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.

The American Academy of Dermatology COVID-19 registry: Crowdsourcing dermatology in the age of COVID-19

Esther E. Freeman, MD, PhD,[a,b] Devon E. McMahon, BA,[a] Matthew E. Fitzgerald, DrPH,[c] Lindy P. Fox, MD,[d] Misha Rosenbach, MD,[e] Junko Takeshita, MD, PhD, MSCE,[e] Lars E. French, MD,[f] Bruce H. Thiers, MD,[c] and George J. Hruza, MD, MBA[c]

Boston, Massachusetts; Schaumburg, Illinois; San Francisco, California; Philadelphia, Pennsylvania; and Munich, Germany

There have been increasing reports of dermatologic manifestations of COVID-19. The first case series of dermatologic manifestations included 18 Italian patients with erythematous, urticarial, and vesicular rashes, often on the trunk.[1] Other reports include drug hypersensitivity,[2] urticaria,[2] a petechial rash mimicking dengue,[3] and acroischemia.[4]

It is important to further characterize dermatologic manifestations of COVID-19 to understand the relationship between the virus and skin and to determine whether cutaneous manifestations of COVID-19 may assist with early disease detection. To date, collecting cases of dermatologic manifestations of COVID-19 has been challenging given their relative infrequency and the rapid spread of COVID-19. Dermatologists are relying on informal networks, including social media, to share cutaneous manifestations of the disease. To rapidly and centrally collate these cases from a global network and inform colleagues on the front lines combatting the virus, the American Academy of Dermatology (AAD) COVID-19 Task Force has launched an online COVID-19 dermatology registry. This registry was inspired by a similar registry created by the COVID-19 Global Rheumatology Alliance.[5]

The registry's primary purpose is to rapidly collect COVID-19 cutaneous manifestations to enable prompt dissemination of the findings to the dermatology community and front-line health care workers. Given early reports of COVID-19 disparities across racial and socioeconomic groups in the United States, we encourage submission of COVID-19 cases across all ages, races, and socioeconomic statuses. A secondary objective is to report how COVID-19 affects patients with pre-existing dermatologic conditions, particularly those receiving immunosuppressive therapies. We expect that these results will generate ideas for further epidemiologic studies on COVID-19 in dermatology.

The registry is available online through the AAD website at www.aad.org/covidregistry. The International League of Dermatological Societies is collaborating with the AAD on this registry with the aim of extending its reach internationally. Cases can be entered by any health care worker, including nondermatologists and non–AAD members, from around the world. Data entry takes 5 to 7 minutes and requires no patient protected health information. Patient demographics, new-onset dermatologic conditions in the setting of COVID-19, dermatologic and medical history, and the patient's COVID-19

From the Department of Dermatology, Massachusetts General Hospital, Harvard Medical School, Boston[a]; Medical Practice Evaluation Center, Mongan Institute, Massachusetts General Hospital, Harvard Medical School, Boston[b]; American Academy of Dermatology, Schaumburg[c]; Department of Dermatology, University of California—San Francisco[d]; Department of Dermatology, University of Pennsylvania, Philadelphia[e]; and Department of Dermatology, University Hospital, Munich University of Ludwig Maximilian.[f]

Funding sources: None.

Disclosure: Drs Freeman, Fox, Rosenbach, Takeshita, and Hruza are part of the American Academy of Dermatology COVID-19 Ad Hoc Task Force. Dr French is president of the International League of Dermatological Societies. Dr Thiers is the President of the American Academy of Dermatology. Devon McMahon and Matthew Fitzgerald have no conflicts of interest to declare.

Accepted for publication April 11, 2020.

Reprints not available from the authors.

Correspondence to: Esther Freeman, MD, PhD, Massachusetts General Hospital, 55 Fruit St, Boston, MA 02114. E-mail: efreeman@mgh.harvard.edu.

Published online April 17, 2020.

J Am Acad Dermatol 2020;83:509-10.

0190-9622/$36.00

© 2020 by the American Academy of Dermatology, Inc.

https://doi.org/10.1016/j.jaad.2020.04.045

diagnosis and treatment are requested. COVID-19 diagnosis may be based on clinical suspicion alone or laboratory confirmation. The registry was reviewed by the Partners Healthcare (Massachusetts General Hospital) institutional review board. Data are housed securely through Partners REDCap, and is not housed at the AAD.

We recognize the limitations of such a registry, including selective reporting, duplicate case entries, and lack of a denominator, that preclude us from accurately estimating incidence or prevalence. This registry does not replace rigorous epidemiologic studies. However, we believe this registry will allow the global community to rapidly share observations without the institutional or national boundaries that often limit scientific collaboration.

Ultimately, the success of this international effort depends on the active participation of all health workers caring for patients with COVID-19. Together, we hope to use this registry to compile a more complete and representative case series of potential dermatologic manifestations of COVID-19 and outcomes of established dermatology patients who develop COVID-19.

The authors would like to thank the COVID-19 Global Rheumatology Alliance for sharing their experience with registry development. We would also like to thank staff at the American Academy of Dermatology for their logistical and administrative support. We also appreciate comments from Drs Kenneth Katz, Matthew Mansh, and Adewole Adamson regarding collecting demographic information in the registry. We thank Megan Wenger for her assistance with REDCap.

REFERENCES

1. Recalcati S. Cutaneous manifestations in COVID-19: a first perspective [Epub ahead of print]. *J Eur Acad Dermatol Venereol*. 2020. https://doi.org/10.1111/jdv.16387. Published online March 26, 2020.
2. Zhang JJ, Dong X, Cao YY, et al. Clinical characteristics of 140 patients infected with SARS-CoV-2 in Wuhan, China [Epub ahead of print]. *Allergy*. 2020. https://doi.org/10.1111/all.14238. Published online February 19, 2020.
3. Joob B, Wiwanitkit V. COVID-19 can present with a rash and be mistaken for dengue. *J Am Acad Dermatol*. 2020;82:e177.
4. Zhang Y, Cao W, Xiao M, et al. Clinical and coagulation characteristics of 7 patients with critical COVID-2019 pneumonia and acro-ischemia. *Zhonghua Xue Ye Xue Za Zhi*. 2020;41:E006.
5. Robinson PC, Yazdany J. The COVID-19 Global Rheumatology Alliance: collecting data in a pandemic [Epub ahead of print]. *Nat Rev Rheumatol*. 2020, Apr 2,1-2. https://doi.org/10.1038/s41584-020-0418-0.