**PD09 (P79)**
A review of proton pump inhibitor photosensitivity in a tertiary referral photodiagnostic centre
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Over the last few years, we have seen 11 patients presenting with proton pump inhibitor (PPI) photosensitivity at our tertiary referral photodiagnostic service and in our local dermatology department. Many adverse effects, including the discovery in 2020 of an almost twofold increased risk of severe COVID-19, of this widely used group of drugs have been noted (Lee SW, Ha EK, Yeniova AO et al. Severe clinical outcomes of COVID-19 associated with proton pump inhibitors: a nationwide cohort study with propensity score matching. Gut 2020; 70: 76–84). Although PPI-induced phototoxicity has been described, phototest results have not been reported and all clinical presentations have not been described. We aimed to identify all patients with PPI photosensitivity who presented to our unit. We sought to better understand their clinical characteristics, blood test results and photodiagnostic results. We retrospectively reviewed all case notes and investigation results of patients who were diagnosed with PPI photosensitivity. Eleven patients were identified to have been seen between 2014 and 2019. Two patients were male and nine were female. Mean duration of disease was 3.6 years and mean duration of PPI ingestion was 5 years. Five patients presented with a drug-induced lupus pattern [subcutaneous lupus erythematosus (SLE; n = 2), papulosquamous SLE and discoid (n = 1), tumid (n = 1) and acute cutaneous (n = 1)]), four with drug-induced phototoxicity (sun-burn-like) and two with a drug-induced solar urticaria relating to a lupus mechanism. The majority of patients reported symptoms on sun-exposed sites. The most common indication for PPI prescription was gastroesophageal reflux disease with omeprazole being the most commonly prescribed PPI. All patients underwent phototesting. Three patients were not on an PPI while undergoing phototesting and did not demonstrate photosensitivity. Of the remaining patients who underwent phototesting the most common finding was delayed sensitivity to ultraviolet A and to visible light. Drug-induced photosensitivity can be a challenging diagnostic entity owing to the varied clinical presentation and heterogeneous time to onset. We present this case series to further help clinicians in recognizing the clinical and diagnostic pattern of photosensitivity present with PPI use.

**PD10**
Light penetration into a six-layer skin model for 200–1000 nm
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A detailed knowledge of the depth that light can travel into skin is beneficial and necessary for many areas of medical research and treatment. Accessible data showing the fluence rate of a phototherapy lamp as a function of depth into skin can help predict the extent that an effective dose of light can reach (Barnard I, Eadie E, McMillan L et al. Could psoralen plus ultraviolet A1 (‘PUVA1’) work? Depth penetration achieved by phototherapy lamps. Br J Dermatol 2019; 182: 813–14). Also, examining the depth to which light in the ultraviolet (UV) spectrum can reach is important for understanding the damage sunlight can inflict upon skin, especially at the DNA layer (Barnard I, Tierney P, Campbell C et al. Quantifying direct DNA damage in the basal layer of skin exposed to UV radiation from sunbeds. Photochem Photobiol 2018; 94: 1017–25), as well as determining the safety of germicidal UV lamps. This study aimed to produce a tool in which fluence rate vs. skin depth information can be easily accessed for a wavelength range of 200 nm–1 μm. Additionally, the effect on fluence rate at depth for different thicknesses of the stratum corneum, the outermost layer of the skin, is investigated. The stratum corneum is the first layer of protection against DNA damage from UV light and so understanding how its thickness can affect this protection is important for preventing development of skin cancer. Monte Carlo simulations are used to predict the path of photon packets through a six-layer skin model, based on a model from previous research (Barnard et al., 2018). Simulations were run and a grid of fluence rate values was produced for each wavelength. To investigate the effect of varying stratum corneum thickness, the layer thickness was first halved compared with the original thickness and then removed completely. Simulations were run at a few relevant wavelengths within the UV range for each scenario. The results show that longer wavelengths, with lower absorption and scattering coefficients, penetrate deeper into the skin. As expected, a decrease in the thickness of the stratum corneum also results in a higher penetration of light into the skin. This increases the fluence rate of damaging UV light getting to the DNA layer, especially at the longer wavelength end of the UV spectrum.

