheads") to painful bumps and abscesses that heal with scarring. Painful bumps can go on to form draining tunnels ("sinus tracts") under the skin. Deep bumps or tracts often leave scars. The tunnels can drain pus or blood, which can result in a bad smell.

HOW IS HS DIAGNOSED?

The diagnosis is made by your child's doctor examining their skin. Since HS is more common in Down syndrome, it is recommended that a doctor look for signs of HS every year starting around age 10. Your doctor may check for infection of the skin before making this diagnosis. Other tests are often not necessary.

HOW LONG DOES HS LAST?

The individual bumps and sores may last for weeks or months. They may keep coming back. In most cases, HS is considered a chronic, long-lasting condition. Each patient is different and the bumps may get better or worse over time.

WHAT ARE THE TREATMENTS FOR HS?

While there are many treatment options, HS can be very hard to treat. It may take time to find the best treatment plan for each person. Medicines take weeks to months to work. Be patient, and do not stop a medication without first discussing with your doctor.

Friction can make HS worse. Ask your doctor for recommendations on bandages and clothing to reduce friction with the skin. Avoid closely shaving the areas where you have HS.

Dietary changes and a healthy lifestyle may help reduce skin-on-skin friction through weight loss and may improve HS.

TIPS FOR MANAGING HS

- See your child's dermatologist or other doctor regularly. They are your partners in helping them feel comfortable in their own skin!
- Make sure your doctor asks about how your child's HS feels. How does it bother them? Does it hurt? Knowing these answers can help the medical professional come up with a helpful treatment plan.
- Wear loose, comfortable clothes. Do not closely shave the areas of HS. Rubbing and friction can make HS worse.
- Healthy eating and exercise may improve HS.
- Wash affected areas gently. Do not scrub the areas, and always use clean washcloths.
- Do not pop the "pimples and bumps" as this can make them worse. Warm compresses or soaks can help the bumps to drain gently.
- Avoid having the areas with HS cut into or drained, unless you are seeing a surgeon specifically for the HS.
- For severe pain or a sudden change in the condition, call your doctor.

Life Stages Handouts



SKIN CONDITIONS & DOWN SYNDROME

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Many different skin conditions can happen during childhood, but some are more common in infants and toddlers with Down syndrome. In this handout, we review skin conditions more commonly seen in the first few years of life. We also provide links to other Patient Perspectives handouts where you can learn more.

LIFE STAGES

Infants & Toddlers

Dry Skin and Eczema

Dry skin is common in people with Down syndrome. This can start at a young age, and it commonly happens on the face and hands. Sometimes dry skin can lead to pink, itchy patches called eczema. Using moisturizing creams or ointments can help and your child's doctor can give other tips and treatments.

DS & Dry Skin PDF

To learn more, check out the Patient Perspectives Down Syndrome & Dry Skin Handout.

Livedo Reticularis

Infants and children with Down syndrome can have a red, net-like pattern on their skin called livedo reticularis or cutis marmorata. This is not painful or dangerous. It can be more noticeable when it is cold. It appears more commonly on the arms and legs. Warming the body sometimes helps. As kids grow, it may fade, but it can continue as an adult. If it continues for years, talk to your doctor, since it rarely may be caused by an underlying medical condition. If you have questions, ask your child's doctor about livedo reticularis.

Diaper Rash

Diaper rash is common in all infants and toddlers. Sometimes children with Down syndrome can have a condition called Hirschsprung disease. This disease is diagnosed at birth and prevents poop from moving through the body normally. Hirschsprung disease can be treated by surgery, but these children can still develop diaper rashes. If your child has Hirschsprung disease, talk to their doctor about how to prevent diaper rash.

Diaper Rash PDF

To learn more about diaper rash and how to treat it, check out the Patient Perspectives Diaper Care Handout.

Alopecia Areata

Alopecia means hair loss. Alopecia areata is hair loss from immune cells attacking the hair, causing:

- Round spots of missing hair on the head.
- Eyebrows and eyelashes to sometimes fall out.

This happens more often in children and adults with Down syndrome because they are more likely to have conditions caused by their immune system. It sometimes starts as young as the first few years of life. Talk to their doctor if you think your child is losing hair. If they suspect alopecia areata, they should make sure thyroid tests have been done recently.

Alopecia Areata PDF

Check out the Patient Perspectives Alopecia Areata Handout for more information.



SKIN CONDITIONS & DOWN SYNDROME

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Many different skin conditions can happen during childhood, but some are more common in children with Down syndrome. In this handout, we review skin conditions more commonly seen in school-age children with Down syndrome. We also provide links to other Patient Perspectives handouts where you can learn more.

LIFE STAGES

School-Age Children

Dry Skin and Eczema

Dry skin is common in children with Down syndrome. This can start at a young age and often happens on the face and hands. Sometimes dry skin can lead to pink, itchy patches called eczema. You may also notice thickened skin called "hyperkeratosis" on the elbows, knees, hands, and feet. Using moisturizing creams or ointments can help, and your child's doctor can give other tips and treatments.

DS & Dry Skin PDF

To learn more, check out the Patient Perspectives Down Syndrome & Dry Skin Handout.

Rashes Around the Mouth

In children with Down syndrome, there are many reasons for rashes around the mouth:

- Saliva and/or food
- Weaker mouth muscles
- A larger tongue

These can cause dry, cracked lips and sores at the corners of the mouth called "angular cheilitis." Perioral or periorificial dermatitis is another common rash that looks like small pink bumps around the mouth, nose, and eyes. Using moisturizing ointments can help rashes around the mouth. Your child's doctor can give other tips and treatments.

DS & Rashes Around the Mouth PDF

To learn more, check out the Patient Perspectives Down Syndrome & Rashes Around the Mouth Handout.

Alopecia Areata

Alopecia means hair loss. Alopecia areata is hair loss from immune cells attacking the hair, causing:

- Round spots of missing hair on the head.
- Eyebrows and eyelashes to sometimes fall out.

This happens more often in children and adults with Down syndrome because they are more likely to develop conditions caused by the immune system. For many, the first signs of alopecia areata start as a child. Tell their doctor if you think your child is losing hair. If they suspect alopecia areata, they should make sure thyroid screening is up-to-date.

Alopecia Areata PDF

Check out the Patient Perspectives Alopecia Areata Handout for more information.



SKIN CONDITIONS & DOWN SYNDROME

spd

Many different skin conditions can happen during the teenage years, but some are more common in teenagers with Down syndrome. In this handout, we review skin conditions more commonly seen in teenagers with Down syndrome. We also provide links to other Patient Perspectives Handouts where you can learn more.

LIFE STAGES

Teenagers

Dry Skin and Eczema

Dry skin is common in teenagers with Down syndrome. This can start at a young age and especially happens on the face and hands. Sometimes dry skin can lead to pink, itchy patches called eczema. You may also notice thickened skin called "hyperkeratosis" on the elbows, knees, hands, and feet. Using moisturizing creams or ointments can help, and your doctor can give other tips and treatments.

DS & Dry Skin PDF

To learn more, check out the Patient Perspectives Down Syndrome & Dry Skin Handout.

Acne

Acne, known as "pimples," usually starts as a teenager. Acne can look like red bumps, white bumps, or blackheads. It can happen on the face, back, or chest. Acne happens as a teenager because of hormone changes from puberty. Your skin starts to make more oil which gets trapped, causing pimples. There are other causes of acne like family history and bacteria or yeast.

Acne PDF

To learn more about acne, check out the Patient Perspectives Acne Handout.

Syringomas

Syringomas are skin-colored-to-yellow bumps on the skin. These are common on the face, particularly around the eyes. Syringomas are more common in people with Down syndrome, especially in women. Syringomas are not harmful but can be hard to treat.

DS & Syringomas PDF

To learn more, check out the Patient Perspectives Down Syndrome & Syringomas Handout.

Rashes Around the Mouth

In teenagers with Down syndrome, there are many reasons for rashes around the mouth:

- Saliva
- Weaker mouth muscles
- A larger tongue

These can cause dry, cracked lips and sores at the corners of the mouth called "angular cheilitis." Perioral or periorificial dermatitis is another common rash that looks like small pink bumps around the mouth, nose, and eyes. Using moisturizing ointments can help rashes around the mouth. Your doctor can give other tips and treatments.

DS & Rashes Around the Mouth PDF

To learn more, check out the Patient Perspectives Down Syndrome & Rashes Around the Mouth Handout.

Let’s Head to the ‘Clinic!’



The “Big 6”



Dry Skin



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DermNetNZ.org

Moisturize!

That’s great Dr. Rork. With what?



http://sincereandjenuine.blogspot.com/2014/01/what-lurks-in-lotion.html

A lotion is often not the best choice

- Thinnest moisturizer
- High water content
- Hurt on open skin



1 J Am Acad Dermatol. 2014;71(1):116–132

Recommend creams and ointments

<u>Creams</u>

- Thicker than lotions
- Vanish

<u>Ointments/Oils</u>

- The thickest
- Do not hurt
- Best moisturizer



http://www.purpleflame.co.uk/products/white-plastic-cosmetic-jar/

Fragrance-free creams













Fragrance-free ointments













Bathing Tips

- Daily bathes are okay
- Limit to 10 minutes
- Cleanser or Fragrance Free Soap
- Only to “dirty” parts of body
- Avoid bubbles

Soak and Smear

Bathe!



Pat dry the skin!



Apply moisturizer!



The Child's Bath, Mary Cassatt, 1893.

Ask me about <u>who lives at home</u> and <u>helps me with daily activities</u>









https://pressofatlanticcity.com/news/local/down-syndrome-families-aging-together-as-life-expectancy-lengthens/article_d909e2fa-559f-11df-8db4-001cc4c03286.html

Ask me if I like a bath/shower and how things feel on my body

- “Do you like the way water feels?”
- “Does taking a shower/bath bother your ears?”
- “How often do you take a shower or bath?”
- “How long does it take for you to take a shower/bath?”
- “Do you like the way lotion feels on your skin?”
- How about something more greasy like Vaseline?”











Hear our voice!







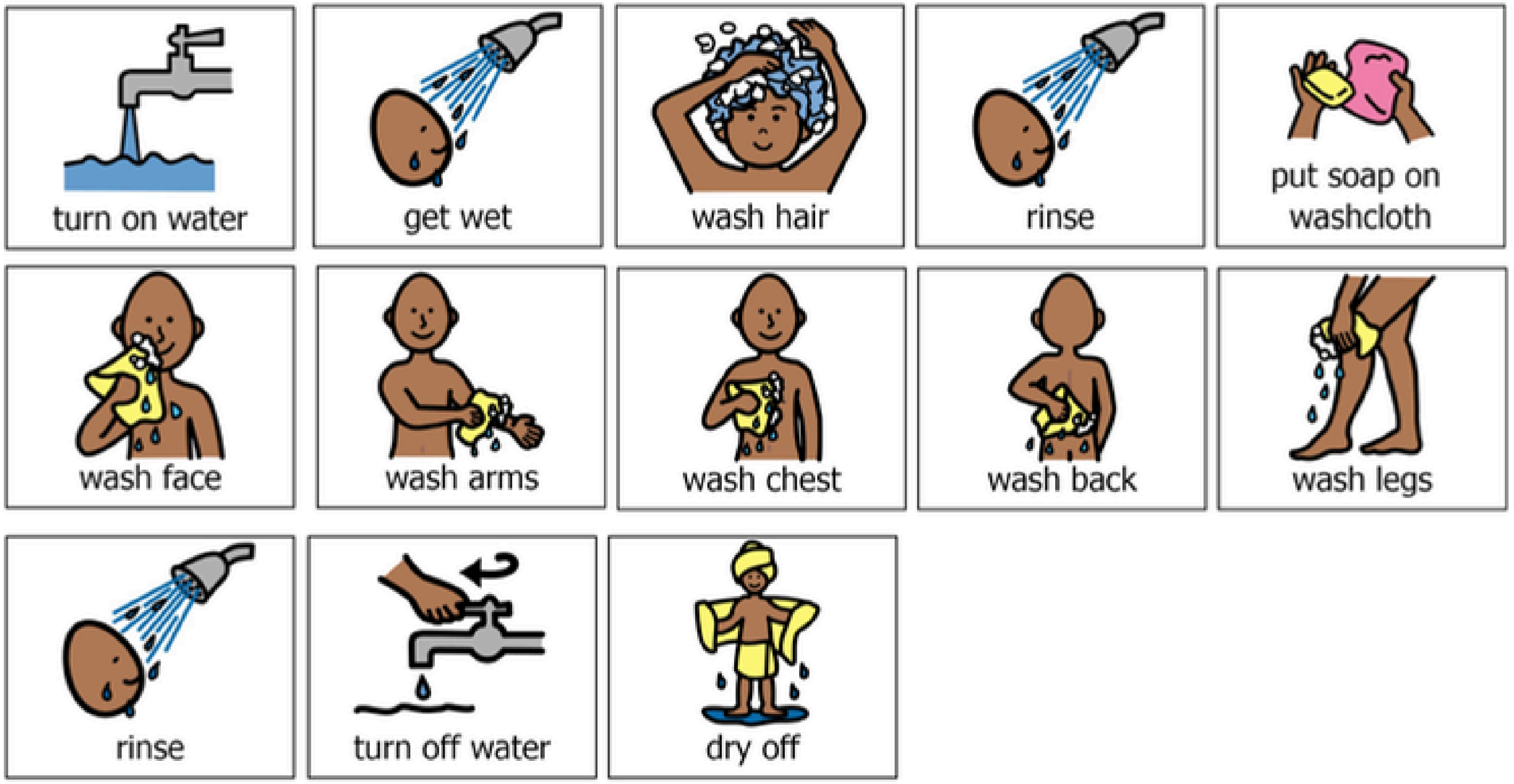




Bathing Pictural Decks Available

Advocate Medical Group
Adult Down Syndrome Center

My Shower Routine



Bathing/Showering Tips

Use a **shower head with lights** that change color based on the water temperature.

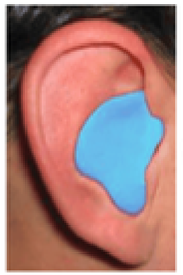


Goggles or **bath visors** are options for those who strongly dislike or fear getting water into their eyes while showering or bathing.





Ear plugs or a **neoprene headband** are options for those with ear tubes or those who want to avoid getting water in their ears.





