In the News:

Study Shows That VisualDx Can Reduce Diagnostic Error for Cellulitis, Preventing Unnecessary Hospitalization

Cellulitis is a common bacterial infection of the dermis and subcutaneous tissue that results in significant morbidity and substantial health care costs in the US and other countries:

- In the US in 2004, approximately 240,000 adults were admitted for cellulitis at a cost of more than $3.7 billion.¹
- In the UK, cellulitis is responsible for over 400,000 bed days annually in the English National Health Service (NHS) at a cost of £96 million ($154 million).²

Distinguishing cellulitis from other conditions with similar presentations can be challenging, and guidelines in this diagnostic area are lacking. Current research has found that cellulitis is diagnosed erroneously in approximately one-third of all cases,¹⁻³ resulting in unnecessary hospitalization and administration of parenteral antibiotics and increasing patient risk for:

- Nosocomial infection
- Medication reaction to IV antibiotics
- Delay to treatment for non-cellulitis (and often non-infectious) condition
- Work days lost

A recent study published in Dermatology Online Journal demonstrates that use of VisualDx by admitting physicians can improve diagnostic accuracy for cases of presumptive cellulitis. In a study of 145 patients hospitalized for cellulitis, 41 (28%) were subsequently identified by either dermatology or infectious disease specialists as misdiagnosed – with stasis dermatitis being the condition most commonly mistaken for cellulitis (37%), followed by (all 5%) trauma-related inflammation, deep vein thrombosis, non-specific dermatitis, and thrombophlebitis.

Compared to the differential diagnosis initially generated by the admitting physician, a differential diagnosis developed for each of the 41 patients with the use of VisualDx included

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What’s Your Diagnosis?

A 68-year-old Vietnam veteran presented to his primary care physician complaining of a new skin lesion. The lesion was asymptomatic. The patient confided that he had severe sunburns while in Southeast Asia years ago. On cutaneous exam there was a dark, scaly plaque on his upper back with surrounding sun-damaged skin.

(Use VisualDx to help make a diagnosis. Check your diagnosis on the back page.)

From the Editor-in-Chief:

Diagnosing Hair Diseases

Hair and scalp appearance is important in defining who a person is, including gender identification, racial and ethnic identification, social identification, and even status and role in the community. When a patient is seeking care or advice for a hair or scalp problem from a physician, the patient is seeing it as a medical problem. Physicians must be familiar with the common disorders of the hair and scalp and have a plan to decide when a biopsy is

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In the News

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the correct non-cellulitis diagnosis 64% of the time vs. 14% without VisualDx.1 This is important, as cognitive studies have shown that inclusion of the correct diagnosis in the differential within the first 6 minutes of cognitive processing greatly increases the likelihood of arriving at the correct diagnosis.2

VisualDx brings specialist knowledge – including the differential diagnosis; process and the variants and spectrum of disease presentation – around dermatologic, infectious, and drug-induced conditions. Other recent studies have reinforced the idea that application of specialist knowledge in suspected cases of cellulitis results in better diagnostic accuracy and fewer admissions for conventional cellulitis treatment.

- Levell et al. evaluated 635 patients referred to dermatologists from primary care and hospital physicians for presumptive severe leg cellulitis; 33% were re-diagnosed with a different condition (most commonly eczema, lymphedema, and lipodermatosclerosis) not requiring admission.3
- Of the 21 primary service diagnoses of “cellulitis” documented by Bauer and Maroon, 33% were re-diagnosed upon dermatology consultation (2 as herpes simplex virus, 4 as dermatitis, and 1 as a drug eruption).4

These studies highlight the challenge as well as the necessity of differentiating cellulitis from other conditions with similar clinical presentations. Failing to make the distinction can incur steep costs all around. Patients risk potential exposure to hospital-acquired infections, adverse medication reactions, delay to proper treatment of a non-cellulitis condition, and missed days at work. Hospitals with few open beds risk filling them with unnecessary admissions. The financial burden of inpatient treatment is borne by the insurer/payer. And bacterial resistance continues to grow with unnecessary administration of antibiotics.

These studies also show that specialist-based interventions early in the diagnostic workflow – including decision support such as VisualDx – may reduce misdiagnosis and its associated risks, resulting in improved patient care, better outcomes, and more efficient healthcare management.

References


From the Editor-in-Chief:

Diagnosing Hair Diseases
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necessary and useful, and which laboratory tests will aid them in planning therapies and giving useful advice.