**PD11**
Access to phototherapy during the COVID-19 pandemic
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As the COVID-19 pandemic hit, many phototherapy centres stopped treating patients completely or limited services to very urgent patients only. As the duration of the pandemic became evident and owing to the need to offer alternatives to systemic immunosuppressive drugs for many patients with inflammatory skin disease, we adapted our service to treat increasing patient numbers. Offering treatment over extended hours and Saturday morning, and reorganizing waiting areas and the flow of how patients entered and exited the unit allowed social distancing. This also provided time for the cleaning of equipment between patients. A survey confirmed that patients
felt very safe attending treatment. Our unit has also offered a home phototherapy service since 2016 – initially four units and expanded to eight in 2018. To allow continued access for our cohort of vulnerable, shielding patients, we drew up a compelling business case and submitted a funding application to the Trust’s emergency COVID-19 budget, successfully obtaining funding for an additional 10 units. Our existing Waldman home units are no longer manufactured, but we were able to source three units from existing stock and seven additional Daavlin 7 Series units from Scott Medical. The home phototherapy service offers treatment for a wide range of inflammatory skin diseases, including psoriasis, eczema, urticaria, polymorphic light eruption, pruritus and pityriasis lichenoides chronicus. In 2020, despite staff redeployment and before the arrival of the new units, patients receiving home phototherapy included 16 patients with psoriasis who were shielding or could not travel to hospital. Eighty-one per cent of patients achieved clear or minimal residual disease activity within 30 exposures or less by the end of their course, which is comparable to our hospital-based service. Rates of symptomatic erythema (E2) were 1% of total number of exposures delivered in this patient group with no episodes of E3 or E4. Our in-hospital erythema rate for 2020 was 2.2%. There were very high levels of patient satisfaction. This highlights the importance of home phototherapy and provides additional evidence that it is safe and effective. The expansion in our service brought about by the COVID-19 pandemic will allow us to extend this service to more patients in the future.

A useful model for setting up a home phototherapy service is described by Hung et al. (Hung R, Ungureanu S, Edwards C et al. Home phototherapy for psoriasis: a review and update. Clin Exp Dermatol 2015; 40: 827–2).

**PD12**

**Daylight photodynamic therapy at home**

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Daylight photodynamic therapy (DPDT) is an established treatment for field-change actinic keratoses (AK) with high rates of satisfaction and success. In recent times there has been a push within the healthcare industry to reduce avoidable clinic time and complement it with community-based healthcare, including self-administration therapies. The importance of ‘decentralized’ healthcare and at-home therapies has been emphasized by the recent COVID-19 pandemic – access to treatments is restricted and many patients are not receiving the appropriate care in an attempt to minimize hospital-based treatments. In this project, we deconstructed DPDT and by utilizing principles of design and the concept of realistic medicine, transformed it into a user-friendly, environmentally conscious and engaging at-home therapeutic option. Information on protocols and best practice was obtained from clinical colleagues and a map of the patient pathway was outlined. The treatment was broken down and re-formed into simple steps, taking care with the number of instructions to prevent confusion. The physical form of the at-home kit was designed to facilitate the required materials for DPDT, while being simple and methodical to follow. Steps were separated into individual numbered sections, with only the materials needed at each step visible. Simple graphics are displayed alongside relevant instructions, with colouring to highlight importance. The at-home kit was iteratively improved with input from end users. As part of this initiative the DPDT at-home kit is designed and prototyped in order to be posted directly to the user. In trialling this kit preclinically, the theoretical patient journey could be visualized, starting with the unboxing of the kit, then followed by the guides and directed procedure. Through feedback, iterations to the design have subsequently been made that efficiently translate the clinical procedure into a successful at-home design. One of the key principles of realistic medicine to consider is the reduction of waste. In this kit we have, where possible, used recycled and recyclable materials, and are in the process of incorporating medically approved biodegradable gloves, which will instantly reduce a high fraction of the nonrecyclable excess. Implementation of the kit in routine clinical practice will provide important feedback allowing further iterations to the design of the kit. Involving patients directly with the development work and continuously responding to the patient experience will significantly improve the final design of the at-home kit. Helping to implement an option to take this important treatment away from a hospitalized environment represents a paradigm shift in the possible delivery of DPDT and can be useful to optimize treatment delivery on a per-patient basis.

**PD13**

**Beliefs and attitudes to sun tanning and knowledge of melanoma in the Irish population: a cross-sectional study**

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The incidence of melanoma and nonmelanoma skin cancer continues to rise in Ireland. This study aimed to explore the tanning and sun-protection behaviour and attitudes, as well as awareness of signs of melanoma, of the Irish population. A cross-sectional study was performed in December 2020 via an online questionnaire. Respondents were recruited according to gender, age and geographical region. In total, 1043 respondents (49% female) completed the questionnaire (mean age 41 years; range 20–72). In total, 443 sunbathe when there is sunny weather in Ireland, with 245 wearing suncream less than half of the time. Thirty-eight per cent (n = 399) have used sunbeds in the last 12 months, despite the global COVID-19 pandemic. Almost half (49%) did not believe