SPEAKER: All right. So what I intend to do is to show you a variety of cases that we've encountered over time and, hopefully, the physical findings will turn out to be instructive to you and we'll talk a bit about management. So this is a two-year-old boy who has a two day history of this rash. It seems to be spreading. He had a cold a week ago, but is now well. He takes no medications and the physical examination is normal aside from the eruption. And if you want to test your diagnostic and therapeutic skills, you can set your outline aside because everything is contained therein and you might just find it useful to look mainly at the photographs.

So if you look at the right hand photograph, you'll notice that there are a number of lesions that are annular, circles, and that it was for that reason that this child was admitted. The concern was could this be erythema multiforme and would the child then be at risk for developing mucosal disease and get sicker. And certainly, if you look at the thigh and you look at the arm, there are lesions that are circles, but you'll notice one thing which is there is no real central change. Meaning there's not a crust, or a vesicle, or anything going on in the middle of that circle. I'm going to come back to that because that's an important physical finding.

And then also importantly is, if you look at his back on the left hand side, you will notice that there aren't just circles. There are some very funny shaped lesions, right? There are some that are polycyclic and there are some plaques. So for all of those reasons I would say this child does not have erythema multiforme. What he has is urticaria. and there is often, I think, difficulty in sorting out these two entities and so I'm going to give you my simple, as I see it, approach to thinking about these.

So first of all is the duration of lesions. So by definition a lesion urticaria lasts 24 hours or less. So if you took a ballpoint pen and circled one of his lesions, if that lesion disappeared in a few hours, may have been replaced elsewhere by another one, that by definition is urticaria. Whereas, in erythema multiforme, when you get a spot show up, the spot stays in that location until the process ends which can be seven days or longer.

The second is the appearance of lesions. So as we saw in this patient, in urticaria you often have a variety of lesion shapes. You can have circles, you can have plaques, and I'll show you examples of these. Whereas in erythema multiforme, the lesions are often very uniform in appearance in an individual patient. So that's going to be a papule, or a thin plaque, and all of the lesions sort of look like one another. You don't have a variety of lesion shapes.

All right. So just some examples of urticaria. If you look at the upper left photograph, you've got sort of a crazy pinwheel shape. If you look at the lower left photograph, you've got some thin plaques. You've also got some papules. And if you look at the upper right, you've got a huge confluent plaque of urticaria. So multiple lesion shapes.

Now let's talk a little bit about erythema multiforme. So in erythema multiforme, often the beginning lesion is going to be a small papule or a plaque, so a plateau shaped object. Over time, over a couple of days, something happens centrally because there has been damage to the vessels in the skin. So that's either you get some petechiae, or you get some purpura, or you get a vesicle, or the vessel ruptures and you get a crust. So that, again, is very different than what you see in urticaria.

Now if you look at the lower left photograph, you'll see that there are several erythema multiforme lesions that have coalesced and you might say, well, heck, now that's starting to look like urticaria. But again, that lesion, those lesions that have coalesced are fixed in location. And last, in the lower right photograph, you can get a vision of what a typical iris lesion is that you read about. So the periphery is going to be red, and then there's a white zone, and then there's a darker central zone.

And just a few examples of the erythema multiforme. There are three different patients, but if you see in each patient, the lesions are consistent. In the upper left, you've got somebody who's got some vesicles and boli forming in their lesion. On the right hand side, you can see the central crust.

So if we go back to our patient, because of the annular appearance of these lesions, several years ago a group of investigators termed this form of urticaria, urticaria multiforme. Well, it does look sort of like erythema multiforme, but truthfully it is just a variant on the theme of urticaria. These lesions are evanescent and they do not have the central change that you see in EM.

All right. So next patient is an infant who's had a rash involving the neck for a couple of weeks. Recently, the mother has noted that the area has been emitting an unpleasant odor. So first of all, if we think about what's going on with this patient, you have erythema in neck folds and I think we see this a lot in young infants, right? You've got not much neck and you've got overlapping skin folds. So those skin folds rub together, you can get some superficial erosion, and that is called intertrigo. But intertrigo can be secondarily infected, and in this case, what we're seeing is secondary infection with group a strep, which is what gave the unpleasant odor.