Hyperkeratosis





There are over-the-counter moisturizers to help with thicker areas of skin

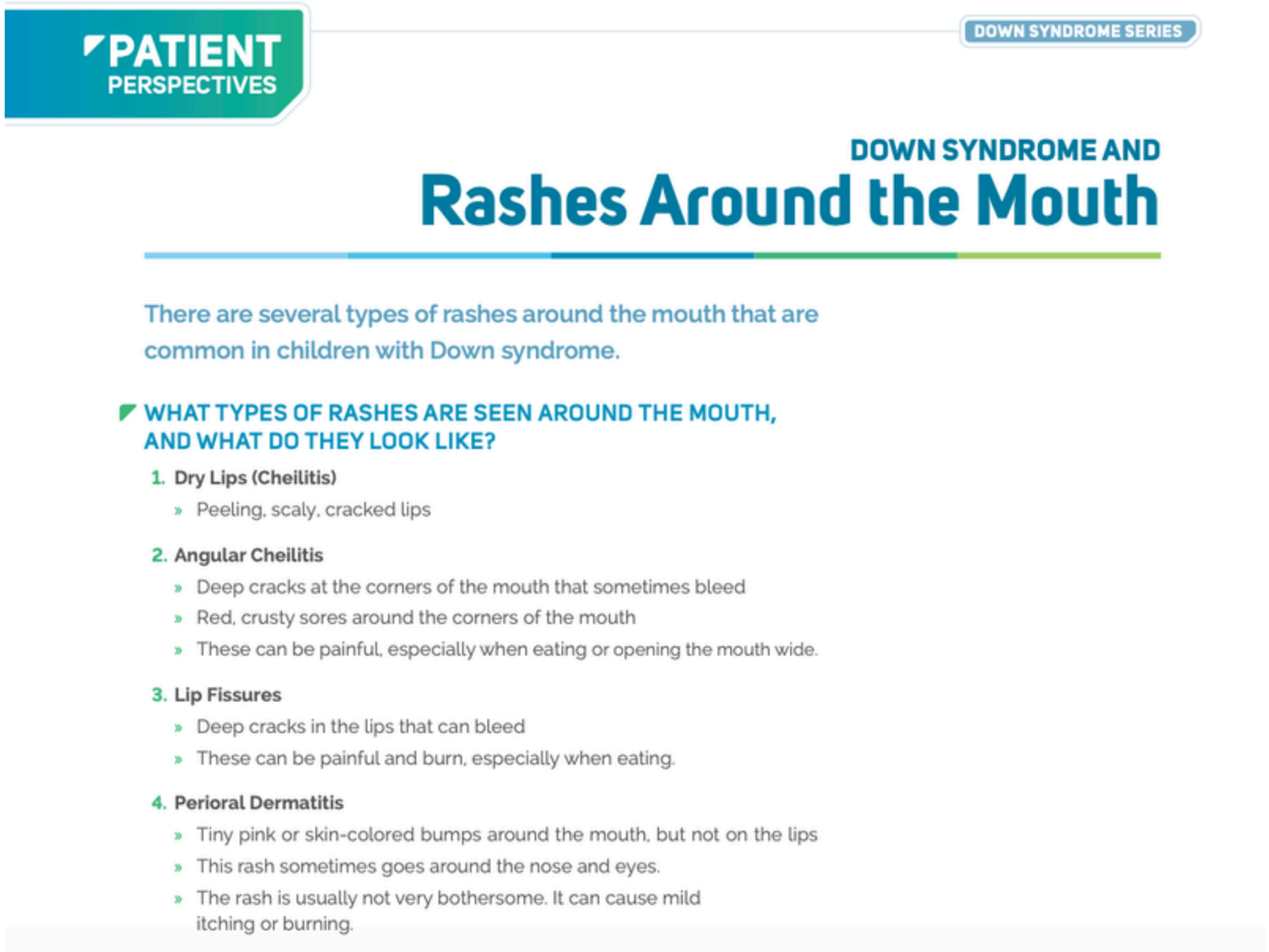






Apply <u>once nightly</u> in the beginning as they can be irritating

Checkout this handout!



PATIENT PERSPECTIVES

DOWN SYNDROME SERIES

DOWN SYNDROME AND

Rashes Around the Mouth

There are several types of rashes around the mouth that are common in children with Down syndrome.

WHAT TYPES OF RASHES ARE SEEN AROUND THE MOUTH, AND WHAT DO THEY LOOK LIKE?

1. **Dry Lips (Cheilitis)**
   - Peeling, scaly, cracked lips
2. **Angular Cheilitis**
   - Deep cracks at the corners of the mouth that sometimes bleed
   - Red, crusty sores around the corners of the mouth
   - These can be painful, especially when eating or opening the mouth wide.
3. **Lip Fissures**
   - Deep cracks in the lips that can bleed
   - These can be painful and burn, especially when eating.
4. **Perioral Dermatitis**
   - Tiny pink or skin-colored bumps around the mouth, but not on the lips
   - This rash sometimes goes around the nose and eyes.
   - The rash is usually not very bothersome. It can cause mild itching or burning.

The “Big 6”



Dry Skin



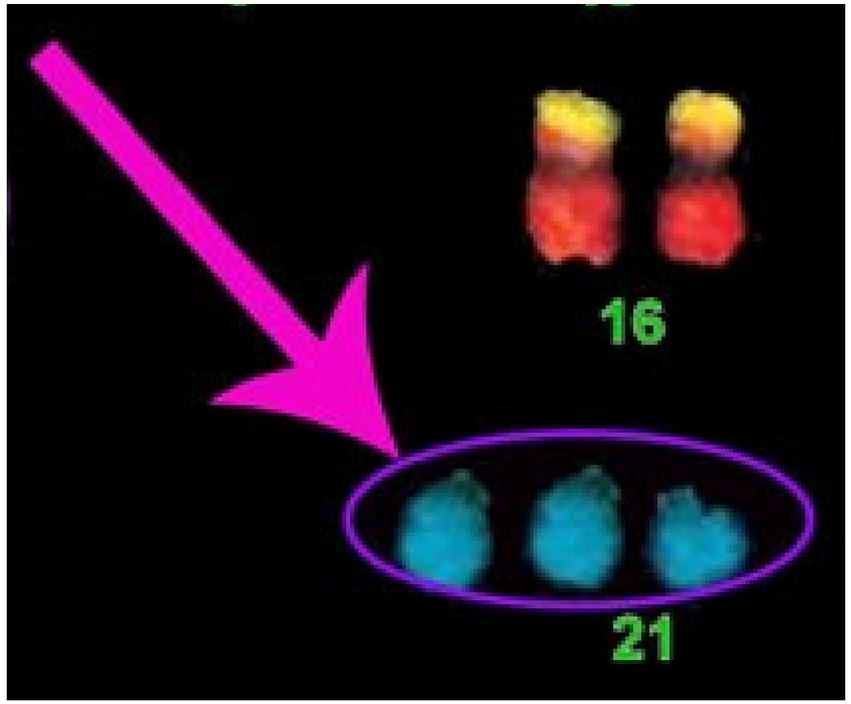
Dandruff

Let’s Head to the ‘Lab!’



https://news.feinberg.northwestern.edu/2019/06/17/northwestern-opens-largest-biomedical-academic-research-building-in-u-s/

People with Down syndrome have a dysregulated immune system



Interferon



Immune system messenger

Down syndrome causes increase Interferon signaling



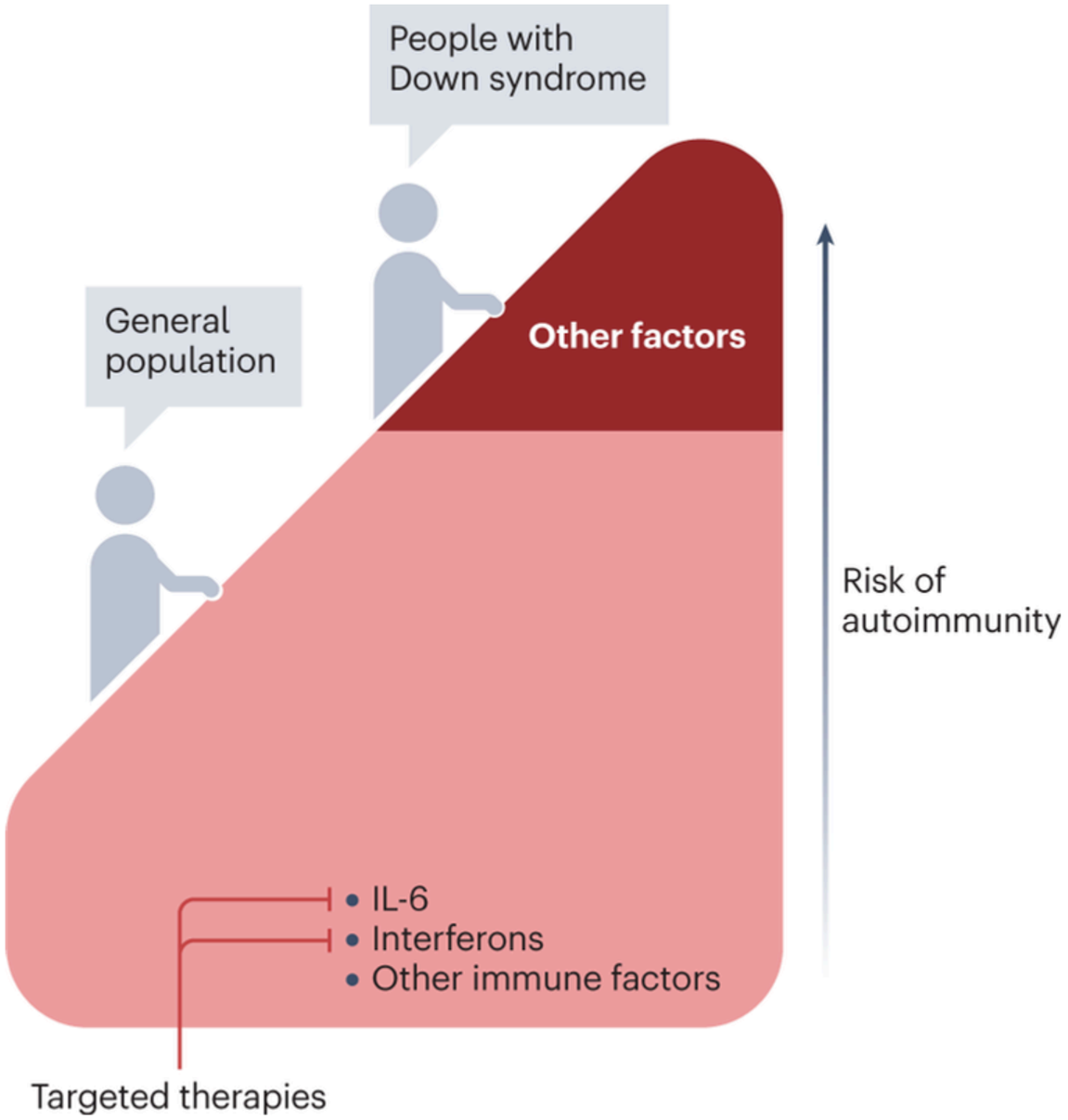
https://harrypotter.fandom.com/wiki/Owl

Increased Interferon Signaling = Immune System Dysregulation

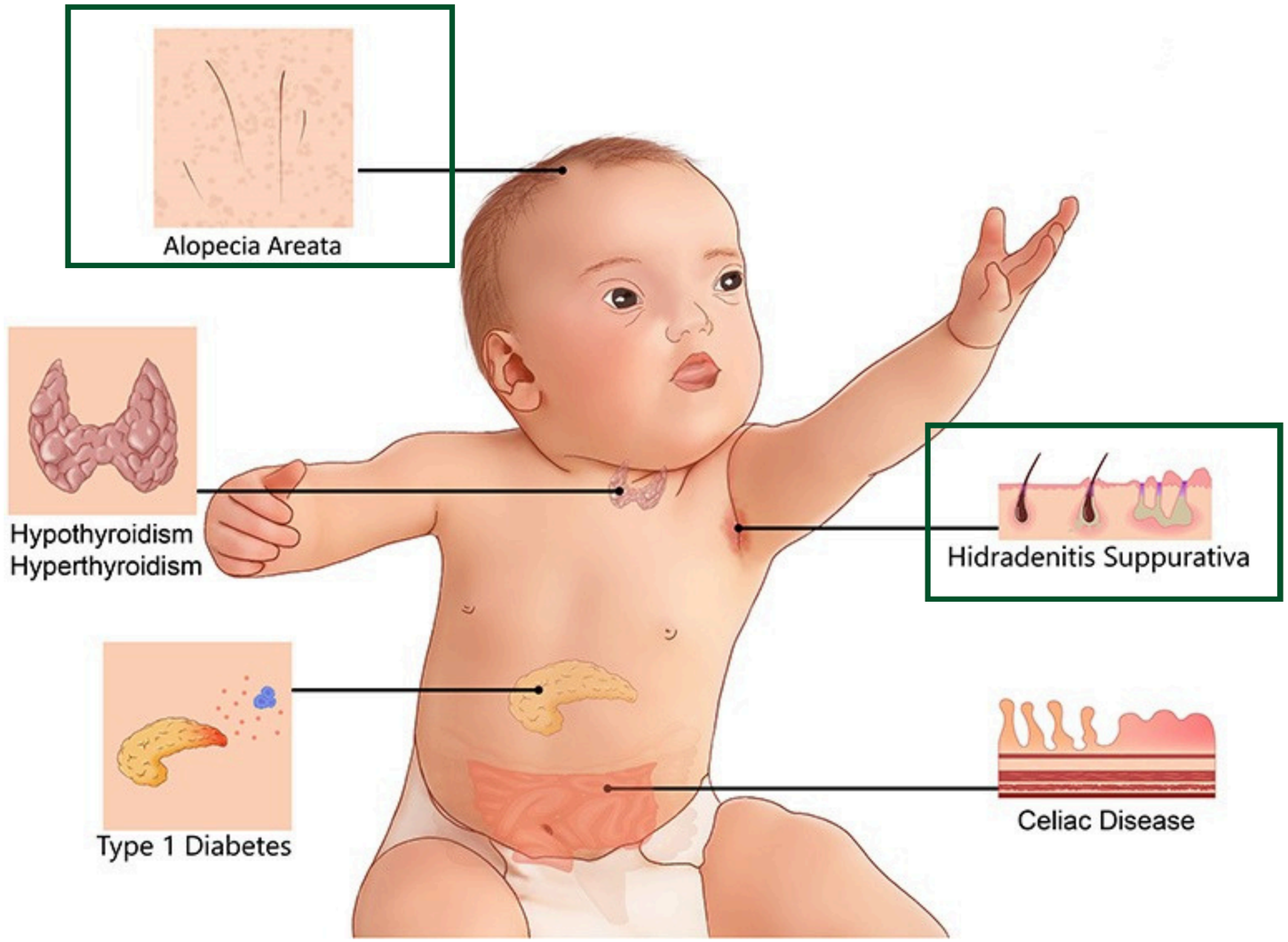


https://harrypotter.fandom.com/wiki/Owl

When an immune system is <u>dysregulated</u> it can cause health problems like <u>autoimmune conditions</u>



Autoimmune conditions in people with Down syndrome



https://www.dovepress.com/interferon-driven-immune-dysregulation-in-down-syndrome-a-review-of-th-peer-reviewed-fulltext-article-JIR

The immune system causes many skin conditions



Seborrheic Dermatitis

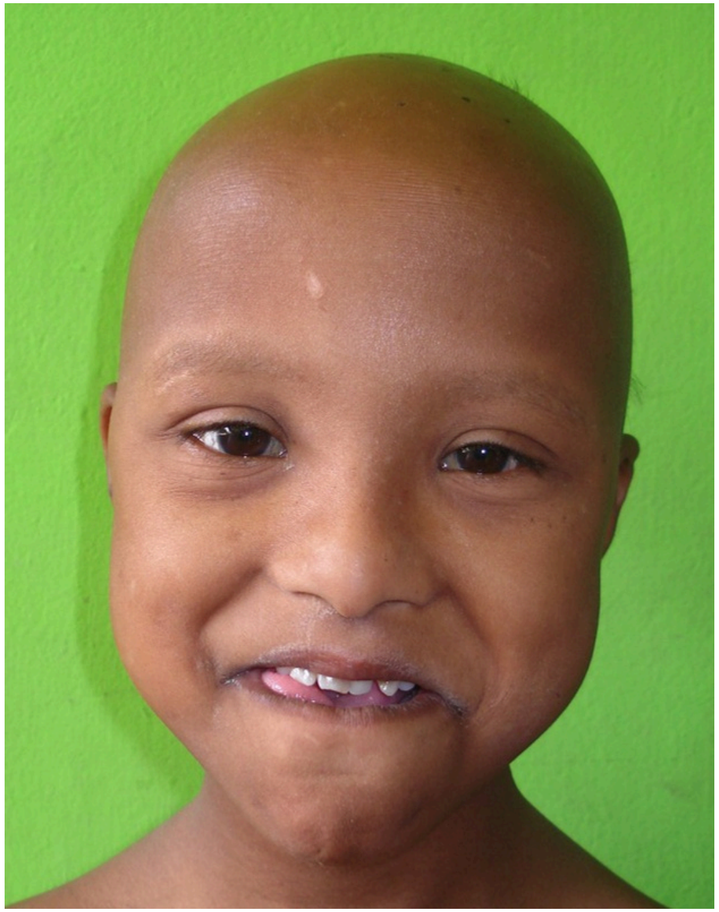


Psoriasis

The immune system causes many skin conditions



Alopecia Areata



Alopecia Areata

Sureshbabu, R., Kumari, R., Ranugha, S., Sathyamoorthy, R., Udayashankar, C., Oudeacoumar, P. Phenotypic and dermatological manifestations in Down Syndrome. Dermatol. Online J. 2011; 17(2).

