6 Melanoma patients with unresectable or metastatic disease always require systemic therapy. Patients with active malignant diseases are at increased risk for a severe course of COVID-19 and thus need to be informed to strictly adhere to recommended safety and hygiene procedures (Table 2). Patients requiring targeted therapy, the combination of encorafenib and binimetinib (if available), should be considered over other BRAF and MEK inhibitors (lower rate of pyrexia). For the majority of patients requiring immunotherapy, it is recommended to start monotherapy with anti-PD-1 inhibitors due to their favourable safety profile.[9] Some patients might still require treatment with the combination of anti-PD-1 and anti-CTLA-4 inhibitors. This includes patients with symptomatic and asymptomatic brain metastases, but also patients with elevated LDH levels, bulky disease, PD-L1 negativity, mucosal and acral melanoma.

7 Melanoma patients are at increased risk of a severe COVID-19 disease course and should receive priority access to SARS-CoV-2 vaccines. A panel of oncology and infectious disease experts agreed that the Pfizer/BioNTech and Moderna vaccines are safe and effective for the general population. To date, there is no evidence that these vaccines should not be safe for cancer patients.[10]

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M. Arenbergerova,[1,*] A. Lallas,[2] E. Nagore,[3,4] L. Rudnicka,[5] A.M Forsea,[6,7] M. Pasek,[1] F. Meier,[8,9] K. Peris,[10,11] J. Olah,[12] C. Posch[13,14]

[1]Department of Dermatovenereology, Third Faculty of Medicine, Charles University and Kralovske Vinohrady University Hospital, Prague, Czech Republic, [2]First Department of Dermatology, School of Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, Thessaloniki, Greece, [3]Department of Dermatology, Instituto Valenciano de Oncología, Valencia, Spain, [4]School of Medicine, Universidad Católica de Valencia San Vicente Mártir, Valencia, Spain, [5]Department of Dermatology, Medical University of Warsaw, Warsaw, Poland, [6]Carol Davila University of Medicine and Pharmacy Bucharest, Bucharest, Romania, [7]Oncologic Dermatology Department, Elias University Hospital Bucharest, Bucharest, Romania, [8]Skin Cancer Center at the University Cancer Centre Dresden and National Center for Tumor Diseases, Dresden, Germany, [9]Department of Dermatology, University Hospital Carl Gustav Carus, TU Dresden, Dresden, Germany, [10]UOC di Dermatologia, Università Cattolica del Sacro Cuore, Rome, Italy, [11]Dermatologia Fondazione Policlinico Universitario A. Gemelli – IRCCS, Rome, Italy, [12]Department of Oncotherapy, Department of Dermatology and Allergology, University of Szeged, Szeged, Hungary, [13]Department of Dermatology and Allergy, School of Medicine, German Cancer Consortium (DKTK), Technical University of Munich, Munich, Germany, [14]Faculty of Medicine, Sigmund Freud University Vienna, Vienna, Austria

*Correspondence: M. Arenbergerova. E-mail: arenbergerova@email.cz.

