Fundamentals of Pemphigus and Pemphigoid Patient Education Webinar- January 30, 2025

Becky Strong: Welcome everyone. This webinar is now being recorded. I'm Becky Strong, IPPF Outreach director, and I'd like to thank you for being here with us today. Before we begin, I want to remind everyone that information is a key factor in treating and living with any condition. However, everybody's situation is unique and we want to remind you that any information found online or during a presentation such as this should be discussed with your doctor or healthcare team to determine if it applies to your specific situation. Today we're excited to have Dr. Zachary Hopkins with us for a foundational overview of pemphigus and Pemphigoid. Let me introduce you to him now. Dr. Zachary Hopkins is a Board Certified Dermatologist and Clinician Researcher at the University of Utah. His clinical and research interests focus on complex medical and autoimmune dermatology and a special interest in blistering diseases and lichen planus. Aside from his interest in improving care and outcomes of patients with these difficult diagnoses, he's keenly interested in advancing patient-centered care in these realms. To do this, Dr. Hopkins research is focused on understanding how these diseases impact patients including their quality of life, mental health, and social wellbeing. Additionally, he is interested in developing ways that clinicians can better collect data, forming them of these impacts and better understand each patient's perspectives and values in order to best guide clinical care to meet their needs and goals. (Then reviews housekeeping information). Please join me in welcoming Dr. Hopkins.

Dr. Hopkins: Thank you for that introduction. I'm very excited to be here and humbled to be here with this group. Certainly a disease state that's near and dear to me and something I've been interested in for a long time. So hopefully I can provide everyone with some good information and education that will help empower you and educate you moving forward. So let me share my screen here. Actually it looks like it is sharing, So yeah, this is my little introduction page here. As Becky said, I'm a dermatologist at the University of Utah from Utah originally and live here with my family, including my wife and our two sons here. And then we have one that's going to be on the way here in a couple weeks so I’m about to have a chaotic household of three little boys here. So I've been here with the University of Utah for a few years now that included some specific training actually for a year in autoimmune disease and blistering disease with the group here that includes some very experienced folks like Dr. John Zone, who's been kind of a pioneer in this space. I have been very humbled and excited to learn from them and now continue both practicing and researching here at the University of Utah.

Dr. Hopkins: So for today, the thing I wanted to talk about is getting an understanding of what is autoimmunity. I think we use that term a lot. Pemphigoid and pemphigus are both autoimmune diseases, but I think we often don't fully understand or know what that means, what that term means. I think it's foundational to really understand both pemphigoid and pemphigus. And then I would like to go over some potential causes pemphigoid and pemphigus and risk factors and things that come up when I'm talking to folks. Then go through a little bit about how we diagnose and manage and treat these conditions, what we expect from treatment and some tips and

tricks as well as ways that we approach it as a clinician. I think overall I wanted to kind of structure this in a way that kind of mirrors when I'm talking to a new patient with pemphigoid or pemphigus, the questions that we go over, the discussions that we have so we have that foundation to work off of moving forward.

Dr. Hopkins: All right, so to jump right in here, autoimmunity, of course, to understand that we have to understand the immune system itself and the immune system itself is super complicated. So I'm really just going to hit on a couple of little key highlights here, but I like to think of it as two basic overlapping circles here. So we have the innate immune system, which we won't focus on a whole lot today, but that's basically things that are always there and play a variety of roles. So these are things like when you get a cut on your skin, there's cells that come in and chew up the debris and help clean up that space so the skin can heal. And these are things in the innate immune system. They are often involved in digesting things, so gobbling up invaders or debris or destroying things like bacteria or viruses or things of that nature. Then we have the thing that I'd like to focus on most, which is the adaptive immunity. Adaptive immunity, I think is what most of us think about when we think about our immune system. It's the site of things that adapt or learn based on what we're exposed to. So when we have a cold, we get the flu, et cetera, that virus is doing its thing and the body basically recognizes, ah, there's a virus in here and it creates these little antibodies that can tag it. Then we keep those little antibodies in store so the next time you're exposed to that same virus, there's these little sentinel antibodies floating around, tags it and you can better destroy that virus or bacteria or whatever you're exposed to. In that sense it adapts to things that we're exposed to and keeps us safe from things we've already seen. Now, what happens in autoimmunity, these antibodies go a little wrong or rather the cells that are producing them. So generally there is kind of a tight process in play and a good process in play that helps prevent these cells from making antibodies to our own proteins, our own structures. But sometimes that gets messed up or it doesn't quite work or there's breakthroughs in that mechanism and we end up making antibodies or basically flagging things for our immune system to destroy that should not be destroyed, that are our own proteins.

Dr. Hopkins: This is just a little note here on antibodies themselves. I think this is so core to what we're going to be talking about. Antibodies are what drive these diseases, antibodies to different targets. So what do antibodies do? They're these little y looking proteins and they're specific to different things. So they're specific to different viruses, different bacterias, different things of that nature. And when an antibody sticks onto its specific target, it can either activate it or often commonly can mark it for destruction.

Dr. Hopkins: Now how does that play into us in the skin? Well, we have structures in the skin that antibodies can stick onto and cause problems with. And in order to understand that, I think we kind of need to understand what's going on in our skin normally. So this is a little diagram of our skin. If we were imagining looking under a microscope here. I like to imagine the skin as a brick wall here. So each of these little bricks is a skin cell and they form different layers, but ultimately they're connected together with essentially mortar. And the mortar are these proteins called desmoglein and desmocollin. The ones that we're going to really focus on today are the desmogleins. These are little connections that hold these cells together, allow the skin to be

waterproof, to be a good barrier, to keep things out that aren't supposed to get in, all these types of things. So that's kind of pemphigus, it affects the mortar and we'll go through that in more detail. But then we have our foundation. So we have our brick wall, it's sitting on top of this basement membrane zone in the dermis, and that's like our foundation. That's what our top layers of the skin anchors to. It's strong and it gives a good foundation. And the rebar, if you will, that connects this wall to the foundation is what we call these basement membrane zone proteins. So this is like BP 180 here, which is bullous pemphigoid antigen 180 and a whole bunch of these other very complicated ones. But the bottom line here is, there's these anchoring proteins that are on the bottom of our brick wall that anchor us to the foundation that is the dermis.

Dr. Hopkins: So how does this go wrong in autoimmune disease like pemphigus and pemphigus? Well, in pemphigus, a key concept here is that antibodies that are not supposed to be there are being produced by the immune system and they're sticking to the mortar between those skin cells, the desmoglein. And it turns out that depending on which kind of flavor of desmoglein, there's two main ones here, the desmoglein 1 and 3, depending on which flavor of desmoglein these antibodies are attaching to and disabling, will determine what sort of pemphigus our patients have. That is driven by both which antibodies you have, desmoglein 1 or 3 or both and also where on the body is being affected. So it turns out that the kind of distribution, if you will, of the mortar of these little connections is different in what we call mucosal skin, like skin in the mouth versus our skin elsewhere. It turns out the skin in the mouth is one of the most commonly affected areas in pemphigus. Many folks just have disease in the mouth, but you can have blisters in the mouth and outside the mouth and elsewhere. But I'm just going to start with the mouth because it's one of the most common areas. It turns out in the mouth that desmoglein 3 as it shows here in the diagram, is the primary mortar between those bricks all the way through. So in all of the layers of the skin, the desmoglein 3 is very important, whereas desmoglein 1 is really kind of most important in the superficial layers and then it kind of peters out as you go deeper. So as you might imagine, if you have antibodies messing up desmoglein 1, it doesn't necessarily do too much because the desmoglein 3 is there to hold everything together and stay strong. But if you get antibodies to desmoglein 3, everything kind of starts falling apart. So we lose the mortar between our bricks. That brick wall is now weakened. Any little friction, food in the mouth, just moving our tongue around, any little sort of friction can then cause those bricks to fall apart and you get blisters, you get sores and you get what we see in pemphigus. So that is why desmoglein 3 is the most common antibody target that we see in pemphigus. When folks only have antibodies to desmoglein 3, it tends to only cause disease in the mouth.