Mary G. Mercurio, MD, is the perfect leader of the new VisualDx content addressing hair and scalp disease. She has a broad medical background and a precise and orderly approach to differential diagnosis in her extensive clinical practice, which includes many patients with alopecia. The VisualDx Hair & Scalp clinical
scenario is an extraordinary vehicle for demonstrating the variability of what seems to be a single disorder – even simple conditions with defined causes, like dermatophyte infection, have broad clinical presentations. Diseases that may be self-limited are very important to diagnose so that patients can be counseled appropriately. And distinguishing alopecias that scar from those that do not is an essential branching point for diagnosis and treatment approaches. With a wide variety of diagnostic tests – hair plucks and hair root examination, Wood lamp examination, hair shaft microscopy, biopsies with transverse and longitudinal sections, autoimmune testing, dermatophyte cultures, and very specialized biochemical tests and genetic tests – diagnosing hair diseases can seem daunting. The approach by Dr. Mercurio and her team helps remove the mysteries of the diagnosis of alopecia and other hair and scalp diseases, alleviating the anxiety of both the patient and the care provider when these patients present.

Thank you, Dr. Mercurio, for a job well done!

Sincerely,
Lowell A. Goldsmith, Editor-in-Chief

About From the Editor-in-Chief
This regular feature will explore issues of education and patient care and discuss how to be the best professionals for our patients.
Meet
Dr. Mary Gail Mercurio

Mary Gail Mercurio, MD, is a valued member of the Logical Images Editorial Team and editor of the recently added Hair & Scalp clinical content in VisualDx, which covers non-scarring and scarring alopecias, diseases associated with hair shaft defects, infectious conditions affecting the scalp or hair, and benign and malignant scalp lesions.

An Associate Professor of Dermatology and Obstetrics & Gynecology at the University of Rochester, her joint appointment stems from her clinical and research interests in women's health, with a clinical focus on dermatologic diseases unique to women including female pattern hair loss and other types of alopecia, hirsutism, dermatoses of pregnancy, and vulvar diseases. She is also the Program Director of Dermatology Residency.

Following in the footsteps of several family members, Dr. Mercurio studied mechanical engineering as an undergraduate at Cornell University. However, she always had a career in medicine in the back of her mind, and a year spent working as an engineer at Eastman Kodak solidified her desire to pursue a career in medicine. She applied and was accepted to a medical school "just down the road" at the University of Rochester.

After an internship at the University of Rochester, Dr. Mercurio trained as a resident in dermatology at University Hospitals of Cleveland. She notes, "I had incredible mentoring from David Bickers, MD, and Boni Elewski, MD, both of whom included me in a variety of scholarly pursuits and encouraged me to pursue an academic career. I first became interested in hair loss as a fledgling faculty member at Columbia University where my Chair, Dr. Bickers, encouraged me to develop a specialization in dermatology."

A Women's Dermatologic Society Mentorship Grant provided Dr. Mercurio the opportunity to work with Vera Price, MD, at the University of California at San Francisco. A very positive experience, her hair practice has continued to grow. She has directed a forum at the annual American Academy of Dermatology meeting – Hair Loss in Women – for the last several years. "I enjoy treating patients with hair loss as well as teaching about it," says Dr. Mercurio.

In addition to the Hair & Scalp content, Dr. Mercurio is editor of one of the very first VisualDx clinical scenarios in adult skin – Female Anogenital – with her Obstetrics & Gynecology colleague David Foster, MD, and has shared many images from her personal collection.

Outside of medicine Dr. Mercurio enjoys spending time with her family including her two young children Andrew and Anna. In the rare personal time she carves out for herself, she enjoys practicing Vinyasa yoga, cooking, and gardening.

About Expert Contributors

Logical Images relies on its worldwide medical editorial board of practicing physician scholars to keep our clinical content objective, accurate, and current. Our ever-expanding team of over 100 physician experts writes, edits, consults, authenticates, and reviews to bring you authoritative medical information in concert with comprehensive visuals.

This regular feature spotlights Expert Contributors from various medical and scientific research fields, so you can get to know us better.