The immune system causes many skin conditions



Folliculitis



Hidradenitis Suppurativa

The immune system causes many skin conditions



Foot and Toenail Fungus

Let’s Head back to the ‘Clinic!’



The “Big 6”



Dry Skin



Dandruff

PATIENT PERSPECTIVES

What is seborrheic dermatitis?

Seborrheic (seb-o-REE-ik) dermatitis is a common skin rash. It develops in skin areas that have oil glands. It commonly affects the face and scalp. It also affects other body parts. When it affects the scalp in babies it is called cradle cap. On the scalp of kids or older people it is called dandruff. It is most common in infants, teens, and adults.

WHAT CAUSES SEBORRHEIC DERMATITIS?

We don't know exactly what causes seborrheic dermatitis. It can appear with hormone changes. It can also happen when normal skin yeast called *Malassezia* grows too much. Seborrheic dermatitis is not an infection. It is not contagious. Stress, cold weather, and sickness can worsen the rash, but they do not cause it. Seborrheic dermatitis may run in families. It is not known to be related to diet.

SHOULD A DOCTOR TREAT MY SEBORRHEIC DERMATITIS?

You may be able to control your seborrheic dermatitis at home just with over-the-counter shampoos and creams. See your doctor if you are not getting better or if you are not sure about the diagnosis. Although there is no cure for seborrheic dermatitis, it usually gets better with treatment and time.

SEBORRHEIC DERMATITIS FACTS

- Seborrheic dermatitis looks like skin flaking. You might also see skin color changes.
- Depending on a person's skin color, the rash may look pink, darker, or lighter in color.
- Skin flakes may look dry, dusty, or greasy. The flakes may be white, yellow, or brown.
- On the scalp, sometimes the flaky skin can be very thick and difficult to clear up.
- On the face, the rash can be in the eyebrows, nose creases, cheeks, and behind and inside the ears.
- It can also be on the chest, upper back, armpits, and groin.
- The rash can be very itchy or not itchy at all.
- In infants, it often goes away within the first year of life. In teens and adults, it may come and go for years.

HOW CAN I TREAT MY DANDRUFF (SCALP SEBORRHEIC DERMATITIS)?

Over-the-counter medicated shampoos treat dandruff. They also help get rid of skin flakes and product build-up that makes dandruff worse. How often you use the shampoo will depend on your hair type, hair length, and how severe the rash/itch is. For example, someone who has naturally oily hair might need to use the special shampoo daily. People with long, curly, coily, or braided hair will use the medicated shampoo less often.

Medicated dandruff shampoos should be used directly on the scalp skin. These are not hair shampoos. They can dry your hair out too much.

In the shower, before you use your regular hair care:

- ☐ Apply dandruff shampoo to your hands.
- ☐ Use your fingertips to spread the shampoo on your scalp skin.
- ☐ Massage the dandruff shampoo into your scalp.
- ☐ Work it into your scalp skin for **3-5 minutes**. (Sing a song!)
- ☐ When the treatment is done, rinse the shampoo out well.
- ☐ Then only as needed, you can continue with your regular hair care routine.

Dandruff can happen on many places on the head





https://www.goodrx.com/conditions/seborrheic-dermatitis

Dandruff “Seborrheic Dermatitis” can cause hair loss



Photograph courtesy of Dr. Leah Belazarian

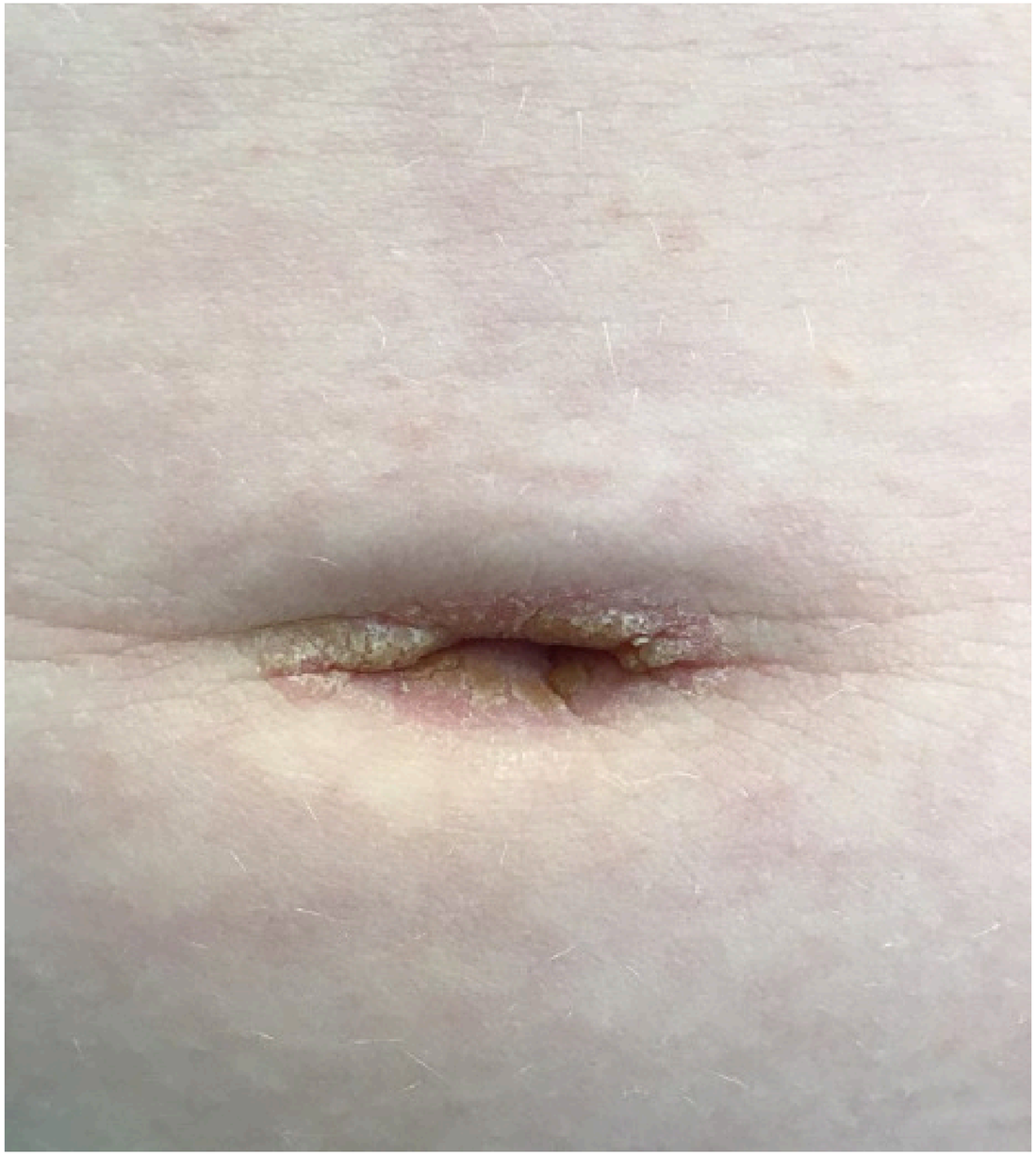






Clark SM, Tobe S, Jaboori KA. Diagnosis and Treatment of Seborrheic Dermatitis. Am Fam Physician. 2015 Feb 1;91(3):185-190.





Treatments for scalp seborrheic dermatitis

- Shampoos:
  - Over-the-counter tea-tree oil, anti-dandruff, keratolytic shampoos
  - **Ketoconazole 2% shampoo** – Prescription
  - **Ciclopirox 1% shampoo** – Prescription
- Corticosteroids (Prescription):
  - Solutions or foams
    - **Fluocinolone 0.01% solution**
    - **Fluocinonide 0.05% solution**
    - **Clobetasol 0.05% solution/foam**
  - Consider oil for younger children or open areas
    - **Fluocinolone 0.01% oil (**Derma-Smoothe)

Potential plan for scalp seborrheic dermatitis

- **Ketoconazole 2% shampoo** 2-3 times per week
- Let these shampoos sit on the skin around 1-2 minutes!
- **Fluocinolone 0.01% solution** nightly until symptoms improve, then taper off.



Practical Pearls

- Squirt bottle to wet the scalp
- Apply shampoo and let sit BEFORE the bath
- Alternate with a salicylic acid shampoo: **MG217 Salicylic Acid Shampoo** – let sit!
- Consider a Zinc-based anti-dandruff shampoo if odor is an issue: **CeraVe** and **Cetaphil** brands
- Use the Adult Down Syndrome Center tips!



The “Big 6”



Dry Skin



Dandruff



Psoriasis

PATIENT PERSPECTIVES

What is Psoriasis?

Psoriasis is a common, chronic condition in which red plaques with thick scales form on the skin.

Psoriasis is a fairly common skin condition that affects 1-2% of all people. It is chronic, meaning the symptoms can come and go at any time throughout a person's life. Psoriasis can develop at any age – from infancy to adulthood. In fact, one-third of psoriasis patients develop the condition before the age of 20. Psoriasis varies from person to person, both in severity and how it responds to treatment. There is no cure for psoriasis, but many treatment options are available depending on where it is located on the body and the severity of the disease.

WHAT CAUSES PSORIASIS?

We do not yet know what causes psoriasis, but we do know that the immune system and genetics play major roles in its development. In patients with psoriasis, the immune system is mistakenly activated, resulting in a faster growth cycle of skin cells. Normally, the skin goes through constant renewal by shedding the outer, dead layer of skin cells while new skin cells are made underneath. Normal skin cells mature and fall off the skin in three to four weeks. Psoriasis skin cells only take three to four days to go through this cycle. Instead of falling off, the cells pile up and form thick, red, scaly patches.

Psoriasis tends to run in families. If one parent has the condition, there is a 25% chance that each child will have it. Certain triggers can bring out psoriasis or make it worse. In children, injury to the skin and infections are common triggers. Up to half of children with psoriasis will have a flare-up of psoriasis 2-6 weeks after illnesses such as ear infections, strep throat, or a common cold. Psoriasis itself, however, is not contagious.

WHAT ARE THE SIGNS AND SYMPTOMS OF PSORIASIS?

Psoriasis usually appears as dry, red, scaly patches on the skin. The patches can be very itchy and sometimes burn. They can come and go in an unpredictable way.

There are several different forms of the condition, but the most common in children is **plaque psoriasis**. It can be limited to a few patches or can involve large areas of the skin. It can arise anywhere on the body, but it tends to most commonly affect the elbows, knees and scalp. **Guttate psoriasis** – where the rash takes the form of small raindrop-like lesions – is another common form of psoriasis in kids. The face and genital areas are often affected in younger children. Psoriasis can also develop in the nails (usually in the form of small depressions or pits in the nail), and in the joints (called **psoriatic arthritis**). The severity of psoriasis can range from mild to severe and varies from person to person and may change over time.

HOW IS PSORIASIS DIAGNOSED?

No special blood tests exist to diagnose psoriasis. A dermatologist diagnoses psoriasis by looking at the skin. A skin biopsy is occasionally needed to confirm the diagnosis or to ensure that the rash is not being caused by something else.

EMOTIONAL CONSIDERATIONS IN CHILDREN

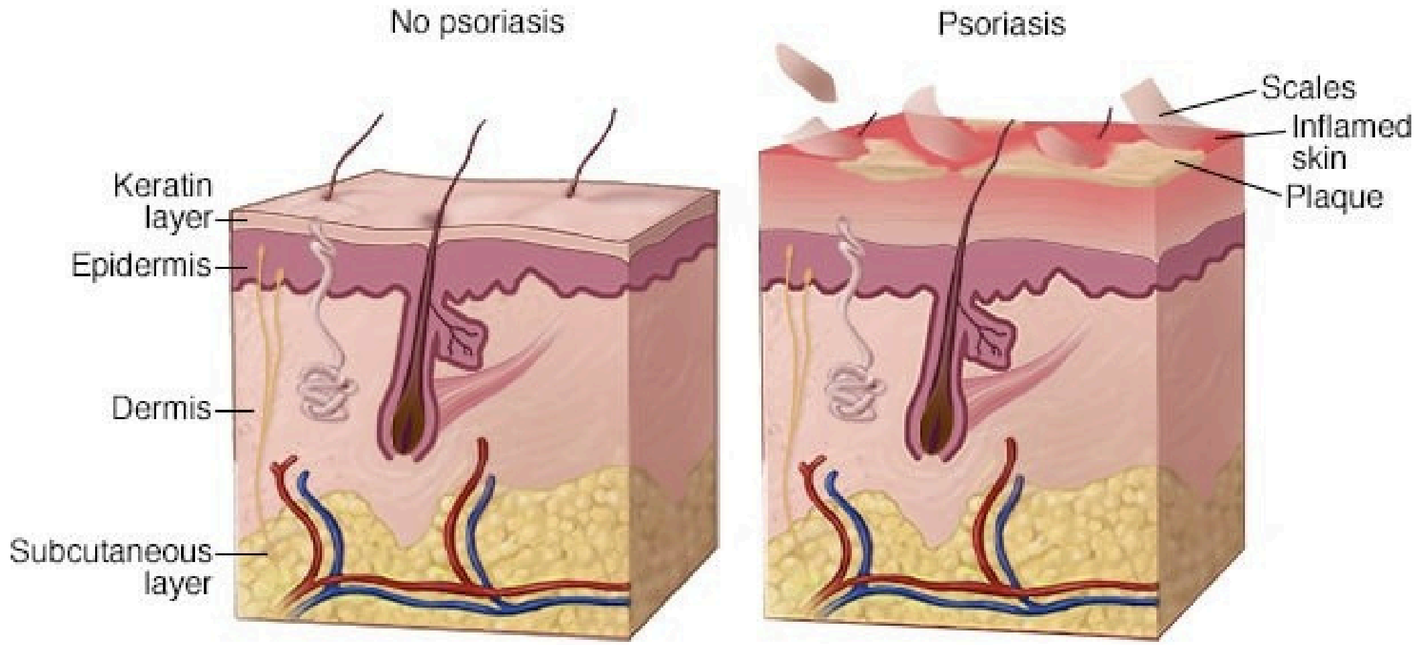
For many children, the main problem with psoriasis is its visibility and the effect it may have on the child's self-esteem and confidence. Children with psoriasis are at risk of depression and anxiety. Though psoriasis is not contagious, and the patches do not leave permanent scars on the skin, it can leave emotional scars. Caregivers are encouraged to keep a close eye on their child's emotions and maintain open communication about their mood.