Dr. Hopkins: Now moving on beyond that, if we're looking at the skin, it's a little different. There's not one desmoglein that's there all the way through, rather we have this kind of gradient. So desmoglein 1, that form of mortar, is most common in the more superficial layers or desmoglein 3 is more common and does the majority of the strength holding there in the bottom layers. And so here if folks have only antibodies to desmoglein 3, they have a rare form of pemphigus, what we call pemphigus foliaceus, which is a skin specific disease. So thinking back to the past diagram, desmoglein 1, you knock that out, the mouth is going to still kind of be able to be okay, it's going to be able to hold together. So folks that just have antibodies to desmoglein

1, they get this skin disease but without the mouth disease. And then if we have desmoglein 1 and 3, you can see then we're kind of getting a full knockout of the skin. We're getting the top layers messed up, the bottom layer messed up and we're affecting the mouth. So if we have both antibodies, that's what we call mucocutaneous meaning folks have it in the mouth and on the skin. These are just some pictures of it. So the first picture there is an example of pemphigus foliaceus. It tends to occur on these sebaceous areas, the scalp, upper chest, and then upper back as well, but can really be kind of anywhere on the skin. Scalp is again, like I said, commonly affected and can really be a rough area for our patients.

Dr. Hopkins: Then moving forward to pemphigoid, I do not want anybody to try to have to interpret this diagram. The reason I put this up here is to demonstrate that pemphigoid is actually pretty complicated. It's not quite as clean of a mechanism as the pemphigus that I was showing earlier. For pemphigoid, it's still the same idea, basically antibodies are hooking onto those anchoring proteins, the rebars that are anchoring our wall to our foundation, the dermis, and they're different antibodies. So instead of just inactivating the protein and causing the weakening, they're triggering all kinds of pathways and signaling that's causing inflammation. A key to pemphigoid is that it tends to be very inflammatory and that tends to manifest itself with a lot of itch and red rash in addition to the blisters. The blisters form because we're again blowing up that connection, that foundation between our wall and the dermis so we're splitting the skin and you tend to get a little different blister. In pemphigus you get a lot of sores because with those blisters the wall is broken up, the little bricks are holding together well, so they tend to just fall apart and you're left with sores as that top layer comes off. With pemphigoid, you tend to get what we call tense blisters. You can see in the picture there, they're tight looking, they're fluid filled. That's because you have the whole wall above it that splits right at the foundation. So you still have that strong top layer of the skin holding that blister together, but the base is falling apart. So the other thing to know with pemphigoid is there are more targets. So as I showed in that diagram earlier, and it's kind of a little bit of a blurry diagram here, but there's all kinds of different proteins or structures that kind of participate in this anchoring the skin to the dermis, and depending on which one of those, the antibodies hooked to drives the type of disease. So you can have classic bullous pemphigoid, which is shown in the picture here. You can have an entity that we call non bullous pemphigoid where people don't tend to get blisters at all, but rather it sort of looks like an eczema almost. It's just a red, very itchy rash. Then you can get disease in the mouth, we call this mucous membrane pemphigoid and it can look sort of like pemphigus a little different, but it's the same idea. It causes sores and discomfort in the mouth. Then you could even get it in the eyes or other structures and this can be a real problem because this can progress on to blindness and problems with the eye itself. And interestingly with pemphigoid, folks don't tend to move around a whole lot within these. In other words, they don't tend to just come out with eye disease later in life if they had the skin disease and vice versa. Many people that have the eye disease tend to have that without some of the other features like the disease in the mouth or the disease in the skin. There's exceptions of course here with overlap. We certainly have patients that kind of have multiple sites affected. It happens, but in general there tends to be these kind of distinct entities in pemphigoid. So anyway, a little bit more of a complicated disease, but at the end of the day it's still the same

process. It's autoimmunity, it's these antibodies that are inappropriately hooking onto structures in our skin that are then causing inflammation and destruction, which then leads to blistering.

Dr. Hopkins: So kind of risk factors here, this is a question that comes up all the time when I'm seeing patients, how did I get this? Why do I end up with this? And I think the main kind of bottom line here before we get into the weeds a little bit is, we really don't know too much. It's probably a complex interaction of all kinds of things that make somebody a little more susceptible and then the right kind of environmental trigger happens and kind of kicks them over the edge. And that's very variable between people. So the bottom line is we really don't know. I think the first thing to talk about is to give some assurance. Folks often wonder is this some gene or genetic thing I have that I'm going to pass on to my children? And the answer is no. We've done studies and it turns out familial pemphigoid or pemphigus, meaning where you see these diseases passed down through lines of people in a family tree is exceedingly rare and almost never happens. Now genes do play a complex role here. Again, a complex diagram that I only put up just to show that the picture is very murky. Basically there's all kinds of very small genetic little changes that can happen, most all of it having to do with the immune system that can predispose people to getting these diseases. These are kind of wide sweeping things. So like whole areas, let's say western Europe, they tend to have some of these genes in that population or something. There's some of these things that can kind of explain why we see different amounts of these diseases at different parts of the world and stuff. But ultimately these are not the kind of genes that we think about when we think are you going to pass on to your kids? These are things that either spontaneously happen in a single person and just are kind of unique to them or these kinds of wider population-based things. But at the end of the day, people can have many of these mutations. In fact, most people who have these mutations will not get pemphigus or pemphigoid. And likewise, there's many people who get pemphigoid and pemphigus who have none of these known mutations. So it's a risk factor, but it's not really the big part of the story here.

