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.

Once a decision to continue or to resume phototherapy service has been made, the following recommendations are made:

Consider to have all patients:

- Be screened for symptoms, based on local guidelines, before entering the unit, understanding that those with symptoms might be denied treatment;
- Attend the phototherapy appointment alone (ie, family members, friends, caregivers should not enter the medical facility). If the patient is a minor, 1 guardian is allowed to accompany the patient. Screening, wearing a homemade mask, applying hand sanitizer, and practicing social distancing would be required of the guardian;
- Wear a homemade cotton mask, with the exception during the total body phototherapy treatment;
- Apply hand sanitizer upon entering and leaving the unit;
- Be provided with their individual goggles (if the face is exposed during phototherapy) that can be stored in the unit in an individualized plastic bag. Patients should clean the goggles according to manufacturer's instructions thoroughly with disinfecting wipes before putting it in the bag;
- Be given a bag to store their clothes when they disrobe, and bag is discarded at end of treatment;
- Practice social distancing.

Staff should consider to:

- Schedule patients not more than every 30 minutes;
- Arrange waiting area with seats 6 feet apart;
- Wear a mask;
- Apply hand sanitizer before and after each patient encounter;
- Avoid turning on the fan of the phototherapy unit if possible; if need be, treatment can be fractionated to avoid excessive heat build-up in the unit;
- Disinfect high-touch surfaces in the changing area after each patient;
- Disinfect high-touch area of the phototherapy equipment in between patients.

Once the public health authority has given the permission to resume unrestricted daily activity, practice performed before the pandemic can then be done.

Henry W. Lim, MD,[a] Steven R. Feldman, MD, PhD,[b] Abby S. Van Voorhees, MD,[c] and Joel M. Gelfand, MD, MSCE[d]

From the Department of Dermatology, Henry Ford Health System, Detroit, Michigan[a]; the Department of Dermatology, Wake Forest School of Medicine, Winston-Salem, North Carolina[b]; the Department of Dermatology, Eastern Virginia Medical School, Norfolk, Virginia[c]; the Department of Dermatology and Department of Biostatistics, Epidemiology, and Informatics, University of Pennsylvania Perelman School of Medicine, Philadelphia, Pennsylvania.[d]

Funding sources: Funded in part by a contract (PCS-1608-35830) from the Patient-Centered Outcomes Research Institute.

Conflicts of interest: None disclosed.

IRB approval status: Not applicable.

Reprints not available from the authors.

Correspondence to: Henry W. Lim, MD, Department of Dermatology, Henry Ford Medical Center—New Center One, 3031 W Grand Blvd, Ste 800, Detroit, MI 48202

E-mail: hlim1@hfhs.org

REFERENCES

1. ClinicalTrials.gov. Light Treatment Effectiveness (LITE) Study (LITE). Available at: https://clinicaltrials.gov/ct2/show/NCT03726489. Accessed April 18, 2020.
2. Hamzavi IH, Lyons AB, Kohli I, et al. Ultraviolet germicidal irradiation: possible method for respirator disinfection to facilitate reuse during COVID-19 pandemic. *J Am Acad Dermatol*. 2020;82(5):1511-1512.
3. Lytle CD, J Sagripant JL. Predicted inactivation of viruses of relevance to biodefense by solar radiation. *J Virol*. 2005;79:14244-14252.

https://doi.org/10.1016/j.jaad.2020.04.091

Clinical considerations for managing dermatology patients on systemic immunosuppressive or biologic therapy, or both, during the COVID-19 pandemic

To the Editor: Concern exists about COVID-19 in patients treated with systemic immunosuppressive or biologic therapy, or both.[1,2] However, there are no data on the effects of COVID-19 infection in this population.[1,3] We examined randomized controlled trials (RCTs), systematic reviews, and meta-analyses, focusing on RCTs for dermatologic conditions and respiratory infections where available.