Stories from the Field:

A VisualDx International Case

From Dr. Laura Foudy, who is currently volunteering as part of a medical mission in the Republic of Congo:

"I downloaded VisualDx when I was in residency and found it a useful tool since it has pictures ranging from mild to worst-case scenarios, as well as in different skin tones. I am now working in Impfondo, Republic of Congo. The most notable occasion occurred several weeks ago. We had a young 20-something-year-old female patient with known HIV and TB present with dysphagia, headache, fever, and a generalized maculopapular-vesicular rash, more prominent on the extremities and face than on the torso. There have been cases of monkeypox here before, but I had never seen it. I used VisualDx to look up a differential for the patient’s rash, as well as specifically monkeypox. Interestingly enough, the overview mentioned several outbreaks of monkeypox in the Likouala region of the Republic of Congo, which is where I am practicing. It is common here for people to eat monkey or Gambian rat, and the patient’s family reported eating the former. We reported our suspicions to the local health department, and someone was sent to obtain a sample for testing. It came back positive for monkeypox. Unfortunately, the patient died. It is unclear the exact cause given her many co-morbidities, but I suspect a component of dehydration (she couldn’t swallow due to pain, we had a hard time keeping IV fluids running, and I don’t believe she got enough by nasogastric tube) along with the HIV, monkeypox, and TB. So far she is our only case this year.

There was another patient who presented after her whose rash was somewhat similar, who was also HIV positive, but the papules were a little more umbilicated. We treated her for cutaneous cryptococcus and she got better. VisualDx also helped in that case, as the skin lesions of cutaneous cryptococcus and molluscum are very similar. The pictures were nice for comparison. I enjoy the program.”

– Laura Foudy, MD

See More Images of Monkeypox

Monkeypox is a rare zoonotic Orthopoxvirus infection that mostly occurs in the rainforest areas of Central and West Africa, where the disease affects people who have hunted or eaten squirrels and other infected mammals.

Look up Monkeypox in VisualDx for additional images as well as clinical information.

See More Stories from the Field

Visit our VisualDx Community on LinkedIn for more stories and to share your stories with other VisualDx users!
VHA Takes VisualDx Nationwide

VisualDx was selected by the Department of Veterans Affairs as a new clinician resource to be deployed nationally throughout the Veterans Health Administration’s (VHA) medical centers and clinics, which treat more than 5.5 million veterans on an annual basis.

With its ability to assist primary care providers in the identification, diagnosis, and management of common skin disorders, VisualDx expands the level of care, treatment capability, and patient education delivered during the primary care visit.

VisualDx Can Help:

• Assist in training primary care providers in the evaluation, diagnosis, and management of common conditions.
• Aid primary care providers in the recognition and treatment of frequent skin ailments.
• Educate patients regarding the natural history and proper treatment of their disorders.

VHA clinicians have immediate point-of-care access to this diagnostic and educational resource via both Web and mobile devices. If you are a VHA clinician, simply go to www.visualdx.com and click the Login button to launch VisualDx at your institution.

“We are proud that our product supports the care of the men and women who bravely serve in our armed forces. By implementing health IT resources like VisualDx, the VHA continues to be a leader in our nation’s movement to improve quality and care throughout our health system.” – Richard Cohan, CEO of Logical Images, Inc.

VisualDx has been nationally deployed throughout the VHA with the assistance of the Veterans Affairs Library Network (VALNET).

Snapshot on Images:

Growing International Network of Dedicated Image Contributors

Logical Images continues to expand our international network of image contributors. Images and case data continue to be submitted by experts from around the world. Images are captured digitally, uploaded, annotated then integrated into VisualDx.

These contributions include diseases of regional and geographic importance as well as common disorders in a variety of ethnicities and skin types. As we continue to focus on representing variation across all skin types, nationalities, stages of severity and progression – establishing these relationships with experts abroad is critical.

Recent International Acquisitions

Common conditions: A. Dermographism (China), B. Contact dermatitis to henna (Pakistan), and C. Rash resulting from a reaction to eating rice (Pakistan)

Diseases of regional significance: D. Podoconiosis - Non-Filarial Elephantiasis (Rwanda), E. Tungiasis (Kenya), and F. Secondary syphilis (Colombia)

Logical Images Editorial Board Commendations

Logical Images Editorial Board members are dedicated to enhancing patient care through professional service, leadership, and commitment to advancing standards in clinical practice, medical education, and research. Most recently, the following board members were recognized by the International League of Dermatological Societies and by William D. James, MD, FAAD, president of the American Academy of Dermatology.