Dr. Hopkins: Number two is the environment. We know that there's these susceptibility factors, and then there's probably something that kind of kicks people over the edge. There's some unique ones that might be worth pointing out. For pemphigus, there are some species of black flies most commonly down in the north of Brazil that can trigger, for reasons we don't fully understand, but they can trigger pemphigus. And so we can get these what we call endemic pemphigus, where pemphigus is more common in a discrete geographic area. There's a few pockets of these. Brazil is one, Tunisia is another, there's a few different spots, but I think overall for most folks, this is kind of a rare cause. Number two, I wanted to point out was covid, this comes up a lot. So there's newer big studies showing that having an infection with covid actually does increase the risk of autoimmune diseases, blistering diseases included. The risk is not huge. We're talking 40-50% increased risk and that's a 40 50% increase on an already very small risk. So your actual increased chances of getting these is not super huge, but it is a risk factor and it has come out in the data. The other important part to note there is the other one that comes up all the time is covid vaccines. It turns out in the data thus far that the covid vaccines or having been vaccinated actually tends to decrease the risk of autoimmunity across the board. Now, do I have patients that come in and have a pretty convincing story of the covid vaccine triggering their blistering disease? Sure, I think all of us do, and I think it stands to

reason, right? We're stirring up the immune system. That's kind of the point of it. And so if somebody is already predisposed or getting there, it can certainly kick it off. But I think that's the way to think about these environmental triggers, it's not that they're causing this disease, it's that you kind of already have it brewing. Some people even already have the antibodies if you were to test for them, but they just don't have disease yet. And the right kind of trigger kicks them over the edge. And then the lightning bolt is just other traumas. So other viruses, there's kind of a whole host of things that are out there as potentially described triggers for this condition. But I think the bottom line is, they're triggers not causes. Nutrition is another one that comes up. I think just in general, we don't know of any direct nutritional triggers. You will find that there for folks with disease in the mouth especially, there are lots of certain types of foods that make it feel worse or kind of trigger the disease itself. And that's more of a mechanical issue or irritating the membranes. It's not really driving the disease. I think in general, I talk with my patients about a healthy diet, anti-inflammatory diet, things of that nature. You can never go wrong I think with eating healthily, but we don't know of any specific triggers. It comes up, is this something I ate that triggered it? And the answer is no. The other thing I wanted to bring up with nutrition is, this happens to come up fairly frequently in my practice where folks ask about these immune stimulating supplements and there's zillions of them out there. It turns out these actually can kind of stimulate up the immune system, which in autoimmunity is sort of the opposite of what we want to have happen. The immune system's a little too stirred up, it's creating antibodies against ourselves, against our skin. And it turns out that there's some kind of early studies showing that these types of supplements can actually trigger flares of disease and make things worse. So I do tell my patients to stay clear of supplements that say anything like immune stimulator or immune activator or immune support or things of that nature because that can be problematic in some folks. And lastly, the one that I think we have a little bit better sense of in some cases are medications. There's a number of medications that are associated with triggering both of these conditions, pemphigoid and pemphigus, I think the ones that trigger pemphigus are a little less used nowadays. You see them occasionally, but it doesn't come up too much. But in pemphigoid there's a couple very good examples. So the first one is here on the bottom, the sitagliptin or gliptins, these are a type of diabetes medication. Again, nowhere near everybody on this medication is going to get pemphigoid, but we do see a clear association between this medication and folks developing pemphigoid after. So if we see this medication on the medication list, I do generally have folks switch this out for a different medication and sometimes their pemphigoid gets better. The other one is immunotherapy. So immunotherapy is an anti-cancer drug. The idea is to stimulate the immune system to take down the cancer. They're very effective and they've really been very important medications in the cancer world, but they do just by stimulating the immune system, trigger a number of autoimmune diseases including pemphigoid especially, but more rarely pemphigus as well.

Dr. Hopkins: Alright, so once we're suspicious of pemphigoid or pemphigus, how do we diagnose it? Well, a skin biopsy is really the gold standard here and we generally do at least two biopsies. The reason we do that is we test for what we call an H&E, which is just our standard. We stain the tissue and look at what it looks like under the microscope. And that's this picture on the top right here, which is a picture of pemphigus and what the blister looks like. So you can see that the brick wall is falling apart and there's little bricks just hanging loose there in the

blister cavity. Then the little base bricks that are anchored still to the foundation are just holding on to the bottom and the blisters hanging out at the top. If you see that on pathology, that's very suggestive of pemphigus, that can help us make the diagnosis. Pemphigoid likewise has some of its own specific characteristics. And then really the gold standard for both of these diseases is this second biopsy, which is a direct immunofluorescence, and that's the bottom right. What this one does is we can actually stain for antibodies that have stuck to the skin. So we take a little sample of the patient's skin and we stain it for antibodies and look at it and they'll light up with this kind of bright green. This is an example of pemphigoid and you can see this kind of bright green line tracking right along the basement membrane zone or the bottom of that wall. That's a nice clear indicator for pemphigoid or sort of pemphigoid related disease. This is really a critical component of diagnosis. We can do these biopsies in the mouth, we can do them on the gums, you can do them pretty much anywhere. Sometimes you'll folks are not as comfortable doing biopsies in the mouth or on the tongue and things of this nature. Not every dermatologist does this or dentist, but usually we can find somebody in an area that is willing to do it. I do a bunch of these. We have a few dentists that we work with, so there's definitely people out there who do it. But this I think is a tough point and sometimes why people don't get diagnosed as soon as they should is because sometimes folks just don't have the expertise or knowledge to do some of these more specialized biopsies compared to the ones we do on the skin.

Dr. Hopkins: The other one that comes up a lot is the blood tests, we call these serologies. I think the key here is they help with the diagnosis. We use blood tests to help us prepare for treatment, screen for infection, and see how the kidney and liver and stuff like that are doing. They can also help us track treatment progress. We can kind of track the antibody levels, which I'll get into in the next slide. But it's important to note that these are kind of supplementary. They can have false positives, they're very helpful, but they're not perfect. And so we use them together with the biopsies, but you really need both of them. You don't want to rely just on the blood tests itself.

Dr. Hopkins: So here's an example of where the blood tests do come to be helpful. So the specific blood tests that we use for pemphigus and pemphigoid are basically indirect immunofluorescence, which I won't really focus on too much. Basically you take the patient's blood, you stick it on a donor sample of tissue, skin or we use some other types of tissues that have the targets we're looking for, so the desmoglein and the basement membranes own proteins and these. And then we basically stain that tissue, that donor tissue looking for antibodies and look at that under the microscope. So it's sort of an indirect way of doing the direct immunofluorescence that we do on the biopsy. Again, it's a supplementary test. We still use it routinely, but it's a little bit older. Again, it's a supplementary test. The ELISA, I think is the one that comes up the most. ELISA is a specific assay, we basically look to see the quantity of a specific antibody in the blood. So we look at desmoglein 1 and 3 for pemphigus, we look at bullous pemphigoid antigen180 and 230 for bullous pemphigoid. These are the most common antibodies that are involved in these diseases that are sticking on and causing problems. And we can see the kind levels of those in the blood. So in the upper right hand corner, we see an example from a patient I had seen who basically, you can see the levels are elevated here at diagnosis, we initiate treatment and they begin kicking down. So we can use these to track, is treatment working. We can use these to track tricky situations. I had a case the other day where

somebody came in who was on really good treatment for pemphigus, but their mouth was still a mess. So it was like, oh, what's going on? Is the pemphigus still really bad or is this something else? And we were able to look at these lab tests, and saw that the antibodies were actually nice and low, responding exactly like we want to the treatment. It made us think of other causes. We ended up finding out that a medication they were on was causing these mouth sores. Took them off of it and helped clear up the disease. So they can be very helpful to help guide us, these supplementary tests. So while they might not be necessary for diagnosis, they can help us in kind of tracking how things are going. If we're worried about a disease flare, we can check and see if these levels are starting to come back up again after treatment. Lots of different uses.