OTHER CONCERNS FOR CHILDREN WITH PSORIASIS

Children with psoriasis are at risk of suffering from obesity, diabetes (high blood sugar), high cholesterol, and heart disease later in life. It is important to maintain a healthy weight by eating a good, balanced diet and staying active. The whole family should be part of this healthy lifestyle.

What is Psoriasis?

A skin condition where the **<u>immune system makes the skin cells grow and shed to quickly</u>**, leading to red, scaly patches often on the elbows, knees, and scalp



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DermNetNZ.org
13/9/2000


© 2013 VisualDx




















© 2012 VisualDx



Let’s Head to the ‘Lab!’

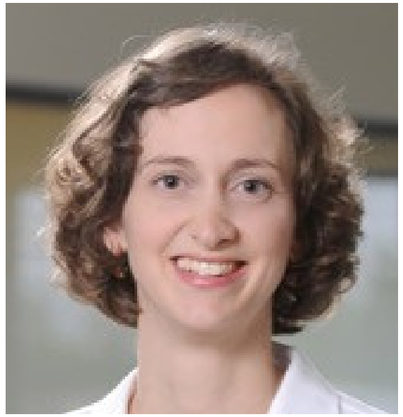


https://news.feinberg.northwestern.edu/2019/06/17/northwestern-opens-largest-biomedical-academic-research-building-in-u-s/

NIH INCLUDE Project at Dartmouth



The Project's Team – It Takes a Village



Jillian Rork, MD



Brian Skotko, MD



Timothy Burdick, MD



Dominic Strohmeyer, BS



Nicolas Oreskovic, MD, MPH



Amy Buros Stein, PhD



Jennifer Snide, MS

Prevalence and demographics of psoriasis in the Down syndrome population: A cross-sectional analysis using the Epic Cosmos dataset

Study Population

DS = 107,759

DS + Psoriasis =2,125

Pediatric Psoriasis

0.79%

(CI 0.71-0.87)

Adult Psoriasis

3.08%

(CI 2.94-3.22)



Dominic Strohmeyer, BS



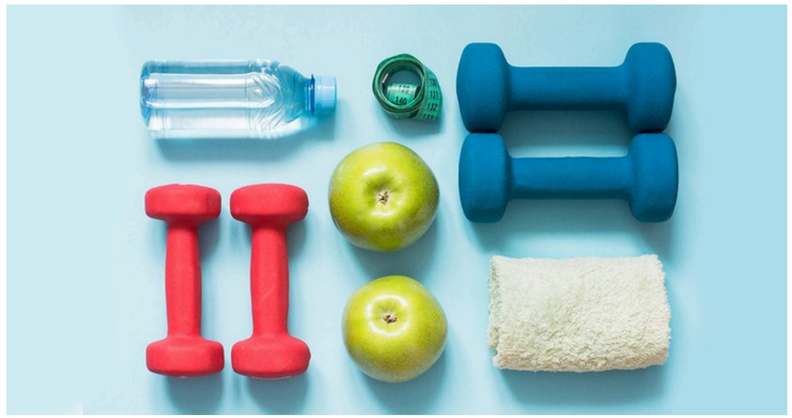
Amy Buros Stein, PhD



Timothy Burdick, MD

J Am Acad Dermatol. 2026 Jan;94(1):323-325.

There are many ways to treat psoriasis











Dermatologists predominantly manage skin conditions

- 43% Dermatologists
- 23% Family Medicine
- 16% Internal Medicine
- Remaining 18% Pediatrics, Genetics, Other

Treatments



Topical prescriptions (94%)





Systemic prescriptions (30%)

Most Common Systemic Medications



Apremilast (8%)



Adalimumab (11%)

Over 1/3rd of patients with Down syndrome and psoriasis are receiving a systemic treatment

H

Are the ecific?

Wh s?





Biological and JAK inhibitor therapy outcomes for severe psoriasis in trisomy 21

Cathal O'Connor[1,2] | Berbie Byrne[3] | Darren Roche[1] | Garret O'Connell[4] | Michael O'Connell[4] | Michelle Murphy[1,2] | John Bourke[1] | Maeve Lynch[3] | Mary Bennett[1]

N = 21
(mean age = 25 years)

90% (18/20) **TNF-alpha inhibitor failed**

81% (17/21) **required conversion**

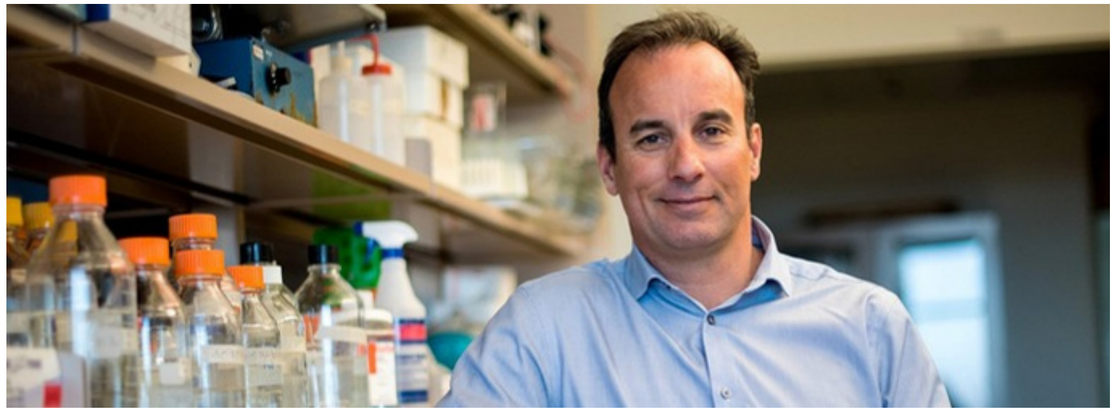
Treatment	Success/trial	Success rate, %
TNFα-inhibitors	2/20	10
Etanercept	0/5	0
Adalimumab	2/11	18.2
Golimumab	0/2	0
Infliximab	0/2	0

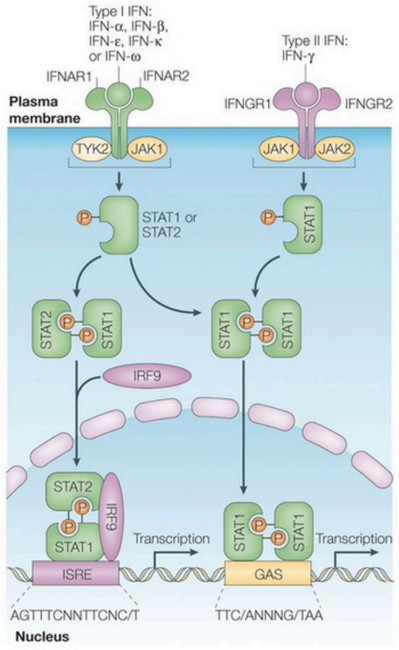
67% (7/11) **adequate response to ustekinumab**

3 patients treated with tofacitinib with adequate response
(previously failed 3 biologics)

J Dermatol. 2023 Oct;50(10):1339-1342.

Higher rate of inefficacy and/or paradoxical flares of psoriasis from TNF blockade?

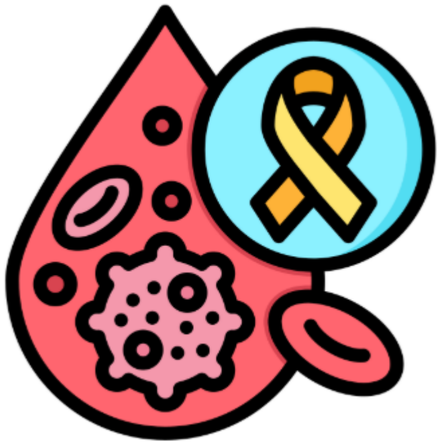




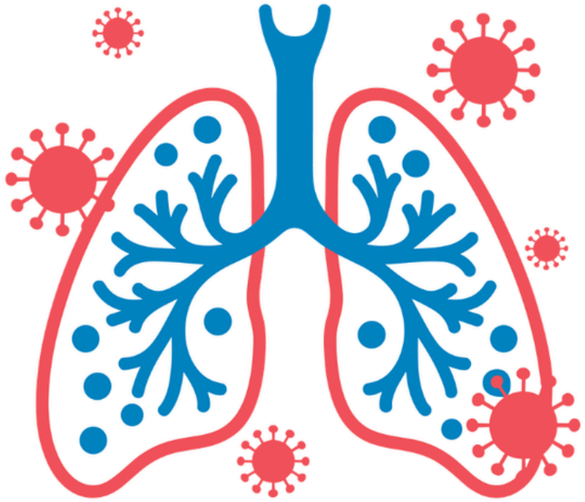
Nature Reviews | Immunology

https://www.nature.com/articles/nri1604

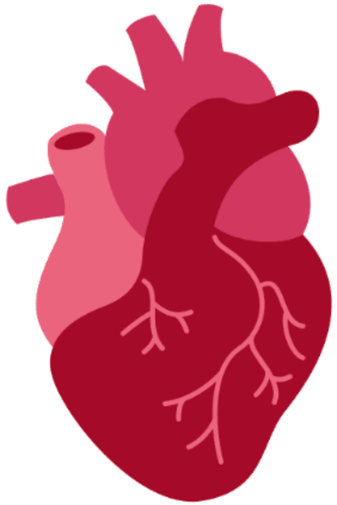
TNF-alpha inhibitor side effects



Hematologic Malignancy

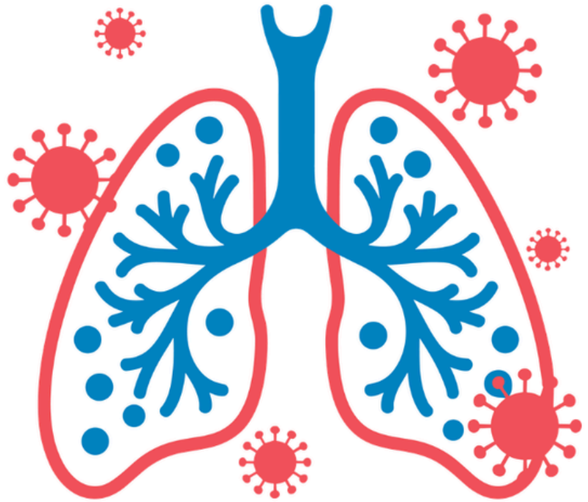


Sinopulmonary Infections

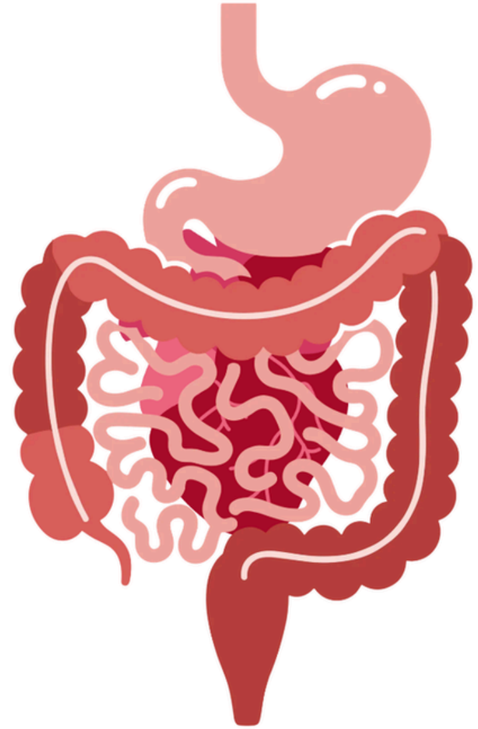


Congenital Heart Conditions

IL-17 side effects



Sinopulmonary Infections



Inflammatory Bowel Disease

Down syndrome:

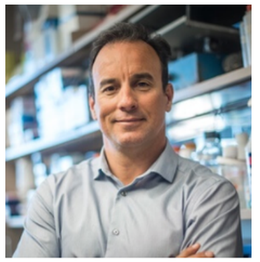
The ultimate challenge in precision personalized medicine



Immune System Dysregulation

Are we doing this?