It is very common for the initial infection to be something like Candida. So if you have a patient within intertrigo, who has the rash persisting more than a few days, there's a fairly good chance that they have Candida secondary infection and you may wish to use nystatin or one of the [INAUDIBLE] for that. If you have a more persistent intertrigo, particularly one in which you're seeing lots of moisture and erosion, and that unpleasant odor becomes apparent, then treating for group a strep makes sense.

Now there are a couple of other things that you can do for intertrigo. In minor cases, you can use an absorbent powder which will absorb moisture and it also reduces friction between skin surfaces. Some people like to use a barrier preparation to reduce friction. But again, be aware of the persistent or worsening case of intertrigo. And just a couple more examples. The one on the right is kind of milder. The one on the left, similar to the patient we're seeing with lots of erosion, lots of weeping. That was a patient who had the malodor and was treated for secondary infection.

OK. Next patient is an 8-year-old who's had a several month history of scaling of the scalp. And you're seeing them in the office and the question comes up, OK, is this some form of tinea capitis and do I need to treat them with griseofulvin? So if we look at the physical findings, importantly there's been no history of alopecia, and we really don't see any there, so that would kind of move us away from tinea capitis, and I'd also draw your attention to the scale that you can see. We're going to give this a go over here. In those areas, that's thick concretions of scale adherent to the air shaft, which is very different than what you see in tinea capitis.

So let's just think about tinea capitis for a moment. So on the left is pretty typical clinical presentation. You get an area of alopecia and you have scale, but that scale is fine. It is not that thick concretion of scale and, occasionally, that scale can be much more widespread throughout the scalp as you see on the right. Well what we're seeing is, in fact, not tinea capitis. It's a condition that has this unfortunate misnomer name of tinea amiantacca which would make you think that it is fungal in nature, which it is not. It is a disorder that people don't really understand well, but it is characterized by those very physical findings we saw. Thick amounts of scale adherent to hairshafts without alopecia.

It's often seen in association with seborrheic dermatitis, atopic dermatitis, or even psoriasis. And the treatment can vary a little bit, depending upon the severity. The first step, and the easiest step, is to use a keratolytic shampoo like one that contains salicylic acid. And the idea would be if you can apply some of that to the affected area and leave it on for a period of time. Now how long is going to depend on the tolerance of the patient and probably their age. If you can leave it on 15 to 20 minutes to an hour or so, that will allow the salicylic acid an opportunity to work, then you shampoo the scalp with that same shampoo. And over the course of a couple of weeks, often mild cases of this will disappear and your therapy can become intermittent and only as needed.

If you have a more resistant form, and the photograph here would probably be an example of that, the salicylic acid may not do quite the job. So there is this product called P&S lotion. That stands for phenol and saline. And it's a little bit better at dissolving this keratotic debris. The problem is that it smells to high heaven. And although it is advised that you leave it on overnight, I've met few people who can tolerate that. So again, you might try the pretreatment for 15 minutes, or 45 minutes, or something like that, and then use your keratolytic shampoo to get rid of it.

OK. So we brought up the subject of tinea capitis and I want to go back to that for just a moment and talk about therapy for a second. So you realize, of course, that traditionally we've treated tinea capitis with griseofulvin at 20 milligrams per kilogram per day. It often takes eight weeks for that to resolve. It remains a good drug although there clearly are some treatment failures. And remember that terbinafine is now an alternative in treating tinea capitis. It's approved for use in children over the age of four and the dosing schedule I've provided for you here. And we often use selenium sulfide as an adjunct to therapy to try and kill surface fungal elements and reduce spread to other individuals. It's OK for folks to return to school once treatment has been begun and then often we'll see folks back in three or four weeks to determine how they've responded to therapy.

So I wanted to just present to you a dilemma that comes up, I think, with some frequency in treating tinea capitis. So let's say we have a six-year-old girl who weighs 20 kilos. So her dose of griseofulvin would be 400 milligrams per day. And let's say just for the moment that she prefers liquids rather than pills. And let's additionally add to this that the family has financial limitations. Well, if you use the suspension as you'll see by my little calculation there, a 300 ml now bottle of that griseofulvin costs nearly $300 and you will get 19 days of therapy for that girl. So that's going to be a potential problem.