Dr. Hopkins: Then getting a little bit into treatment here. As one would expect, going back to this diagram, since antibodies are such a key role in this disease, the main treatment that we do to take care of it is to lower the antibody level, get rid of those antibodies. And we do that in a variety of different ways. I think before I get too much in the weeds there, a huge shout out to the IPPF. They have this amazing guide to pemphigus and pemphigoid. I highly recommend everybody take a look. They have a section that actually goes through all the common medications that we use in these conditions, and it has a really nice kind of breakdown on what they do, what the doses tend to look like, potential side effects, and really just gives some very good information. So I'm just going to briefly touch on these, but I really kind of want to hit more on how we sort of approach treatment in these conditions. But for individual medications, questions you might have, of course your physician would be able to provide you with information, but also this IPPF guide is super valuable.

Dr. Hopkins: So how do we kind of approach treatment in general? I like to think about bridge therapies and then maintenance therapies. And the reason we think about this is maintenance therapies, often mycophenolate or CellCept or rituximab are two common ones. These medications are very effective and good at suppressing the disease, but they take a long time to get up and running. So when we're diagnosing these diseases, oftentimes folks are very miserable as you guys well know. Their mouth is a mess and hurting and they've got blisters on their skin. So we don't want to wait two to three months for these maintenance medications to kick in before we see any effect. So then we use these bridging agents or induction agents, and these work very fast, but they're often temporary. The most common one by far are systemic corticosteroids or prednisone being a main example, methylprednisolone, prednisone, dexamethasone, any of these get at the same end. And this basically just drops a bomb on the immune system, if you will, just shuts down the inflammation, lowers those antibody levels and helps really reduce the disease rapidly. The problem here is, they're not sustainable. They cause all kinds of problems in the long term. They chew up people's stomachs, they leach calcium from the bones, they cause cataracts. The list goes on and on and on and on and on. One of the main goals of therapy nowadays is to decrease our usage and amount of time we're having folks on corticosteroids. Sometimes we can't get off of them, sometimes we have a hard time with these diseases and so we have to use these for longer term. But ultimately we think of these as short-term treatments. There's other ones, cyclosporine, IVIg, that kind of bridges actually both sides of the spectrum here and other treatments that I won't get too far into the weeds with. But the goal is kind of similar. And then these maintenance agents over here, again, the idea of these are they're more sustainable. They're relatively safer, they're cleaner, they're

going to lower the immune system in the sense that they're going to decrease those antibody levels, but they're safe to be on, relatively safer to be on for the long term. Again, the big ones here, mycophenolate or CellCept. Rituximab, which is especially big for pemphigus. We'll talk about that one specifically. Dupilumab, which is a new upcoming one for bullous pemphigoid. Kind of exciting because it's not an immune suppressing agent and then some of these other lesser used ones as well.

Dr. Hopkins: So when we're treating folks, what do we think about? When we're thinking about these, it's always a balance between controlling symptoms, controlling the disease and preventing flares of disease while at the same time minimizing side effects from the medications and then downstream problems from the medications like infections, adverse events, meaning like clots or chewing up stomach ulcers or all kinds of other stuff. And so that's always this consideration. How can we balance controlling the disease and symptoms with that and then also thinking in the long term, what's going to prevent the diseases from getting worse?

Dr. Hopkins: So I'll talk about the paradigm first for pemphigus here. So the main thing for pemphigus here is that it's a little bit different disease. And by that I mean folks tend to get it when they're a little younger on average and it tends to be kind of a lifelong disease. Now this doesn't mean that you have active disease for your life. No, the goal is to control it. But oftentimes even if folks have been under control for long periods of time, they may get little flares here and there later. It doesn't tend to totally go away, although it can. So that is one consideration. The second consideration is in pemphigus and pemphigoid to a degree, but in pemphigus especially, there's this idea of disease hardening. And by that we mean if you kind of let it just simmer, so you sort treat it and you punt it around for a while and folks have it for a long time, it tends to A, get worse and B, get harder to treat. There's a lot of the as to why that happens, but it tends to be what we observe clinically. With pemphigus, the paradigm has shifted such that we want to treat it pretty aggressively upfront even if the disease itself doesn't seem overly severe. I've had this conversation with a few patients where they have a few blisters and they're like, it's not too overly bothersome. Topicals kind of help. Do I really need to get this rituximab, this infusion therapy? And I really tell them, yes I would and the reason for that is we know when we treat with rituximab early or CellCept to a lesser degree mycophenolate, but when we use rituximab early, people can get really profound remissions. Meaning we can use the therapy, they get their doses, their disease goes away, and we can maintain it being gone for long periods of time, sometimes years before they need to redose that therapy. Whereas disease that's very severe has been around for a while, oftentimes we're having to redose this therapy more frequently because if we don't, the disease wants to come back. So at any rate, that's a thought there. Again, we use a number of other treatments in conjunction with this. So we often will use IVIg, we often use topicals just to kind of help with symptoms, and then there's some new emerging stuff as well.

Dr. Hopkins: So because rituximab is so central, I think to pemphigus especially, and to a lesser degree pemphigoid, I think it's worth just briefly mentioning what it does. It tself is an antibody and it attaches to this little marker on B cells, which are the cells that help kind of produce antibodies in the immune system. The B cells have this little marker called CD20, and basically rituximab sticks onto CD20 and marks those cells for destruction. The immune system

comes in and gets rid of them, and it gets rid of basically all the types of B cells that are in this red box. And it's kind of a clever thing because it turns out that these plasmablasts that are activated, these ones here in the middle, are the ones that tend to produce the antibodies associated with pemphigus. But the antibodies that we don't want to get rid of are these long-lived plasma cells. Those are the antibodies that are things to flus or colds or vaccines, things that our immune system has seen before. And we want it to recognize if we get exposed to them again. So rituximab does not wipe out those, but it does wipe out these other kind of less mature B cells that are oftentimes producing the antibodies. So it's nice because we get a very profound treatment effect. It's the best treatment we know of on the market for pemphigus, but you don't tend to get as much immune suppression as you would necessarily expect for knocking out basically one side of your immune system.

Dr. Hopkins: So moving to pemphigoid, pemphigoid is a little bit different. So we know from some of the long-term studies in pemphigoid that if you treat pemphigoid well, so get people's blisters under control by about one year, nearly half of those folks if you were to remove therapy, their disease will burn out and go away. And then with each year of good disease control, when you stop it, there's kind of another group of folks that go into remission or the disease basically burns out and doesn't come back. Then there's a smaller chunk of folks who continue on, kind of like pemphigus where it can kind of flare, move around more long term. So because of this, we tend to base our treatment and how aggressive we are with it on the disease severity. So if somebody has very localized disease or not super widespread pemphigoid, we might just use topicals or maybe something like doxycycline, which is an anti-inflammatory antibiotic. Whereas, there are also those who have very severe disease and we're going to treat it just like pemphigus, we use things like rituximab, mycophenolate, et cetera. The other consideration in pemphigoid we have to be a little bit careful about is folks with pemphigoid tend to get diagnosed a little later in life. They tend to be a little older. They tend to have more of what we call comorbidities, meaning they just have more medical stuff going on. So sometimes we have to be a little more gentle, right? Immune suppressing their immune system might be a little more dangerous and expose them to problems. So to that end, we are pretty excited to see dupilumab, which is Dupixent, an eczema drug that is going to be coming out on the market for this. Their trial looked great. We were one of the site participants on it. It looked to be like an effective therapy for a number of folks. And they are currently in conversation with the FDA. It's expected that the label for that will come out in summer, which is exciting because then this would allow insurance to actually cover this, us to use patient assistance programs to cover the cost of this drug because it is rather expensive and some of the things we have from the other therapies. So anyway, that's kind of cool news for pemphigoid. But it's a different, more complicated paradigm than what I wanted to convey here.