The Promise of JAK Inhibitors



First clinical trial for JAK inhibition in Down Syndrome

Alopecia areata
(patchy hair loss)



Hidradenitis suppurativa
(boils)



Atopic dermatitis
(eczema)



Psoriasis



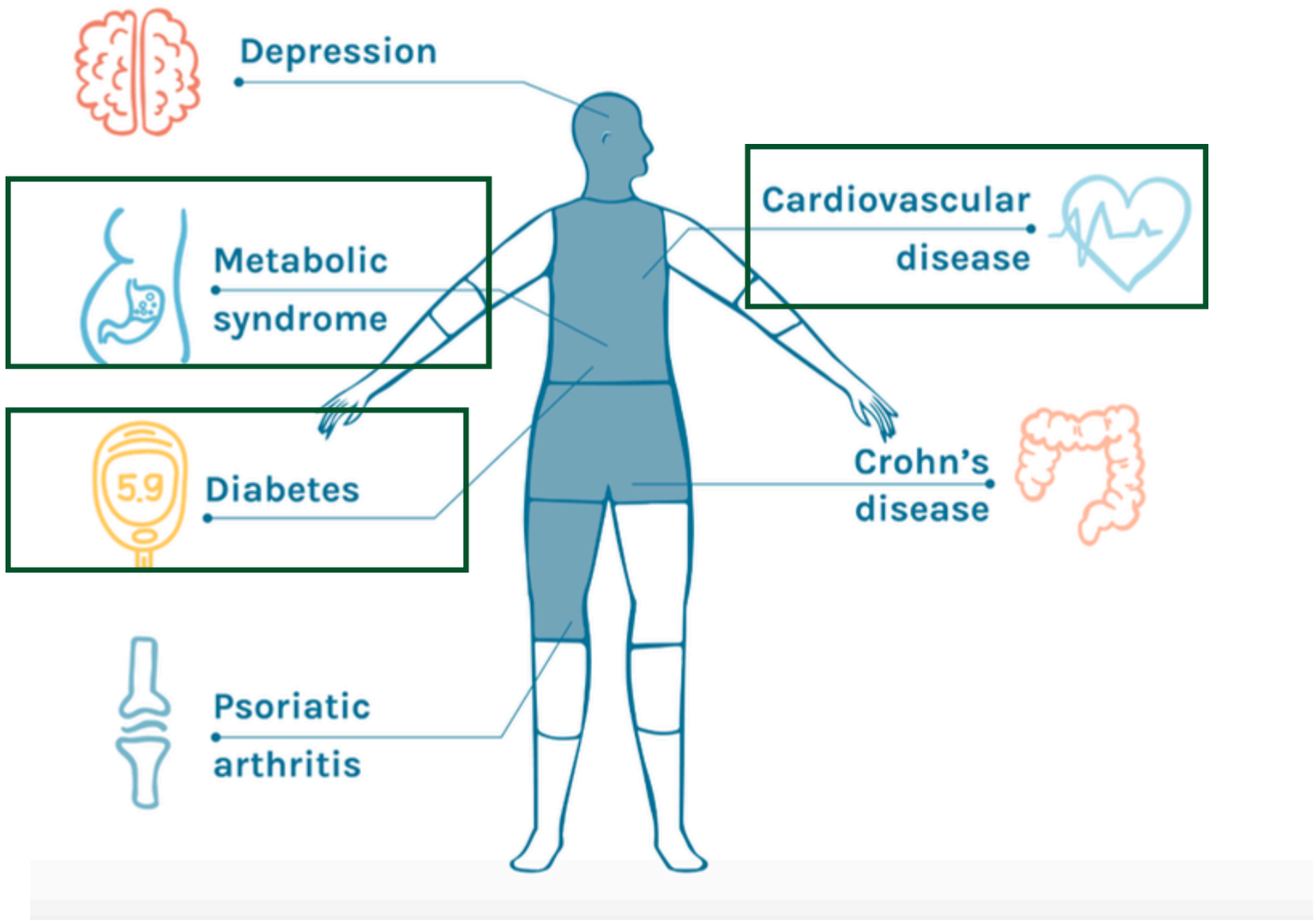
Vitiligo



4-9 months of treatment with JAK inhibitor **Tofacitinib**

Funded by: NIH THE INCLUDE PROJECT NIH National Institute of Arthritis and Musculoskeletal and Skin Diseases

Psoriasis does not just affect the skin



https://www.psoriasis.com/psoriasis-patients/tips/psoriasis-comorbidities

Individuals with Down syndrome rarely develop atherosclerosis, myocardial infarctions, stroke, hypertension





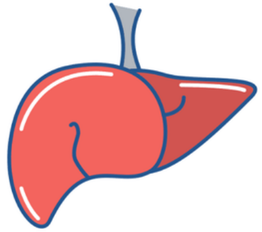



LDL

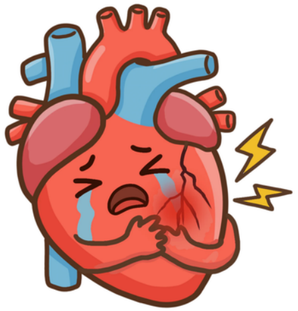



TYPE 2






180
90





Let’s Head back to the ‘Clinic!’



The “Big 6”



Dry Skin



Dandruff



Psoriasis



Alopecia Areata

PATIENT PERSPECTIVES

What is alopecia areata?

Alopecia areata is a condition that causes hair loss. It usually shows up as round patches on the scalp. Alopecia areata is one of the most common causes of hair loss in children.

About 1 in 50 people will experience alopecia areata in their lifetime. In most people, hair eventually grows back, although this process can take months or years.

WHAT CAUSES ALOPECIA AREATA?

Alopecia areata is an autoimmune condition. It is caused by the immune system attacking the hair.

The immune system normally fights against germs. In patients with alopecia areata, the immune system attacks the hair. This causes hair to fall out. It is not clear what triggers the immune system to start mistakenly fighting the hair.

WHAT TESTS ARE NEEDED IN ALOPECIA AREATA?

Usually, doctors can diagnose alopecia areata by looking at the areas of hair loss. Sometimes they might do a special test called a biopsy, where they take a small piece of skin from the scalp to look at under a microscope.

Most children with alopecia areata are otherwise healthy. Some children with alopecia may also need testing of their thyroid. Your doctor may order some blood tests if needed.

WHAT CAN I EXPECT FROM TREATMENT OF ALOPECIA AREATA?

There is no cure for alopecia areata, but there are treatments that can help. Treatment options may include:

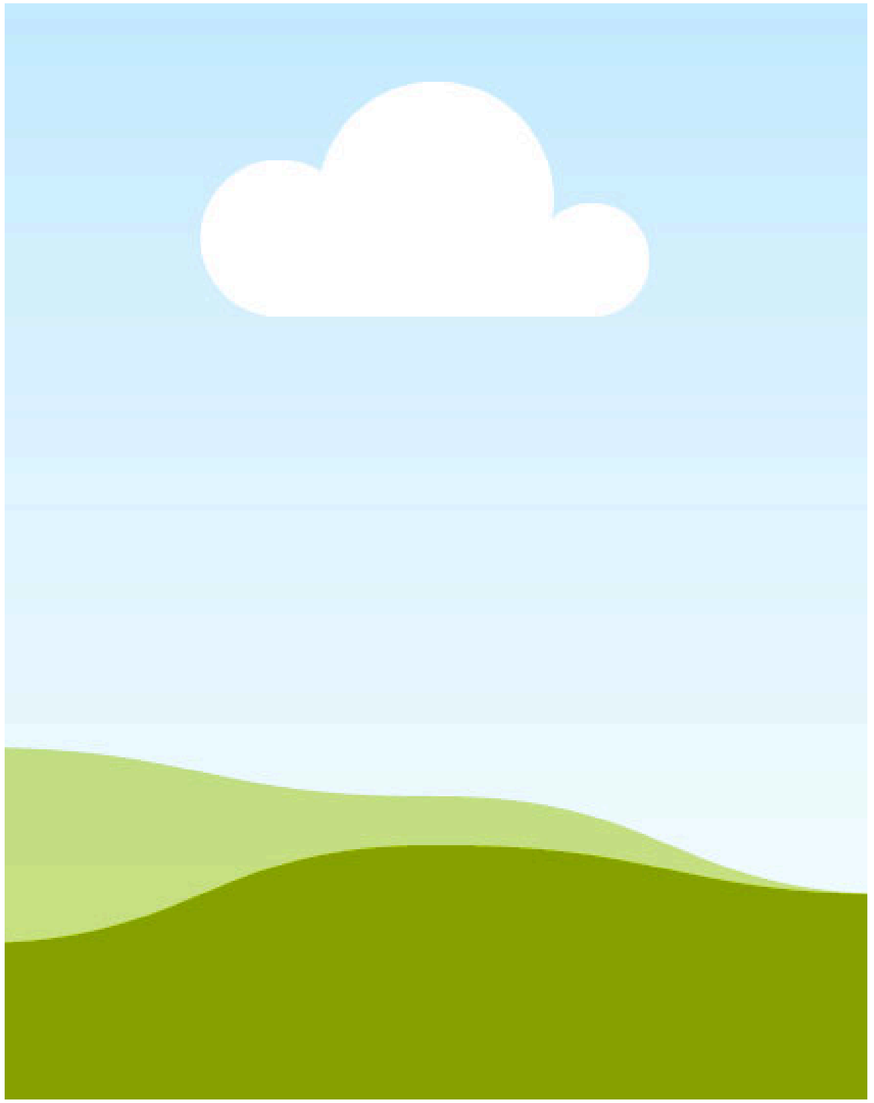
- **No treatment:** Some kids' hair grows back on its own without any treatment. In milder cases, you and your doctor may choose to wait to see if the hair grows back on its own.
- **Topical steroids:** These include creams and solutions that are applied to the scalp. The goal is to lower the inflammation in the scalp so the hair can grow back.
- **Steroid injections:** Steroids can be injected into the scalp to lower the inflammation under the skin of the scalp. These injections are painful but are an option for older children and teens who want to try them.

WHAT ARE THE DIFFERENT TYPES OF ALOPECIA AREATA?

There are three common forms of alopecia areata. The type depends on how much hair is lost:

- **ALOPECIA AREATA:** round patches of hair loss. This is the most common type and can occur anywhere on the body that has hair.
- **ALOPECIA TOTALIS:** loss of all hair on the scalp.
- **ALOPECIA UNIVERSALIS:** loss of all scalp and body hair.

Alopecia Areata

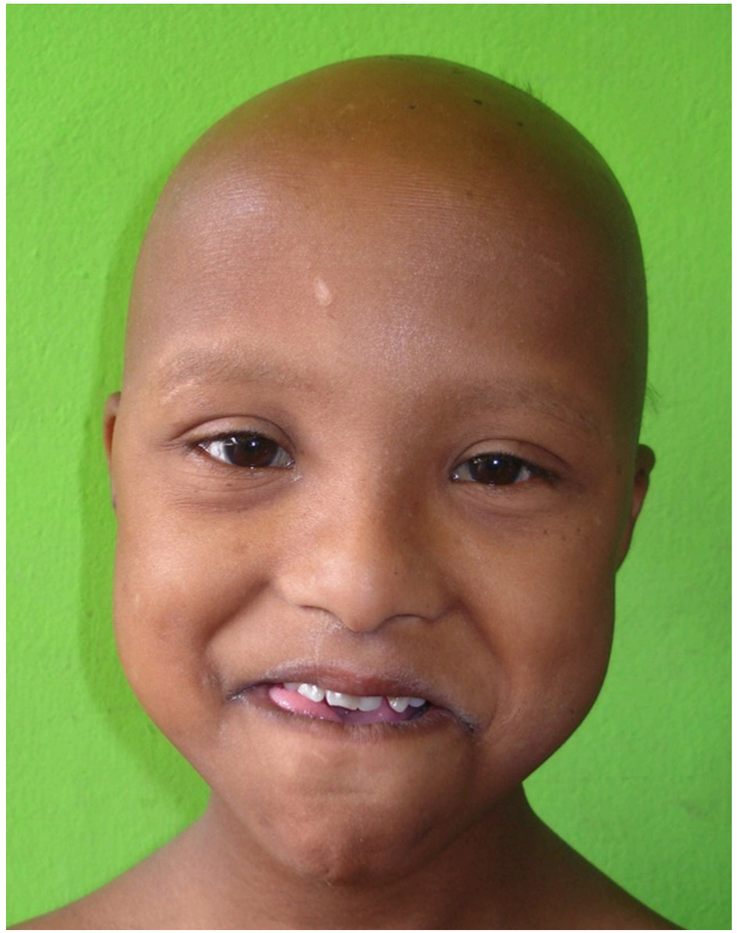


Schepis C, Barone C, Lazzaro Danzuso GC, Romano C. Alopecia areata in Down syndrome: a clinical evaluation. J Eur Acad Dermatol Venerol. 2005; 19: 769-70.

Alopecia Areata



Alopecia areata is more prevalent, presents earlier, and may be more severe.



Alopecia areata was diagnosed **in 0.83%** of DS patients, compared with **0.06%** in the general population

(**RR 15**; 95% CI 14.0-16.1; P<0.001)

Sureshbabu, R., Kumari, R., Ranugha, S., Sathyamoorthy, R., Udayashankar, C., Oudeacoumar, P. Phenotypic and dermatological manifestations in Down Syndrome. Dermatol. Online J. 2011; 17(2).



Remember Interferon? This plays a role!







Immune Dysregulation – Skin – JAK-Inhibitors



Joaquin Espinosa, PhD



Angela Rachubinski, PhD



Matthew Galbraith, PhD



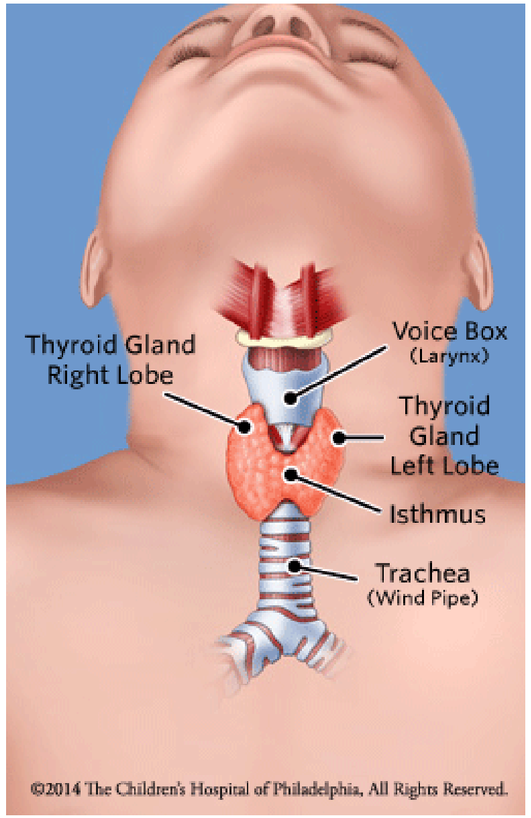
Emily Gurnee, MD

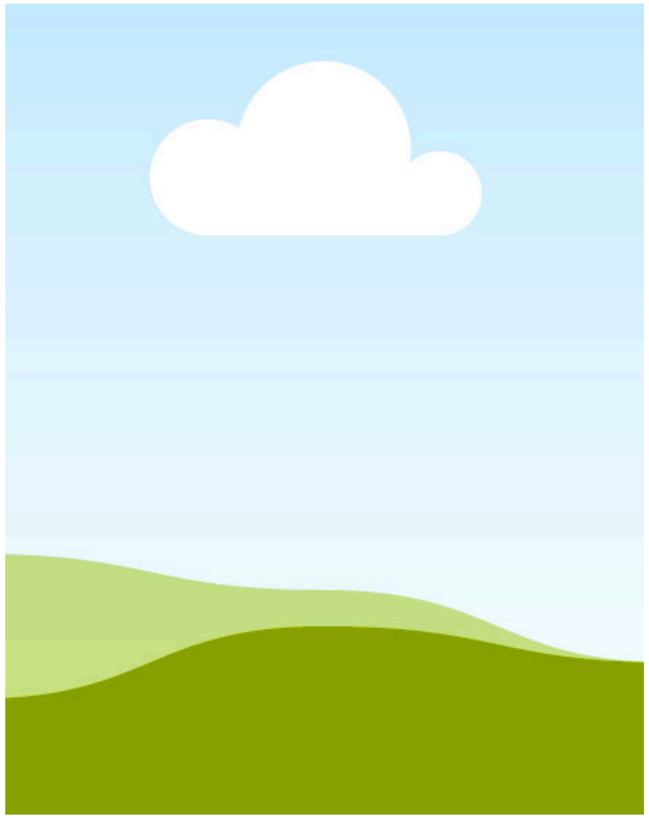
School of Medicine
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

LINDA CRNIC INSTITUTE
for DOWN SYNDROME

GLOBAL
DOWN SYNDROME FOUNDATION®

Alopecia areata is more common in people with Down syndrome who have thyroid disease





www.chop.edu/conditions-diseases/pediatric-thyroid-disorders

Scalera A, Barone C, Lazzaro Danzuso GC, Romano C. Alopecia areata in Down syndrome: a clinical evaluation. J Eur Acad Dermatol Venerol. 2005; 19: 769-70.