The results are presented in Table I, and a detailed discussion is available in the Supplemental materials (via Mendeley at https://doi.org/10.17632/bsjcgsvvxw.2). Briefly, our findings suggest that upper

Table I. Rate of infections with systemic immunosuppressive or biologic therapy, or both, for dermatologic indications

Medication	Dermatologic indication (n)	URI drug/control, No. (%)	Viral infection drug/control No. (%)	Pneumonia drug/control, No. (%)	Infections, overall drug/control, No. (%)	Comments
Etanercept	Psoriasis (n = 583)	51 (13)/25 (13)* ↔	NR	NR	NR	…
Adalimumab	Psoriasis (n = 425)	NR	NR	0 (0)/0 (0) ↔	14 (16.1)/59 (17.5)	…
	Psoriasis (n = 1212)	59 (7.2)/14 (3.5) ↑	NR	NR	235 (28.9)/89 (22.4)	…
	Psoriasis (n = 163)	NR	0 (0)/1 (1.9) ↔	NR	51 (47.7)/23 (43.4)	…
	HS (n = 631)	NR	0 (0)/1 (0.3) ↔	NR	79 (25)/96 (30.5)†	…
Infliximab	Psoriasis (n = 129)	7 (8.3)/2 (4.4) ↑	NR	NR	NR	At week 26
	Psoriasis (n = 378)	46 (15)/12 (16) ↔	NR	NR	125 (42)/30 (40)	…
	Psoriasis (n = 835)	92 (14.7)/29 (14) ↔	NR	NR	NR	…
	PG (n = 30)	NR↔	0 (0)/1 (6)	NR	NR	…
	HS (n = 33)	4 (26.7)/5 (27.8) ↔	0 (0)/1 (5.6)	NR	NR	…
Certolizumab	Psoriasis (n = 389)	14 (4.2)/6 (10.5)* ↔	NR	1 (0.3)/0 (0)*	82 (24.7)/16 (28.1)*	Reported as infections and infestations
	Psoriasis (n = 460)	24 (7)/5 (5) ↑	NR	NR	129 (36)/31 (31)*,†	…
	Psoriasis (n = 175)	4 (3.4)/4 (6.9)* ↔	NR	NR	43 (37)/24 (41)*	Reported as influenza. Other respiratory morbidities (tonsillitis, nasopharyngitis, rhinitis, bronchitis): 32 (27.4)/19 (32.8)
Ustekinumab	Psoriasis (n = 9882)	45 mg; 1.40 (1.09-1.81) 90 mg; 1.02 (0.84-1.24) ↔	NR	NR	45 mg; 1.09 (0.90-1.32) 90 mg; 1.06 (0.93-1.21)	Reported as RR by dose; 6 studies included. $P > .2$ for all data presented. Single study data for 3- and 5-year follow-up was similar
Risankizumab	Psoriasis (n = 39)	3 (10)/1 (13) ↔	NR	NR	NR	…
	Psoriasis (n = 171)	NR	NR	NR	NR	…
	Psoriasis (n = 997)	30 (5)/8 (4) ↔	NR	NR	131 (22)/26 (13)	Reported as viral URI (other URI 4.7% and 2.0% for risankizumab and placebo, respectively) ↑
Tildrakizumab	Psoriasis (n = 2862)	25 (2)/9 (1.9)*,† ↔	NR	NR	3 (0.2)/1 (0.3)	Reported as severe infections requiring intravenous antibiotics
Guselkumab	Psoriasis (n = 837)	25 (7.6)/9 (5.2) ↑	NR	NR	85 (25.8)/44 (25.3)	…
	Psoriasis (n = 992)	16 (3.2)/10 (4) ↔	NR	NR	106 (21.5)/46 (18.5)	…
Secukinumab	Psoriasis (n = 2077)	39 (2.8)/5 (0.7)†	10 (0.7)/2 (0.3)†	NR	…	Viral infection with oral herpes
	Psoriasis (n = 949)	Included in study immediately above	31 (4.4)/3 (1.2)*,† ↑	NR	378 (53.8)/48 (19.4)	Data included in study immediately above Reported separately due to description of influenza-like illness and overall infections
Ixekizumab	Psoriasis (n = 1224)	51 (3.5)/12 (3)*,† ↔	NR	NR	381 (26)/74 (21)*,†	…