Dr. Hopkins: Anytime we're suppressing the immune system for treating these things, there's some problems that we'd like our patients to be aware of. So number one, they're going to increase the chance of getting an infection. And the main things here are infections of the wounds from the blisters or other infections that come about. Pneumonias, mouth sores especially, I see this a lot in patients with mouth disease. They'll call me and say, hey doc, my pemphigus is coming back with a vengeance and I've got sores all over my mouth. And it's like, oh, it's kind of odd because their disease is under such good control. It's oftentimes the same

virus that causes cold sores when you have the immune system suppressed, it can cause just an outbreak of sores. We treat it with antivirals and it gets better. So keeping in mind infections, and I think a key for folks to be aware of that I always stress with my patients is immune suppression can alter your symptoms of infection. You may be less likely to fever, you might not feel an infection coming on the same. So I tell folks to have a very low threshold. If you're noticing sores that are getting red and that redness is spreading, sore that are getting more painful, suddenly. So pain and redness or a sore putting out more fluid. Anything like that, that can be signs that a sore is getting infected. If you're having a cough or starting to notice things that you think might be pneumonia, have a low threshold to talk with your physicians, your primary care, your dermatologist, et cetera. Because we like to be very careful with infections with these medications. And number two is medication side effects. These vary tremendously depending on the medication, but we have tools in the toolbox nowadays. So if you're suffering with a side effect, we really want to hear about it. Don't be shy, let us know. We don't want to try to flog you through a treatment that's making you miserable.

Dr. Hopkins: Then to that end, what are treatment goals? So the goal of most of these treatments is to get the skin clear, and that's meaning clear in the mouth and clear on the skin itself. Sometimes we get occasional breakthrough blisters. Everybody's going to be a little different in terms of what our goals are, but ultimately, of course, we'd love to see everybody's skin be clear. Another thing we track is, no new areas popping up. So a lot of folks ask, how can I tell if my disease is flaring? Sometimes people can have sensations of it. Pemphigoid, oftentimes it starts with itch, itch and redness or rash, even before you see the blisters. I want to hear about it. Sometimes in the mouth it can start with just some soreness or sensitivity to certain foods. That is a distinct change. So we definitely want to hear about it. And ultimately my goal is to be able to help folks live the life that they want to do, to not be hindered by their condition. And so to that end, we ask here at the University of Utah, we send out a survey that's asks about quality of life components. It's these questions here on the right, how are you being bothered or affected by your skin condition, the symptoms, how is it affecting your daily activities? How is it affecting what you like to enjoy, things of that nature. And we really try to cater our treatments to that.

Dr. Hopkins: And I think this is very important in pemphigus and pemphigoid. I'm kind of preaching to the choir here probably, but with this, I think this is an interesting study we did looking at blistering disease and quality of life and as you'd expect. The higher the number, the worse the quality of life that people are reporting. And the flare here means during disease flare. And you can see across the board during a disease flare, people are miserable. Quality of life is poor. It's exactly what you'd expect. But what I think was interesting that came out of this study is even during a no- flare, so if the disease is under control, yes, quality of life was better, but there's still a big range there. Some folks, especially in this emotional domain, emotional quality of life and wellness, still had a lot of impact. I think we definitely see that. There's a lot of PTSD and anxiety surrounding it coming back, side effects from the treatment. A lot of things that can impact quality of life, even if the disease activity itself is quiet. So I think knowing this, what's going on and being able to talk with our patients or get them resources they need is very important and is a goal of my research.

Dr. Hopkins: Some other just sort of lifestyle things as we get towards the end here, I focus a lot on the mouth stuff. I think it's very important. But I'll also hit on the skin stuff as well here in the next slide. But for mouth stuff, it's very important to try to maintain good, what we call dentition, meaning brushing the teeth, seeing your dentist and maintaining that. That's obviously a lot easier said than done because the mouth is a mess, right? It's got blisters and sores and it hurts. So what are some things we can do? There's amazing resources that the IPPF has examples of, soft toothbrushes and things like that. But I think just a few things I generally tell my patients. I really like very mild toothpaste, this Cleure® brand, pardon the pixelated picture here, but this Cleure® brand is pretty good. It's on Amazon and you can get it online. It's a little more expensive, but not too bad. But it has really low levels of things that cause allergies. It's not flavored, and so it tends to be very mild. Tom's of Maine is another one I tend to recommend, especially their strawberry one tends to be very gentle. Syensodyne has some good ones. But in general, things that I think that can be helpful, unflavored, very gentle, and things that are less likely to cause allergy because the skin, it's beat up. And we know that sometimes when the skin's beat up, you can be more likely to get allergies to certain products and then that can create its own sores and sort of perpetuate the issue. So I like to keep things very bland. The other thing I like is this CloSYS mouthwash. It's a very, very, very gentle mouthwash, but it does a good job at maintaining the bacterial load in the mouth, cleaning things out. It's very gentle, meaning it has no alcohol in it, it doesn't have any irritants. It basically feels like sloshing water, which I get can also be very uncomfortable in these conditions. But I think it's about as mild as it gets, but is also effective at what it does. And then I got a picture of the dentist here. Finding a dentist that's comfortable or knows some things about these conditions and can maintain things best they can despite what's going on, I think can really be super valuable. I've seen a number of patients with pemphigus where the gums are still kind of messed up and what's going on? Their disease looks quiet, their antibody levels are good. And a lot of times it's gingivitis, right, tt's bacterial infections, it's these other things that we can treat and maintain. So it definitely plays dividends even though it's difficult to keep that up.

Dr. Hopkins: Other things. So for the blisters themselves on the skin, I think oftentimes baths can be helpful. Obviously not everybody has access to these, but if you do and can take a bath, it can oftentimes be more gentle than a shower. There's also shower heads that you can get a little bit lower pressure, the big ones or whatever that can shower down more and just be gentle. The problem with showers is they, especially for pemphigus where the skin is weak, they can kind of tear off skin and beat things up a little bit. So just being gentle. The other thing I like, especially if there's wounds on the skin, are these bleach baths, if you can tolerate them. So I tell people to start slow if you're going to try them and just see how it feels on your skin. Ideally, if it's dilute enough, it's soothing and doesn't feel harsh or anything. I have a recipe for that coming up here in one of the slides that you can screenshot or that type of thing. But I think that could be helpful just to decrease the inflammation and the bacterial load in these wounds. Number two, when we're doing wound care, I like vinegar soaks. So dilute vinegar soaks, it's safe. It's a simple, cheap thing to get, natural. It really does help decrease the bacterial load and break up some of the biofilm and such that bacterias can cause on the wound that inhibits wound healing. In terms of sticking things to you, I tell my folks to avoid tape like the plague, especially people with pemphigus. Anything that sticks to the skin that can tear and pull skin off

with it. I like to use a lot of wraps. So use a lot of Vaseline on the wound itself to be non-stick, stick on the dressings and then use wraps, different curlex or things like that to hold it on rather than sticking anything. Try to use, if you are going to use tape, stick it to other bandages rather than the skin. And if we do need something to stick, using special silicone based bandaging that doesn't stick to the skin or is not hard to pull off can be helpful as well. But just being very cognizant of that. I tell all of my folks that Vaseline is your best friend. It's going to help it be non-stick. It doesn't have allergens in it. It's cheap and easy to get. We use it heavily. And then lastly is kind of a lifestyle component here, the mental health component. I think this is really big, right? These conditions are a lot. They're a lot to take in when folks are first diagnosed, initial flares can be horrific, people can be hospitalized. The medications are a lot. It's a huge lifestyle change sometimes for folks. So there can be a lot of PTSD, anxiety, depression, difficulty dealing with this, social interactions change. So I think it's so important to be cognizant of this. Voice these issues to your clinicians. Don't be afraid to get help, whether that be medications, support groups, getting lined up with mental health therapists. I think support groups can be huge. Folks that understand what you're going through and have been through it and these types of things.

