



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

Telemedicine for inpatient dermatology consultations in response to the COVID-19 pandemic



To the Editor: Coronavirus disease 2019 (COVID-19) caused by novel coronavirus severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has reached pandemic status. As of April 16, 2020, there were 632,548 cases and 31,071 deaths attributed to COVID-19 in the United States (Fig 1).¹

Hospital-based dermatology is invaluable in the assessment and treatment of life-threatening dermatologic disease by rapidly diagnosing conditions such as toxic epidermal necrolysis and purpura fulminans.² Hospital-based dermatology is also instrumental in the diagnosis and management of morbid conditions such as neutrophilic dermatoses, vasculitis, adverse reactions to chemotherapy, and other diseases that complicate and extend hospitalizations.³ Inpatient dermatology services will continue to provide impactful care throughout the COVID-19 crisis with a particular need to help allocate scarce resources.

Hospital bed space, isolation rooms, and equipment is now and will be limited during this pandemic, and dermatologists will play an important role in triaging and identifying conditions, such as varicella-zoster mimics, that can be safely managed outside of isolation rooms or pseudocellulitis that can be managed outside of the hospital setting. However, proper protocols and safety

measures are necessary to protect the health of patients, trainees, consultants, and family members.

Telemedicine has already begun to revolutionize how we provide care to patients. Outpatient teledermatology services have the potential to increase access to dermatology care and to address health care disparities for underserved urban and rural populations.⁴ Inpatient teledermatology is emerging as a safe and effective option as well.⁵ Dermatologists are poised to use teledermatology to increase access to dermatologic care for hospitalized patients, reduce the risk of infection of patients, trainees, and staff, and reduce the use of precious resources such as personal protective equipment and medical supplies.

Here we provide a practical algorithm to implement triaging telemedicine consults within multiple hospital settings in the context of the ongoing COVID-19 pandemic (Fig 2). These guidelines may evolve as data on COVID-19 transmission improve, testing becomes faster, and improved telemedicine platforms emerge. However, given the state of our current crisis, implementing guidelines in the interest of public health is imperative. This algorithm will maintain access to inpatient dermatologic care, reduce patient and provider exposure to COVID-19, and decrease unnecessary use of personal protective equipment. Given the current paucity of data, the following goals are based on expert consensus within the Society of Dermatology Hospitalists and have been adopted by a plurality of member institutions within this society. The goals are to:

Cumulative total number of COVID-19 cases in the United States by report date, January 12, 2020 to April 15, 2020, at 4pm ET (n=632,548)*†

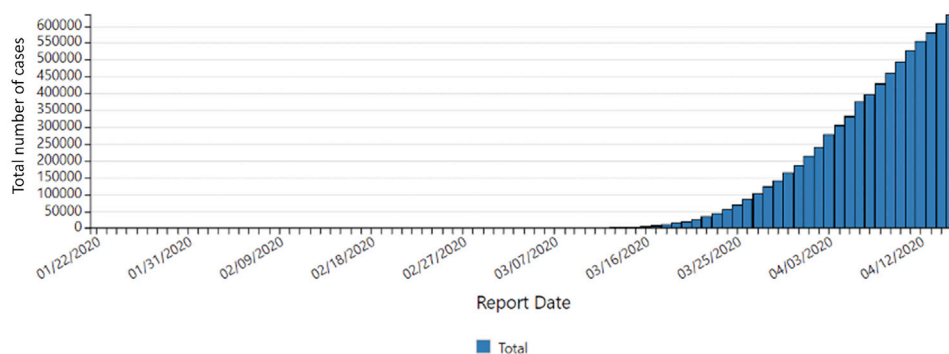


Fig 1. Cumulative total number of COVID-19 cases in the United States through April 15, 2020.

*On March 24, 2020 the CDC updated the data included in this figure to include estimated illness onset date. †CDC's numbers may not represent all cases in the US now that US states and territories are testing and reporting their COVID-19 cases. Source: Centers for Disease Control and Prevention at <https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html>.