Continued

Table I. Cont'd

Medication	Dermatologic indication (n)	URI drug/control, No. (%)	Viral infection drug/control No. (%)	Pneumonia drug/control, No. (%)	Infections, overall drug/control, No. (%)	Comments
Brodalumab	Psoriasis (n = 661)	36 (8.2)/14 (6.4)* ↑	NR	NR	3 (0.7)/0 (0)*	…
	Psoriasis (n = 195)	13 (8)/2 (5)* ↑	NR	NR	NR	…
	Psoriasis (n = 3089)	112 (4.5)/40 (6.4)*,† ↔	NR	1 (.04)/0 (0)*,† ↔	11 (0.45)/2 (0.3)*,†	…
Anakinra	HS (n = 20)	…	NR	NR	1 (5)/1 (5)	…
Omalizumab	Chronic urticaria (n = 322)	7 (2.9)/7 (8.9) ↔	NR	MR	88 (36.2)/30 (38)	Additional outcomes, drug/control, No. (%): Viral URI: 6 (2.5)/1 (1.3); Flu: 10 (4.1)/4 (5.1)
	Chronic urticaria (n = 335)	18 (7.1)/2 (2.4) ↑	NR	NR	93 (36.9)/25 (30.1)	…
	Chronic urticaria (n = 318)	7 (2.9)/3 (3.8) ↔	NR	NR	68 (28.6)/22 (27.5)	…
Dupilumab	Atopic dermatitis (n = 2932)	19 (1.0)/16 (1.5)* ↔	100 (5.4)/51 (4.7)*	NR	739 (40.1)/453 (41.5)*	…
Rituximab	Pemphigus vulgaris (n = 91)	NR	NR	3 (11)/1 (2) ↑	NR	Control: oral prednisone (1-1.5 mg/kg/d)
Cyclosporine	Psoriasis (n = 217)	10 (4.6%) ↑	4 (1.8)	NR	NR	Dose escalation study. No placebo control.
	PG (n = 121)	NR	NR	NR	4 (7)/5 (9) ↔	Control: oral prednisolone (0.75 mg/kg/d)
Azathioprine	Atopic dermatitis (n = 37)	5 (13.5)/2 (5) ↑	NR	NR	1 (2.7)/1 (2.7)	…
	Atopic dermatitis (n = 63)	2 (5)/1 (5) ↔	NR	NR	2 (5)/0 (0)	Higher rates of lower respiratory infection in the treatment arm
Tofacitinib	Psoriasis (n = 1106)	10 (1.5)/0 (0) ↑	NR	NR	134 (20.3)/20 (18.7)	…
Methotrexate	Psoriasis, psoriatic arthritis (n = 221)	31 (28.4)/25 (22.3) ↑	NR	NR	NR	…

HS, Hidradenitis suppurativa; *NR*, none reported; *PG*, pyoderma gangrenosum; *RR*, relative risk; *URI*, upper respiratory infection.
Control group is placebo unless stated otherwise in comments. ↔Suggests no increased URI. ↑Suggests increased URI.
*Combined doses reported as mean.
†Data collected from 2 phase II-III trials and reported as mean.