Dr. Hopkins: And on that note to end out here, I just again want to give a huge shout out to the IPPF's patient information page. It's super good. If y'all haven't navigated through it, it's well worth your time. Amazing resources here, peer coaches, webinars like this one, the support groups, and you can search them in your area. There's this one kind of paper where it helps you advocate for yourself with your clinicians if they're not as familiar with these conditions. And it's, have you done this, this, and this, or can we consider this and helps guide that conversation. Lots of super useful information here. So definitely explore that for support with these conditions. And that's basically it for me. I can toggle back to these if people want.

Dr. Hopkins: This is the bleach bath, an example of a bleach bath recipe.

Dr. Hopkins: This is the vinegar soak kind of recipe and example of that.

Dr. Hopkins: And then this is our contact information. If you happen to be here in Utah, this phone number is for our autoimmune clinic and we're happy, myself or one of our other specialists in blistering disease are happy to help you out. And I should note, there was one of the questions that they asked, they were in Canada and they were asking about the ELISA test and such. There can be differences there in getting these. Our lab here at the University of Utah, our Immunodermatology lab is one of the kind of big ELISA groups. We run a lot of ELISA for people all over the place. We've worked it out where we've gotten in contact with dermatologists or folks in other countries even and sent them the samples and then they mail them to us and stuff. So if that's something that's very important to you, by all means, feel free to have either yourself or your clinician reach out. We can see about that stuff. We've kind of helped out in those cases in certain situations and such. But anyway, I'd love to open it up to questions now. Let me know if you want to go back to any of the other slides. Thanks again for having me.

Becky Strong: Thanks, Dr. Hopkins. I don't know if you've had a chance to look at the questions, probably not but there are raves of thank you's. One of the comments said it's the best explanation of these diseases they have ever heard and everything is understandable. So you're becoming a favorite in the community very quickly. Thank you so much for the explanation. I'm going to start with Alessandra's question, and she's asking if patients with pemphigus vulgaris or pemphigoid develop an atopic dermatitis or eczema or dry skin sort of bumps. Is that something that's common?

Dr. Hopkins: Yeah, that's a great question. I don't know that we have data on how common it is, but I definitely do see it. Atopic dermatitis is super common itself. And so is it possible to have both? Absolutely. And interestingly, especially with pemphigoid, they actually share some mechanisms together. So I do have a number of folks, especially with pemphigoid that have it, and I even have a couple that come to mind that actually started as pemphigoid and then they kind of stopped responding to our pemphigoid treatments and I was like, what's going on here? I biopsied them and their pemphigoid was completely quiet and it was just rip roaring eczema and we switched them to a different eczema medication and they cleared great. So definitely you can have overlap here. Sometimes a biopsy is needed to really tell just how much, but ultimately, yes, that can definitely occur and it's worth kind of treating them. I often treat them as separate, but sometimes some of the treatments work together and we can kind of align things. As an insider tip, so you guys know the games we play with insurance, it can be very handy, especially in pemphigoid because some of the treatments we can't get covered very easily, that work well for pemphigoid are approved for eczema. So when that happens, we go, yay, a little bit. We can convince insurance to cover these treatments for the eczema side of things, but it actually covers both. So yeah, great question.

Becky Strong: Our next question, Frank is asking about if he's on an acid reduction drug, is there a problem taking Dapsone and using it and getting its full efficacy from it?

Dr. Hopkins: Yeah, good question. Oh, I would have to review the interactions there with Dapsone. There probably is one. It's one of these older drugs that you can see some cross reactions and stuff. I usually don't worry about cross reactions like that too much unless we're worried about toxicity. So where we really worry about drug interactions is where, if one drug is increasing the levels of the other in the blood beyond what we'd expect. So with Dapsone, if that occurs, we worry about the anemia or things like that getting worse. But as long as side effects and labs are looking good, we can kind of tolerate normal interactions that are common, not dangerous, bad ones, but this one is one where I think it's, from what I recall, without looking it up on hand, it's kind of loosely affects levels of one or the other in the blood. So to me, as long as the symptoms are controlled and you're not having side effects, we can shift those to adjust the differing levels in the blood causing the interaction. Hopefully that makes sense. So this comes up a lot where it's like, oh, is this decreasing my efficacy? And I don't know, maybe I'm just overly pragmatic about it, but for me I'm like, okay, well putting that aside, how are your symptoms doing? How is your disease doing? And if they're like, I'm good, then I'm like, great, I'm good too. As long as you're controlled, I'm okay with it. And again, maybe we need to monitor a little bit more frequently. Maybe we need to be careful and make sure there's no

toxicity happening there. But ultimately if those things aren't happening, then I'm okay with allowing a little bit of unknown in terms of what our actual levels look like due to interactions.

Becky Strong: Great. George is saying that his disease is affecting the bottom lid of his eye and is actually pulling in and his lashes are scratching his eye. Is there anything that can be done and what do you do when you have pemphigoid and have red sore scratchy eyes that are very uncomfortable?

Dr. Hopkins: Yeah, that's a great question. Ocular cicatricial pemphigoid is what we call it, pemphigoid that affects the eye or even eyelid structures nearby are really tough. And one of the biggest things that we see happen is exactly what you're describing. We call that ectropion. So the eyelid kind of turns in the eyelids, the eyelashes poke in, and that generates a lot of irritation and then scarring. The biggest thing we do ultimately is stop the inflammation. In general, when we see the eye being affected, we treat it pretty aggressively compared to other forms of pemphigoid. We're much more likely to go to rituximab quickly. We sometimes even go to cyclophosphamide, which is like an old chemotherapy drug that basically just drops a nuclear weapon on your immune system, just bombs it. So we treat it very aggressively. And then I think really a key that is often hard is finding an ophthalmologist or oculoplastic surgeon who is very familiar with this disease. There are some surgical procedures that can be done to remove the eyelashes, to correct the eyelids to try to improve the symptoms and the damage that is caused by that. But you really need somebody who knows what they're doing and you also need somebody who's treating the inflammation. I see two pitfalls in this situation. One, is that you don't have an ophthalmologist who knows what they're doing and without treating the inflammation, goes in and does a surgical procedure to fix this. Those surgical procedures can stir up the pemphigoid and so sometimes you just get caught in procedures increasing the inflammation and then the inflammation causing the disease and scarring in the eye. And then the other side of that is, the flip side, great medical management, but we don't have an ophthalmologist or a surgeon who necessarily knows or feels comfortable with this disease and how to fix the eyelids. It's an interesting disease where we have very close associations with a few trusted ophthalmology and oculoplastic colleagues. And so we tend to manage in dermatology the medical side of it, and they tend to manage the surgical and ophthalmologic side of it. So hopefully that answers the question. But I think without giving direct advice, the key, the paradigm here is control the inflammation. Once we're in a good place there and ideally quickly, then we do surgical procedures to remove that irritation of the eyelashes on the eye that can perpetuate scarring.