## References

1 ESMO, Cancer patient management during the covid-19 pandemic. URL: https://www.esmo.org/guidelines/cancer-patient-management-during-the-covid-19-pandemic?hit=ehp (last accessed: 22 December 2020).
2 NCCN. Short-Term Recommendations for Cutaneous Melanoma Management During COVID-19 Pandemic. URL: https://www.nccn.org/covid-19/pdf/Melanoma.pdf (last accessed: 06 May 2020).
3 Garbe C, Amaral T, Peris K *et al.* European consensus-based interdisciplinary guideline for melanoma. Part 2: treatment e update 2019. *Eur J Cancer* 2020; **126**: 159–177.
4 Oude Ophuis CM, Verhoef C, Rutkowski P *et al.* The interval between primary melanoma excision and sentinel node biopsy is not associated with survival in sentinel node positive patients - An EORTC Melanoma Group study. *Eur J Surg Oncol* 2016; **42**: 1906–1913.
5 Tejera-Vaquerizo A, Descalzo-Gallego MA, Traves V. The intriguing effect of delay time to sentinel lymph node biopsy on survival: a propensity score matching study on a cohort of melanoma patients. *Eur J Dermatol* 2017; **27**: 487–495.
6 Tejera-Vaquerizo A, Nagore E, Puig S *et al.* Effect of time to sentinel-node biopsy on the prognosis of cutaneous melanoma. *Eur J Cancer* 2015; **51**: 1780–1793.
7 Faries MB, Thompson JF, Cochran AJ *et al.* Completion dissection or observation for sentinel-node metastasis in melanoma. *N Engl J Med* 2017; **376**: 2211–2222.
8 Nahm SH, Rembielak A, Peach H *et al.* Consensus guidelines for the management of melanoma during the COVID-19 pandemic: surgery, systemic anti-cancer therapy, radiotherapy and follow-up. *Clin Oncol* 2021; **33**: e54–e57.
9 Rogiers A, Pires da Silva I, Tentori C *et al.* Clinical impact of COVID-19 on patients with cancer treated with immune checkpoint inhibition. *J Immunother Cancer* 2021; **9**: e001931.
10 Garassino MC, Giesen N, Grivas P *et al.* COVID-19 vaccination in cancer patients: ESMO statements. URL https://www.esmo.org/covid-19-and-cancer/covid-19-vaccination (last accessed: 22 December 2020).

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# Vaccination against SARS-CoV-2 and psoriasis: the three things every dermatologist should know

*Dear Editor,*

In this document, the three most important items that dermatologists should know about COVID-19 vaccines to be better prepared to the management of psoriatic patients are reported.

**Table 1** Features of the 2 vaccines against SARS-CoV-2 already authorized both from FDA (Food and Drug Administration) and EMA (European Medicines Agency) for Emergency use[1,2]

| COVID-19 vaccine developer/ manufacturer | Vaccine platform | Type of candidate vaccine | Number of doses | Timing of doses | Route of administration |
|---|---|---|---|---|---|
| Moderna/NIAID® | RNA | LNP-encapsulated mRNA | 2 | 0.28 days | IM |
| BioNTech/Fosun Pharma/Pfizer® | RNA | 3 LNP-mRNAs | 2 | 0.28 days | IM |

1 What are the characteristics of the vaccines approved by FDA (Food and Drug Administration) and EMA (European Medicines Agency) against SARS-CoV-2?

Currently, there are two vaccines already authorized from FDA and EMA for Emergency Use.[1] They are the BNT162b2 and the mRNA-1273, respectively, produced by Pfizer (New York, NY, USA) /BioNTech® (Mainz, Germany) and Moderna® (Cambridge, MA, USA) (Table 1). Both vaccines consist of nucleic acid, mRNA able to induce our human cells to use protein factories to make the antigen (viral spike protein) that will trigger an immune response.

According to data published by the two companies, the BNT162 and the mRNA-1273 vaccines showed 95% and 94.5% efficacy in preventing COVID-19, respectively.[2,3]

Regarding safety profile, phase III studies demonstrate an excellent safety profile for both vaccines.[2,3]

In mRNA-1273, Moderna® vaccine solicited adverse events at the injection site occurred in 84.2% of patients after first dose and in 88.6% of patients at second dose. The most common injection-site event was as follows: pain after injection (86.0%), delayed injection-site reactions in 0.8% of patients after the first dose and in 0.2% after the second dose.

Solicited systemic adverse events occurred in 54.9%, after first dose and in 79.4% of patients after second dose.

The most common treatment-related adverse events were fatigue (1.5%) and headache (1.4%).

In BNT162b2, Pfizer/BioNTech® mild-to-moderate pain at the injection site within 7 days after an injection was the most commonly reported local reaction, with <1% of participants across all age groups reporting severe pain.

The most commonly reported systemic events were fatigue and headache (59% and 52%, respectively).