You could substitute a tablet and crush that, but again, if the family has financial limitations, that's not going to be a great advantage. But the advantage is terbinafine tablets order generically, which are on the $4 list at all of the big places, Walmart, Target. And her dose would be 125 milligrams a day. So the family could get a pill cutter, split the pill, and she'd get a half tablet once a day which, if she could not swallow, she could crush and put into a tablespoon of yogurt or something similar.

So many of our patients have insurance and that's terrific. But in the event that they don't, think about terbinafine and there are certain advantages in that you may get away with four to six weeks of therapy with terbinafine rather than eight or more for griseofulvin. I didn't mention that there is a granular form of terbinafine that's designed for folks who can't swallow tablets. I could not find a price for that, but it is many hundreds of dollars for a one month supply.

All right. This is a little guy who we saw who had had a rash around the mouth and the nose for about two to three months. And it sort of started off inconspicuously enough, but was getting to be more problematic and was treated, as you can see, with hydrocortisone, desonide, nystatin, without benefit, and he came to see us. And so, to me, the part of the physical findings that I would take away here are the location of the eruption, so around the mouth, around the nose, and even around the eyes. And that that rash is composed of some erythematis papules and some pustules. But notably these things don't extend to the lateral face.

And then as we gather some past medical history we learn that he has asthma and he's being treated with an inhaled corticosteroid on a daily basis and albuterol as needed. So you probably are guessing from the peri-oral, peri-ocular, peri-nasal location of this, that this is something called periorificial dermatitis which is actually a quite common entity. And when it was first described, it was often in association with the use of topical corticosteroids that were a little bit too potent for the face. But there were clearly other precipitance in patients who hadn't used those steroids, but the location and the appearance is pretty classical.

And often we would treat this, if it was sort of severe like the case I presented, with an oral antibiotic much like we would treat acne. So we would use something like erythromycin for eight weeks or so, try to taper the topical corticosteroid, and ultimately remove that, and children got better really nicely. In milder cases, you can use a topical antibiotic such as metronidazole or erythromycin. Well, in our case, the twist on all of this is the fact that his periorificial dermatitis resulted probably from his use of the inhaled corticosteroid.

And this has been described in this report in pediatric dermatology which I've cited for you. So remember, one bit of advice for families who are using this is it's probably a good idea to wash the mask with some regularity, and to wash the face perhaps after an administered dose. Now this is not a common occurrence in folks who use inhaled corticosteroids, but it is certainly something we've seen fairly often. And so I'd encourage you to think about that washing after administration.

All right. Next is a 5-month-old who developed an itchy rash a couple of weeks ago. And as you look at the infant, there are erythematis papules that are kind of scattered on the trunk and the extremities, including on the hands, and feet, palms, and soles. So you might say, well, gosh, something like atopic dermatitis is certainly common. It is something that can give you a papular eruption at times, and in infants it's a generalized disorder, so it's often the chest, and back, and extremities that are involved.

But what I'd encourage you to think about as you look at these photographs is that involvement of the palms and soles in atopic dermatitis is unusual. And secondly, you're looking at a number of different papule sizes. Often in atopic dermatitis, if the eruption is papular, they're kind of consistently small papules, where this infant clearly has some that are larger. So taken together, those things make you wonder about the possibility of scabies. And remember that the infestation occurs, and then two to three weeks later, as the result of a hypersensitivity reaction, you start to develop itching and a papular eruption, also oftentimes with vesicles or even pustules.

So as we discussed, scabies is often generalized in infants. So you'll see the papules on the chest, back, extremities, and a key is looking at the palms and soles because that is often a tip off to the correct diagnosis. You may see papules there, often pustules. In older children and adolescents, the eruption become much more fluxual in its distribution. So interdigital spaces, as you see on the left hand side with the papules in the web, it may be axillae areola in women, waist in both genders, and another little pearl I think is, if you're examining a boy who you think has scabies, look south of the equator because papules or nodules on the penis and scrotum are very, very common.

Now much is made of burrows, and if you see a burrow, that is terrific because you're home free with respect to diagnosis. These will be several millimeters in length, they're kind of squiggly, and it's the exact site at which a mite is burrowing in the stratum corneum. The problem is that this is such an itchy condition that often the burrows become traumatized and you just don't get to see them clinically. So often the diagnosis of scabies is pretty straightforward and you can embark on your treatment plan. If there is uncertainty, often we'll scrape, and as you can see in the upper right, we have a mite, and eggs, and here's the bad part, poop. Apologize before lunch.