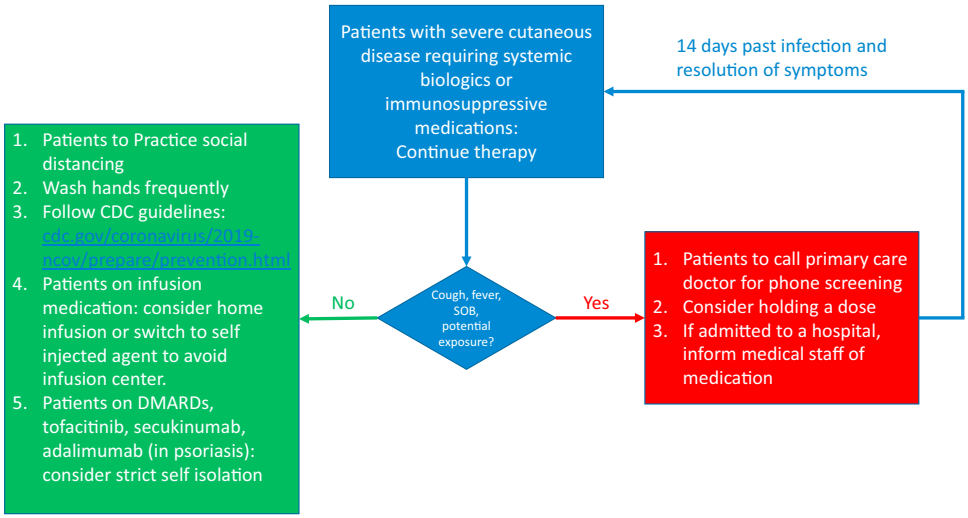

Fig 1. University of Miami clinical considerations for managing patients on systemic immunosuppressive or biologic therapy, or both (*SIBT*), during COVID-19 pandemic. *CDC*, Centers for Disease Control and Prevention; *DMARDs*, disease-modifying antirheumatic drugs: azathioprine, cyclosporine, methotrexate; *SOB*, shortness of breath.

respiratory infection (URI) rates associated with biologics were overall comparable with placebo before the COVID-19 outbreak; however, medication and disease-specific subtleties exist. Antitumor necrosis factor agents, for example, pose a risk for viral infections. However, differing results were seen in treatment of psoriasis vs hidradenitis suppurativa. Secukinumab was associated with increased URI but not the other IL-17 inhibitors. Tofacitinib treatment of patients with psoriasis resulted in an increased incidence of URIs compared with placebo. Cyclosporine is immunosuppressive; however, in the management of pyoderma gangrenosum, URIs were not reported in an RCT but 11% (n = 6) of patients on prednisolone experienced infections requiring hospital admissions compared with none in the cyclosporine arm. Placebo-controlled RCTs of other systemic immunosuppressive medications for dermatologic indications are lacking.

Considering the data presented in this report, the vital protective function of the skin and mucosa, and the relatively lower doses used in dermatology, it is reasonable to conclude that patients with severe dermatologic conditions requiring systemic therapies are overall likely to benefit from improved intact cutaneous function afforded by these medications. In high-risk patients, consideration of stopping tofacitinib and secukinumab may be warranted.

We encourage all patients to focus on infection prevention strategies. If symptoms arise, we advise a stepwise approach (Fig 1).[4] Active infections remain a contraindication for systemic immunosuppressive and biologic therapy. Practical considerations should apply, including avoiding medications with frequent blood testing, switching to self-injected medication, and moving visits to telehealth. Discontinuation of systemic immunosuppressive and biologic therapy may result in disease exacerbation and loss of therapeutic response upon reintroduction. We hope these guidelines help dermatologists navigate therapy, as deemed appropriate by the patient and clinician during this dynamic period.

The authors thank Minhu Chen, MD, PhD, from the Department of Gastroenterology and Hepatology, The First Affiliated Hospital of Sun Yat-sen University, and from the Chinese Society of Gastroenterology, Guangzhou, China, for contributing unpublished data for this report.

Daniela P. Sanchez, BS,[a,b] Robert S. Kirsner, MD, PhD,[a] and Hadar Lev-Tov, MD[a]

From the Dr. Phillip Frost Department of Dermatology & Cutaneous Surgery, University of Miami, Miller School of Medicine, Miami, Florida[a]; and Boston University School of Medicine, Boston, Massachusetts.[b]

Funding sources: None.

Conflicts of interest: None disclosed.

IRB approval status: Not applicable.

Reprints not available from the authors.

Correspondence to: Hadar Lev-Tov, MD, University of Miami Miller School of Medicine, 1600 NW 10th Ave, RMSB 2023A, Miami, FL 33136

E-mail: hlevtov@med.miami.edu

REFERENCES

1. Mao R, Liang J, Shen J, et al; Chinese Society of IBD, Chinese Elite IBD Union; Chinese IBD Quality Care Evaluation Center Committee. Implications of COVID-19 for patients with pre-existing digestive diseases. *Lancet Gastroenterol Hepatol*. 2020;5(5):426-428.
2. Centers for Disease Control and Prevention. Coronavirus Disease 2019 (COVID-2019). People Who Are at Higher Risk for Severe Illness. Available at: https://www.cdc.gov/coronavirus/2019-ncov/specific-groups/high-risk-complications.html. Accessed March 16, 2020.
3. American College of Rheumatology. A Message from the ACR about Coronavirus Disease 2019 (COVID-19). Available at: https://www.rheumatology.org/announcements. Accessed March 16, 2020.
4. American Academy of Dermatology. Coronavirus resource center. Available at: https://www.aad.org/member/practice/managing/coronavirus. Accessed March 30, 2020.