International League of Dermatological Societies Certificate of Appreciation 2010
In recognition of lifelong dedication to the study of itch –
• Jeffrey D. Bernhard, MD, FRCP Edin, FAAD – Senior Consulting Dermatology Editor

American Academy of Dermatology 2011 Presidential Citations
In recognition of collaborative efforts with the Academy to serve on the Expert Panel to Guide the Museum Exhibit –
• Society for Investigative Dermatology: Lowell A. Goldsmith, MD, MPH, FAAD – Editor-in-Chief, VisualDx

In Recognition of Help in Making the Teledermatology Pilot Program Launch a Success
• April W. Armstrong, MD, FAAD – Dermatology Editor
• Noah A. Craft, MD, PhD, DTM&H, FAAD – Tropical, International, and Humanitarian Medicine Editor
Who Hasn’t Been Challenged by a Derm Complaint?

**Tips for Building a Better Differential.**

Searching for a diagnosis in VisualDx is easy. But what happens when a patient presents with a skin complaint or visual finding or symptom, and you don’t have a specific diagnosis in mind?

We hear many stories of VisualDx coming to the rescue in difficult cases. Building a patient-specific differential is easy, but how do you avoid the frustration of too many results? These tips will help you create a better differential – in only a minute or two.

**Four Tips to Building a Better Differential in VisualDx:**

1. **Choose the Right Place to Start.**

   The Differential Builder capability in VisualDx is organized by clinical scenario. Getting to the best differential starts with selecting the best clinical scenario. Take a quick look at all of the options. For example, if your patient has a fever and rash, start with Fever & Rash instead of Adult Rash.

2. **Enter the Best Findings.**

   Usually, entering just 3 or 4 findings will narrow your differential to a manageable list of possibilities. We find it’s best to start with Lesion Type – a very important component of building any differential – and Body Location / Distribution. Then, select Key Findings, which are tailored to the clinical scenario. Nearly all of the clinical scenarios in VisualDx display buttons for entering these findings at the top left of the Differential Builder page: eg, Add Lesion Type, Add Body Location, and Add Key Findings.

3. **Refine the Search.**

   There are over 25,000 finding-to-diagnosis relationships in VisualDx and many different types of findings. When building a differential you can add, eg, patient medications, patient occupation, and geographical location. Is your patient recently back from Afghanistan? Choose the International Travel clinical scenario and enter Afghanistan.

4. **Understand the Results.**

   We’ve provided tips above on creating your differential. Interpreting the results is just as important! You’ve entered findings, and the VisualDx Differential Builder has returned a set of results (diagnoses matching 1 or more of the findings entered). What now?

   Start with the top group, which shows diagnoses matching the maximum number of findings entered. If you don’t see a good match in this group scroll down to see other groups.

   **Note:** the number of matching findings in each set is the same, but the findings can vary: a diagnosis matching 3 of 4 findings might match to findings A, B, and C or to findings B, C, and D, or to findings A, C, and D.

   Don’t forget, you can always add more findings or remove findings using the tools along the left side of the screen.

   **Hint**

   To see, eg, which 3 of the 4 findings you’ve entered match a particular diagnosis, place the cursor over the diagnosis. A pop-up will appear listing the specific findings matches.

   And with a few clicks you’ve built a custom differential based on your patients findings! View more images by clicking on the picture, or click on the diagnosis name to read about the condition.

   **Hint**

   Oh, here’s one last hint that can really save some time. Think you chose the wrong clinical scenario? No need to start over – instead, just click the Change Clinical Scenario link on the left side of the Differential Builder page to switch to another scenario while retaining the findings you’ve already entered.

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**Upcoming Events**

**Come See Us!**

Art Papier, MD will be presenting at the 2011 Physician-Computer Connection Symposium (Ojai, CA) July 15, 2011 8:00am – 9:00am. Papier’s presentation, *Smart Doc on My Shoulder*, will discuss how mobile is impacting diagnostics.

**VisualDx Snapshots**

Attend one of our 20 minute info sessions to learn more!

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**Coming Soon: Dermatology Education Series**

These educational sessions will feature presentations by the VisualDx senior editorial board including Lowell A. Goldsmith, MD, MPH; Art Papier, MD; Noah Craft, MD, PhD, DTM&H; and Jeffrey Bernhard, MD, FRCP Edin. More information to come in the next issue of Zoom.
Have an Android Device? Get VisualDx Mobile Now

The VisualDx Mobile Android app has the same great functionality as the Web and Apple versions of the system including the Look Up a Diagnosis and Differential Builder capabilities as well as the system’s essential and unique asset, a database of thousands of medical images. However, the Android app includes some new enhancements to the Differential Builder interface.