OK. So the treatment of scabies is, as you all know, is Permethrin 5% cream. It's been that way for decades and there seems to be relatively little resistance amongst mites to this agent, although some recent treatment failures have been described. As you know, it goes from the neck to the tippy toes into every nook and cranny and is left on overnight. And in infants, because the head often is infested, that area should be treated as well. And there are some folks who advocate that even in young children and in the elderly, we should be treating the head and face. There's not lots of documented science on that, but it is something that folks are recommending.

Because household contacts can be infested, but have not yet developed symptoms, it probably is prudent to treat them at the time the index case gets their first treatment. Failing to do so often results in cycles of infestation and reinfestation. It has traditionally been stated that we ought to launder all of the bedding and clothing, although there's pretty good evidence you can just throw everything into the dryer at high temperature for 10 minutes and that may be sufficient in getting rid of things, and that certainly is a bit easier than going through the laundering.

The index case should get a second treatment 7 to 10 days later because the product is not completely ovicidal. And you can advise the family that even with effective treatment, it may take two, three, four weeks until the itching resolves and the rash begins to disappear. They'll know that their treatment's been effective because they won't be seeing new lesions appearing. And if you need to control itching, you could certainly use some hydroxyzine or some topical corticosteroid.

So I want to make just a mention about resistant infestations which, while not common, clearly can occur, and the role of oral ivermectin in treating these. Now this drug is not approved by the FDA for the treatment of scabies, but it is clearly effective in that regard. The caveats in children is that it shouldn't be used in those less than five because there are insufficient safety data and not in those less than 15 kilograms. It's really a challenge up here. And that's because of potential neurotoxicity. OK?

All right. So kind of in a related domain, a 7-year-old girl has been treated twice with Permethrin for head lice, and on examination you find eggs close to the scalp that you think may be viable. So the question is, what is your approach? So I wanted to make a statement or two about Permethrin, the 1% variety which is available without a prescription which we all use to treat head lice. There is no doubt that there is emerging an ongoing resistance to this agent and that makes treatment sometimes challenging.

But I think, oftentimes, the treatment failure may be because the product isn't used entirely properly. So the key points here are you need to shampoo the hair with a non-conditioning shampoo that does not contain silicone. If you use either of those, the Permethrin does not bind the hair shaft well and won't be effective. Now, I did a little bit of research on this and it's sort of hard to get a shampoo that is meeting those criteria. Something old school like plain old Prell is one example of a shampoo that will do the job. It needs to be left on 10 minutes by the clock and a second treatment is necessary, sort of in the 7 to 10 day realm, because the product clearly does not kill all eggs.

And the bits of advice that folks offer are nine, day nine, which is optimal from the lifecycle of the louse, but maybe not so optimal from families where it's hard to remember day nine, so I would say at least seven to 10 days. And then there are some others who advise a kind of three-step process, times 0, time seven days, times 13 to 14 days, or 15 days. OK. All right. Well, if Permethrin has truly failed, then what are your options? And I've kind of summarized those in this table and I would just point out a couple of things. If you practice in North Carolina, and if you have patients who have Medicaid, the two things that are approved are Ovide, that's number one, and Ulesfia, which is the last one, OK?

As you'll see, most of these products are prescription. The exception being LiceMD and that also turns out to be the least expensive of these. So remember, paying out-of-pocket, if you'll just look at Sklice, that's number two, that's ivermectin topically, that's the newest agent, $277. Now I will say that for many of these products, if you have internet access, you can get a coupon that will reduce the price and that may be suitable, but remember that for those who are paying out-of-pocket, it can sometimes be a challenge. And even insurers may not approve of all of these products, Sklice being one example. If you have true overall resistance, remember again that oral ivermectin, in the lower right, is affective in eradicating head lice with the same caveats that I mentioned in the treatment of scabies.

You may remember a number of years ago that occlusive therapies were sort of all the rage because they were not toxic, they were available to everyone. And I just thought I would share with you this study that is now a number of years old, but it's kind of interesting in that they embedded eggs and lice attached to hairs in a variety of these occlusive things. And if you look at Petrolatum, you'll find out that it turns out to be the best product for both killing lice and killing eggs. So if it comes to the fact that you need an occlusive therapy, that one would be the best and save the olive oil for your bruscetta.