https://doi.org/10.1016/j.jaad.2020.04.143

COVID-19 and biologics for psoriasis: A high-epidemic area experience—Bergamo, Lombardy, Italy

To the Editor: A severe outbreak of coronavirus disease 2019 (COVID-19) emerged in China in December 2019 and has rapidly spread worldwide. A large number of people in Italy have been infected with COVID-19, and it has become a serious public health emergency.[1] The first case in our hospital was identified on February 21, 2020.[2]

Information is still limited regarding the new coronavirus and its impact on patients receiving long-term immunosuppressive therapy. In a precoronavirus era, respiratory infection rates for biologic therapy patients were comparable to placebo.[3]

As suggested by the Italian Society of Dermatologists (SIDeMaST),[4] we advise patients treated with biologic drugs to carefully comply with hygiene rules, use protective devices, maintain social distancing, and to not spontaneously suspend ongoing therapy but to inform the dermatologist in case of symptoms. We report our experience with patients treated with biologic therapy for psoriasis in Bergamo, an area of high epidemic rates for COVID-19.

Patients being treated at the psoriasis outpatient service of the Bergamo Hospital live in Bergamo (86.2% [n = 137]), Milan (6.3% [n = 10]), Brescia (4.4% [n = 7]), Lecco (1.9% [n = 3]), and Lodi (1.3% [n = 2]), all Lombardy region areas with a high incidence rate of COVID-19 infections.[5]

All patients were contacted by telephone or underwent a dermatologic visit 40 to 45 days after the beginning of the COVID-19 epidemic (population characteristics are reported in Table I). Twenty-five patients (15.7%) reported contacting individuals with established (positive nasal swab test) or suspected COVID-19. Symptoms suggestive of COVID-19 developed in 18 of these 25 patients (72.0%; 15 mild, 3 moderate) (Table I).

Table I. Characteristics of patients with psoriasis on biologic therapy

Variable	All patients
Age, mean ± SD (range), y	51.5 ± 14.0 (17-84)
Sex	
Male, % (n/N)	71.7 (114/159)
Female, % (n/N)	28.3 (45/159)
Biologic therapies	
Anti–TNF-α (adalimumab, etanercept, golimumab), % (n/N)	33.3 (53/159)
Anti–IL-17 (secukinumab, ixekizumab, brodalumab), % (n/N)	47.8 (76/159)
Anti–IL-12/-23 (ustekinumab, guselkumab), % (n/N)	18.9 (30/159)
Contact with suspected/confirmed COVID-19 patient, % (n/N)	15.7 (25/159)
Patients with positive COVID-19 nasal swab, % (n/N)*	0.0 (0/159)
Suspected COVID-19 symptoms, % (n/N)†	18.2 (29/159)
Mild	15.7 (25/159)
Moderate	1.9 (3/159)
Severe	0.6 (1/159)
Patients who had drug suspended, % (n/N)	5.6 (9/159)

IL, Interleukin; *TNF*, tumor necrosis factor.
*In March 2020 almost only hospitalized patients were tested with COVID-19 nasal swab (n = 0/1 positive nasal swab/hospitalized patients)
†Suspected COVID-19 symptoms defined as: Mild: flu-like symptoms, cough, low-grade fever, anosmia/ageusia, resolved in ≤7 days without hospitalization. Moderate: flu-like symptoms, cough, low-grade fever, anosmia/ageusia, resolved in 8-16 days without hospitalization. Severe: serious symptoms that required hospitalization; 1 patient reported serious symptoms that required hospitalization (pneumococcal pneumonia with negative COVID-19 nasal swab).

Six patients contacted us to report respiratory symptoms; as a precaution, given the limited information available on the risk due to COVID-19, we temporarily discontinued therapy for up to 30 days after the symptoms resolved. One patient reported serious symptoms that required hospitalization (pneumococcal pneumonia with negative COVID-19 nasal swab). Three patients without symptoms stopped therapy on their own and reported worsening of psoriasis; all resumed treatment after receiving reassurances. Twenty-three patients reported having had symptoms consistent with COVID-19 (22 mild, 1 moderate) but did not stop therapy. There were no significant demographic or