If you have alopecia areata, make sure thyroid studies are up-to-date

Ages 6 months and 12 months

Annually beginning at age 1 years

Every 1-2 years beginning at age 21 years

Pediatrics. 2011;128(2):393-406.
JAMA. 2020;324(15):1543-1556.

Treatment of alopecia areata

- **Topical treatments**
  - Topical steroids
  - Topical irritants
  - Minoxidil 5% solution or foam
- **Intralesional corticosteroids**
- **Oral treatments**
  - Prednisone
  - Oral minoxidil
  - **JAK-inhibitors**
    - Baricitinib (JAK1/2); Ritlecitinib (JAK3/TEC); Deuruxolitinib (JAK1/2)
    - Not approved, but in clinical trials: Tofacitinib (JAK1/3); Abrocitinib (JAK1)

Ask for a referral to a Dermatologist to discuss treatment options for alopecia areata

The “Big 6”



Dry Skin



Dandruff



Psoriasis



Alopecia Areata



Folliculitis/HS

PATIENT PERSPECTIVES

DOWN SYNDROME SERIES

DOWN SYNDROME AND Folliculitis

Folliculitis is a skin issue that happens when a hair follicle gets inflamed. Folliculitis is one of the most common skin conditions in people with Down syndrome.

WHAT DOES FOLLICULITIS LOOK LIKE?

You may see raised, pinkish or reddish bumps around the hair follicle. These can be itchy or painful. Sometimes there is pus or peeling skin around the bumps. These bumps can appear anywhere on the body, but the buttocks and thighs are the most common.

When the bumps go away, they may leave behind dark spots or pink spots. These usually fade over time.

Sometimes a single bump can become infected. When this happens, it gets swollen, red, and painful. This is called a "boil" or "abscess".

It can be hard to tell the difference between folliculitis and another skin condition called hidradenitis suppurativa (HS). HS is larger, painful bumps in the armpits, buttocks, and legs. HS is also common in people with Down syndrome. Talk with your child's doctor about monitoring for HS.

WHAT CAUSES FOLLICULITIS?

Folliculitis is caused by inflammation or infection of the hair follicle.

- Hair follicles are small openings on the skin where the hair comes out. They may become blocked or damaged from rubbing against clothing or shaving.
- People with Down syndrome may be more likely to have folliculitis because of the extra copy of chromosome 21. This may cause follicles to become blocked more easily because of differences in skin proteins and the immune system.
- Clogged follicles may trap bacteria that normally live on the skin. Bacteria grow inside the follicle, causing them to become red, swollen, and bumpy.

HOW CAN I PREVENT FOLLICULITIS?

If your child is prone to folliculitis, wash your child's skin regularly with antibacterial soap. You can either use your hand, a clean towel, or washcloth. Avoid sharing washcloths with others. If your child prefers baths and/or application of soap is difficult, talk with your child's doctor about bleach baths.

Shaving Care

- ☐ Avoid shaving when possible.
- ☐ An electric razor is less irritating than a blade razor.
- ☐ Shave in the same direction that the hair grows.
- ☐ Use shaving cream to lessen friction.
- ☐ Do not share razors with others.

Folliculitis is one of the most common skin conditions in people with Down syndrome



WHAT DOES FOLLICULITIS LOOK LIKE?



Body acne


© 2010 VisualDx


© 2011 VisualDx

Folliculitis is often on the bottom and thighs



Photograph courtesy of Dr. Leah Belazarian

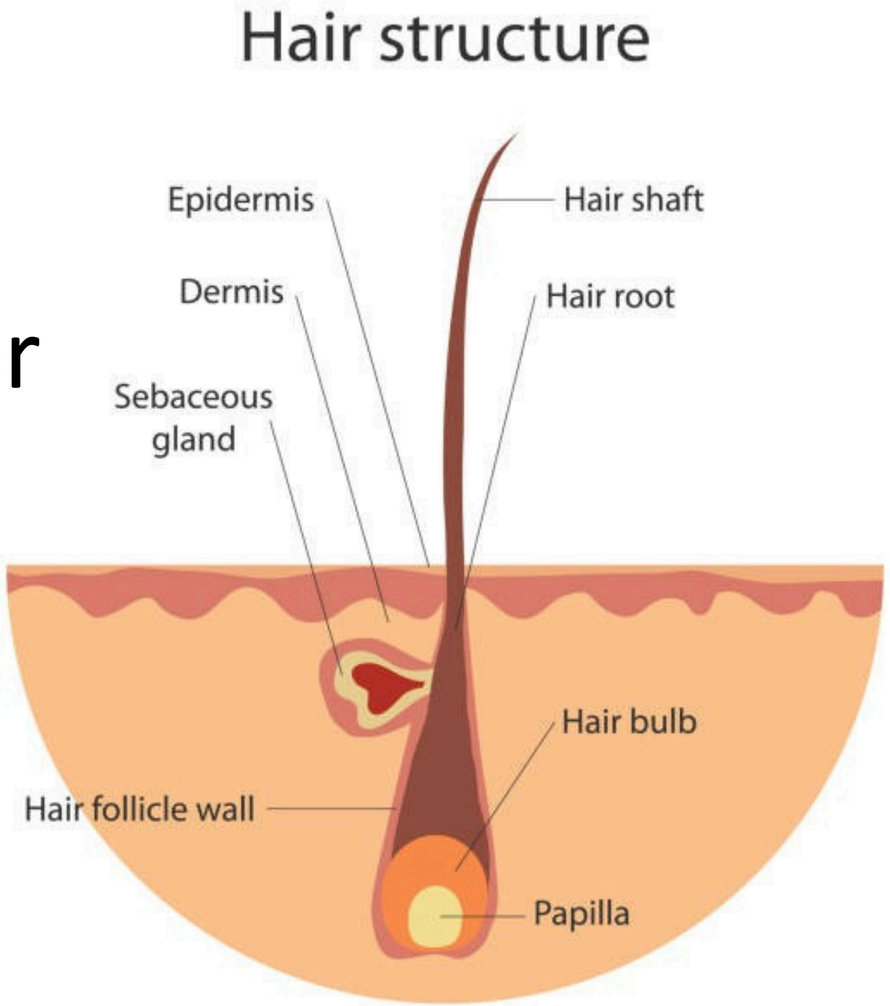
Folliculitis can cause scarring



Photograph courtesy of Dr. Leah Belazarian

WHAT CAUSES FOLLICULITIS?

Clog pores – Amyloid Precursor Protein?

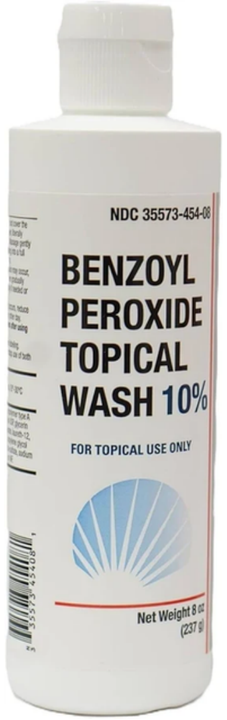


Microbiome?

Immune system?

Treatments for folliculitis

- **Bathes and/or showers**
  - Once daily or every other day
- **Body washes**
  - Tea tree oil body wash
  - Benzoyl peroxide wash
  - Hibiclens wash
  - CLn body wash





Treatment for folliculitis

- **Bleach bathes in the bathtub**
  - Full tub: ½ cup bleach
  - Half-tub: ¼ cup bleach
  - Gallon of water: 1 teaspoon bleach

- **Time in the swimming pool!**
  - Make sure to shower after swimming, especially in a public pool

Treatments for folliculitis

- **Topical antibiotics for the skin**
  - **Clindamycin 1% lotion** once daily
  - **Metronidazole 0.77% cream** once daily
  - **Erythromycin 2% pads**
  - Typically pair with a wash or soak
- **Topical retinoids** – Adapalene or tretinoin
- **Hypochlorous acid sprays**
- **Resorcinol 15% cream** – For big bumps, specialty pharmacy

Treatments for folliculitis

- **Oral Zinc gluconate**
  - Zinc gluconate 30 mg – 100 mg daily
  - Watch for stomach upset
  - Watch for **copper deficiency**
    - Start a copper supplement if taking for more than 3 months (Ratio of 10:1)
  - Ask a dermatologist!
- **Vitamin D deficiency**
- **Oral Isotretinoin (Accutane)**

Treatments for folliculitis

- **Antibiotics by mouth**
  - **Keflex 500 mg** twice daily for 1-2 weeks
  - **Doxycycline 50-100 mg** 1-2 times daily for 1-2 weeks

- **I <u>avoid</u> chronic, long-term oral antibiotics**

Hidradenitis Suppurativa





Down syndrome and hidradenitis suppurativa (HS)

Hidradenitis suppurativa (*HI-drad-en-I-tis sup-per-ah-TEE-vah* or HS) is a chronic condition with recurrent painful bumps and draining sores of the skin. Sometimes it can look like acne. It more commonly affects the skin folds, such as the underarms, buttock crease, and groin area. When severe, it can appear in other parts of the body as well. HS seems to be more common in people with Down syndrome.

WHAT CAUSES HS?

The cause is not completely clear. HS is not an infection and is not contagious. It is not caused by poor hygiene. The immune system and local factors play a role in the disease. People with Down syndrome have three copies of chromosome 21, and this can lead to changes in the immune system and skin that make HS more common. There might be other genetic factors that contribute, and it might run in families.

WHEN DOES HS START?

HS can develop as a child, teenager, or adult. HS can start at a younger age in people with Down syndrome.

WHAT DOES HS LOOK LIKE?

HS can range from mild to severe. It can look like multiple comedones ("blackheads") to painful bumps and abscesses that heal with scarring. Painful bumps can go on to form draining tunnels ("sinus tracts") under the skin. Deep bumps or tracts often leave scars. The tunnels can drain pus or blood, which can result in a bad smell.

HOW IS HS DIAGNOSED?

The diagnosis is made by your child's doctor examining their skin. Since HS is more common in Down syndrome, it is recommended that a doctor look for signs of HS every year starting around age 10. Your doctor may check for infection of the skin before making this diagnosis. Other tests are often not necessary.

HOW LONG DOES HS LAST?

The individual bumps and sores may last for weeks or months. They may keep coming back. In most cases, HS is considered a chronic, long-lasting condition. Each patient is different and the bumps may get better or worse over time.

WHAT ARE THE TREATMENTS FOR HS?

While there are many treatment options, HS can be very hard to treat. It may take time to find the best treatment plan for each person. Medicines take weeks to months to work. Be patient, and do not stop a medication without first discussing with your doctor.

Friction can make HS worse. Ask your doctor for recommendations on

TIPS FOR MANAGING HS

- See your child's dermatologist or other doctor regularly. They are your partners in helping them feel comfortable in their own skin!
- Make sure your doctor asks about how your child's HS feels. How does it bother them? Does it hurt? Knowing these answers can help the medical professional come up with a helpful treatment plan.
- Wear loose, comfortable clothes. Do not closely shave the areas of HS. Rubbing and friction can make HS worse.
- Healthy eating and exercise may improve HS.
- Wash affected areas gently. Do not scrub the areas, and always use clean washcloths.
- Do not pop the "pimples and bumps" as this can make them worse. Warm compresses or soaks can help the bumps to drain gently.
- Avoid having the areas with HS cut into or drained, unless you are seeing a surgeon specifically for the HS.
- For severe pain or a sudden change in the condition, call your doctor.