2 Which is the specific risk for psoriatic patients in case of SARS-CoV-2 infection?

According to Dadras *et al.*,[4] there would be a close connection between psoriatic disease and COVID-19 disease due to the angiotensin-converting enzyme (ACE) role. SARS-CoV-2 spike protein shows strong binding affinity to human angiotensin-converting enzyme 2 (ACE2) receptor. This has been recognized as the major reason for skin involvement during SARS-CoV-2 infection.[5,6] Serum level of ACE tends to be higher among psoriatic patients and correlates with higher cardiovascular comorbidities, including subclinical atherosclerosis.[7] Moreover, tissue ACE activity seems to be higher among psoriasis subjects and correlates with disease activity.[8]

The overactivity of ACE in COVID-19 patients may aggravate psoriatic condition, favouring higher incidence of cardiovascular events in the subset of COVID-19 psoriatic patients. Thus, Dadras *et al.*[4] proposed that psoriasis patients may be at an increased risk of both deterioration of the disease and higher incidence of cardiovascular events in case of COVID-19 infection. They concluded that prevention of SARS-CoV-2 infection by vaccine is crucial for patients with psoriasis.

3 Which specific recommendations may be drawn for psoriatic patients receiving vaccine?

In this phase, specific data on the efficacy or safety of vaccines against COVID-19 in patients with psoriasis on immunosuppressive therapy are not available yet, as these patients are naturally excluded from clinical trials.

However, given the nature of the vaccine and the results of studies on the efficacy of other types of inactivated vaccines in patients undergoing biological therapy, there are no obvious contraindications to the use of the vaccine. The major international scientific societies, such as the National Psoriasis Foundation, in fact, recommend the use of the SARS-CoV-2 vaccine even in patients undergoing biological therapy without the necessity to discontinue the therapy.[9]

Although further study will be required to define mainly efficacy of SARS-CoV-2 vaccines in psoriatic patient undergoing biological treatments, nowadays their vaccine immunization against SARS-CoV-2 infection is strictly recommendable in our opinion.

Assessing a case-by-case approach, evaluating the risk-benefit ratio of maintaining the ongoing immunosuppressive therapy before performing the vaccine is mandatory at the moment.[10]

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F. Diotallevi,[1,†] A. Campanati,[1,†] G. Radi,[1] E. Martina,[1,*] G. Rizzetto,[1] P. Barbadoro,[2] M.M. D'Errico,[2] A. Offidani[1]

[1]Dermatological Clinic, Department of Clinical and Molecular Sciences, Polytechnic University of the Marche Region, Ancona, Italy, [2]Department of Biomedical Sciences and Public Health, Section of Hygiene, Preventive Medicine and Public Health, Polytechnic University of the Marche Region, Ancona, Italy

*Correspondence: E. Martina. E-mail: ema.martina@gmail.com

[†]These authors contributed equally to the manuscript.