OK. Well, the last part of the lice discussion is everything old is new again. So many years ago, I gave a talk that included a few comments about lice, and at that time, there were facilities, businesses, that had cropped up that would remove the lice from your hair. And those sort of fell out of favor, but they're experiencing something of a Renaissance and we have our own facility in Winston-Salem. It's called Pediatric Hair Solutions.

So they will either allow you to come to their facility or they will come to your home, and they use some kind of a treatment that usually employs lots of combing of the hair to physically remove the lice, and then either a topical therapy which probably does something like facilitates removal, or heat which I'll mention in a moment. The cost in Winston-Salem is a relative bargain. It's $85. I'm going to New York in a couple of weeks to give a talk and it's like $225 there, so feel fortunate that we have this available.

All right so one of the things these facilities might use is heat. And this is the second part of everything old is new again. So the upper black and white, not very pretty photograph, is about something called the Louse Buster which was discussed in a publication in 2006. And they have devised this hair dryer that would redirect the hot air to the scalp, not just to the hair, and the thought was that this would desiccate the lice and they would be killed.

So interestingly enough, as I was putting together this talk and looking at these facilities, at least one of the authors of that initial study was entrepreneurial enough to take that, and you see the second color photograph, that is the new version of the Louse Buster that is used in many of these facilities. And as it turns out, it's highly effective. If you look at the last row of the table in the parentheses, are the efficacy rates for the new form of the Louse Buster, approximately 90% lice dead and 100%, basically, of eggs. So again, this isn't for everyone, but it might be for some.

All right. Next is this child who developed a rash several weeks ago and it's kind of puzzling because it began on the proximal thigh and it spread to the leg, and there are no other associated symptoms. And then if you look at the bottom photograph, that is a close-up of the eruption. So tell me, do you think those papules are kind of your average rounded papule or not? Not. Would you buy that they're sort of flat-topped? OK. So that's a subtle physical finding, but it turns out to be something that real dermatologists pay attention to.

So in their language, in their vernacular, there is a term called lichenoid and that means flat-topped and sometimes scaling. And if you look at lichens which is the color photograph, they are indeed flat-topped. So the fact that these are fla-topped papules, and this very unusual linear distribution, leads to this diagnosis of lichen striatus. And hopefully once you've seen it, you'll never miss the diagnosis. It's pretty striking.

So it begins often with erythematous papules and they can become a little bit purplish in color. They often begin on an extremity, although they can occur anyplace, and they extend down that extremity and they carry with them some degree of post-inflammatory pigmentation. And the whole thing will ultimately resolve, though it may take many months to two or three years, before the repigmentation is complete. And although lots of folks apply topical corticosteroids to this erruption, it seems that it has no impact on its natural history, though it might be useful if the eruption were itchy.

So I just want to show you a couple more examples of lichen striatus on the abdomen. In the upper right, you can see extending down the thumb and, if it gets down to the nail bed as this child does, you can get some nail dystrophy. And then on the medial thigh with hypopigmentation and the purplish color. Now the question is, well, why this crazy pattern of an eruption? And the reason is because of things called Blaschko's Lines, which are not the same as dermatone. So these are the lines of cell migration from the neural crest to the peripheral skin during embryogenesis. And for heaven knows what reason, these lines often have a swirling arrangement. And you can see the pattern they take on the back and the pattern they take, for example, on the chest, and on the extremities are often very linear.

And there are a number of disorders that have this sort of distribution. And the distribution is because you have some cutaneous mosiasism. In the areas where the skin is normal, you'll have one color. Where it is abnormal, you have a different color. And if you look, for example on the right, in a condition called Hypomelanosis of Ito, the little bit darker color is that child's normal color, the white is abnormal. So you have two populations of cells with different pigmentary capabilities.

Now I'm going to show you a patient I saw two days ago. So this is a girl who came because she had these light spots on her back. And I think you can see that these are hypopigmented macules and do you recognize a pattern? So these things extended up to her arm and also laterally to her breast. And I think although this is a little bit more extensive than what we just saw, that distribution of lesions and the hypopigmentation is a form of lichen striatus.