Hidradenitis can appear in different ways



Inflammatory bump/boil



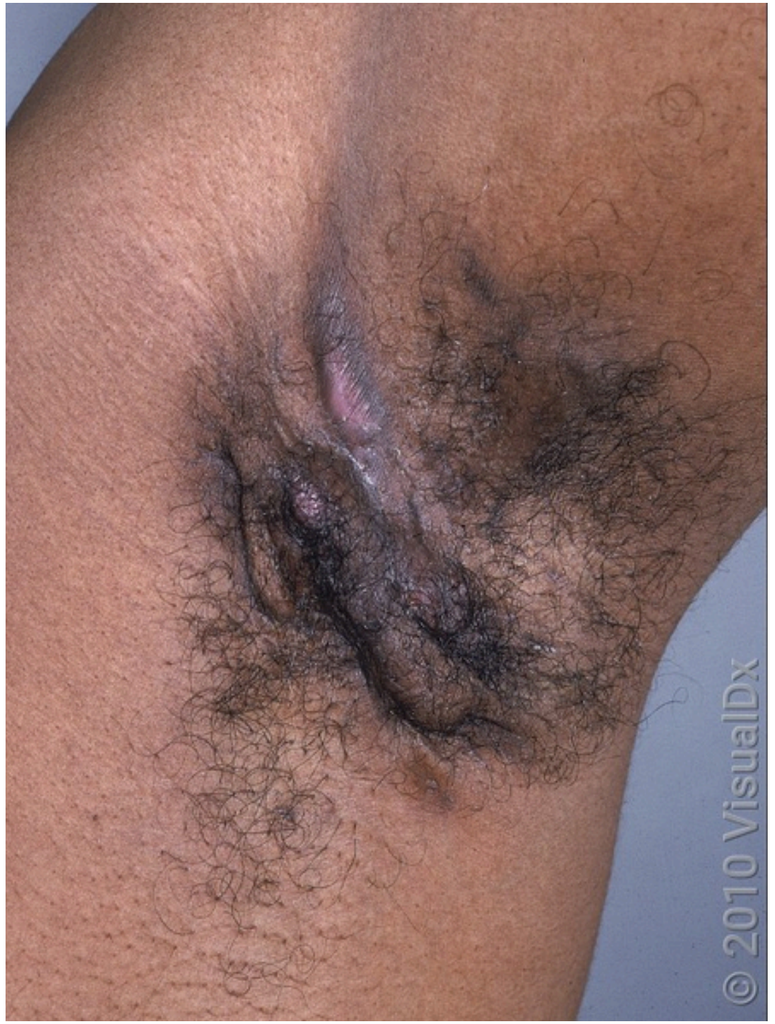
Scars



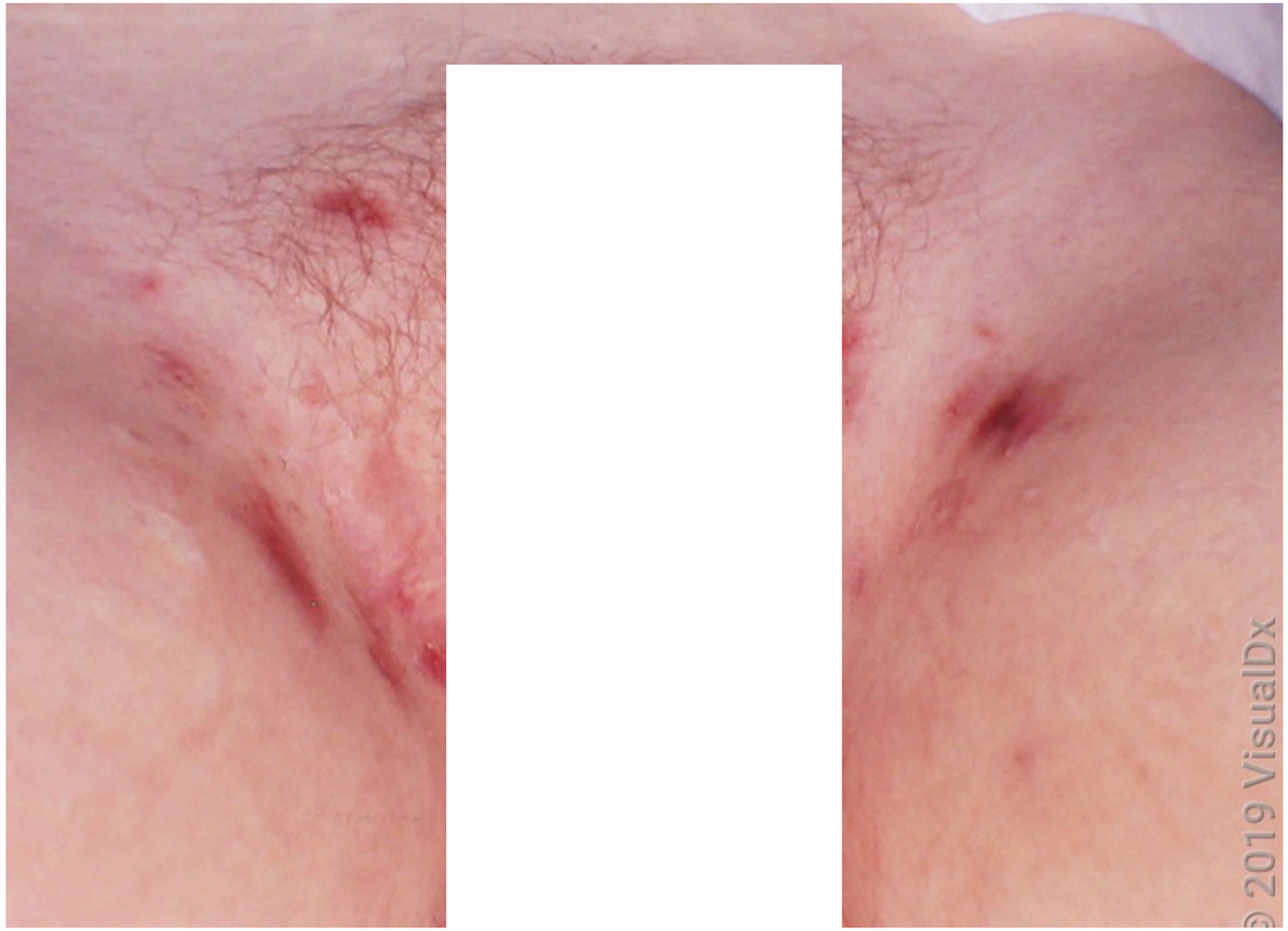
Comedones

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Hidradenitis can happen in the armpits, groin, under the breasts, and sometimes other areas



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Different severities/stages of hidradenitis



Hurley Stage 1

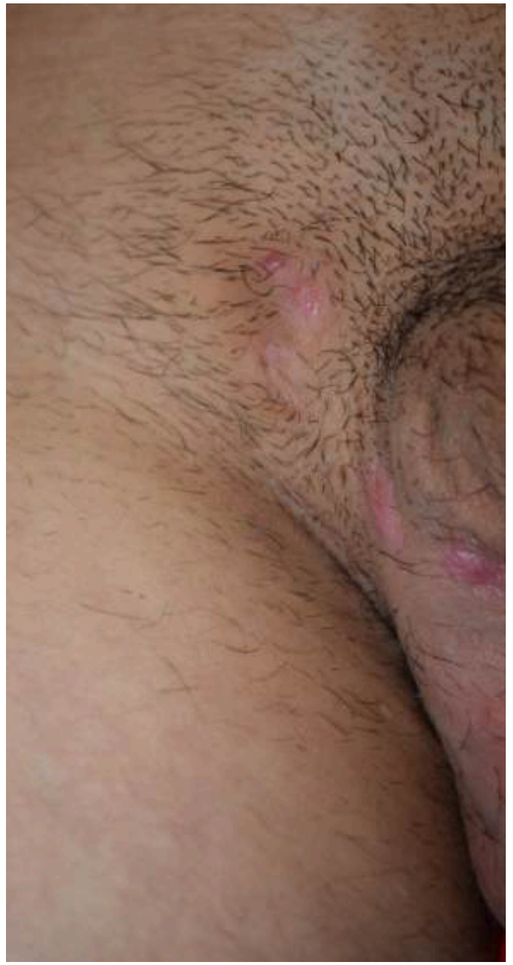
Hurley Stage 2

Hurley Stage 3

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Folliculitis and Hidradenitis Suppurativa are often on a continuum





Let’s Head to the ‘Lab!’



https://news.feinberg.northwestern.edu/2019/06/17/northwestern-opens-largest-biomedical-academic-research-building-in-u-s/

Hidradenitis is likely more common



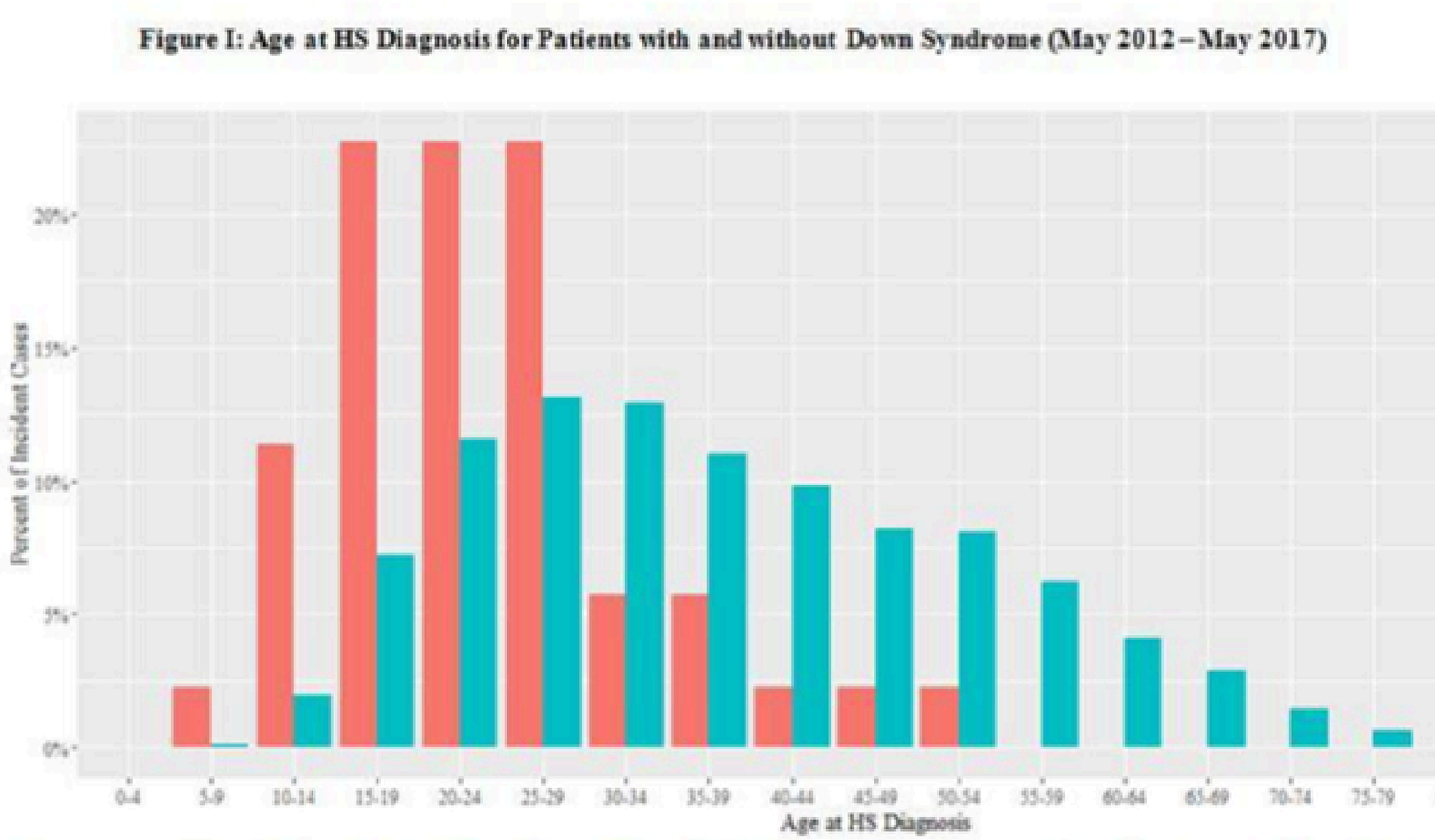


Adults with Down syndrome were <u>over 5 times more likely</u> to have HS

(Adjusted OR 5.24, 95% CI 4.62-5.94)

Br J Dermatol. 2018;178(3):697-703.

Hidradenitis may present earlier in life



Hidradenitis diagnosis by age 29 years in **80%** of patients with Down syndrome compared to **34%** in those without

Br J Dermatol. 2018;178(3):697-703.

Screen every year for hidradenitis suppurativa
Start at a young age (8 years)

REVIEW

Comorbidity screening in hidradenitis suppurativa: Evidence-based recommendations from the US and Canadian Hidradenitis Suppurativa Foundations

Amit Garg, MD,[a] Neeta Malviya, MD,[a] Andrew Strunk, MA,[a] Shari Wright, BS,[a] Afsaneh Alavi, MD,[b] Raed Alhusayen, MBBS, MSCE, FRCPC,[b,c] Ali Alikhan, MD,[d] Steven D. Daveluy, MD,[e] Isabelle Delorme, MD, FRCPC,[f] Noah Goldfarb, MD,[g] Wayne Gulliver, MD,[h] Iltefat Hamzavi, MD,[i] Tarannum Jaleel, MD,[j] Alexa B. Kimball, MD, MPH,[k] Joslyn S. Kirby, MD, MEd, MS,[l] Mark G. Kirchhof, MD, PhD, FRCPC,[m] Janice Lester, MLIS,[n] Hadar Lev-Tov, MD,[o] Michelle A. Lowes, MD, PhD,[p] Robert Micheletti, MD,[q] Lauren A. Orenstein, MD,[r] Vincent Piguet, MD, PhD, FRCP,[b,s] Christopher Sayed, MD,[t] Jerry Tan, MD, FRCP,[u] and Haley B. Naik, MD, MHSc[v]

New Hyde Park, Hempstead, and New York, New York; Toronto, Drummondville, St. John's, and Ottawa, Canada; Sacramento and San Francisco, California; Detroit, Michigan; Minneapolis, Minnesota; Durham and Chapel Hill, North Carolina; Boston, Massachusetts; Hershey, Pennsylvania; Miami, Florida; Philadelphia, Pennsylvania; and Atlanta, Georgia

J Am Acad Dermatol. 2021 Jan 23:S0190-9622(21)00213-9.

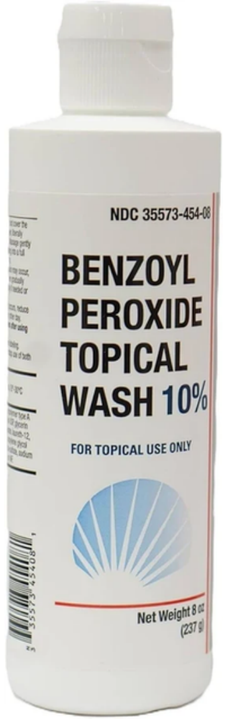
under breasts



https://www.animalwised.com/my-dog-is-hiding-and-acting-strange-3375.html

Treatments for Hidradenitis

- **Bathes and/or showers**
  - Once daily or every other day
- **Body washes**
  - Tea tree oil body wash
  - Benzoyl peroxide wash
  - Hibiclens wash
  - CLn body wash





Treatments for Hidradenitis

- **Anti-perspirant, deodorant – Go fragrance free!**
  - Vanicream (deodorant, anti-perspirant/deodorant) stick
  - Native (aluminum free, fragrance free) stick
  - Lume Invisible unscented cream (stick dispenser)
  - Almay Sensitive Skin Clear Gel
  - Sprays: Lume, Crystal, Native MAGS Skin spray

Treatments for Hidradenitis

Wound care

- Look at **HS Connect Website!**
- Mess underwear
- ABD pads
- Mepilex dressings



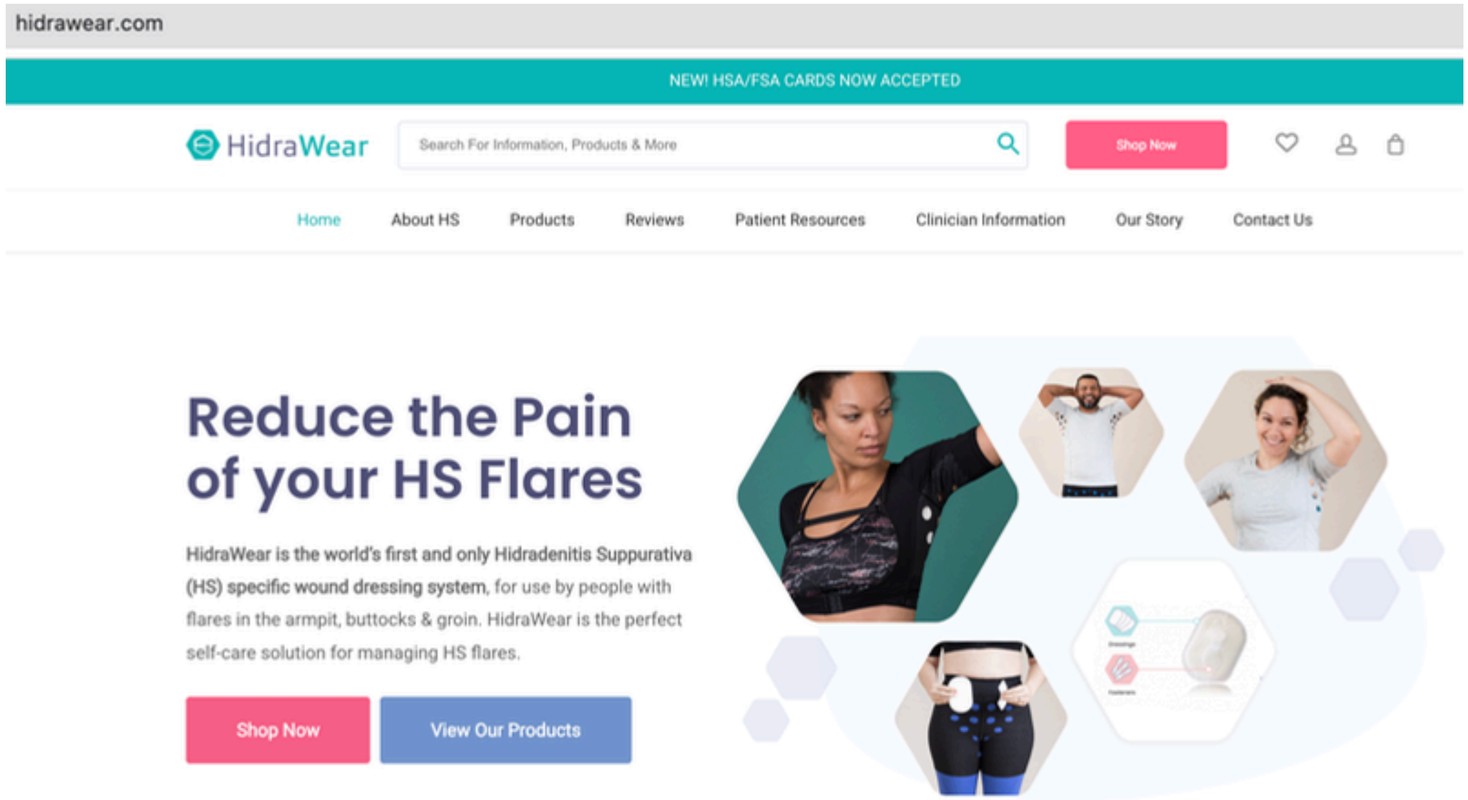




Treatments for Hidradenitis

HidraWear

Hidrawear.com



Treatments for Hidradenitis

- **Antibiotics for the skin**
  - **Clindamycin 1% lotion** once daily
  - **Metronidazole 0.77% cream** once daily
  - **Erythromycin 2% pads**
  - Typically pair with a wash or soak
- **Topical retinoids** – Adapalene or tretinoin
- **Hypochlorous acid sprays**
- **Resorcinol 15% cream** – For big bumps, specialty pharmacy