The redesigned interface for building a differential diagnosis in the Android app is a four-step process that guides the user through adding patient symptoms and signs before displaying a list of diagnoses. The end result is a much more refined and relevant list of diagnoses to aid the clinician in accurately diagnosing.

If you currently access VisualDx through your institution, go to the home page of VisualDx at your institution and click Get VisualDx Mobile Free to request your username and password. Then you can download the app from the Market.

VisualDx Image Count Now Over 20,000

Now VisualDx includes over 20,000 medical images depicting variation in disease presentation for over 1,000 visually presenting diagnoses. The new Hair & Scalp clinical scenario contains over 900 new images. In addition, many new images were added to the Adult Rash and Adult Growth or Lesion clinical scenarios.

The Hair & Scalp clinical scenario covers over 75 diagnoses and should be used to evaluate patients with non-scarring and scarring alopecias, diseases associated with hair shaft defects and other abnormalities, infectious conditions affecting the scalp or hair, and benign or malignant scalp lesions.

To see how VisualDx is being used at the point of care click here.

Customers Starting to See VisualDx Results in UpToDate

We have had a great response to the integration of VisualDx results in UpToDate searches with a good portion of VisualDx customers already providing this capability to their clinical staff. This integration streamlines the login and search process for clinicians, giving them one-click access to clinical and diagnostic support – including the unique capability to see the differential as they enter patient findings in the VisualDx Differential Builder.

Current subscribers to both VisualDx and UpToDate can contact their account managers to get integrated. For those who are not currently VisualDx subscribers, you can sign up for a free 90-trial of VisualDx. Take advantage of this opportunity to provide added clinical and educational value to your clinicians’ UpToDate searches.

Simplify accessibility with single sign-on and one-click search of these two expert resources. Sign up today, contact: dreinhart@logicalimages.com

Have suggestions for new content? Need tips from other users? Want to be the first to hear about new features?

Be a part of the VisualDx Community on LinkedIn.

Join our group

The correct diagnosis for ‘What’s Your Diagnosis?’ on the front page is Seborrhoeic Keratosis, found in the Adult Growth or Lesion clinical scenario (as well as other clinical scenarios).

Seborrhoeic keratoses are extremely common, benign growths of the epidermal component of the skin. Seborrhoeic keratoses increase in number as patients age, and sometimes occur in the hundreds. Some patients will only have one or a few seborrhoeic keratoses.

Solitary new pigmented lesions in adults are always a concern, as melanoma is in the differential of any pigmented lesion. Dermatologists frequently receive consultations to ‘rule out’ skin cancer in patients with obvious seborrhoeic keratoses. By knowing the features of seborrhoeic keratoses and the spectrum of presentation, clinicians can become more comfortable diagnosing seborrhoeic keratoses as well as knowing which lesions to refer for further evaluation.

Seborrhoeic keratoses have a coarse, waxy scale that can be removed to show a raw, moist base. Individual lesions grow rapidly and reach a static size without further growth. Close examination with a magnifying device such as a magnifying lens or an episcop can show the plug-like structure that is the gross manifestation of the microscopic horn cyst. Seborrhoeic keratoses can be pink, skin-colored, or yellow-brown to brownish-black. These lesions often have a ‘stuck-on’ appearance. Pigmentation may be variable within a single lesion. The surface may appear wart-like. Lesions are usually well circumscribed. They may occur on any body site, save for the palms, soles, and mucous membranes.

The differential of a solitary scaly plaque includes squamous cell carcinoma, superficial basal cell carcinoma, psoriasis, and even tinea corporis. Tinea corporis and psoriasis tend to have a whiter, finer scale than squamous cell carcinoma, superficial basal cell carcinoma or seborrhoeic keratosis. The differential of a superficially pigmented seborrhoeic keratosis is melanoma.

By studying the features of multiple melanomas and seborrhoeic keratoses, you can begin to appreciate the typical features of each lesion. Lesions that are ambiguous can always be referred, but by knowing the classic features listed above you can avoid an unnecessary referral for your patient.

Explanation: By selecting the Adult Growth or Lesion (or Elder Adult Growth or Lesion) clinical scenario and entering patient findings (scaly plaque, upper back, military occupation), the clinician can quickly create a patient-relevant visual differential. Although not all of the clues are relevant (ie, some are coincidental), VisualDx sorts Seborrhoeic Keratosis toward the top of the list, prompting the physician to consider the diagnosis.