## References

1 https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/covid-19-vaccines (last accessed: 2 January 2021).
2 Polack FP, Thomas SJ, Kitchin N *et al.* C4591001 clinical trial group. safety and efficacy of the BNT162b2 mRNA Covid-19 vaccine. *N Engl J Med* 2020; **383**: 2603–2615. https://doi.org/10.1056/NEJMoa2034577
3 Baden LR, El Sahly HM, Essink B *et al.* Efficacy and safety of the mRNA-1273 SARS-CoV-2 vaccine. *N Engl J Med* 2020; **384**: 403–416.
4 Shahidi-Dadras M, Tabary M, Robati RM *et al.* Psoriasis and risk of the COVID-19: is there a role for angiotensin converting enzyme (ACE)? *J Dermatolog Treat* 2020; **9**: 1–2.
5 Diotallevi F, Campanati A, Bianchelli T *et al.* Skin involvement in SARS-CoV-2 infection: case series. *J Med Virol* 2020; **92**: 2332–2334.
6 Campanati A, Brisigotti V, Diotallevi F *et al.* Active implications for dermatologists in 'SARS-CoV-2 ERA': personal experience and review of literature. *J Eur Acad Dermatol Venereol* 2020; **34**: 1626–1632.
7 Abdollahimajd F, Niknezhad N, Haghighatkhah HR *et al.* Angiotensin-converting enzyme and subclinical atherosclerosis in psoriasis: is there any association? A case-control study. *J Am Acad Dermatol* 2020; **82**: 980–981.e1.
8 Huskić J, Mulabegović N, Alendar F *et al.* Serum and tissue angiotensin converting enzyme in patients with psoriasis. *Coll Antropol* 2008; **32**: 1215–1219.
9 https://www.psoriasis.org/advance/vaccinating-in-the-time-of-covid/ (last accessed: 2 January 2021).
10 Radi G, Diotallevi F, Campanati A. Offidani A Global coronavirus pandemic (2019-nCOV): implication for an Italian medium size dermatological clinic of a II level hospital. *J Eur Acad Dermatol Venereol* 2020; **34**: e213–e214.

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# A new virtual inpatient dermatology electronic referral service: a timely solution in the COVID-19 pandemic and beyond?

*Dear Editor,*

The use of teledermatology in an inpatient setting is not well-established, with limited data published compared to the outpatient setting. It has, however, been demonstrated that teledermatology may be effective for managing inpatient dermatologic disease, leading to highly concordant diagnostic and management decisions.[1,2] Involvement of dermatologists in the care of hospitalized patients has been found to improve patient outcomes[3] with inpatient teledermatology reducing response times.[4]

We set up a store-and-forward, fully digitized, virtual inpatient referral service to replace our traditional paper-based, face-to-face (FTF) inpatient referral pathway, amidst the COVID-19 pandemic. Our health board in Wales, UK, covers a relatively wide geographical area across 1553 km$^2$, accounting for 30% of the Welsh landmass, but covering only 18% of the population of 3.1 million. We cover inpatients across six different hospital sites, two of which have traditionally had inequitable access to a dermatology opinion as they lack regular onsite clinics. The old system was onerous for both clinicians and administrative staff, as historically inpatient referrals comprised handwritten forms manually delivered or faxed between hospitals. Referrals often lacked vital clinical information, comprised illegible handwriting and frequently went missing. We therefore implemented an entirely paperless, electronic referral pathway that integrated with the electronic patient record (EPR) and enabled virtual rather than FTF review.

An e-referral form was designed for referrers to include essential clinical information, with medical photographs requested alongside. High-quality images were taken by the medical illustration service and uploaded securely onto the EPR. Dermatology residents reviewed referrals virtually, relaying advice back to the referring clinician. Referrals, including patient metadata, from all inpatient specialties across the six hospitals over a 10-week period from 14 July to 30 September 2020 were assessed. A five-point Likert scale was used to assess the degree of confidence residents felt in managing inpatients virtually.

Of 95 consecutive referrals, 55% were male and 45% female (age range 0–103 years; average 63.8). Almost all (96%) were judged to be appropriately directed to dermatology. Most referrals (84%) were successfully dealt with virtually. The majority of the remaining 16% comprised patients that required a biopsy, paediatric cases needing parental reassurance and complex medical cases. A wide variety of dermatological conditions were diagnosed and managed, both inflammatory and lesions, and 87% were discharged with appropriate advice.

The average response time was 1.9 days, 66% were dealt with within 24 h and 77% within 48 h (Fig. 1a). The rate-limiting step was waiting for accompanying images, accounting for 74% of variance in the time awaiting review (Fig. 1b). Residents felt highly confident in 62% cases (Fig. 1c). A senior review was needed in 65%, of which 99% were easy to obtain.

Our virtual platform has widened the reach of timely specialist input across sites where dermatology services have not traditionally been based, ensuring equitable access for patients, independent of location. It establishes a secure and permanent

 