Treatments for folliculitis

- **Antibiotics by mouth**
  - **Keflex 500 mg** twice daily for 1-2 weeks
  - **Doxycycline 50-100 mg** 1-2 times daily for 1-2 weeks

- **I <u>avoid</u> chronic, long-term oral antibiotics**

Treatments for folliculitis

- **Oral Zinc gluconate**
  - Zinc gluconate 30 mg – 100 mg daily
  - Watch for stomach upset
  - Watch for **copper deficiency**
    - Start a copper supplement if taking for more than 3 months (Ratio of 10:1)
  - Ask a dermatologist!
- **Vitamin D deficiency**

Treatments for Hidradenitis

- **Oral hormonal treatments (for women)**
  - **Oral contraception/Implant contraception**
    - Discuss this with PCP, OB/GYN
  - **Spironolactone**
    - Discuss this with PCP, endocrinology, nephrology

Treatments for Hidradenitis

- **Biologics**
  - Adalimumab – TNF-alpha
  - Secukinumab – IL-17 (preferred?)
  - Bimekizumab - IL-17
  - JAK-inhibitors – not currently approved, but coming soon

Treatments for Hidradenitis

- **Metformin and GLP-1 inhibitors**
  - The literature and clinical experience is limited
  - Could be promising!





Treatments for Hidradenitis

- **Procedural treatments:**
  - Intralesional Kenalog
  - Surgical treatments
  - Laser hair treatments







If you believe you have hidradenitis, talk to your provider and ask for a referral to a dermatologist



https://pixabay.com/vectors/speak-up-megaphone-communication-5941874/



BJD
Improving Patient Outcomes in Skin Disease Worldwide

If my hidradenitis had a voice, this is what it would say: the perspective of a young woman with Down syndrome and hidradenitis suppurativa

Alexis Sokoloff,[1] Morgan Dykman,[2] Gwen Sokoloff,[3] Kishore Vellody,[4] Kristen Holland[5] and Jillian Rork[6,7]

PeDRA Podcast

If My Hidradenitis Had a Voice, This is What it Would Say


HS Connect.
CAREGIVERS OF HS + DS PATIENTS COMMUNITY
ONLINE ZOOM SUPPORT GROUP
Free and virtual, meeting monthly
HS+DOWN SYNDROME
Parents Group
REGISTER NOW!
FOR PARENTS AND CAREGIVERS OF HS + DS PATIENTS, FIND OTHERS WHO GET IT.

Hsconnect.org

Brindley Brooks



Founder & CEO

The “Big 6”



Dry Skin



Dandruff



Psoriasis



Alopecia Areata



Folliculitis/HS



Foot Fungus

PATIENT PERSPECTIVES

What is Tinea?

Tinea is a fungal infection of the skin, hair or nails. These fungal infections are named for where they occur on the body. Some examples are:

- **Tinea capitis** (scalp)
- **Tinea corporis** (body)
- **Tinea cruris** (groin) – "jock itch"
- **Tinea faciei** (face)
- **Tinea pedis** (feet) – "athlete's foot"
- **Tinea unguium** or **onychomycosis** (nail)

WHY IS TINEA SOMETIMES CALLED "RINGWORM"? IS IT CAUSED BY A WORM?

On much of the body and face, tinea can look like a red, scaly ring. Because of the ringed shape, it is sometimes called "ringworm" even though it is *not* caused by a worm.

WHAT DOES TINEA LOOK LIKE ON THE BODY?

The appearance of tinea, as well as the symptoms, may be different on different parts of the body.

Tinea capitis (scalp):
The scalp may show flakes of skin resembling dandruff. There may also be pus bumps or patches of hair loss or broken hairs. In some people, the fungus causes more inflammation with redness, crusting and weeping on the scalp, and there may be enlarged lymph nodes in the neck ("swollen glands"). When hair loss occurs, it is usually temporary, and the hair will grow back. However, if the fungus has caused too much inflammation or scarring, the hair may not grow back completely.

Tinea corporis, faciei, and cruris (body, face and groin):
These are typically the areas where the name "ringworm" is used, as the fungal infection looks like a red, scaly ring with clearing in the center. Sometimes there are multiple rings or partial rings or rings

TINEA IS CONTAGIOUS

People usually get tinea by touching a person who has it. Family members and close contacts may pass the fungus back and forth. Wrestlers are particularly at risk because of skin contact during the sport. The fungus that causes tinea can also live on sheets, brushes, hats, damp floors, gym mats, in the soil, and on pets. People can get tinea from touching these things too.

Some tips to prevent spreading tinea to others or back to yourself:

- **Avoid sharing combs, hair brushes, hats, pillowcases and towels.**
- **Keep combs and hair brushes clean.**
- **Towel dry well after baths or showers. Pay special attention to body folds and feet, including the skin between toes.**
- **Wear sandals or flip flops in locker rooms, public showers and around the pool.**
- **Change your socks at least once daily.**

Tinea Pedis (Athlete's Foot)



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Onychomycosis (Nail Fungus)



A hidden spot!



Treatment of foot and nail fungus

- **Topical treatments**
  - Creams, sprays, lotions 1-2 times per day for 2-4 weeks
    - Over-the-counters:
      - **Clotrimazole** 1% creams/spray, **Terbinafine** 1% cream spray, **Tinactin** spray
    - Prescriptions:
      - **Ketoconazole** 2% cream, **Econazole** 1% cream,
      - **Ciclopirox** cream/solution/laquer
      - **Efinaconazole** 10% (Julia)
  - Children tend to do better with topical nail treatments
- **Oral treatments**
  - **Terbinafine** for 1-3 months
    - Check liver function, overall well tolerated

Treatment of foot and nail fungus

- **Keep feet dry**
  - Change socks frequently
  - Consider wearing wicking socks
  - Consider a drying antifungal foot powder
- **Keep shoes dry**
  - Consider treating shoes with antifungal powder
- **Consider a maintenance treatment**

Our Road Map

Welcome to the “Clinic”



The “Big 6”

Welcome to the “Lab”



Research Helps

The “Big 6”



Dry Skin



Dandruff



Psoriasis



Alopecia Areata

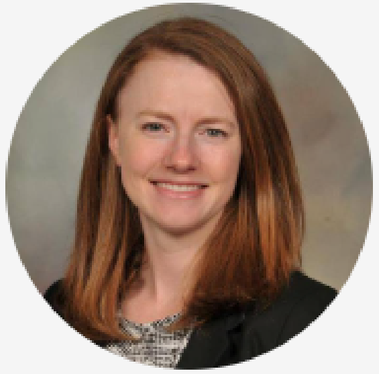


Folliculitis/HS

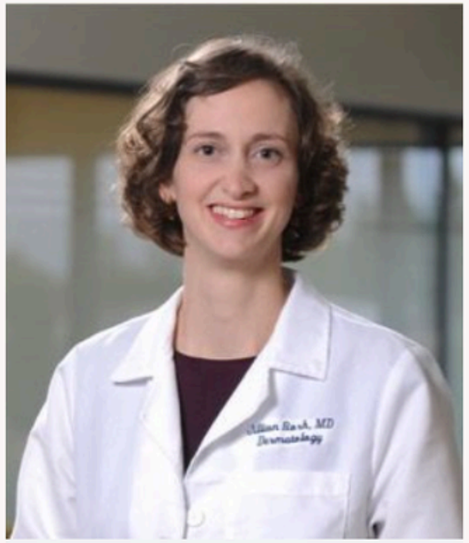


Foot Fungus

PeDRA Down Syndrome Subgroup



Emily Gurnee, MD



Jillian Rork, MD

Co-Chair



Kristen Holland, MD

Co-Chair



Irene Lara-Corrales, MD

PeDRA Down Syndrome Subgroup



Tasya Rakasiwi, BS



Morgan Dykman, MD



Mina Woo, BA



Allison Kranyak, MD



Brianna Green, BA



Chenin Ryan, MD

PeDRA™

Pediatric Dermatology Research Alliance



Mike Siegel, PhD

Executive Director



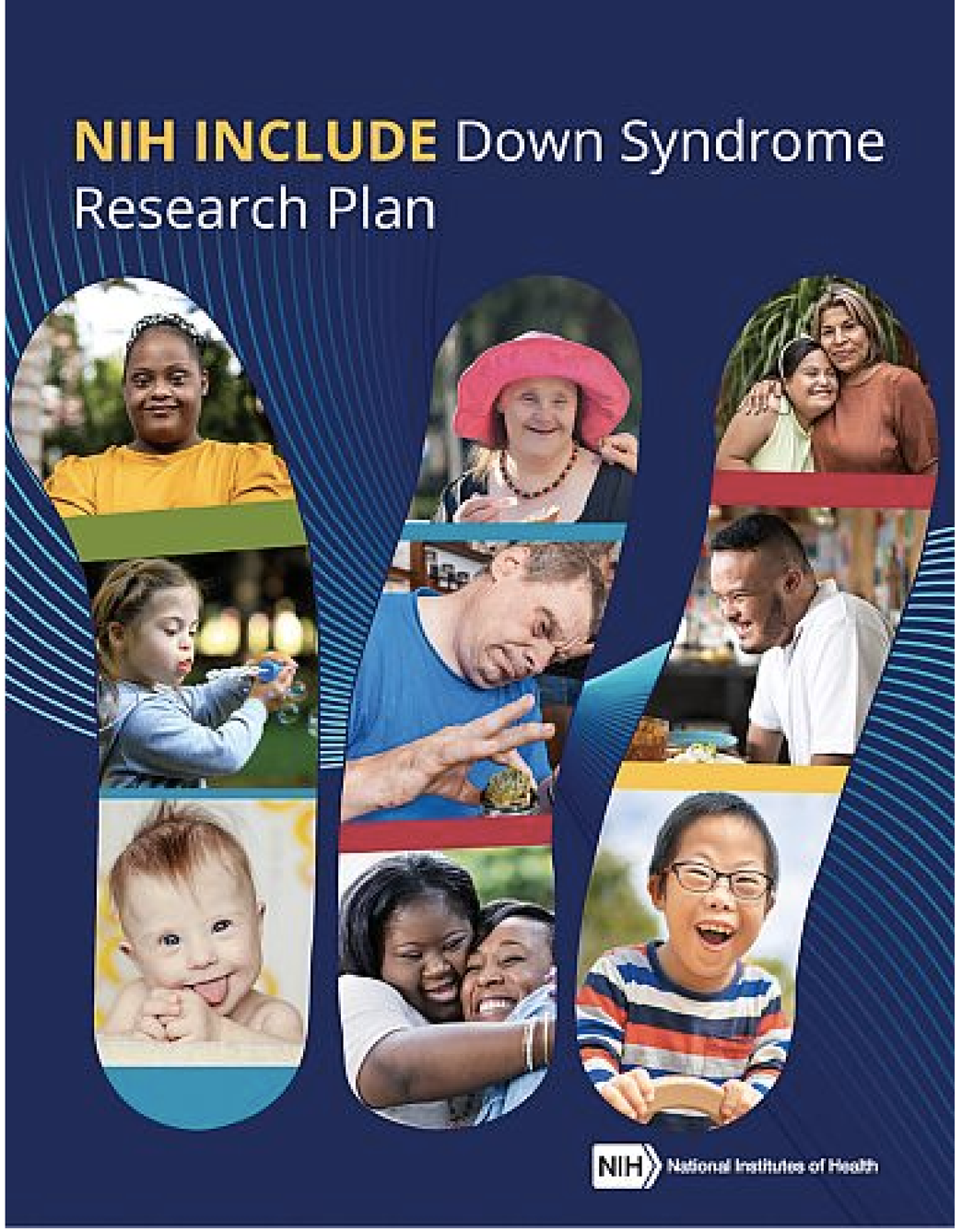
Jenn Dawson

Director of Educational Programs

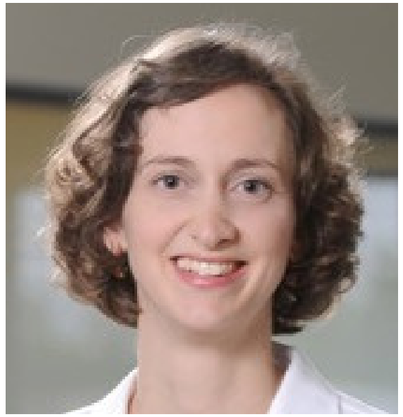


Katherine Devenport

Research Programs Manager


NIH INCLUDE Down Syndrome
Research Plan
NIH National Institutes of Health

Psoriasis R03 Dartmouth Team



Jillian Rork, MD



Brian Skotko, MD



Timothy Burdick, MD



Dominic Strohmeyer, BS



Nicolas Oreskovic, MD, MPH



Amy Buros Stein, PhD



Jennifer Snide, MS

The power is in collaboration!









The Skin Is In

Skin Conditions in Children and Adults with Down Syndrome

Jillian Rork, MD
Clinical Assistant Professor of Dermatology and Pediatrics
Dartmouth Health
Geisel School of Medicine at Dartmouth

Dartmouth
GEISEL SCHOOL OF
MEDICINE