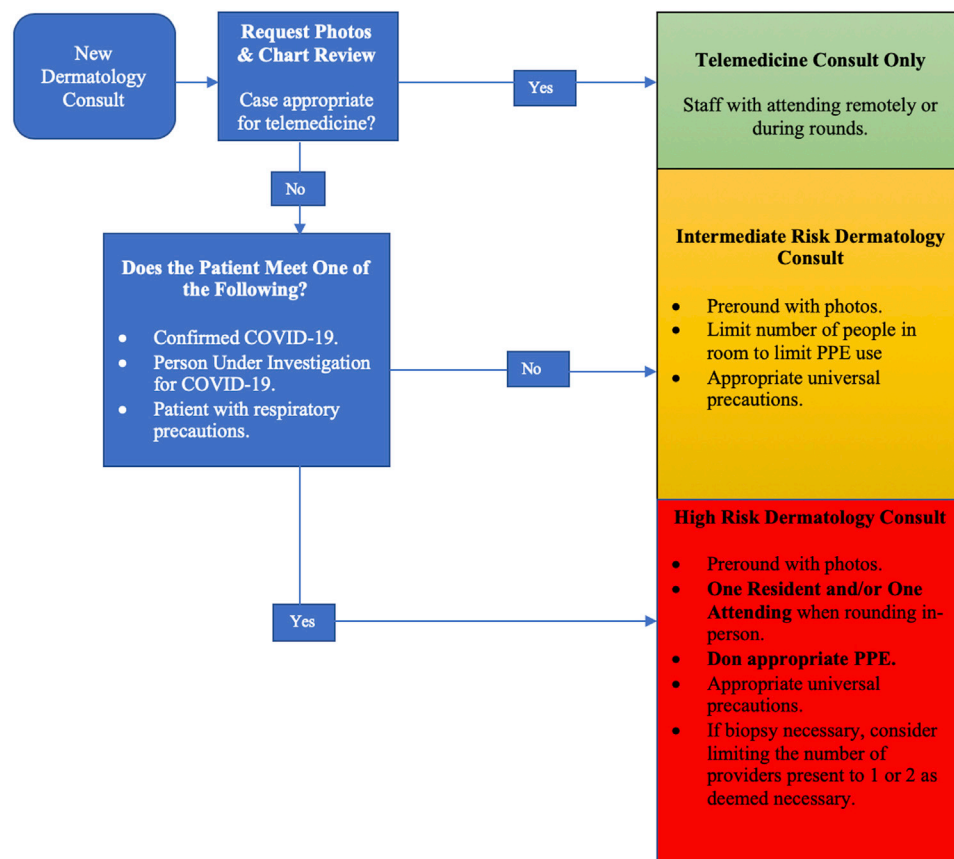


Fig 2. Inpatient dermatology consult decision-making algorithm. *PPE*, Personal protective equipment.

1. Prioritize the use of telemedicine consultation to minimize risk of COVID-19 exposure to patients and consulting dermatologists.
2. Identify patients who are at high risk for exposing consulting dermatologists to COVID-19.
3. Limit the use of resources for low-risk in-person dermatology consults.
4. Provide a framework for predominantly outpatient dermatologists to use in the event that they are required to staff inpatient dermatology consultations.

This algorithm is a logical way to implement triaging telemedicine consults within multiple hospital settings while acknowledging that challenges exist. Institutional limitations may include access to Health Insurance Portability and Accountability Act-compliant photo sharing, video conferencing, or electronic medical records. In addition, as resources and medical staff become more limited, hospital-based dermatologists and trainees may be conscripted to other facets of disaster relief. While this has been publicized and debated within the specialty society, we believe it is of critical importance to provide this

algorithm to all dermatologists who may be providing consults during this unprecedented time.

We hope that these recommendations help to ensure effective, safe, and efficient dermatologic care for hospitalized patients in the face of a global crisis. Please contact us for any questions. Any of our authors would be glad to share their institution-specific guidelines and memoranda to help draft your own.

John Trinidad, MD, MPH,^a Daniela Kroshinsky, MD, MPH,^b Benjamin H. Kaffenberger, MD,^a and Nathan W. Rojek, MD^c

From the Division of Dermatology, Department of Internal Medicine, Ohio State University Wexner Medical Center, Columbus, Ohio^a; the Department of Dermatology, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts^b; and the Department of Dermatology, University of California, Irvine, Irvine, California.^c

Funding sources: None.

Conflicts of interest: None disclosed.

IRB approval status: Not applicable.

Reprints not available from the authors.

Correspondence to: Nathan W. Rojek, MD, Department of Dermatology, University of California, Irvine, 118 Med Surg 1, Irvine, CA 92697-2400

E-mail: nrojek@uci.edu

REFERENCES

1. Centers for Disease Control and Prevention. Coronavirus Disease 2019 (COVID-19), Cases, Data, & Surveillance. Cases of Coronavirus Disease (COVID-19) in the U.S. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html>. Accessed April 16, 2020.
2. Weinkle A, Pettit C, Jani A, et al. Distinguishing Stevens-Johnson syndrome/toxic epidermal necrolysis from clinical mimickers during inpatient dermatologic consultation—a retrospective chart review. *J Am Acad Dermatol*. 2019; 81(3):749-757.
3. Haynes D, Hammer P, Malachowski SJ, et al. Characterisation and diagnosis of ulcers in inpatient dermatology consultation services: a multi-centre study. *Int Wound J*. 2019;16(6):1440-1444.
4. Wang RF, Trinidad J, Lawrence J, et al. Improved patient access and outcomes with the integration of an eConsult program (tele-dermatology) within a large academic medical center. *J Am Acad Dermatol*. 2020. <https://doi.org/10.1016/j.jaad.2019.10.053>.
5. Korman AM, Kroshinsky D, Raff AB, et al. A survey-based study of diagnostic and treatment concordance in standardized cases of cellulitis and pseudocellulitis via teledermatology. *J Am Acad Dermatol*. 2020;82(5):1221-1223.
<https://doi.org/10.1016/j.jaad.2020.04.096>