Becky Strong: Great because it's the top of the hour, and I don't want to keep you too long. I'm going to group some questions together. There's a lot of questions about how long you can be on treatments. The ones that I see popping up frequently is, how long can you be on doxycycline and how much Rituxan can you get? Is there a maximum lifetime where you tap out?

Dr. Hopkins: Yeah, great question. The doxycycline one, I have had colleagues jokingly say that we should put doxycycline in the drinking water. We use it a lot. I'm not an advocate for that. I think in general, it's an antibiotic. It can affect gut flora. It tends not to as much as other

antibiotics. I think in the past, have we run people on doxycycline for years and years and years? Absolutely. Is it the best thing? Probably not. But at the same time, again, it's all about balances. Is it great to be on an antibiotic for years and years and years? No. Is it better to be on an antibiotic for years than immune suppressants? That's a little bit more of a difficult question. As with all of these medication considerations, it's all about checks and balances here. Is being on doxycycline for decades worse than being not on doxycycline? Yes. Is it better than being on some of the more toxic medications if it's controlling the disease? And is it better to take that risk of the doxycycline than have active disease that can in turn get infected and cause problems? Maybe, yes. It depends on the situation. So I think it's a good question. There's not really any hard stops on any of these medications. It's all about the balance of what's going on and what the alternatives could be. And likewise with rituximab, there's not really a top line. I think at some point the question comes, are we hitting our head into a wall that's not doing anything right? Are we doing the same thing over and over and over that's not going to work? So if we've given somebody eight rounds of rituximab and their disease is still plenty active, it might be time to consider a different treatment or are we treating the wrong thing? Is there something else going on like medication induced, as I mentioned earlier and stuff, but there's not really a top one. I mean, you see studies of folks that have gotten zillions of rounds of rituximab, and we have folks that have gotten quite a few over the years. So I don't think there's really a hard stop there. It's always kind of balancing what is the minimal and safest amount of therapy we can give to adequately control the symptoms, but then also not treat people into the ground. I talk about this with some of my folks too, where it's like, at what point do we say, okay, there's a little bit of minimal disease, but you're on a safe regimen. Do we really want to expose you to severe stuff for that little bit of disease control? And that's a personalized discussion. Everybody's going to have a little different value structure there. But yeah, I think in general that was a very long-winded answer to that. But the point is none of these medications that really have a hard stop, it's more about balancing. I take that back actually, cyclosporine, some of the bridging agents, the short-term ones do. So cyclosporine, we really don't want people to be on for longer than a year. It can start hurting the kidneys and stuff, but we don't use that one as much in these diseases anyway. So anyway, outside of that, the main ones we use, there's not really a hard stop. It's a personalized discussion of risks and benefits that we have with each individual patient.

Becky Strong: Great. The next question I have is, do you have any tips for somebody who is looking at having surgery specifically like a joint replacement and they're still on immunosuppressive therapy?

Dr. Hopkins: That is a great question and that is a tough one. That is a tough one. This is another one of those, it’s very kind of personalized. And it often comes down to discussions with us in dermatology with the surgeons themselves. And it all depends, if it's a totally elective surgery, meaning it's something that we have flexibility in terms of timing, then we may do something like treat more aggressively, get people clear, wait a couple months, and if things look good, then maybe we say, okay, we have a moment. We can do a drug holiday and maybe do the surgery. The risk here always is, you don't really want to be on immunosuppression when you get a joint replacement. It's going to impair wound healing and also is going to increase the chance of getting an infection in that joint, which is obviously bad, catastrophic. At the same

time, what the surgeons often don't appreciate, and what the insight we often give is, look, there is an increased risk of immunosuppression, but what is the risk of infection if this person flares with blisters all over them while they're trying to recover from their joint replacement? And that's its own conversation too. So in general, we do try to minimize. For example, with pemphigus, if we can give them rituximab, we have some time to buy, we can get them in remission and get towards the end of that rituximab course. So like eight, nine months out from rituximab or their immune system is back online and they're doing okay, great. Then we just watch out for flares that the trauma from a surgery might induce. But again, I'm given a lot of these, it depends answers and it does. It's very customized to the patient balancing what is the risk of having the disease active versus the immune suppression? And that depends on the surgery. A lot of very routine, easy surgeries can be done with immune suppression. The risk of infections is low, where major surgeries maybe we balance the possibility of flare, pulling people off immunosuppression to keep them safe during the surgery. So very, very personalized, but I would definitely invite your clinicians to have a powwow about that. That's going to be the key.

Becky Strong: Great advice. Do you have time for two more questions?

Dr. Hopkins: Absolutely, yeah.

Becky Strong: Luther is asking, are these diseases usually fatal?

Dr. Hopkins: Good question. So there's an interesting history here. So back prior to the advent of corticosteroids, which was like 1940s, pemphigus was universally fatal pretty much. It would just progress, we did what we could to make people feel comfortable, and ultimately they would get an infection, and that was usually the cause of death. Nowadays, I think it is much less common to see these conditions kill somebody, much more common to see somebody die from complications of the therapy. So when corticosteroids came out, they changed the game. Now all of a sudden we give somebody loads of prednisone, their pemphigus is gone, great, but we didn't know about corticosteroids. So we just park people on prednisone for years, and then all of a sudden they start falling apart and would die of complications of that. So then we kind of pivoted to, okay, now we need these maintenance therapies that we can kind of balance that are safer long term. Ultimately I think nowadays, do we see increased risk of death in these diseases? The answer is yes, but it's not that big compared to what we used to see. So I think for pemphigoid I recall, there was a nice study from a French group that just came out. I think it was like a 10% kind of increased risk, but not huge. Like I say, most of the issues that you see, the mortality nowadays that come from these diseases actually comes from therapy. So infections and pneumonia, things of this nature than the disease itself. So then people say, well, are we overtreating it? And then my answer is, well, no. People used to die all the time of pemphigus and pemphigoid. So there, there's a balance there. But yeah, so the answer I think in the raw sense, yes, there is an increased risk that you would expect when you have a group of folks who have immunosuppression, but it's much better than it used to be. And we're continuing to strive to do better in terms of coming up with new therapies that can address these diseases in more targeted ways, impact the overall immune system less with things like dupilumab for pemphigoid. But I think in general, when patients ask this, they're usually coming from a place of, I just got diagnosed with this, is this going to kill me? And my answer is

thankfully, usually not. Are there cases of catastrophic initial diagnoses that are found late? I mean, yes. I had a guy unfortunately who passed with really bad disease just a couple months ago in the hospital, got a secondary infection and was otherwise a very complicated medical person otherwise, and they did. So does it happen? Yes, but I think for the most part, when we're catching these diseases earlier and have better forms of treatment, are people passing from these diseases themselves? Not a whole lot these days, not a whole lot. So anyway, hopefully again that was a helpful answer to it. I think overall I wanted to be reassuring and optimistic with it. There's real risks, but I think they're much better in continuing to get better.