All right. Next patient's a three-year-old who presents with low grade fever, sores in the mouth, and a rash on the hands. And that rash on the hands looks like vesicles and would somebody comment on the vesicles? Are they round? They're oval. OK. And they have a little rim of erythema. So when you put all of that together, of course, that's the very typical hand-foot-and-mouth disease that we have been used to seeing, usually caused by coxsackie virus A16, at least in the past. And it's typically been a generally mild illness, maybe a little bit of low grade fever, some discomfort if there is oral involvement, but the absolutely characteristic appearance of those vesicles being oval.

Well, unfortunately, things change. And as you're all probably aware, over the last two to three years, hand-foot-and-mouth disease has changed its sort of presentation and morphology, and that's probably because the coxsackie type responsible in some areas has changed. It now often is A6. And I've listed a couple of studies for your consideration, but this is one of them in which they have seven dermatology centers and they collected a number of patients who had this atypical hand-foot-and-mouth disease.

And the thing that I would just point out would be, one, the eruption in this disease is much more widespread than the typical hand-foot-and-mouth disease, and the morphology of lesions is quite different, and I'll point that out momentarily. So these are photographs from one of those reports. I think you'll notice that there's a whole lot of facial involvement, which we usually did not see. In the lower left, this erruption can be bullous, not vesicular. It still can involve the feet, as you see in the lower right, and in the upper right a curious thing can happen. You can get a collection of these little papules and vesicles that turns out mimicking something called eczema herpeticum, which is cutaneous HSV infection in children who have atopic dermatitis.

And that often is a common problem. So the two sort of left-hand photographs are eczema herpeticum. In the lower panel, you can see that there are individual vesicles and pustules, and when those rupture, they give you little punched out ulcers on the skin that can then crust over. And that pattern is remarkably similar to the upper right photograph which is from a patient who had a typical hand-foot-and-mouth disease. So the problem is when the patient presents, there often is some confusion, and because eczema herpeticum can be serious, patients may get admitted to the hospital and treated with acyclovir, which is perfectly reasonable. But just remember, that there is this atypical hand-foot-and-mouth disease that may mimic it.

All right. This is our last case and it's cleverly aligned with Dr. Patel's presentation. So this is an infant who I saw a number of years ago who came in because of this rash that was located only on the neck and the scalp, nowhere else. The infant was perfectly well. So I looked at the rash and I'm starting to struggle a bit because you say, well, gosh, that's round, so could that be hives? Well, why wouldn't it be all over the body? And, of course, these lesions were static, they weren't evanescent. Well, could it be tinea capitis? Well, I suppose it could be. Could it be tenia corporis? And then the mother bailed me out and she said, oh, I don't know if it's important, but I have mixed connective tissue disease.

So this is neonatal lupus erythematosus. And this is probably the most out there of the conditions I've presented today, but I've seen two cases in the last few months, so it does show up. And once you've seen it, you'll remember it forever. So as Dr. Patel mentioned, this is due to transplacental antibody passage and often the presentation is with skin disease in infants. So these are going to be erythematous [INAUDIBLE] annular lesions that have a predilection for the head, and particularly the area around the eyes, that's absolutely characteristic, without lesions elsewhere.

Couple more examples of this. The skin lesions can be present at birth or they may show up in the first weeks of life. As the antibodies resolve, the eruption goes away, so that often by six to seven months, there are no additional skin lesions. And infants, as Dr. Patel mentioned, can have heart block which often is detected in utero, but if not, you would certainly, in an infant who has skin disease, think about an electrocardiogram, because they can have thrombocytopenia. You might get a CBC diff in platelets. They can occasionally have renal involvement, so an CMP in your analysis is indicated. The treatment of the skin part of neonatal lupus is sun avoidance as much as possible, use of sunscreens, and a mild topical steroid for the individual lesions, recognizing again that these are going to resolve.

And I'm just going to present the two cases that I saw over the past several months. And here's the deal. They're sort of atypical. They don't exactly look like all of those classic photographs, but the infant on the left had annular erythematist to slightly violatious patches limited around the eyes. The infant on the left had these roughly annular lesions in the scalp. So again, I showed you classic photographs, these are less classic, but annular lesions, head or face, neonate, think neonatal lupus. And with that I'm going to quit and thank you so much for your attention.