Becky Strong: Thank you for that. You've given great advice about skincare and different soaks and oral treatment as well. There's some questions about scalp and hair loss, and if you have any tips that you can pass on with that, that would be helpful.

Dr. Hopkins: Yeah, great question. I think early treatment is of course key here before we get scarring. I would say it's a little different between the different conditions here. Pemphigoid doesn't tend to affect the scalp as much, but because it's a deeper blister, it's more likely to cause scarring, which can cause problems with hair loss. Pemphigus on the scalp, it's dramatic and rough, but it's more superficial. So the good news is once we get the inflammation under control, people will often shed a lot of hair and it's from the inflammation. So anytime you get a lot of inflammation, a big insult if you will to the body, you can shed a lot of hair and thin it out. And so I've seen folks get quite thin after, but the good news is it's generally not deep enough to really destroy those hair follicles and you can get some growth back. So controlling disease is number one. Number two, my folks that have hair loss and are worried about it, I actually have a pretty low threshold to use low dose oral minoxidil. We use it all the time in dermatology for hair loss. It's pretty darn safe and it really does help with hair growth. So I think unfortunately this gets poo-pooed a lot. Like, oh, you got this terrible blistering disease and we're helping to save you, don't worry about your hair. But the reality of it is that hair's important, obviously we care about it. And so I am very happy in my patients once we get the disease under control, or even as we're getting disease under control, if they're worried about the hair loss or that's really impacting them, I just start them up on the oral minoxidil. It plays nicely in these conditions and it does help with hair growth. Now the flip side of that is it does take a while, so that's my disclaimer. Anytime I'm using hair growth medication, hair grows slowly. It takes like six months to a year to kind of fully grow out. So I say don't expect any huge changes in a first couple months, but when we get out to talking eight months, nine months, a year out from starting the low dose oral minoxidil, you tend to get pretty darn good hair growth. So yeah, that's what I would say to that. Disease control and then low threshold to use oral minoxidil to support hair growth as

Becky Strong: Well. Great, thank you. So one last question. I know I said two, but I'm going to do three. A lot of people, our community are relatively newly diagnosed. What is your best advice that you want us new patients to know when we are just first diagnosed with pemphigus or pemphigoid?

Dr. Hopkins: Yeah, great question. I think number one is it's going to feel super overwhelming, right? Tons of new information, tons of tests, treatment stuff getting thrown at you. I think it's

okay, right, to feel that. I feel like some people are like, oh man, am I just not getting it? No, it's a lot of information. It's overwhelming. And so I think having good communication with your physician, exploring the patient resources on IPPF, very helpful. Number two, I think would be some of the reassurance about the tools that we have nowadays and such to get these under control. I think it can be very overwhelming especially if it's a severe disease, new diagnosis. But I think the good news is, nowadays when we're talking about disease remission and getting the skin clear, these are real possibilities that can be done and stuff. There's real advancements. Obviously there's still severe disease that lingers on, but I think in general, I like to try to give some degree of hope and optimism that we do get most people under control, that we experience and get them feeling better. And most people do well on these treatments. There's hope on the horizon. I think for a lot of times, getting the diagnosis is the biggest thing. So if you're newly diagnosed, you overcame that hurdle, you have your diagnosis, great work. Now it's just a matter of letting it all absorb and being patient with yourself as you come to terms with all these things. And number three I would say is like I say, don't neglect that mental health and that component of it. These are real traumatic things that are very hard to deal with. It's okay to acknowledge that, and it's definitely okay to seek treatment and support and things for the mental health side of stuff as well. So embrace those resources as they're available and advocate for yourself to get those as well, I would say.

Becky Strong: Well, great. We sincerely appreciate everything and how you broke down some really complicated things and made it really easy for us to understand and even stayed late for us. So thank you so much, Dr. Hopkins,

Dr. Hopkins: Of course, of happy to be here.

Becky Strong: So before we go, I do have a few announcements. As we step into 2025, we can't help but pause and reflect on the incredible impact you've made. Your support over the past year has been a beacon of hope for the pemphigus and pemphigoid community. And it's because of you that the IPPF can continue providing vital resources, education, and compassion to patients and families. Looking ahead, we're filled with hope for what we can accomplish together. Our mission remains clear to build a strong community, to offer unwavering support and education and inspire hope for everybody navigating these challenging diseases. No one should ever feel alone on these journeys. Your kindness and generosity have the power to create lasting change. When you donate to the IPPF, you're not just giving a gift, you're giving hope to those who need it most. Each dollar fuels critical programs like these webinars and provides essential resources and can transform lives. Scan the QR code or visit www.pemphigus.org/donate to make your gift today. Together we can continue to give hope, change lives, and make a lasting impact.

Becky Strong: Sign up for our email list to stay updated on exciting webinars, upcoming events, and important news in the pemphigus and pemphigoid community. It's the easiest way to stay connected and ensure you have access to the latest resources and updates. Joining us, simple, you know the drill, scan the QR code or visit www.pemphigus.org and click on our new

line in the header. Join our email list at the top of the page and enter your information into the box that pops up on the middle of the screen.

Becky Strong: Dr. Hopkins mentioned this during the presentation, but have you had a chance to check out the IPPF's Guide to Pemphigus and Pemphigoid? Whether you're newly diagnosed or just looking for reliable information about managing and treating these conditions, this guide is here to support you. It's filled with medically reviewed answers to common questions, practical tips and valuable insights to help you navigate your journey with confidence. What's more? We're proud to offer this guide in multiple languages so it's accessible to as many people as possible. Our hope is that this guide, along with other IPPF resources can empower you with the knowledge you need to make life with pemphigus and pemphigoid a little easier.

Becky Strong: Are you wondering how to contact doctors like Dr. Hopkins? Are you looking for a doctor who understands pemphigus or pemphigoid? Well, be sure to check out the IPPF Find a Doctor directory. This easy to use tool helps you to search for doctors in your area or anywhere in the world, who the IPPF believes have experience with these rare diseases. You can filter your search using different criteria to start your search and to find the right doctor for you. Scan the QR code or visit our website to get started. Do you want to help doctors and researchers better understand pemphigus and pemphigoid? Do you wish there were better and more FDA approved treatments? We'll join the IPPF Natural History Study today. Sponsored by NORD and the FDA, this patient registry ensures your information is private and protected. Your participation will help advance research, improve treatments and move us closer to a cure. Share your journey and make a difference for everyone affected by these diseases. Get involved and visit www.pemphigus.iamrare.org and to join today.

Becky Strong: The PPF also has support groups nationwide. If you'd like to join a meeting, please visit our event page to register. We're also looking to expand our network, and so if you're interested in starting a support group in your area, please contact me. My email address is becky@pemphigus.org. It's easier than you think and a great way to help others find the support they need to.

Becky Strong: I'd love for you to join us on our next patient education webinar on Thursday, February 20th. Dr. Brittney Schultz, Assistant Professor and Director of the Autoimmune Blistering Disease Clinic at the University of Minnesota will be sharing the latest on current treatments for pemphigus and pemphigoid. It's a great chance to learn, ask your treatment questions, and find real answers from an expert. Scan this QR code on your screen to register now, and I hope to see you there. A recording of today's presentation along with a survey will be sent out after the webinar. Thank you everybody for joining us. Goodbye.